BIG BEAR AREA REGIONAL WASTEWATER AGENCY

Regular Board Meeting Agenda
July 24, 2024 at 5:00 p.m.
121 Palomino Drive, Big Bear City, California

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. APPROVAL OF AGENDA

4. PUBLIC FORUM

Public testimony is permitted at this time only on consent calendar items and other matters not listed on the posted agenda that are within the subject matter jurisdiction of the Agency. State law prohibits the Agency from taking action on any items not listed on the posted agenda. Public comment on items listed on the posted agenda will be taken at the time each item is called for discussion.

5. PRESENTATION AND INTRODUCTION

5.A. Distinguished Budget Presentation Award, Government Finance Officers Association

5.B. Replenish Big Bear Summary: Preliminary Pilot Facility Water Quality Testing Presentation and Pilot Report

6. INFORMATION/COMMITTEE REPORTS

6.A. General Manager's Report

6.B. Replenish Big Bear Report

6.C. Bear Valley Basin Groundwater Sustainability Agency on June 27, 2024

7. CONSENT CALENDAR

All matters listed on the Consent Calendar will be enacted by one motion at the appropriate time. There will be no separate discussion of these items. If a detailed discussion is necessary, any Governing Board Member may request that an item be removed from the Consent Calendar and considered separately.

7.A. Approval of the Meeting Minutes from the May 22, 2024 Special and Regular Meetings

7.B. Monthly Disbursements Report for May and June - Informational

7.C. Investment Report Identifying Agency Investments and Reporting Interest Income for May and June - Informational

8. ITEMS REMOVED FROM CONSENT CALENDAR

9. OLD BUSINESS

9.A. Resolution No. R. 08-2024, A Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency Adopting Environmental Findings and Statement of Overriding Considerations Pursuant to the California Environmental Quality Act, Certifying the Replenish Big Bear Program Final Environmental Impact Report (SCH #2022110595), Adopting the Mitigation Monitoring and Reporting Program, and Approving the Program

10. NEW BUSINESS – DISCUSSION/ACTION ITEMS

10.A. Award Contracts for Municipal Advisory and Placement Agent Services and Retain Bond Counsel for Replenish Big Bear Final Design Funding

10.B. Resolution No. R. 09-2024, A Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency Approving the Force Main Slip Lining Project and Finding the Project Exempt from the California Environmental Quality Act Pursuant to State CEQA Guidelines Section 15301 (Existing Facilities) and Authorization to Advertise and Solicit Bids

11. COMMENTS AND ANNOUNCEMENTS

11.A. General Manager Comments

11.B. Governing Board Member Comments

12. ADJOURNMENT

In compliance with the Americans with Disabilities Act and Government Code Section 54954.2, if you need special assistance to participate in an Agency meeting or other services offered by the Agency, please contact the Agency at (909) 584-4018. Notification at least 48 hours prior to the meeting or time when services are needed will assist Agency staff in assuring that reasonable arrangements can be made to provide accessibility to the meeting or service.

Copies of staff reports or other written documentation relating to each item of business referred to on this agenda are on file in the office of the Big Bear Area Regional Wastewater Agency and are available for public inspection during normal business hours.

Visit www.bbarwa.org to view and/or print the Agenda Package.

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Summary: Preliminary Pilot Facility Water Quality Testing

JULY 24, 2024

AGENDA

1. Pilot Water Quality Summary
2. Pilot Purpose & Objectives
3. Background
4. Piloting Sequence
5. Data Collection
6. Results & Findings
7. Next Steps

Pilot Facility Water Quality Summary

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Key Treatment System Drivers

Constituent	Units [1]	Drinking Water Objectives for Comparison	Anticipated RBB Permit Objective	Pilot Treatment Results [2]
Total Dissolved Solids	ppm	500	175	8
Sodium	ppm	--	20	0.8
Chloride	ppm	250	10	1.1
Sulfate	ppm	250	10	0.1
Total Phosphorus (TP)	ppm as phosphorus	--	0.035	0.013
Total Inorganic Nitrogen (TIN)	ppm as nitrogen	10 for Total Nitrogen	0.15	0.27
Total Organic Carbon (TOC)	ppm	--	0.5	0.16
Total System Recovery	%	--	98% (Target)	98.7%

DESIGN CHANGES UNDERWAY TO MEET OBJECTIVE

TREATMENT PROCESS MET TARGETS

[1] mg/L = milligrams per liter (parts per million)
[2] Based on CCRO Effluent from Phase Two

Pilot Study Purpose & Objectives

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Replenish Big Bear Pilot Study

✓ WHAT IT IS

Small scale test of potential treatment processes using the same water source that would be treated through full-scale system

Opportunity to:

- Collect data to optimize design of final treatment process
- Estimate brine production
- Gain operator experience

✗ WHAT IT ISN'T

- The final Replenish Big Bear treatment process
- An exact report on Replenish Big Bear Program Water quality to be discharged into Stanfield Marsh

Drivers for Replenish Big Bear Pilot Study

Stringent Effluent Water Quality Regulations + Unique Project Needs

- Inform selection of treatment processes needed to meet very low objectives for Big Bear Lake
- Evaluate impacts of winter process temperatures on treatment performance
- Quantify total system recovery and estimate brine to be produced

Background

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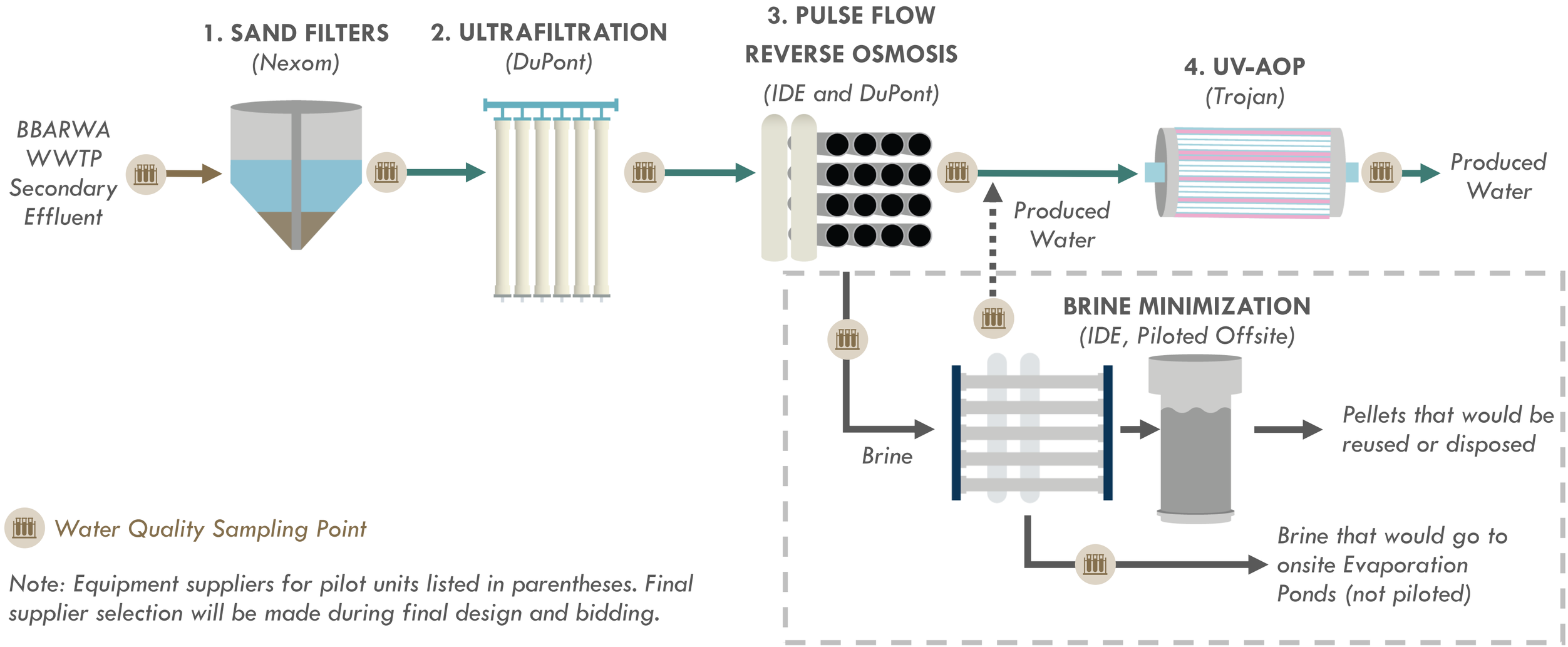
4 Treatment Processes Piloted at BBARWA Site

Pilot ran at ~25 gallons per minute (less than 1% of full-scale flow rate)



Water Quality Sampling Point

Note: Equipment suppliers for pilot units listed in parentheses. Final supplier selection will be made during final design and bidding.

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Multiple Processes Required for Treatment

Constituent Targeted	Sand Filter	UF	RO	UV-AOP
Inorganic Nitrogen	■		■	
Phosphorus	■		■	
Metals	■		■	
Solids	■	■		
Total Dissolved Solids			■	
Pathogens		■	■	■
Organics			■	■
Constituents of Emerging Concern (CEC)			■	■

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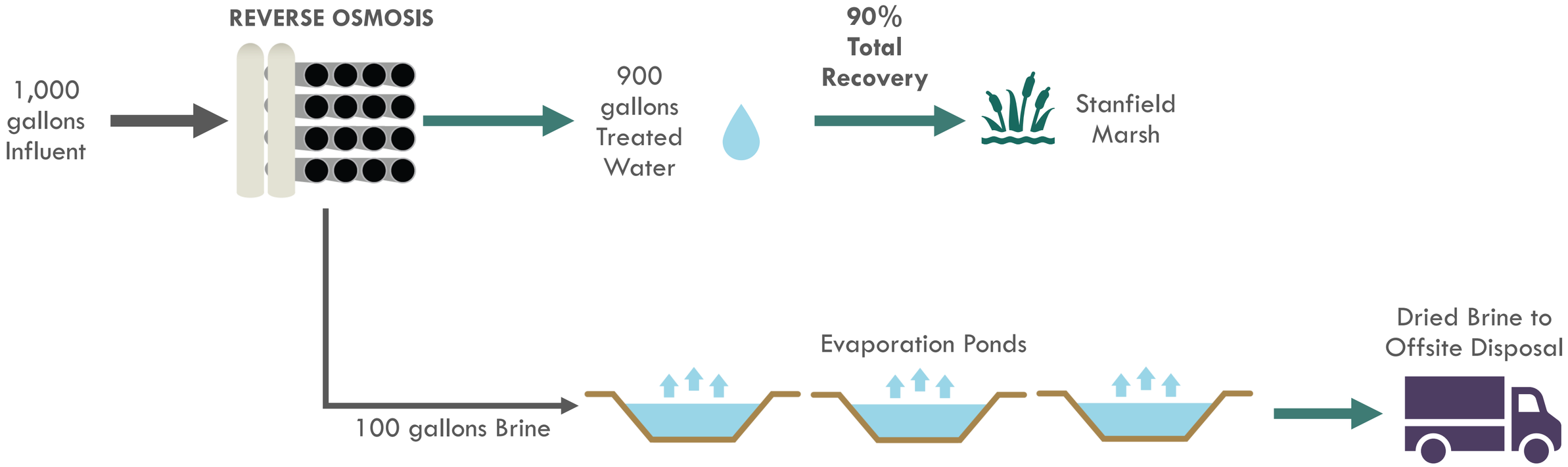
Why do we need brine minimization?

Without Brine Minimization – Lower Total System Recovery



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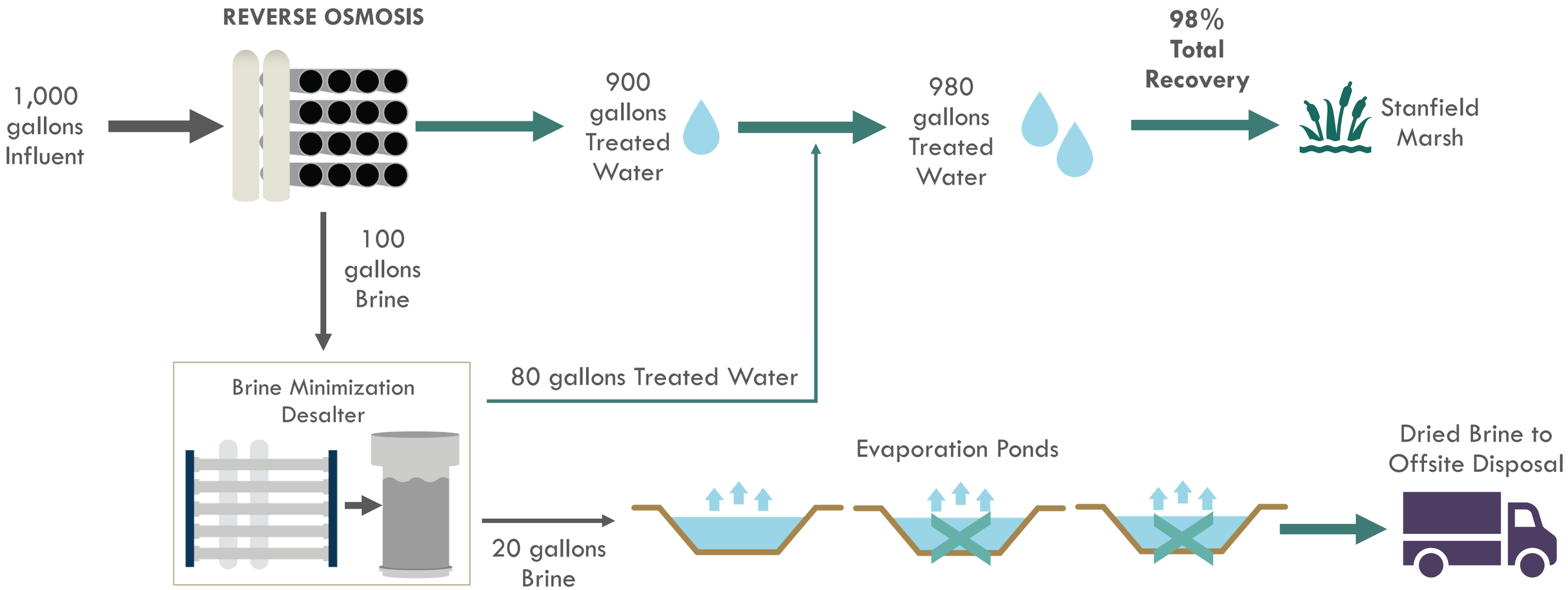
Why do we need brine minimization?

With Brine Minimization – Greater Total System Recovery



Piloting Sequence

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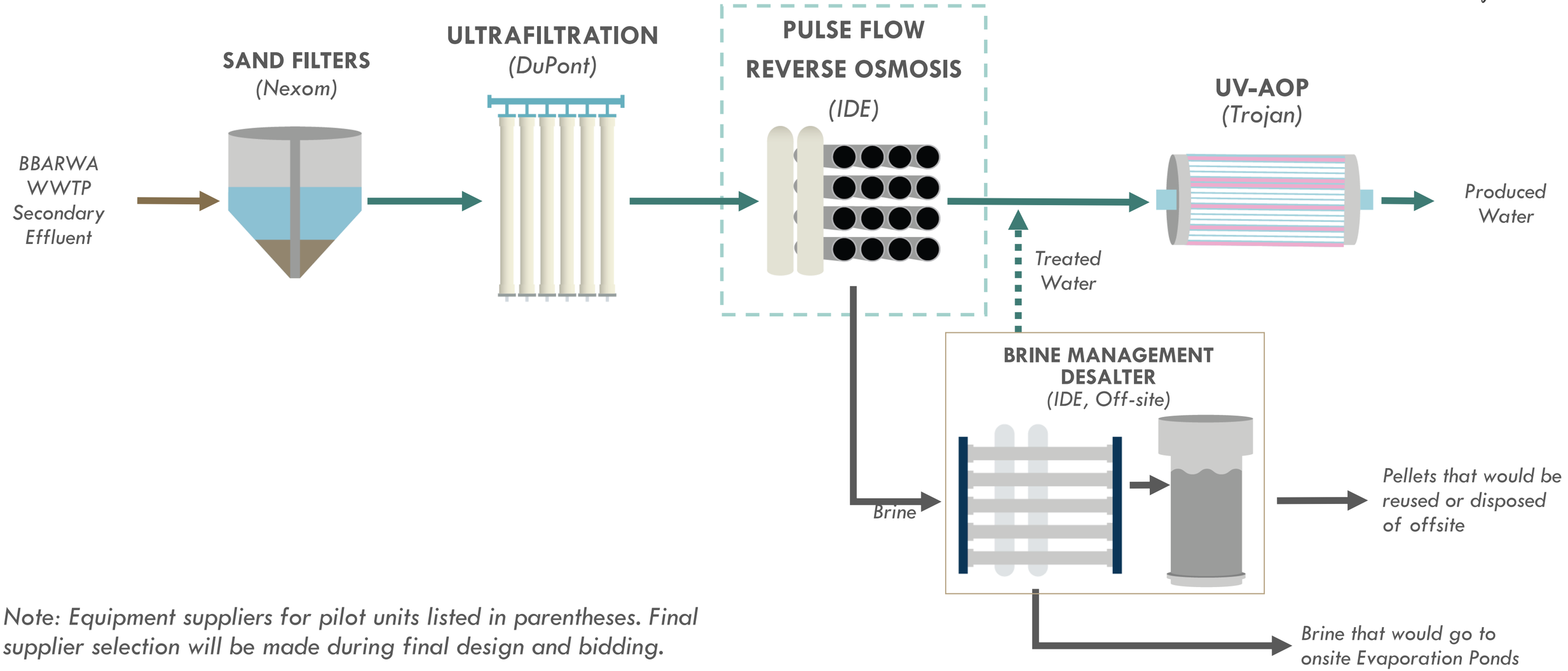
Piloting Sequence



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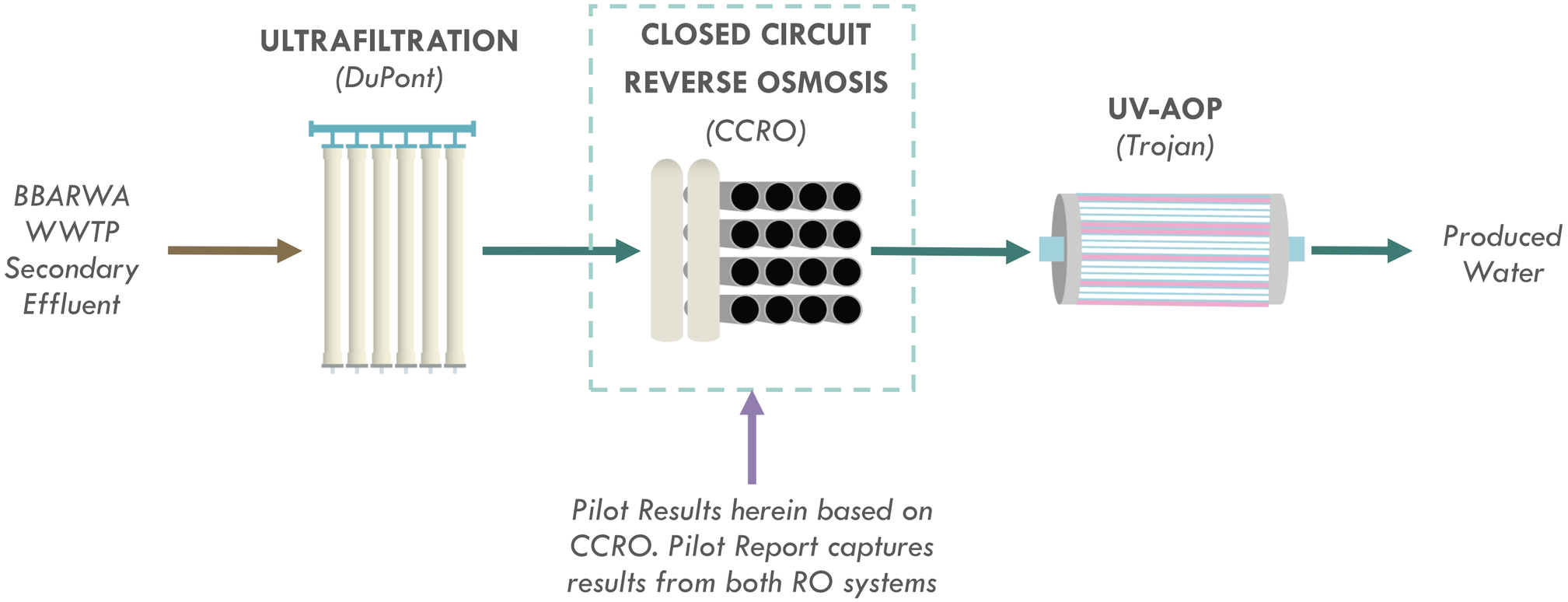
Piloting Sequence



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Data Collection

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Data Collection

- Certified Third-Party Water Quality Testing Lab (Eurofins)
  - *200+ constituents analyzed for Pilot Report*
  - *3,000+ samples analyzed over 5 sample points*
- Certified On-site Water Quality Testing (BBARWA Lab)
- Real-time and Continuous Monitoring of Various Constituents
- Pilot Process Performance Test

Pilot Results & Findings

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Key Treatment System Drivers

Constituent	Units [1]	Drinking Water Objectives for Comparison	Anticipated RBB Permit Objective	Pilot Treatment Results [2]
Total Dissolved Solids	ppm	500	175	8
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DESIGN CHANGES UNDERWAY TO MEET OBJECTIVE

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Key Findings From the Pilot

- Nearly all treatment targets were met by the pilot treatment system.
- Sand Filters will not be used in the full-scale system because they did not achieve reliable nitrogen removal in cold weather conditions.
- A different nitrogen removal treatment process will be added after RO instead of the Sand Filters (such as ion exchange).
- The brine minimization technology that was tested can meet the target of 98% recovery.
- Alternative brine minimization technologies are also being evaluated to optimize the approach for full-scale design (+99% total recovery).

Purified Water Quality Monitoring Results

- In addition to water quality parameters tested for the pilot treatment process, 304 other constituents were monitored, of which 16 were detected. Of the 16 detected, only 11 constituents have established objectives, which were all below the most stringent objective. The remaining constituents were not detected.

- The quality of the purified water produced by the pilot treatment system met all of the established regulatory objectives (except TIN, which will be further reduced by a modified treatment process, as noted in prior slides)

See Appendix D of the **Pilot Report** for full results

www.replenishbigbear.com/documents

Process to Set New Water Quality Objectives

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New water quality objective proposed by regulators → Public comment period → Regulators issue final rule with new objective

→ New limits and monitoring added before or during permit renewals (every 5 years) → If needed, discharger (e.g., BBARWA) develops Compliance Plan to meet the new limit → Regulators approve Compliance Plan and enforce limit

Next Steps

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Pilot Study Follow Up Work

1. **Perform process modeling for ion exchange nitrogen removal (to replace sand filters)**
2. **Brine Minimization Alternatives Analysis**

Bench Scale Testing of Softening Process

- Complete – Results indicated high total system recovery is achievable (+99%)
- Softening process would replace brine minimization desalter

Results of above analyses will be summarized in Preliminary Design Report (expected Fall 2024) including a comparison to IDE's Brine Minimization Desalter process that was piloted

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Preliminary Design Report

Preliminary Design Report = **Facility Plan** *(Planning Contract)* + **Design Validation Report** *(Design Contract)*

PART I

- Introduction
- Program Benefits
- Regulatory Analysis

PART II

- Preliminary Engineering Work (original Facility Plan)

PART III

- Recommended Project and Updated Cost Estimate
- Preliminary Design Criteria
- Implementation Plan

Discussion and Questions

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See the **Pilot Report** for full results, analysis and discussion of how results will be used to refine the final full-scale treatment process

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Pilot Report

Prepared for:

Big Bear Area Regional Wastewater Agency

July 2024

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EXP. 09/30/2025
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STATE OF CALIFORNIA

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Acknowledgment of Credit

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BBARWA SINCE 1974 · City of Big Bear Lake Department of Water · Service, Quality, Community · Bear Valley Basin · Big Bear Municipal Water District · Big Bear City CSD Community Services District

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LIST OF ACRONYMS

AF	Acre Foot
AFY	Acre Feet Per Year
AHT	Air Hold Test
AWPF	Advanced Water Purification Facility
BBARWA	Big Bear Area Regional Wastewater Agency
BBCCSD	Big Bear City Community Services District
BBLDWP	Big Bear Lake Department of Water and Power
BBMWD	Big Bear Municipal Water District
BVBGSA	Bear Valley Basin Groundwater Sustainability Agency
BW	Backwash
CCR	California Code of Regulations
CCRO	Closed Circuit Reverse Osmosis
CCV	Continuing Calibration Verification
CEC	Constituents of Emerging Concern
CFR	Code of Federal Regulations
CIP	Clean in Place
COD	Chemical Oxygen Demand
CTR	California Toxic Rule
DDW	Division of Drinking Water
DP	Differential Pressure
EPA	Environmental Protection Agency
FBR	Fluidized Bed Reactor
GMF	Gravity Media Filter
GRRP	Groundwater Replenishment Reuse Projects
ICV	Initial Calibration Verification
IDE	IDE Technologies
LRV	Log Reduction Value
MDL	Method Detection Limit
mg/L	Milligrams Per Liter
MGD	Million Gallon per Day
MUN	Municipal
MW	Maintenance Wash
ND	Non-detect
NDMA	N-Nitrosodimethylamine
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric Turbidity Units
OH	Hydroxyl Radical

PFRO	Pulse Flow Reverse Osmosis
PVDF	Polyvinylidene Fluoride
RL	Reporting Limit
RO	Reverse Osmosis
SCFH	Standard Cubic Feet per Hour
SNRP	Soluble Non-Reactive Phosphorus
TDS	Total Dissolved Solids
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TMP	Transmembrane Pressure
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
UF	Ultrafiltration
UV-AOP	Ultraviolet-Advanced Oxidation Process
UVT	Ultraviolet transmittance
WQO	Water Quality Objectives
WSC	Water Systems Consulting, Inc.
WWTP	Wastewater Treatment Plant

LIST OF APPENDICES

INTRODUCTION

The Big Bear Area Regional Wastewater Agency (BBARWA) operates an existing regional wastewater treatment plant (WWTP) and related facilities in the Big Bear Valley (Valley). BBARWA has partnered with Big Bear City Community Services District (BBCCSD), Big Bear Lake Department of Water and Power (BBLDWP), Big Bear Municipal Water District (BBMWD), and Bear Valley Basin Groundwater Sustainability Agency (BVBGSA), collectively known as the Agency Team, to develop the Replenish Big Bear Program. The Replenish Big Bear Program is intended to help protect the Big Bear Valley and the Santa Ana Watershed from drought and variable precipitation impacts by recovering a water resource currently discharged outside the watershed. The program is comprised of several projects. First, BBARWA will complete wastewater treatment upgrades at the BBARWA WWTP to produce purified water through full advanced treatment and construct a pipeline to discharge into the Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), a tributary of Big Bear Lake (Lake). Once the purified water (known as Program Water) is in the Lake, up to 380 acre-feet per year (AFY) of stored water can be extracted and used for groundwater recharge at the Sand Canyon Recharge Area, when recharge is needed and up to 120 AFY can be extracted and used for golf course irrigation, which will provide indirect recharge of the groundwater basin. The City of Big Bear Lake Department of Water and Power (BBLDWP) and the Big Bear City Community Services District (BBCCSD) will fund and implement this project.

Figure 1 displays an overview of the proposed effluent flow path to Stanfield Marsh from the AWPF at the existing BBARWA WWTP.

Figure 1 Replenish Big Bear Program Overview

Stringent effluent water quality requirements for discharge to Stanfield Marsh will be set to comply with Basin Plan Water Quality Objectives (WQO) for total dissolved solids (TDS), total inorganic nitrogen (TIN), and the Total Maximum Daily Load (TMDL) for total phosphorous (TP). The TIN and TP requirements of 0.15 mg/L-N and 0.035 mg/L-P, respectively, drive the required treatment process to the limits of technology with multiple chemical and physical treatment steps required to reach the target effluent water quality. It is anticipated the Santa Ana Regional Water Quality Control Board (Santa Ana Regional Board) will issue National Pollutant Discharge Elimination System (NPDES) permit limits consistent with all applicable California and Federal regulations.

BBARWA has completed a Pilot Study to evaluate the proposed treatment process as a viable design approach to meet the target treatment levels, understand potential limitations in the proposed treatment process, and demonstrate treatment performance to the regulatory agencies: the Santa Ana Regional Board and Division of Drinking Water (DDW).

Water Systems Consulting (WSC) coordinated with manufacturers and vendors (collectively referred to as "equipment suppliers") for the components of the pilot treatment process, which included the following process units:

- Two Stage Continuous Upflow Sand Filters (Sand Filter)
    - Nexom Blue Nite® and Blue PRO® Filtration Vessels In-Series (Figure 2)
- UF Membranes (UF)
    - DuPont MEMCOR® CPII Ultrafiltration System with L40 modules and polyvinylidene fluoride (PVDF) membranes (Figure 3)
- High Recovery RO Membranes (RO)
    - IDE Technologies (IDE) Pulse Flow RO (PFRO) with four 8" FilmTec™ SW30-XLE-400 membrane elements (Figure 4)
    - DuPont DesaliTec Closed Circuit Reverse Osmosis (CCRO) with four 8" FilmTec™SOAR 7000i membrane elements (Figure 5 and Figure 6)
- UV-Advanced Oxidation Process (UV-AOP)
    - Trojan TROJANUVTELOS™ System with 2-500W low pressure UV lamps (Figure 7)
- Brine Minimization
    - IDE MaxH2O Desalter (Figure 8)

BBARWA contracted directly with the equipment suppliers for rental of pilot units and support services including mobilization, installation, startup, and support in operation of their pilot units. The Pilot Study was performed at BBARWA's WWTP (Pilot Site) with all process units located in an enclosed building, with the exception of the brine minimization process which was operated at IDE's research and development (R&D) facility in Israel. The cost of modifying IDE's existing brine minimization pilot system was cost prohibitive for this Pilot Study, therefore off-site piloting was selected.

Prior to initiating the Pilot Study, a Piloting Plan was created to describe the piloting processes, standard procedures, schedule, monitoring plan, and operational plan for the Pilot Study and is attached to this report as **Appendix A**. Appendix A can be referenced for description and details of the pilot process units, original operational plan, and monitoring plan.

As outlined in the Piloting Plan, the key objectives of the Replenish Big Bear Pilot Study are:

1. **Demonstrate efficacy of the proposed treatment process** from a regulatory perspective.
2. **Determine total system recovery** from representative and scalable treatment processes.
3. Quantify **treatment performance through seasonal variability**.
4. **Provide operator training** for the proposed treatment technologies.

This Pilot Report was developed to evaluate the key objectives of the Pilot Study following pilot completion, present the results and analysis from the process unit and water quality monitoring data collection, and to demonstrate process performance to the afforementioned regulatory agencies.

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Figure 2 Nexom Sand Filters

Figure 3 DuPont MEMCOR UF Membranes

Figure 4 IDE PFRO

Figure 5 DuPont CCRO (Container)

Figure 6 DuPont CCRO Pilot Equipment

Figure 7 Trojan UV-AOP

Figure 8 IDE Desalter (Located in Israel)

PILOT STUDY

This section provides additional context and background of the Pilot Study, including how pilot system treatment targets were set, an overview of online instrumentation and water quality monitoring, the sequence of the pilot operations, and operational criteria for each pilot process unit.

Pilot System Treatment Targets

Pilot system targets were set for the Pilot Study to reflect the anticipated NPDES limits for Replenish Big Bear (Table 1). The anticipated NPDES limits are based on the numeric and narrative Basin Plan WQOs, Lake Nutrient TMDL for Dry Hydrologic Conditions, and Title 22 of the California Code of Regulations (CCR) (Title 22) for Groundwater Replenishment Reuse Projects (GRRP) regulations. The GRRP regulations apply due to the intended use of Program Water to recharge Sand Canyon. In addition, to protect the Municipal (MUN) beneficial use of the Lake, the Regional Board and DDW recommended implementing full advanced treatment. Therefore, BBARWA plans to meet the treatment requirements for full advanced treatment systems.

Pilot system targets represent the treatment criteria that would be applied to the design of the full-scale system and are equal to or more stringent than the anticipated NPDES limits. The constituents identified in Table 1 were identified as the key constituents driving the design, as the established Basin Plan WQOs are so stringent that treatment to those limits is approaching the limits of technology. Total organic carbon (TOC) and 1,4-Dioxane are surrogate constituents to help protect public health. Surrogate constituents in recycled water are used to monitor water quality and assess the effectiveness of unit processes. The target system recovery is unrelated to anticipated NPDES limits and is based on the maximum land area available for BBARWA to construct evaporation ponds to manage a brine stream from a 2.2 MGD treatment process (inclusive of a safety factor for redundancy). The Pilot Study monitoring plan was developed to provide the data necessary to evaluate the performance of the pilot system targets as well as other constituents relevant to regulatory requirements and full-scale design. The monitoring plan can be referenced in the Piloting Plan (Appendix A).

Table 1. Anticipated Effluent Requirements and Pilot System Targets

Constituent/Parameter	Units	Anticipated NPDES Limit	Pilot System Target	Source of Limit
Total Inorganic Nitrogen (TIN)	mg/L-N	0.15	0.1	Basin Plan WQO
Total Phosphorus (TP)	mg/L-P	0.035	0.03	Lake Nutrient TMDL
Total Dissolved Solids (TDS)	mg/L	175	50	Basin Plan WQO
Sodium	mg/L	20	20	Basin Plan WQO
Chloride	mg/L	10	10	Basin Plan WQO
Sulfate	mg/L	10	10	Basin Plan WQO
Hardness	mg/L	125	125[1]	Basin Plan WQO
Total Organic Carbon (TOC)	mg/L	0.5	0.5	Title 22
N-Nitrosodimethylamine (NDMA) Log_{10} Reduction	log removal	--	1	Monitoring Requirement
1,4-Dioxane Log_{10} Reduction	log removal	--	0.5	Title 22
Total Recovery	%	--	98	Project Target

1 If TDS Pilot System Target of 50 mg/L is met, hardness will be well below Anticipated NPDES Limit.

Piloting Sequence

The Pilot Study consisted of two phases differentiated primarily by the operation of the two different high recovery RO systems that were piloted, the IDE PFRO and DuPont's CCRO. Phase One was in operation from February 2023 through October 2023, and Phase Two was in operation from January 2024 through March 2024. A summary of the piloting schedule that includes mobilization, startup, operation, and demoblization of each process unit is provided in Figure 9. A detailed daily log of the Pilot Study startup and operational sequence and schedule is included in Appendix B. Appendix B details the different arrangements of the process train during each phase of operation, with each arrangement representing different configurations due to phased mobilization and demobilization of process units and changes to operational scenarios (e.g., in-series operation, chemical use changes, etc.). Where applicable, impacts from the differing arrangements during each phase are captured throughout the Pilot Report with Appendix B serving as supplemental documentation to the main body of this report.

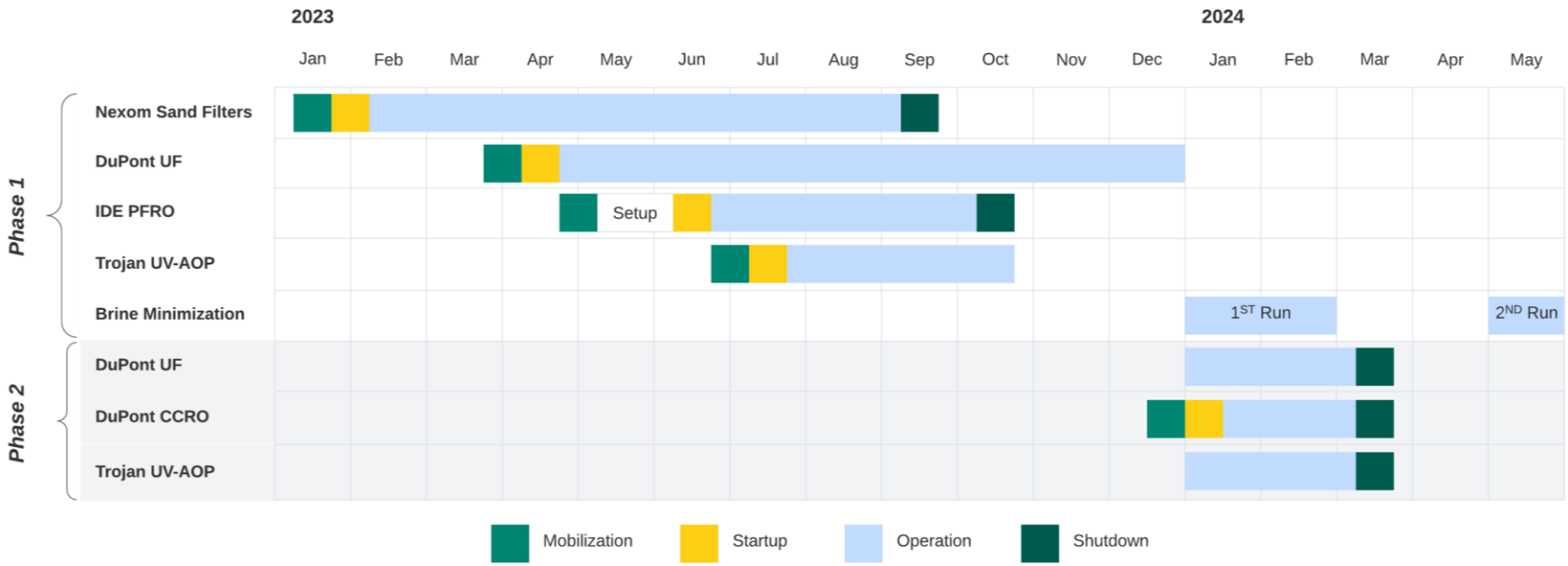

Figure 9 Pilot Sequencing Schedule

Phase 1

Pilot Study Phase 1 included operation of the Nexom Denitrification Sand Filters, DuPont UF Membranes, IDE PFRO Membranes, and Trojan UV-AOP system. In addition, two batches of brine from the PFRO were shipped offsite to IDE's R&D facility in Israel to be treated at their MaxH2O Desalter pilot unit. A process flow diagram for Phase 1 is shown in Figure 10.

Mobilization and startup of the process units were completed in the order of treatment train (Sand Filters, UF, RO, UV-AOP). The Sand Filters were mobilized during the winter to evaluate their performance when wastewater temperatures are coldest and biological denitrification is limited. The Sand Filters required a stepwise startup process with incremental increases in influent flows and loads to establish the denitrifying organisms within the filter. Once the Sand Filter operation stabilized at the target pilot system flow, the downstream processes were mobilized and started up in-series. On June 15, 2024, the Sand Filter effluent was diverted back to the BBARWA WWTP headworks instead of the UF system as a result of excessive fouling of the UF membranes. This operational sequencing is further detailed in Appendix B and noted throughout the results section, where applicable.

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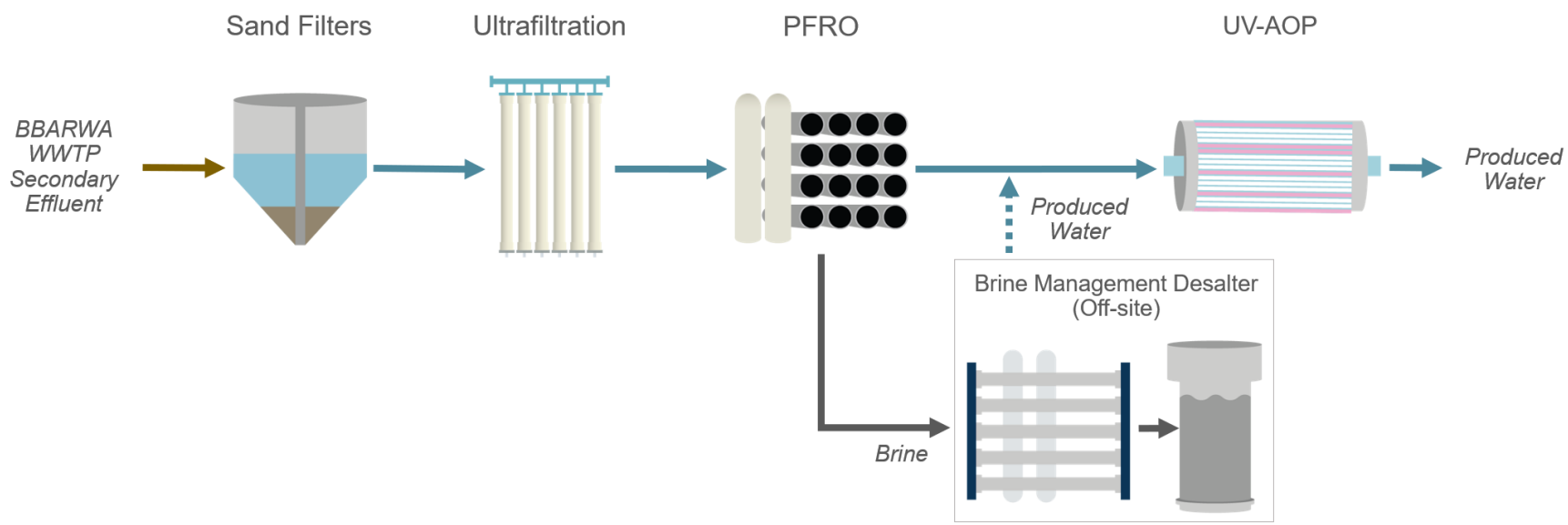

Figure 10. Pilot Study Phase One Process Flow Diagram

Phase 2

Phase 2 of the Pilot Study included in-series operation of the DuPont UF Membranes, DuPont CCRO Membranes, and Trojan UV-AOP system (Figure 11). In September 2023 toward the end of Phase 1, the Nexom Denitrification Sand Filters were decommissioned and in October 2023 the IDE PFRO unit was decommissioned. In between Phase 1 and Phase 2, the UF system remained in operation to preserve the membranes while the UV-AOP unit was shutdown. The CCRO unit was mobilized and commissioned in January 2024 and the UV-AOP unit was brought back online to begin in-series operation of all three units for Phase 2. Water quality monitoring was not performed on the UF Influent or Effluent in the time between the two phases of operation. Brine minimization testing was not performed during Phase 2 due to time and resource constraints.

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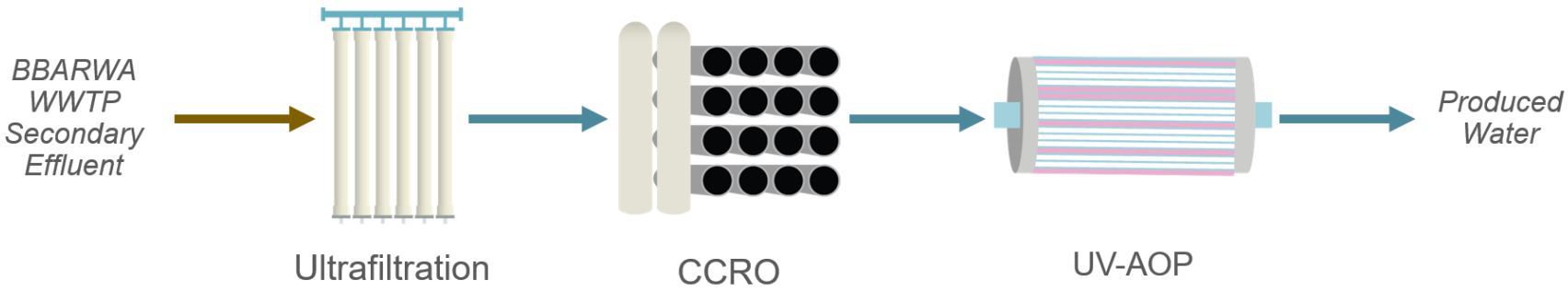

Figure 11. Pilot Study Phase Two Process Flow Diagram

During both phases of the piloting, 1,000 gallon buffer tanks were located between the UF and RO systems and the RO and UV-AOP systems to store enough water to enable continuous flows downstream during membrane cleanings when permeate was not being produced. The UV-AOP system oxidant dosing was shut down in between water quality monitoring events to conserve chemicals since the steady state operation of the system could be established in approximately 30 minutes prior to initiating composite sampling or obtaining grab samples.

Data Collection and Water Quality Monitoring

Operation and performance data was collected throughout the duration of the Pilot Study using online instrumentation, onsite water quality testing by BBARWA lab staff, and third party laboratory water quality analysis.

Online instrumentation monitoring produced data that allowed for monitoring operational performance, diagnosing potential process issues and equipment failures, and evaluating performance against operational criteria. Table 2 outlines the parameters monitored by instrumentation at each process unit during the study.

Table 2. Online Instrumentation Monitoring Parameters

Parameter	Sand Filters	UF	RO	UV-AOP	Brine Minimization
Flowrate (Continuous)	✓	✓	✓	✓	✓
Turbidity (Continuous)		✓			
Pressure (Continuous)		✓	✓		✓
Temperature (Continuous)		✓	✓		
Nitrate (Continuous)	✓				
Conductivity (Continuous)			✓		✓
pH (Continuous)			✓		✓
Oxidation-Reduction Potential (Continuous)			✓		
UV Transmittance (Continuous)				✓	

Water quality monitoring of pilot unit process streams was performed by BBARWA staff onsite and by Eurofins Eaton Analytical in Pomona, California. In addition to monitoring constituents against pilot system targets, the Pilot Study monitoring plan included analysis of various constituents to supplement the following types of analysis:

- Nutrient Removal
- TDS and TOC Removal
- UF and RO Performance
- UV-AOP Performance
- Total System Recovery
- Title 22 Monitoring

Pilot Study performance is evaluated within each of these categories in the Results and Analysis section of this report. Constituents with pilot system targets (Table 1) are captured in one or more of the categories above (e.g., nitrogen and phosphorus in Nutrient Removal, 1,4-Dioxane in UV-AOP Performance and Log Reduction Value (LRV) Credit Estimation, etc.).

BBARWA collected grab samples for nitrogen and phosphorus at the Sand Filter influent and effluent using HACH TNT tests and then analyzed at their onsite laboratory. Eurofins performed water quality analysis for all constituents listed in the Pilot Study monitoring plan. Sampling was performed as often as weekly, but was limited due to site access issues from road closures during winter weather conditions and the available piloting budget for water quality monitoring. Monitoring plan sampling was typically performed on weekdays. Figure 12 and Figure 13 show the location of the sampling points for Phase One and Two of the Pilot Study, respectively. Composite sampling points for Phase One varied whereas Phase Two composite sample points were fixed at the UF Effluent and CCRO Effluent sample locations throughout the phase.

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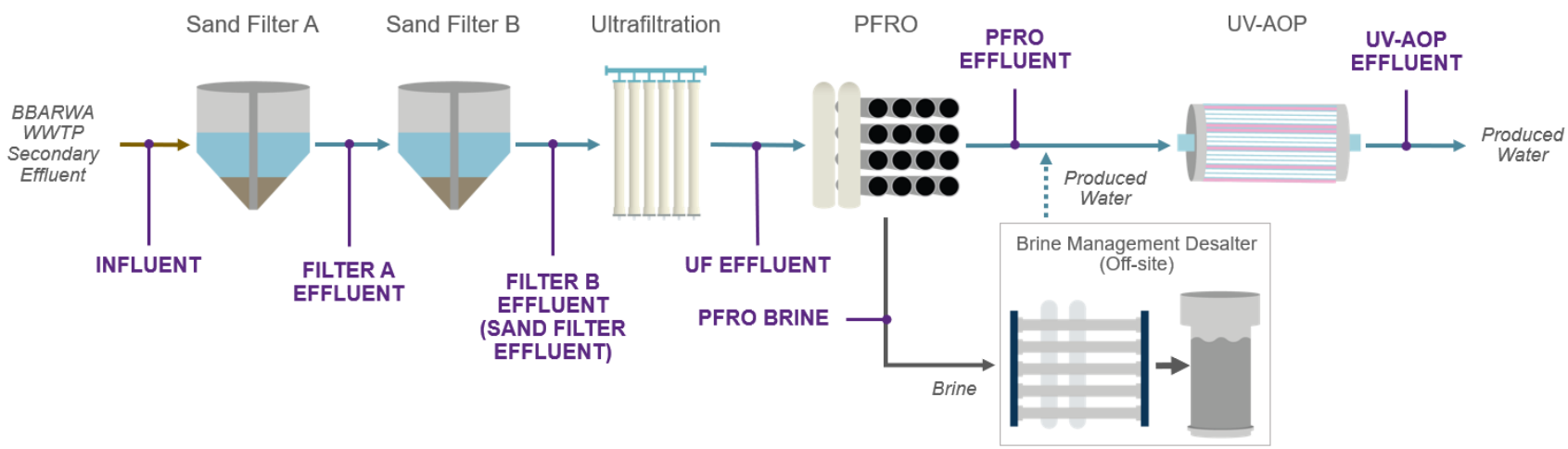

Figure 12 Phase One Pilot System Sample Locations

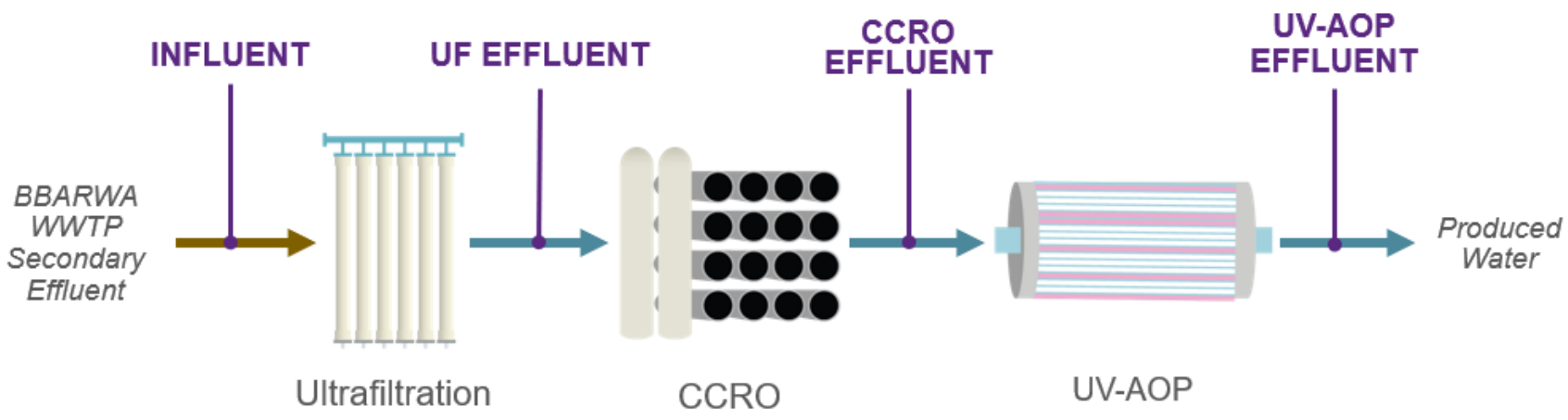

Figure 13. Phase Two Pilot System Sample Locations

Pilot Operation

The Replenish Big Bear Pilot was installed downstream of the existing WWTP process which produces undisinfected secondary effluent from a treatment train consisting of coarse screening, aerated grit removal, extended aeration oxidation ditches, and secondary clarification. BBARWA's WWTP secondary effluent is stored in BBARWA's "Horseshoe Ponds" (4.5 MGD total) before being conveyed throughout the WWTP for in-plant uses or to the discharge location.

Influent to the pilot was conveyed from the in-plant use hose bibb located in the building the piloting system was operated in (Figure 14). This feed location was most conservative for evaluating treatment performance for full-scale in that the water temperatures are lower from open to atmosphere storage in the Horseshoe Ponds. Conveyance directly from the higher temperature secondary clarifier effluent should be considered for the full-scale design, as a higher temperature process stream provides more operational benefits for any downstream biological or membrane processes. Table 3 summarizes the pilot system Influent water quality based on grab and 24-hour composite samples obtained during the Pilot Study. All final pilot effluent, membrane cleaning wastes, and reject streams (e.g., filter reject water and RO brine) were conveyed to a site drain that returned to the BBARWA WWTP Headworks facility.

Figure 14 Secondary Effluent (Pilot Influent) Connection Point

Table 3. Feed Water Quality Grab and 24-Hour Composite Samples

Constituent	Units	Grab Samples			24-hr Composite Samples [1]		
		Average	Range	No. of Samples	Average	Range	No. of Samples
Total Inorganic Nitrogen	mg/L-N	4.0	0.2 - 12	17	1.2	0.8 - 2.2	11
Ammonia as N	mg/L-N	0.89	0.1 - 2.6	15	1.1	0.7 - 2.2	11
Nitrate as N	mg/L-N	2.6	0.01 - 11	19	0.11	0.01 - 0.69	11
Nitrite as N	mg/L-N	0.12	0.01 - 0.8	19	0.02	0.01 - 0.11	11
Total Phosphorus as P	mg/L-P	0.36	0.11 - 0.70	8	0.41	0.11 - 0.99	12
Orthophosphate as P	mg/L-P	0.68	0.07 - 1.5	19	0.29	0.06 - 0.90	11
Total Dissolved Solids	mg/L	419	360 - 480	19	435	410 - 460	11
Total Suspended Solids (TSS)	mg/L	5.2	2.8 - 15	19	6.9	2.8 - 14	11
Total Organic Carbon	mg/L	9.2	8.3 - 10	2	9.9	9.9 - 9.9	1
Biochemical Oxygen Demand	mg/L	8.1	1.0 - 17	19	12	5.0 - 24	9
Chemical Oxygen Demand	mg/L	20	9.3 - 39	17	43	24 - 67	11
Silica [2]	mg/L	22	17 - 24	22	20	19 - 23	5

[1] September 21, 2023, samples were 12-hour composites but reported as 24-hour composites for data analysis purposes.
[2] Silica results presented are for UF-Effluent (per EPA Method 200.7) since the Silica results are most relevant to downstream RO operation. BBARWA analyzed 25 additional grab samples of their undisinfected secondary effluent with HACH Method 8185 for monitoring purposes, which averaged 26.8 mg/L.

An operational plan was developed and outlined in the Replenish Big Bear Piloting Plan (Appendix A). A daily log was kept to document all operational changes and issues that arose with the pilot units. The following sections outline Pilot Study operation for each Phase including the key notes from the daily log. The complete daily log and variances in the process arrangement during each pilot phase are included in Appendix B.

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Operational Criteria

Each pilot process unit has operational criteria that are monitored or measured to evaluate operational performance and treatment process integrity and chemical dosing criteria to support equipment operations and treatment processes. This section summarizes the operational and chemical dosing criteria for each pilot process unit. Throughout the Pilot Study, some of these criteria were adjusted as needed to provide stable and reliable operations.

Sand Filters

Proper operation of the Sand Filters is monitored by reject flow rate, bed turnover rate, and headloss:

- **Reject Flow Rate** - The correct reject flow rate ensures that solids captured on the sand media are being rejected from the filter consistently and is the most important operating parameter for these filters. If the reject flow is too low, the build-up of inert and biological solids may compromise the effluent quality. If the reject flow is too high, media may be rejected from the filter which reduces treatment capacity. Reject flows in the pilot unit are conveyed over a v-notch weir that is level controlled by an operator.
- **Bed Turnover Rate** - The bed turnover rate quantifies how long it takes one piece of sand to pass through the filtering zone. This rate must be maintained within a certain range to minimize excessive wear on the airlift sand deflector from too high of a rate while minimizing headloss from sand bed packing at too slow of a rate. The bed turnover rate is controlled by the airlift airflow from the blower.
- **Headloss** - Headloss quantifies the change in water pressure head between the feed side of the filter and effluent weir. It varies along with solids loading and flow rate and is influenced by the reject flow rate and bed turnover rate.

Sand Filter operational criteria is summarized in Table 4.

Table 4. Sand Filter Operational Criteria

Criteria	Units	Value
Airlift Airflow	SCFH	20 - 35
Airlift Back Pressure	psi	5 - 15
Air Panel Regulator Pressure	psi	40
Maximum Normal Headloss	inch	48
Flow (per Filter)	gpm	5 - 35
Reject Flow (per Filter)	gpm	3 - 5
Maximum Filter Loading Rate	gpm/ft^2	5
Sand Bed Depth	inch	40 - 80
Bed Turnover Rate	times/day	4 - 6
Bed Turnover Velocity	in/min	0.2 - 0.5

MicroC was dosed to Filter A as an external carbon source for denitrification and ferric chloride was dosed for chemical phosphorus removal in Filter A and Filter B from April 10, 2023, to May 24, 2023. Table 5 summarizes the chemical uses, dosing locations, and dosing rates for Sand Filter operations.

Table 5 Sand Filter Chemical Summary

Chemical	Purpose	Dosing Location	Pilot Study Rate
Ferric Chloride (40%)	Chemical Phosphorus Removal	Filter A	20 - 25 mg/L
		Filter B	30 - 40 mg/L
MicroC	Denitrification	Filter A	1 - 30 mg/L

UF Membranes

Operational performance of the UF membranes is primarily characterized by the membrane flux, transmembrane pressure (TMP), and permeability:

- **Membrane flux** - a measure of the flowrate per unit area of a membrane, expressed as gallons per square foot per day (gfd).
- **TMP** - the difference between the feed pressure and permeate pressure, or the pressure drop across the membrane.
- **Permeability** - relates flux and TMP as the flux per unit of pressure driving force. Permeability is inversely proportional to TMP.

The UF membranes operate at a constant flux rate and were adjusted throughout the study based on feed flow and the rate of membrane fouling. Fouling is identified through TMP and permeability trends: TMP will begin to increase and permeability decrease as membrane fouling and solids buildup on the membrane occurs. Three cleaning processes occur during operation to restore the membranes from fouling: backwash (BW), maintenance wash (MW), or clean in place procedure (CIP).

The BW process is a frequent washing event that occurs multiple times throughout each cycle using air scouring to remove solids from the membrane to prolong short-term membrane performance. Each BW lasts about 1.5 minutes during continued operation of the system and minimizes the need for the longer MWs and CIPs. BW intervals are automatically initiated on a fixed time interval (either 20 or 24 minutes during piloting) but can also be manually triggered if needed based on other parameters such as a high TMP rate of increase.

The CIP procedure begins with an acid CIP followed by a basic CIP, each lasting about 2.5 hours. CIPs are important for preserving long-term performance of the membranes. CIP intervals are preset and adjusted during the pilot study but were be triggered early if a TMP setpoint of 20 psi was reached.

The MW process is a shorter version of a CIP with different chemical concentrations with the purpose of decreasing the CIP frequency. Each of the acidic and basic MWs lasted approximately 70 minutes for the pilot system, occurring at preset time intervals. This duration is longer than a full-scale system which typically utilizes 45-minute MWs due to the additional time needed for the pilot system to drain the feed tank and refill with filtrate to use for cleaning.

BW, MW, and CIP intervals varied throughout the Pilot Study based on operational performance and upstream water quality characteristics. Basic and acidic MWs occurred as frequently as every 24 hours and 48 hours, respectively (when upstream metal salt dosing to Sand Filters fouled the membranes), but were typically every 48 or 56 hours, or every 96 or 168 hours, respectively, during normal operation. Table 6 outlines the operational criteria for the UF membranes pilot unit during the study.

Table 6. UF Membranes Operational Criteria

Criteria	Units	Value
Feed Flow	gpm	5 - 40
Membrane Flux	gfd	12.8 - 30
Maximum Transmembrane Pressure	psi	20
Feed Pressure	psi	25 - 30
Maximum Turbidity	NTU	100
Operating pH Range	S.U.	2 - 10.5
Operating Temperature Range	degrees F	32 - 104
Backwash Interval	min	20 or 24
Maintenance Wash Interval	hrs	24, 48, 56, 96 or 168
Target Clean in Place Interval	days	30 - 45

Chemical uses and dosing rates for the UF system are included in Table 7.

Table 7 UF Chemical Summary

Chemical	Purpose	Pilot Study Rate
Hydrochloric Acid (HCl) (31%)	Maintenance Wash	1 mg/L
Sodium Hypochlorite (NaOCl) (12.5%)	Maintenance Wash	300 mg/L
Hydrochloric Acid (HCl) (31%)	Clean-In-Place (First Stage)	0.1%
Citric Acid	Clean-In-Place (First Stage)	0.1% - 0.5%
Sodium Hypochlorite (NaOCl) (12.5%)	Clean-In-Place (Second Stage)	500 - 1,500 mg/L

RO Membranes

Operational performance of the RO systems is primarily characterized by volumetric recovery, salt passage (e.g., TDS removal), and specific energy (energy required per volume of product water). The limitation to RO performance is how quickly scaling or fouling occurs on the membrane, which is dependent on the RO technology applied and feed water quality characteristics.

The PFRO and CCRO units operate with different operational schemes and target setpoints which govern actual volumetric recovery, membrane cleaning frequencies, and operational cycles. PFRO operation cycles between a permeate production cycle and a pulse flow cycle. During the permeate production cycle (~90 seconds), brine is not removed from the system until the pulse flow cycle (~ 4 seconds) begins and brine is flushed out of the membrane at high shear velocities over a short amount of time. The frequency of the pulse flow cycles is dependent on targeted volumetric recovery and feed water quality characteristics. CCRO operation cycles between closed-circuit cycles permeate is produced while brine is returned to the CCRO feed stream and plug flow cycles where the brine return stream is diverted to waste while CCRO feed flow continues.

Cycle times, operational triggers, and cleaning frequencies of the PFRO and CCRO are unique to each system and based on several factors, including the following:

- **Recovery** - a measure of the amount of the accumulated permeate flow as a percentage of the feed flow.
- **Feed pressure** - the pressure applied to the feed side of the membrane and is limited by the maximum pressure rating of the membrane as well as design criteria set by the RO manufacturer.
- **Differential pressure (DP)** - measure of the pressure differential between the feed stream and the concentrate stream.
- **Conductivity** - continuously monitored conductivity of the feed, permeate, and concentrate streams.
- **Salt passage** - measure of the amount of salts (i.e., TDS) in the permeate as a percentage of the amount of salts in the feed stream.
- **Flux** - measure of the amount of flow produced through an area of membrane over a given unit of time (measured in gallons per square foot per day, gfd).
- **Specific flux or normalized permeate flow** - measure of flux divided by net driving pressure (measured in gfd/psi), which is a monitoring indicator of membrane degradation.

The manufacturer's operational criteria, setpoints, and control triggers related to these factors is captured in Table 8 and Table 9 for the PFRO and CCRO, respectively. Table 10 summarizes the chemical uses, dosing locations, and dosing rates for both RO systems.

Table 8. PFRO Operational Criteria

Criteria	Units	Value
Feed Flow	gpm	15 - 25
Recovery Target	%	86 - 90
Membrane Flux	gfd	15.3
Target Feed pH	pH units	6.5
Cleaning Interval	hrs	4
Cleaning Duration	min	23
Acidic Cleaning Frequency	times/day	1
Basic Cleaning Frequency	times/day	5
Maximum Silt Density Index (SDI-15)	--	5
CIP Triggers		
Maximum Differential Pressure	psi	15
Specific Flux	% Increase	10-15% from Baseline

Table 9. CCRO Operational Criteria

Criteria	Units	Value
Feed Flow	gpm	8-15
Recovery Target	%	85-90
Membrane Flux	gfd	11.2
Feed pH	pH units	6.5
CIP Triggers		
Normalized Differential Pressure	psi	42
	% Increase	15% from Baseline
Normalized Permeate Flow	% Increase	10-15% from Baseline
Salt Passage	% Increase	5-10% from Baseline
Concentrate Cycle Duration Control		
Recovery Setpoint (governed)	%	85-90
Feed Pressure	psi	425
Brine Conductivity	ms/cm	Site-Specific

Table 10 RO Systems Chemical Summaries

Pilot Unit	Chemical	Purpose	Dosing Location	Pilot Study Rate
PFRO	Hydrochloric Acid (HCl) (32%)	pH Correction	RO Feed	232 mg/L (1 L/hr)
	Avista Vitec 4000 Antiscalant	Scaling Prevention	RO Feed	0.5 mg/L
	Sodium Hydroxide (NaOH) (50%)	Biofouling Prevention	RO Feed	4.08 kg/d
CCRO	Antiscalant (Vitec 4000)	Scaling Prevention	RO Feed	2.4, 4.2 or 5.4 mg/L
	Hydrochloric Acid (HCl) (32%)	pH Correction	RO Feed	0.1 to 0.35 gal/1,000 gal feed flow

UV-AOP

UV-AOP system operational parameters of UV dose and oxidant dose rate are a function of system design (e.g., lamp power) and feed water quality, specifically, the UV transmittance (UVT) and hydroxyl radical scavenging demand. For UV-AOP systems, a minimum design UV transmittance at 254 nm (1 cm) of 95% is standard. RO permeate is typically above 99% UVT with a low hydroxyl scavenging demand, which was confirmed through site specific testing (see UV-AOP Performance section). Performance of UV-AOP systems is characterized by performance testing for log reductions of specific constituents. Title 22 regulations for groundwater recharge require a 0.5-log reduction of 1,4-dioxane and 1-log reduction of NDMA. Table 11 summarizes Trojan's operational criteria for their UV-AOP pilot system.

Table 11 UV-AOP Operational Criteria

Criteria	Units	Value
Feed Flow	gpm	10 - 25
Minimum UV Transmittance (UVT_{254nm})	%	95
Minimum 1,4-dioxane Log Reduction	log reduction	0.5
Minimum NDMA Log Reduction	log reduction	1.0

Table 12 summarizes the chemical uses, dosing locations, and dosing rates for the UV-AOP system. Sodium hypochlorite was used as the oxidant for the August 3, 2023, and August 10, 2023, sampling events. Upstream pH adjustment of the RO effluent for sodium hypochlorite oxidant dosing, which is most efficient at a pH of around 5 to 6, was not required.

Table 12 UV-AOP Chemical Summary

Chemical	Purpose	Dosing Location	Pilot Study Dosage Target
Sodium Hypochlorite (NaOCl) (12.5%)	Oxidant	Feed Line	2 mg/L
Hydrogen Peroxide (H_2O_2) (10%)		Feed Line	2.5 mg/L

Desalter

The Desalter pilot unit consists of a UF system, a conventional RO system, a Fluidized Bed Reactor (FBR), and a Gravity Media Filter (GMF). The desalter process begins with UF membrane filtration of brine from an upstream RO process (in this case, the PFRO pilot unit) to remove TSS and chemical oxygen demand (COD). UF permeate is conveyed to one of two feed tanks upstream of a conventional RO system which operates at a target recovery of 86%. Product water from this RO system is blended with the product water from the mainstream system (although for the off-site pilot for this Pilot Study it was sent to drain) while the brine is conveyed to the Crystalactor unit (an FBR) which precipitates partially soluble salts onto silica sand media. The precipitates are called "pellets" which must be removed from the FBR while overflow is sent through a GMF before it is conveyed back to the feed tank. Operation through the same feed tank resumes until the brine being conveyed to the RO system reaches the osmotic pressure limit at which point the brine stream from that feed tank would be conveyed to brine management facilities (e.g., evaporation ponds), while the cycle then repeats using feed water from the second feed tank. The objective is to achieve a high product water recovery in the Desalter unit which would result in a total system recovery of 98% or greater. A process schematic of the Desalter process is included in Figure 15.

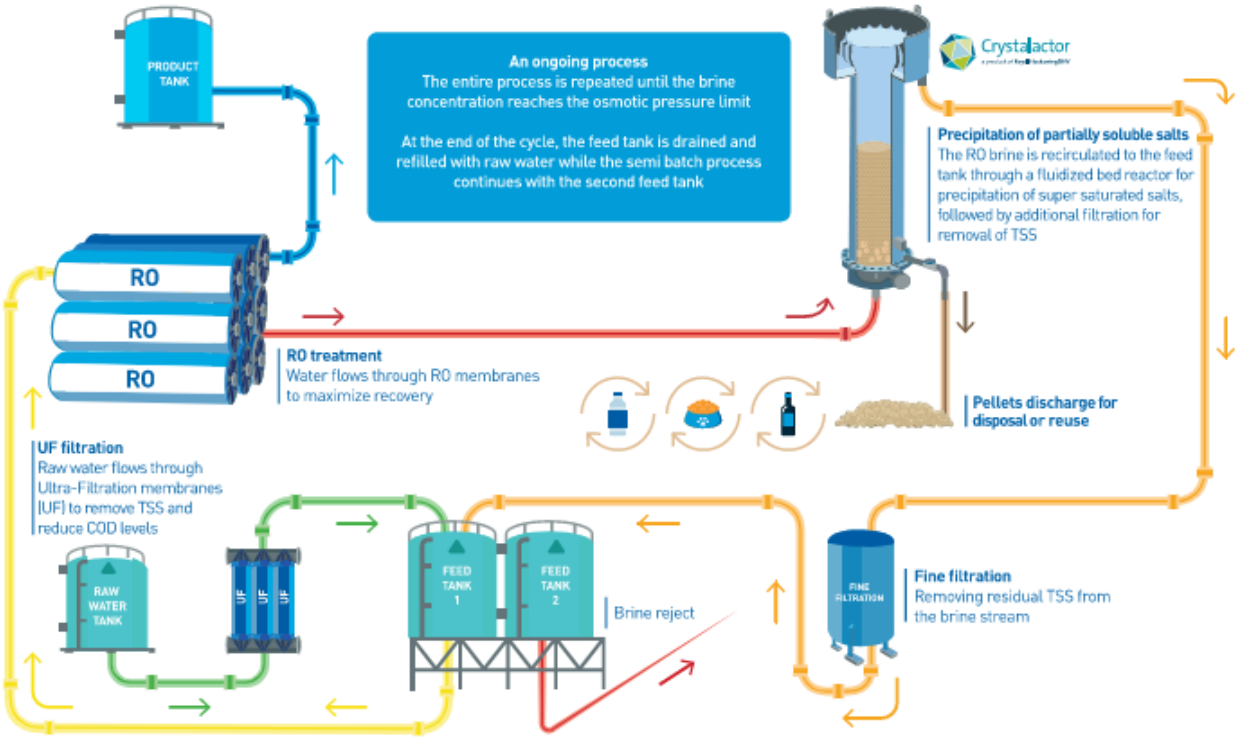

Figure 15 IDE Desalter Process

The UF and RO membranes involved in this pilot unit operate similarly to the upstream pilot UF unit and conventional RO units. UF membranes undergo a backwash (with or without chemicals) at preset intervals and CIPs are performed on the RO membranes when normalized DP increases by more than 10% from baseline, similar to the PFRO. The pellets formed in the FBR are removed from the bed once they reach a certain size. The GMF is backwashed at the end of each cycle using air scouring and water. Table 13 summarizes the operational criteria for all the treatment processes that comprise the Desalter Pilot Unit, and Table 14 summarizes the chemical uses, dosing locations, and dosing rates for the Desalter.

Table 13. Desalter Operational Criteria

Desalter Process	Criteria	Units	Value
UF Membranes	Backwash Duration	seconds	45
RO Membranes	Maximum Feed Pressure	psi	725
	Recovery	%	86 - 90
	Membrane Chemical Flush Triggers Time Interval CIP Triggers Normalized Differential Pressure Normalized Feed Pressure	 hours % Increase % Increase	 5 10% from Baseline 10% from Baseline
FBR	System pH	pH units	9.3-9.5
	Silica Sand Seed Size	mm	0.25-0.35
	Average Pellet Size	µm	600
GMF	Backwash Interval	times/cycle	1
Desalter Process	Target Recovery	%	86

Table 14 summarizes the chemical uses, dosing locations, and dosing rates for the Desalter.

Table 14 Desalter Chemical Summary

Chemical	Purpose	Dosing Locations	Pilot Study Rate
Sodium Hydroxide (NaOH) (2.5%)	pH Control		0.006 - 0.0067 lb/gal product water
Calcium Chloride ($CaCl_2$) (~2%)	Co-precipitant	FBR	0.0051 - 0.015 lb/gal product water

RESULTS AND ANALYSIS

As previously introduced, objectives of the Pilot Study included demonstrating efficacy of the treatment process to meet anticipated regulatory limits, quantifying system recovery, and evaluating treatment performance through seasonal variability. Analysis of the Pilot Study results is captured in this section, organized by the following categories of performance:

- Nutrient Removal
- TDS and TOC Removal
- UF and RO Performance
- UV-AOP Performance
- Total System Recovery
- Title 22 Monitoring

Pilot Study results are based on data collected through the following[1]:

- Online Instrumentation Data
- Daily Field Notes
- Pilot Reports from Equipment Manufacturers
- Third-party Laboratory Water Quality Analysis [2]
- On-site HACH TNT Test Kit Analysis
- March 2024 UV-AOP Performance Testing

As introduced in the Pilot Study section, a combination of grab and 24-hour composite samples were obtained for water quality analysis. Where applicable, results are presented as grab or 24-hour composites in tables and figures within this section.

The analysis captured herein is intended to serve as a basis for optimizing and refining the proposed treatment process, to provide the site-specific operational and design criteria for the full-scale system, and to inform Replenish Big Bear stakeholders of the Pilot Study results.

The following subsections present the results for each performance category followed by an analysis of the results and potential implications for the full-scale system design and operation.

[1] For the purposes of this analysis, where water quality results were measured as “non-detect” (ND), the value was adjusted to equal the respective method’s method detection limit (MDL).
[2] Water quality results provided by third-party labs were reviewed to determine if analytical flags (i.e., qualifiers) and quality control results warranted scrubbing of data points out of the analysis. The basis for evaluating data to be scrubbed out of the dataset is captured in Appendix C – Data Scrubbing Methodology.

Nutrient Removal

"Nutrient removal" is characterized as the removal of nitrogen and phosphorous for the Pilot Study. Anticipated regulatory limits for TIN and TP are 0.15 mg/L-N and 0.035 mg/L-P, respectively, which would be among the lowest nutrient limits for a facility in California. Nutrient water quality monitoring during the Pilot Study included the following:

Third-Party Lab Testing

- TP and Orthophosphate
- Dissolved phosphorus and orthophosphate
- Ammonia, Nitrate, Nitrite

On-Site Testing with HACH TNTplus Kits[3]

- TP
- Ammonia, Nitrate, Nitrite

The Sand Filters subsection below includes analysis of the on-site HACH TNTplus testing results, and the UF and RO subsection includes analysis of the third-party lab testing results.

Sand Filters

The Sand Filter was operated as a tertiary nutrient removal process to remove most of the nutrients upstream of the RO system, which was expected to remove the remaining nitrogen and phosphorus to below the pilot targets. Target Sand Filter effluent nutrient concentrations were established for the Sand Filters, as shown in Table 15, which are consistent with Nexom's observed limits of technology from full-scale facilities throughout the United States.

Table 15 Sand Filter Effluent Targets

Constituent	Units	Sand Filter Pilot System Target
Nitrate as N	mg/L-N	0.8
Total Phosphorus (TP)	mg/L-P	0.05

[3] HACH TNTplus testing kits for phosphorus and nitrogen are photometric analyses consistent with EPA Methods 350.1, 351.1, and 351.2 for ammonia, 40 CFR 141 and 40 CFR136 for nitrate, and EPA Methods 365.1 and 365.4 for Total Phosphorus.

The grab samples from the Influent, Filter A Effluent, and Filter B Effluent were analyzed onsite using HACH TNT testing kits for ammonia, nitrite, nitrate, and TP. Data was removed from the results when the measured concentration was higher than the upper limit for the respective HACH TNT kits test. Any measured concentration that was lower than the lower limit of the test was adjusted to the lower limit value for the respective HACH TNT kit test. A summary of the results is provided in Table 16 and shown in Figure 16, Figure 17, and Figure 18. Figure 16 and Figure 17 separate nitrogen removal results by operational arrangement of the Sand Filters (before and after Sand Filter B was taken offline and when MicroC was dosed to Filter A), while Figure 18 represents the period where Sand Filter B was online.

Table 16 Influent and Effluent Results from the HACH TNT Testing Kits

Constituent	Stream	Units	Average	Range	No. of Samples
Ammonia as N	Influent	mg/L-N	1.3	0.015 - 5.0	92
	Filter A Effluent	mg/L-N	1.2	0.015 - 5.0	93
	Filter B Effluent	mg/L-N	0.34	0.02 - 2.5	24
Nitrite as N	Influent	mg/L-N	0.11	0.015 - 0.70	93
	Filter A Effluent	mg/L-N	0.24	0.015 -1.6	93
	Filter B Effluent	mg/L-N	0.022	0.015 - 0.091	24
Nitrate as N	Influent	mg/L-N	3.1	0.23 - 11.7	112
	Filter A Effluent	mg/L-N	0.83	0.23 - 6.3	112
	Filter B Effluent	mg/L-N	0.43	0.23 - 3.5	24
Total Inorganic Nitrogen	Influent	mg/L-N	4.1	0.28 - 11.9	90
	Filter A Effluent	mg/L-N	2.1	0.26 - 6.6	91
	Filter B Effluent	mg/L-N	0.80	0.26 - 3.7	24
Total Phosphorus	Influent	mg/L-P	1.0	0.5 - 3.0	70
	Filter A Effluent	mg/L-P	0.65	0.05 - 1.7	75
	Filter B Effluent	mg/L-P	0.088	0.05 - 0.44	24

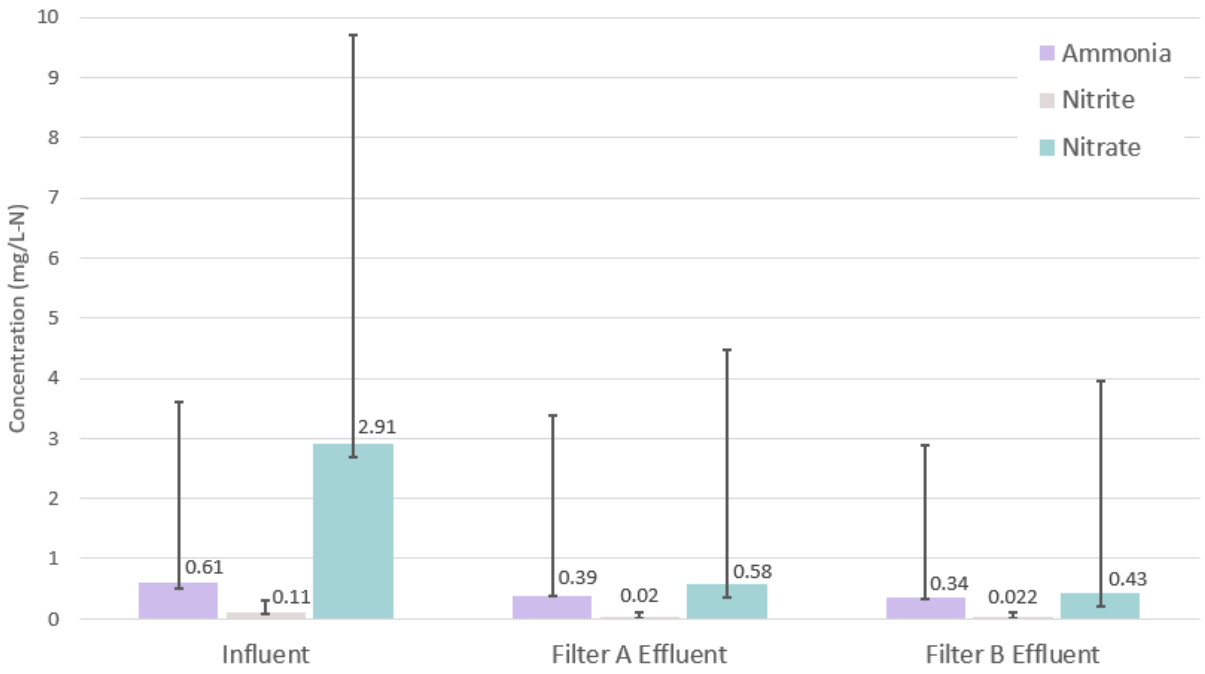

Figure 16 Nitrogen Removal During Filter A and Filter B In-Series Operation
April 10, 2023 – May 24, 2023. Error Bars represent range of results.

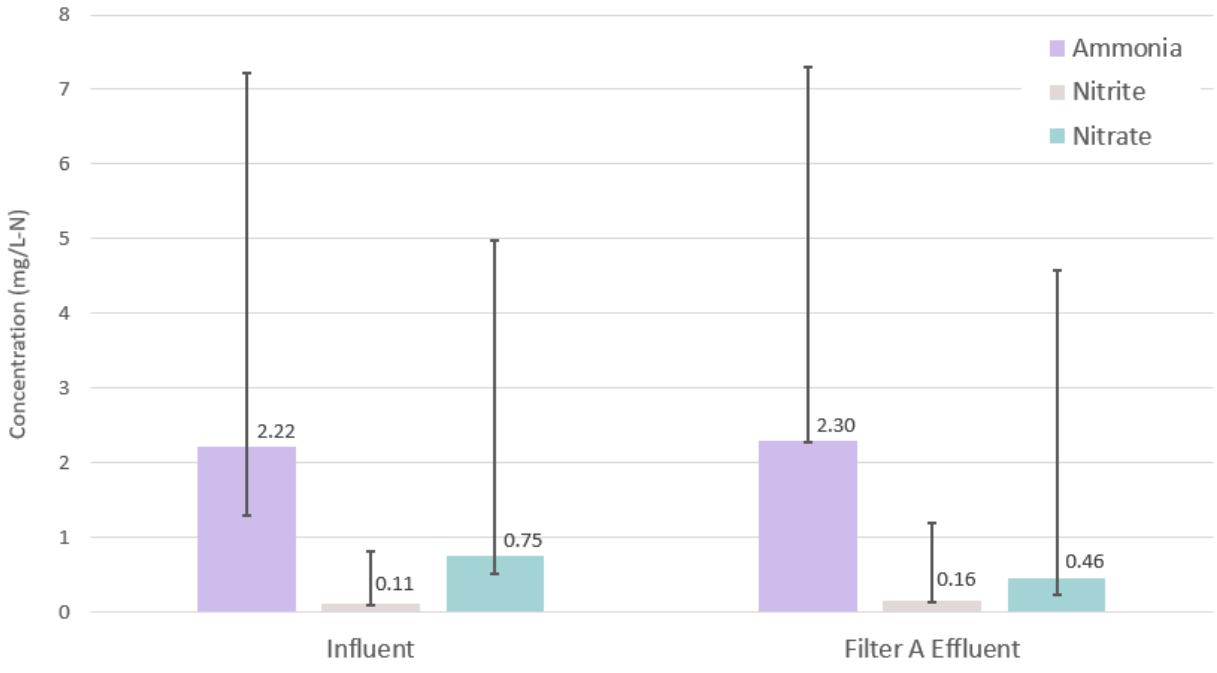

Figure 17 Nitrogen Removal After Filter B was Taken Offline
May 25, 2023 – September 8, 2023. Error Bars represent range of results.

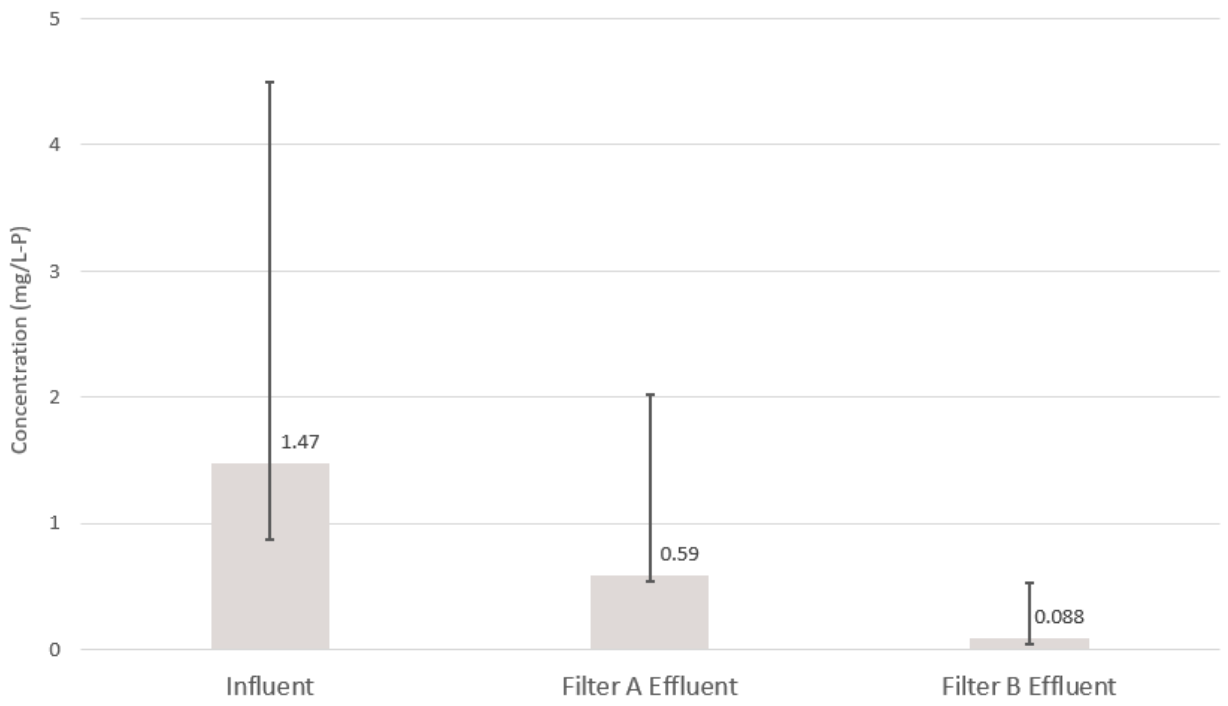

Figure 18 Total Phosphorus Removal Throughout Sand Filter Pilot Operation
April 10, 2023 – May 24, 2023. Error Bars represent range of results.

Sand Filter B was only online from April 10 through May 25, and therefore, minimal data was obtained for the Filter B Effluent. Nitrate removal ranged from 0-98%, and the target limit of 0.8 mg/L-N was obtained about 77% of the time. Nitrate removal was limited by low temperatures of the Sand Filter influent, which was below 10 degrees C for the first six weeks of operation, the theoretical limit for nitrate removal in a denitrification filter process. The process water temperature ranged from 10 to 20 degrees C for the remainder of the Sand Filter piloting period. TIN in the Sand Filter Effluent was composed primarily of ammonia, which is not removed in the Sand Filters. Elevated Influent ammonia was present throughout most of the Sand Filter piloting period due to lower than typical wastewater temperatures at the BBARWA WWTP, which limited nitrification in the secondary treatment process. As shown in Figure 17, most of the TIN entering Sand Filter A was ammonia with the Influent nitrate already below the Sand Filter pilot target. As a result of the low Influent nitrate, a dosing curve to demonstrate dosing versus nitrate removal did not provide any valuable information for determining an optimal dose for low Influent nitrate levels. Similarly, a plot of Influent temperature and nitrate removal did not show any insightful relationship.

Sand Filter operation was hindered by bed packing, microbial overgrowth, and the aforementioned low process water temperatures, all of which led to higher operational intensity than anticipated. These operational issues and limitations made it difficult to provide consistent MicroC dosing since excess microbial growth in the effluent pipeline of Sand Filter A required reduction of MicroC dosing to prevent fouling of the downstream UF membranes. The inconsistency of the Influent nitrate concentration also impacted Sand Filter A performance since control of MicroC dosing was manual, as a result of low range drift and “sleep” of the online nitrate sensor that did not allow control of MicroC based on nitrate sensor ouput.

During the time Sand Fitler B was online, TP removal ranged from 73-98%, and the target limit of 0.05 mg/L-P was obtained about 58% of the time. Ferric chloride dosing was manually controlled based on Influent TP measurements and observed removal rates. Ferric chloride addition resulted in fouling of the downstream UF membranes, which limited performance of downstream processes. Therefore, Sand Filter B was removed from operation and ferric chloride dosing to Sand Filter A was stopped. This provided an opportunity to understand TP removal across the RO membranes, without the benefit of upstream removals. Nutrient removal through the UF and RO systems is captured in the following subsection.

UF and RO

UF and RO processes downstream of the Sand Filter have the capability to remove nitrogen and phosphorus through low pressure filtration of any remaining particulate nutrient species and high-pressure filtration of remaining dissolved species, respectively. From April 13, 2023, to June 15, 2023, the UF operated directly downstream of the Sand Filters and for the remainder of the pilot study the UF was directly fed secondary effluent from the existing facility. Operation of the UF-RO treatment processes in parallel with the Sand Filters allowed for evaluation of nutrient removal through the RO system without upstream nutrient removal, which was intended to occur per the Piloting Plan. Grab and composite sample data was obtained throughout the pilot study for ammonia, nitrite, nitrate, orthophosphate, and TP. Table 17 summarizes the grab and composite sampling data for the Influent, Sand Filter Effluent, UF Effluent, and RO Effluent, and Figure 19 through Figure 24 provide a time series illustration of the Influent, Sand Filter Effluent, and RO Effluent data with relevant operational notes included. UF Effluent data is omitted from the following graphs since nitrogen and phosphorus removal is expected to primarily be removed through the Sand Filter and RO processes.

Table 17 Nutrient Removal Influent and Effluent Grab and 24-Hour Composite Data

Constituent	Stream	Units	Grab Samples			24-hr Composite Samples		
			Average	Range	No. of Samples	Average	Range	No. of Samples
Ammonia as N	Influent	mg/L-N	0.89	0.13 - 2.6	15	1.1	0.74 - 2.2	11
	Sand Filter Effluent	mg/L-N	1.6	0.99 - 3.9	12	0.098	0.007 - 0.45	6
	UF Effluent	mg/L-N	1.22	0.007 - 3.8	21	0.39	0.007 - 0.86	5
	RO Effluent	mg/L-N	0.15	0.12 - 0.17	4	0.16	0.007 - 0.67	15
Nitrite as N	Influent	mg/L-N	0.12	0.006 - 0.8	19	0.023	0.0057 - 0.11	11
	Sand Filter Effluent	mg/L-N	0.20	0.006 - 0.9	14	0.015	0.015 - 0.015	6
	UF Effluent	mg/L-N	0.024	0.004 - 0.19	24	2.1	0.13 - 4.6	5
	RO Effluent	mg/L-N	0.015	0.003 - 0.029	5	0.008	0.003 - 0.036	13
Nitrate as N	Influent	mg/L-N	2.6	0.006 - 11	19	0.11	0.014 - 0.69	11
	Sand Filter Effluent	mg/L-N	0.23	0.006 - 1.3	14	0.22	0.04 - 1.3	7
	UF Effluent	mg/L-N	0.57	0.006 - 5.5	24	3.0	2 - 5.3	5
	RO Effluent	mg/L-N	0.068	0.006 - 0.23	5	0.12	0.003 - 0.46	14
Total Inorganic Nitrogen (TIN)	Influent	mg/L-N	4.0	0.24 - 12	17	1.23	0.75 - 2.2	11
	Sand Filter Effluent	mg/L-N	2.7	1.2 - 10	14	0.33	0.03 - 1.4	7
	UF Effluent	mg/L-N	2.0	0.03 - 6.7	25	5.3	2.9 - 10	5
	RO Effluent	mg/L-N	0.23	0.13 - 0.45	5	0.30	0.038 - 0.74	16
Orthophosphate as P	Influent	mg/L-P	0.68	0.072 - 1.5	19	0.29	0.06 - 0.9	11
	Sand Filter Effluent	mg/L-P	0.62	0.19 - 1.5	14	0.031	0.005 - 0.068	6
	UF Effluent	mg/L-P	0.43	0.005 - 1.3	25	0.030	0.005 - 0.13	5
	RO Effluent	mg/L-P	0.005	0.005 - 0.005	5	0.005	0.005 - 0.005	16
Total Phosphorus as P	Influent	mg/L-P	0.36	0.11 - 0.7	8	0.41	0.11 - 0.99	12
	Sand Filter Effluent	mg/L-P	0.57	0.25 - 1.4	10	--	--	--
	UF Effluent	mg/L-P	0.47	0.22 - 0.9	15	0.068	0.048 - 0.096	4
	RO Effluent	mg/L-P	0.011	0.011 - 0.011	5	0.014	0.011 - 0.024	16

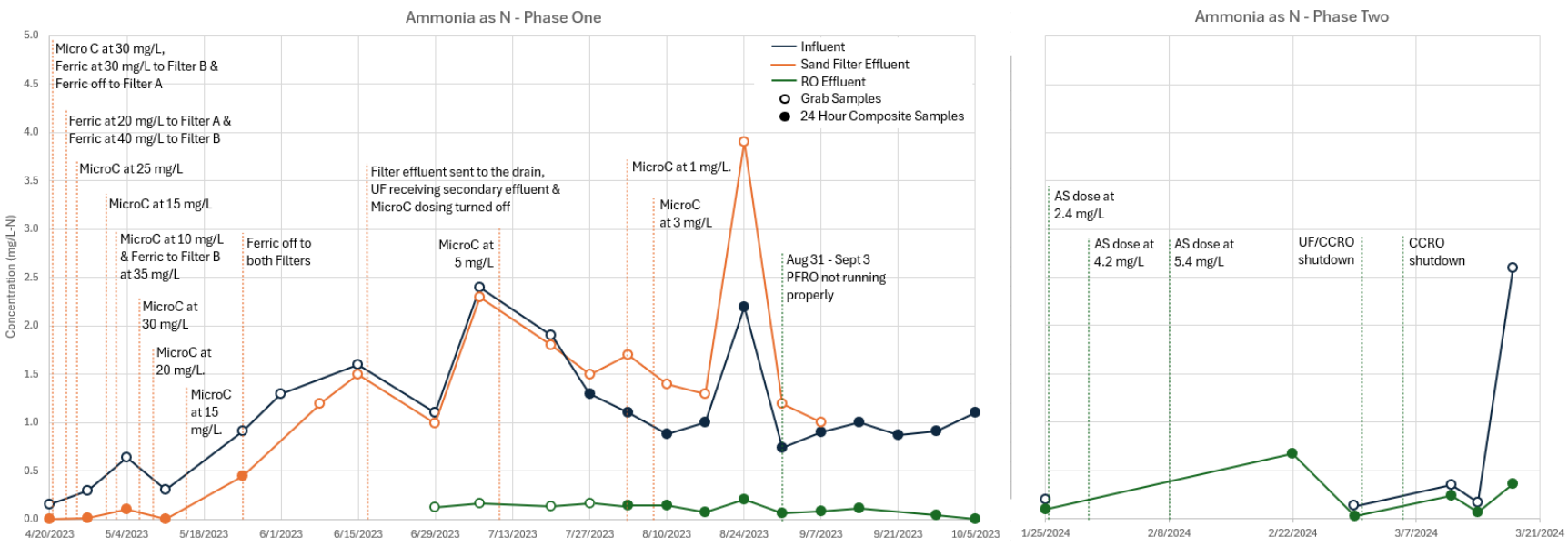

Figure 19 Influent and Effluent Ammonia Concentrations for Phase One and Two

As discussed in the prior subsection, ammonia is not removed by the Sand Filters, but the RO processes successfully removed ammonia during the study. At the feed pH of ~6.5 for the RO processes, ammonia is in the ammonium ion form, for which partial removal has been demonstrated through RO processes. Removal rates were determined based on RO Effluent grab and composite samples with the corresponding Influent or UF Effluent data (where Influent data was not available since the UF does not provide ammonia removal). The following observations were made:

- The PFRO removed approximately 92% of ammonia on average during Phase One based on grab sample results, with an average Influent ammonia of 1.8 mg/L-N and RO Effluent ammonia of 0.14 mg/L-N.
- The PFRO removed approximately 91% of ammonia on average during Phase One based on composite sample results, with an average Influent ammonia of 1.1 mg/L-N and RO Effluent ammonia of 0.01 mg/L-N.
- The CCRO removed approximately 66% of ammonia on average during Phase Two based on composite sample results, with an average UF Effluent ammonia of 0.48 mg/L-N and RO Effluent of 0.16 mg/L-N.

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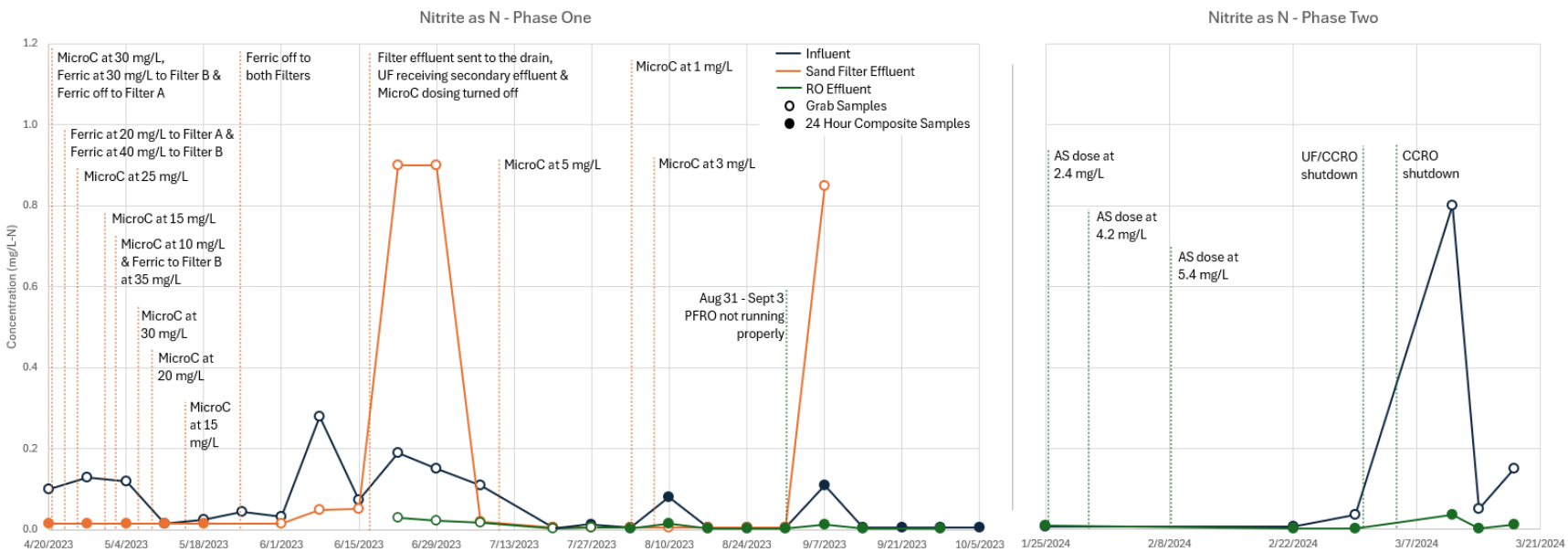

Figure 20 Influent and Effluent Nitrite Concentrations for Phase One and Two

Similar to ammonia removal, nitrite removal rates were calculated using both grab and composite RO Effluent data with the corresponding Influent and UF Effluent data. The following observations were made:

- The PFRO removed approximately 85% of nitrite on average during Phase One based on grab sample results, with an average Influent nitrite of 0.11 mg/L-N and RO Effluent nitrite of 0.02 mg/L-N.
- The PFRO removed approximately 59% of nitrite on average during Phase One based on composite sample results, with an average Influent nitrite of 0.03 mg/L-N and RO Effluent nitrite of 0.001 mg/L-N.
- The CCRO removed approximately 98% of nitrite on average during Phase Two based on composite sample results, with an average UF Effluent nitrite of 2.06 mg/L-N and RO Effluent nitrite of 0.01 mg/L-N.

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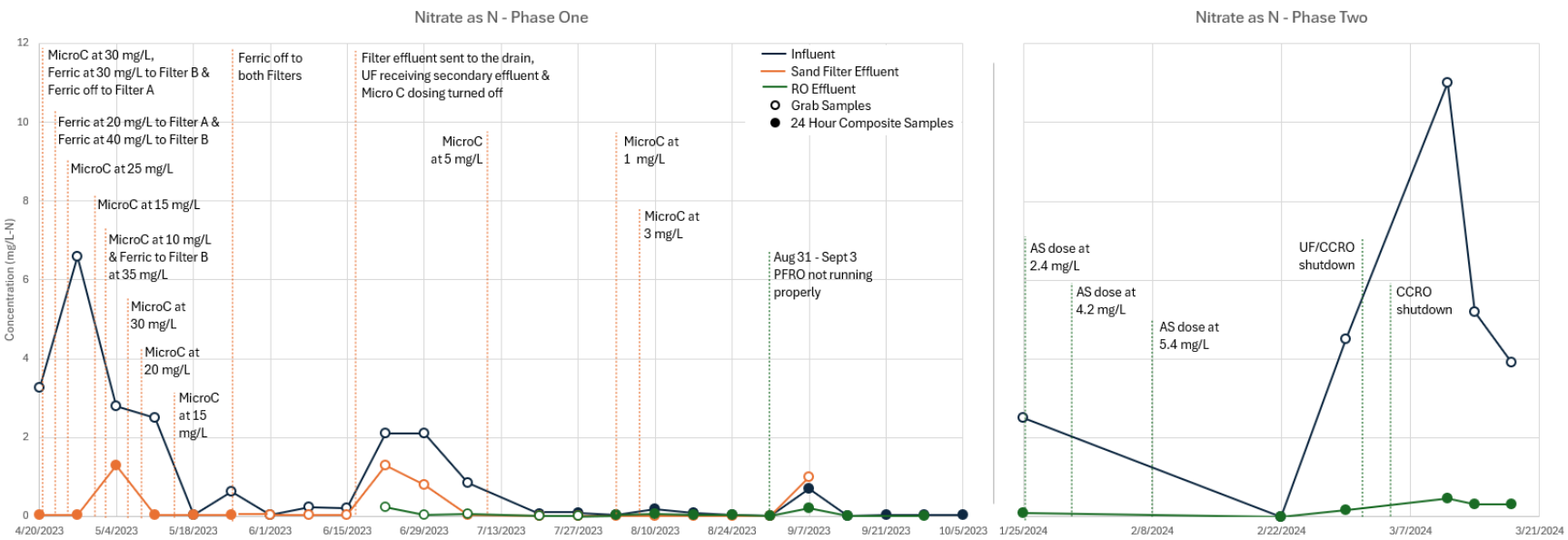

Figure 21 Influent and Effluent Nitrate Concentrations for Phase One and Two

Nitrate removal was calculated in the same manner as ammonia and nitrite and the following observations were made:

- The PFRO removed approximately 93% of nitrate on average during Phase One based on grab sample results, with an average Influent nitrate of 1.27 mg/L-N and RO Effluent nitrate of 0.08 mg/L-N.
- The PFRO removed approximately 51% of nitrate on average during Phase One based on composite sample results, with an average Influent nitrate of 0.14 mg/L-N and RO Effluent nitrate of 0.05 mg/L-N.
- The CCRO removed approximately 90% of nitrate on average during Phase Two based on composite sample results, with an average UF Effluent nitrate of 2.96 mg/L-N and RO Effluent nitrate of 0.27 mg/L-N.

The following graph (Figure 22) provides the time series graph of TIN as a summation of the nitrate, nitrite, and ammonia results from the data set. As shown in the graph, the effluent target of 0.1 mg/L-N was only met 13% of the time. Failure to meet the TIN target is largely a result of the higher ammonia concentrations in the RO feed, which comprised 64% of the RO Effluent TIN concentration, on average. However, compared to Influent and UF Effluent data, the RO processes still provided high removal rates as follows:

- The PFRO removed approximately 93% of TIN on average during Phase One based on grab sample results, with an average Influent TIN of 2.89 mg/L-N and RO Effluent TIN of 0.19 mg/L-N.
- The PFRO removed approximately 87% of TIN on average during Phase One based on composite sample results, with an average Influent TIN of 1.26 mg/L-N and RO Effluent TIN of 0.16 mg/L-N.
- The CCRO removed approximately 92% of TIN on average during Phase Two based on composite sample results, with an average UF Effluent TIN of 5.4 mg/L-N and RO Effluent TIN of 0.44 mg/L-N.

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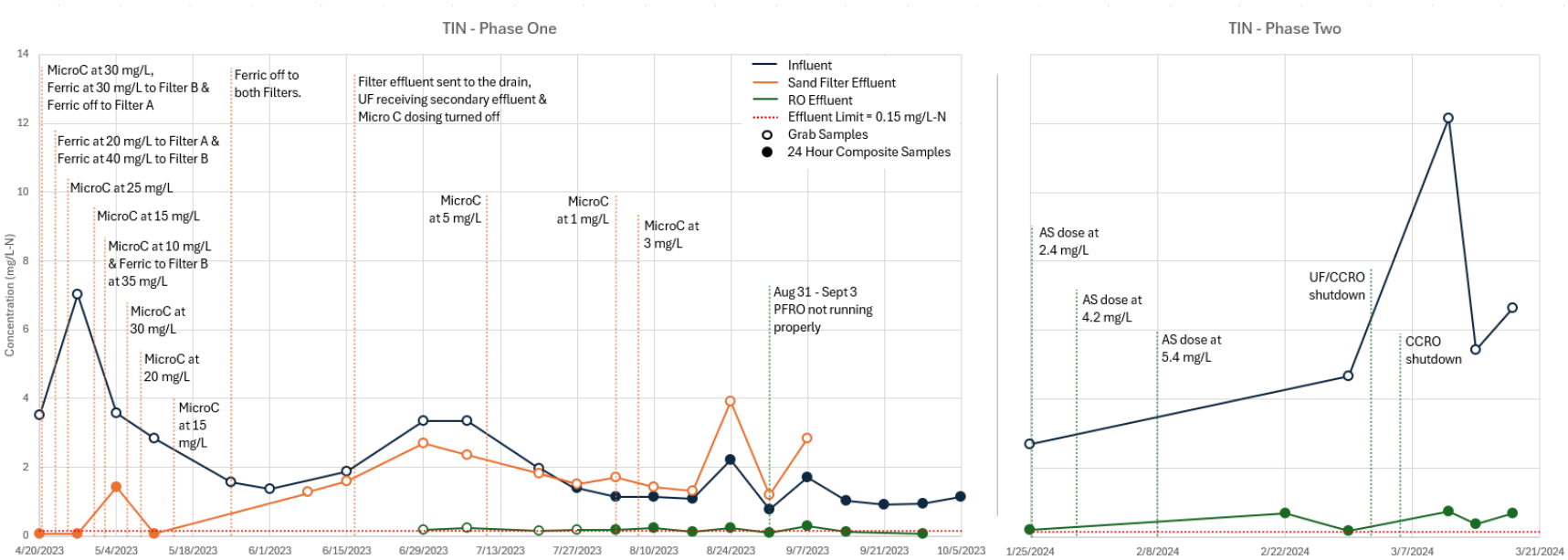

Figure 22 Influent and Effluent TIN Concentrations for Phase One and Two

Figure 23 and Figure 24 below show the time series for orthophosphate and TP. Two key observations regarding Influent phosphorus characterization are that most of the TP in the Influent is in orthophosphate form and TP concentrations are relatively low for secondary effluent, as evidenced by the ratio of orthophosphate to TP and the low Influent TP measurements, respectively. It is expected that BBARWA is removing phosphorus in their existing secondary treatment oxidation ditches within poorly mixed anaerobic areas of the ditches, and good particulate and non-reactive phosphorus species removal is occurring in their secondary treatment process.

TP removal rates through the PFRO and CCRO processes were calculated using grab and composite data as well as Influent and UF Effluent data similarly to how the nitrogen species removal rates were calculated. The following observations were made:

- The PFRO removed approximately 98% of TP on average during Phase One based on grab sample results, with an average Influent TP of 0.53 mg/L-P and RO Effluent TP of 0.011 mg/L-P (all adjusted from ND to method's MDL).
- The PFRO removed approximately 95% of TP on average during Phase One based on composite sample results, with an average Influent TP of 0.40 mg/L-P and RO Effluent TP of 0.015 mg/L-P (adjusted from ND to method's MDL 40% of the time).
- The CCRO removed approximately 82% of TP on average during Phase Two based on composite sample results, with an average UF Effluent TP of 0.068 mg/L-P and RO Effluent TP of 0.012 mg/L-P (adjusted from ND to method's MDL 50% of the time).

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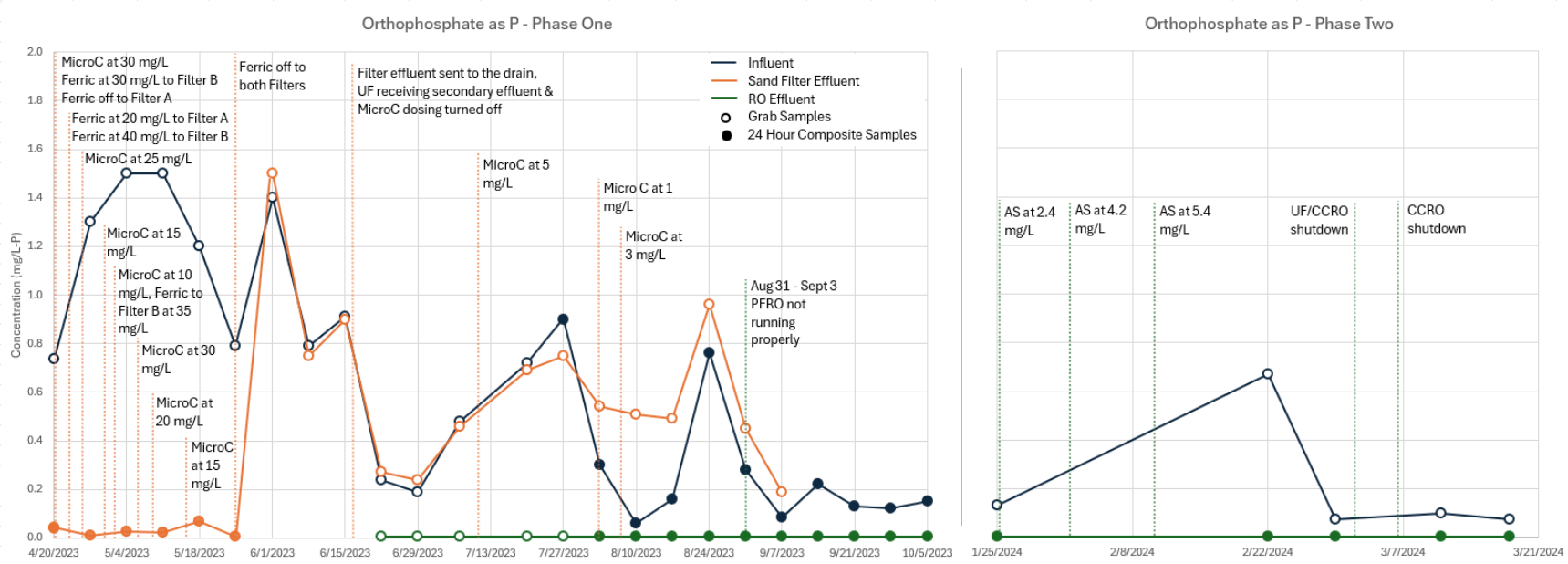

Figure 23 Influent and Effluent Orthophosphate Concentrations for Phase One and Two

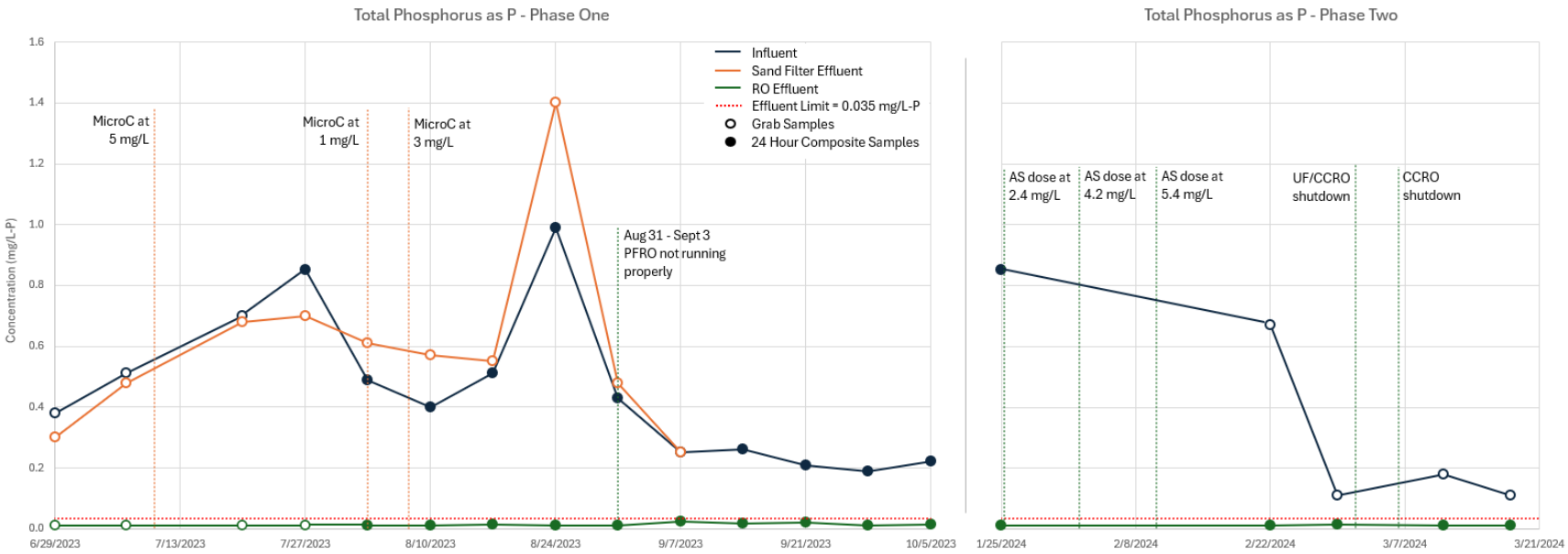

Figure 24 Influent and Effluent TP Concentrations for Phase One and Phase Two

As illustrated in the graphs, grab samples from the Sand Filter indicate poor removal of phosphorus, but a direct conclusion cannot be made by comparing Sand Filter Effluent grab samples with composite Influent samples. Results from the HACH TNT data in the previous subsection indicated the Sand Filters were providing some TP removal based on grab samples from both the Influent and Sand Filter Effluent; however, composite TP measurements in the RO Effluent demonstrate TP can be effectively removed to below the pilot target without upstream Sand Filters. The TP target of 0.035 mg/L-P was met 100% of the time through RO treatment. The residual TP in the RO Effluent is expected to be soluble non-reactive phosphorus (SNRP).

Soluble non-reactive phosphorus (SNRP) is a key analytical measurement for treatment processes that must remove total phosphorus to very low limits, equal to the difference between dissolved phosphorus and dissolved orthophosphate. SNRP represents the lowest effluent total phosphorus for a particular wastewater stream, as it is comprised of dissolved phosphorus species that are non-reactive biologically or chemically. SNRP was quantified through measurement of dissolved phosphorus and dissolved orthophosphate from a composite sample of Sand Filter Effluent on two different sample days. Both sample results were reported as ND on each day; therefore, when substituting the ND result for the respective MDL (0.018 mg/L-P for dissolved phosphorus and 0.005 mg/L-P for dissolved orthophosphate per Method 4500 P B), the calculated SNRP was measured to be 0.013 mg/L-P.

Several composite samples were also analyzed for dissolved phosphorus at different sample points, as summarized in Table 18. The average RO Effluent result of 0.014 mg/L-P dissolved phosphorus is consistent with the calculated SNRP of 0.013 mg/L-P and indicates the SNRP is likely below 0.02 mg/L-P for BBARWA's wastewater stream. This supports the piloting results that show TP can be removed below the 0.035 mg/L-P target objective, as SNRP (e.g., the "floor" of TP removal) is less than the TP target objective. There are limitations with phosphorus analysis at levels less than 0.1 mg/L-P since the relevant analytical methods have MDL values on the same order of magnitude as the target objective for this Pilot Study.

Table 18 Dissolved Phosphorus Sample Results (24-hour composite samples)

Sample Point[1]	Average (mg/L-P)	Range (mg/L-P)	Sample Count
Influent	0.45	0.2 - 1.0	11
Sand Filter Effluent[2]	0.018	0.018 - 0.018	7
UF Effluent	0.029	0.011 - 0.081	5
RO Effluent	0.014	0.011 - 0.037	16

1. Influent, UF Effluent, and RO Effluent sampling results are from operational period when the UF was receiving undisinfected secondary effluent (after Sand Filters were isolated to operate in parallel). Sand Filter Effluent results are from operational period when Sand Filters were operating in-series with downstream pilot units.
2. All seven (7) sample results were measured at ND levels of 0.018 mg/L-P.

TDS and TOC Removal

Total dissolved solids (TDS) and total organic carbon (TOC) concentrations were monitored during the Pilot Study through the pilot treatment train, with an emphasis on the membrane and UV-AOP processes that are expected to remove these constituents. The anticipated NPDES TDS effluent concentration is based on the Basin Plan WQO; however, it was expected that the RO processes would produce effluent with a significantly lower level of TDS. In addition to TDS, sodium, sulfate, and chloride were also monitored since these dissolved constituents have Basin Plan WQO that would apply to Replenish Big Bear.

Title 22 requires TOC monitoring for indirect potable reuse projects. TOC monitoring is used as a surrogate constituent that can be monitored continuously to evaluate the effectiveness of water treatment processes, ensure compliance with regulatory standards, and assess environmental impacts. Table 19 summarizes the effluent targets for TDS and TOC removal.

Table 19. TDS and TOC Pilot Study Effluent Targets

Constituent/Parameter	Units	Anticipated NPDES Limit	Pilot System Target	Source of Limit
Total Dissolved Solids (TDS)	mg/L	175	50	Basin Plan WQO
Sodium	mg/L	20	20	Basin Plan WQO
Sulfate	mg/L	10	10	Basin Plan WQO
Chloride	mg/L	10	10	Basin Plan WQO
Total Organic Carbon (TOC)	mg/L	0.5	0.5	Title 22 Regulations

Total Dissolved Solids

Both RO units, as well as the brine minimization technology, provided TDS removal during the Pilot Study. TDS removal was analyzed separately for the on-site RO units and the off-site Desalter process since it was not possible to recombine the process streams for the Pilot Study. While a mass balance of TDS and relevant dissolved species could be performed based on the data obtained, it would not be representative of anticipated treatment due to the time delay between brine collection and off-site piloting of the Desalter process.

Table 20 provides a summary of the average TDS, sodium, sulfate, and chloride concentrations measured for the Influent, UF Effluent, PFRO Effluent, and CCRO Effluent streams. Figure 25 through Figure 28 include time series data for a combination of Influent, UF Effluent, and RO Effluent sample points. Sand Filter Effluent data is not included in the following tables and figures since it is not intended to remove dissolved solids, and the UF Effluent data sufficiently characterizes RO feed water quality.

Table 20. TDS, Sodium, Sulfate, Chloride Grab and 24-Hour Composite Samples

Constituent	Stream	Units	Grab Samples			24-hr Composite Samples		
			Average	Range	No. of Samples	Average	Range	No. of Samples
Total Dissolved Solids (TDS)	Influent	mg/L	419	360 - 480	19	435	410 - 460	11
	UF Effluent	mg/L	428	360 - 470	25	394	370 - 410	5
	PFRO Effluent	mg/L	17.2	14 - 19	5	59	8.4 - 110	10
	CCRO Effluent	mg/L	--	--	--	8	5 - 10	6
Sodium[1]	UF Effluent	mg/L	49	33 - 60	24	42	36 - 55	5
	PFRO Effluent	mg/L	3.7	3.7 - 3.8	3	22	5.1 - 48	9
	CCRO Effluent	mg/L	--	--	--	0.84	0.41 - 1.3	6
Sulfate[1]	UF Effluent	mg/L	37	26 - 45	24	33	29 - 39	5
	PFRO Effluent	mg/L	0.2	0.03 - 1	5	0.08	0.03- 0.1	10
	CCRO Effluent	mg/L	--	--	--	0.1	0.03 - 0.2	6
Chloride[1]	UF Effluent	mg/L	63	41 - 75	23	49	43 - 60	5
	PFRO Effluent	mg/L	2.3	1.8 - 2.8	5	14	3 - 27	10
	CCRO Effluent	mg/L	--	--	--	1.1	0.8 - 1.4	6

1 Influent samples for sodium, sulfate, and chloride were not collected.

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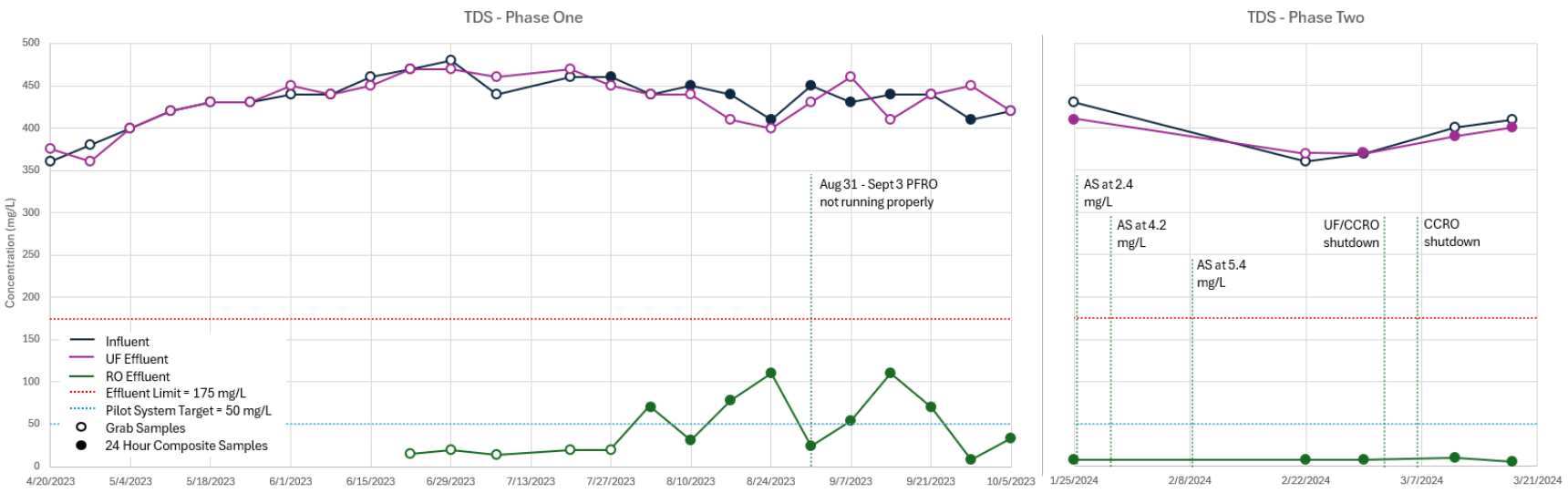

Figure 25. TDS Removal for Phase One and Two

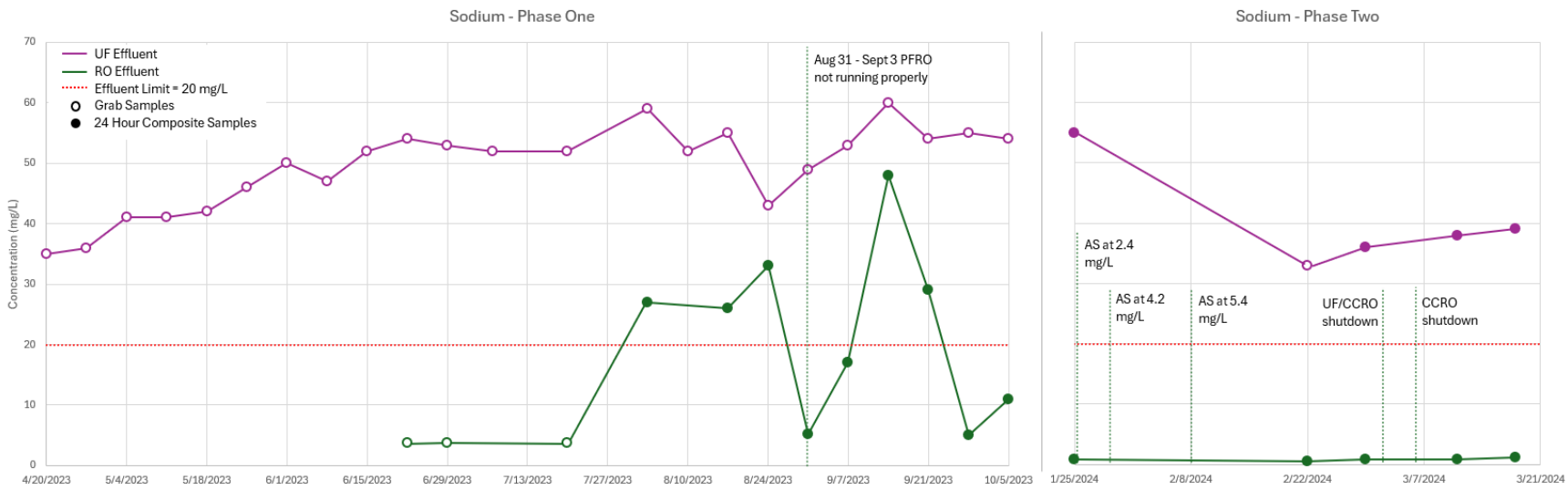

Figure 26. Sodium Removal for Phase One and Two

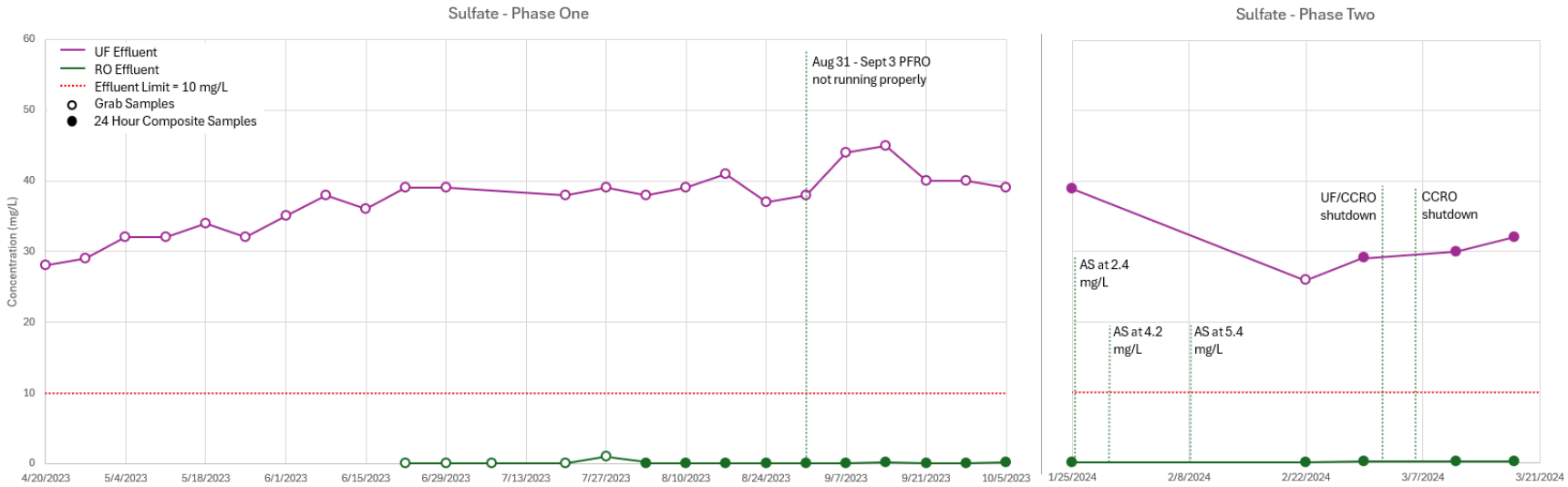

Figure 27. Sulfate Removal for Phase One and Two

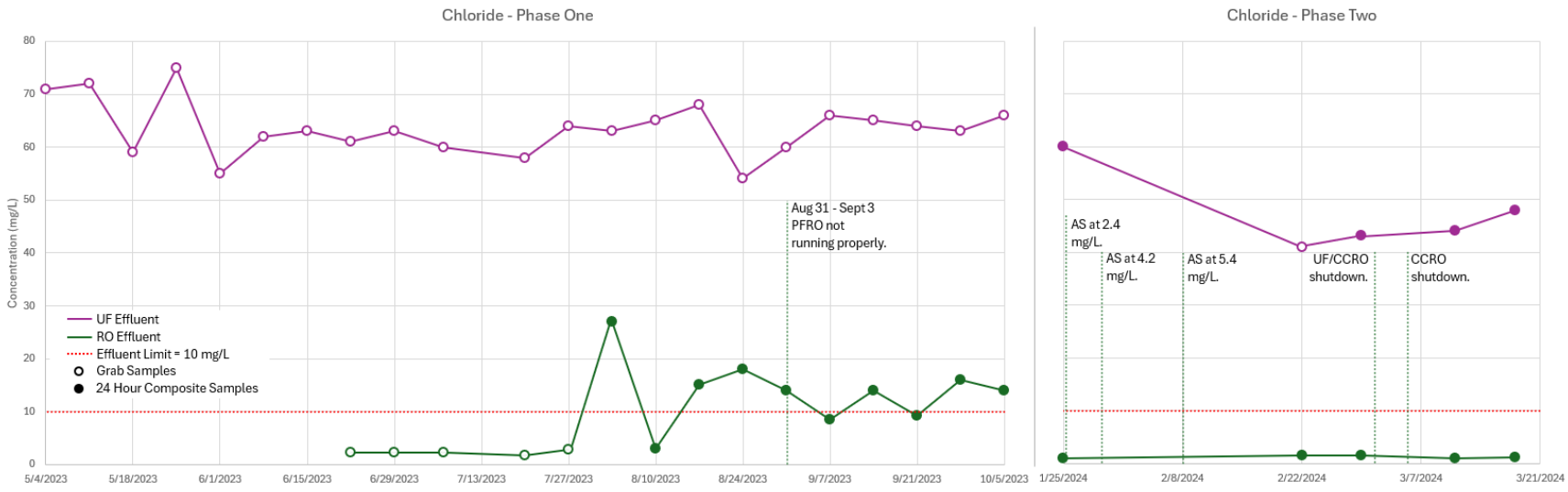

Figure 28. Chloride Removal for Phase One and Two

Although grab samples were obtained for TDS, chloride, sulfate, and sodium, analysis was focused on composite sampling data results to account for the variance in treatment that could occur during RO operational cycles. Based on composite sampling results for TDS, sodium, sulfate, and chloride, the following observations were made:

- The PFRO removed approximately 85% of TDS on average during Phase One, with an average RO Effluent TDS composite sample results of 59 mg/L.
- The CCRO removed approximately 98% of TDS on average during Phase Two, with an average RO Effluent TDS composite sample results of 7.6 mg/L.
- CCRO was more effective in removing TDS, sodium, sulfate, and chloride than the PFRO system. The CCRO system consistently met the pilot system targets for all constituents wheras the PFRO system exceeded the pilot system targets for TDS, sodium, and chloride several times.

In general, TDS, sodium, sulfate, and chloride removal rates were as anticipated for the RO systems, with the CCRO providing consistently higher removal rates than the PFRO.

Total Organic Carbon

The RO and UV-AOP processes have high capabilities of removing TOC and are used in most advanced treatment process trains. RO removes TOC through direct high-pressure filtration and UV-AOP removes TOC by breaking down the compounds through UV destruction and oxidation by hydroxyl radicals. Both sodium hypochlorite and hydrogen peroxide were tested as oxidants for the UV-AOP system, and both produced effluent with TOC levels below the 0.5 mg/L pilot target. UF also provides removal of particulate TOC through direct membrane filtration.

Table 21 provides a summary of TOC concentrations in the UF Effluent, both RO Effluents, and UV-AOP Effluents, and Figure 29 includes a time series graph of the data.

Table 21. TOC Grab and 24-Hour Composite Samples

Constituent	Stream	Units	Grab Samples			24-hr Composite Samples		
			Average	Range	No. of Samples	Average	Range	No. of Samples
Total Organic Carbon (TOC)	UF Effluent	mg/L	7.5	1.4 - 19	24	11	3.6 - 21	5
	PFRO Effluent	mg/L	0.4	0.24 - 0.73	5	0.35	0.22 - 0.5	10
	CCRO Effluent	mg/L	--	--	--	0.26	0.23 - 0.29	6
	UV-AOP Effluent	mg/L	0.16	0.088 - 0.5	17	--	--	--

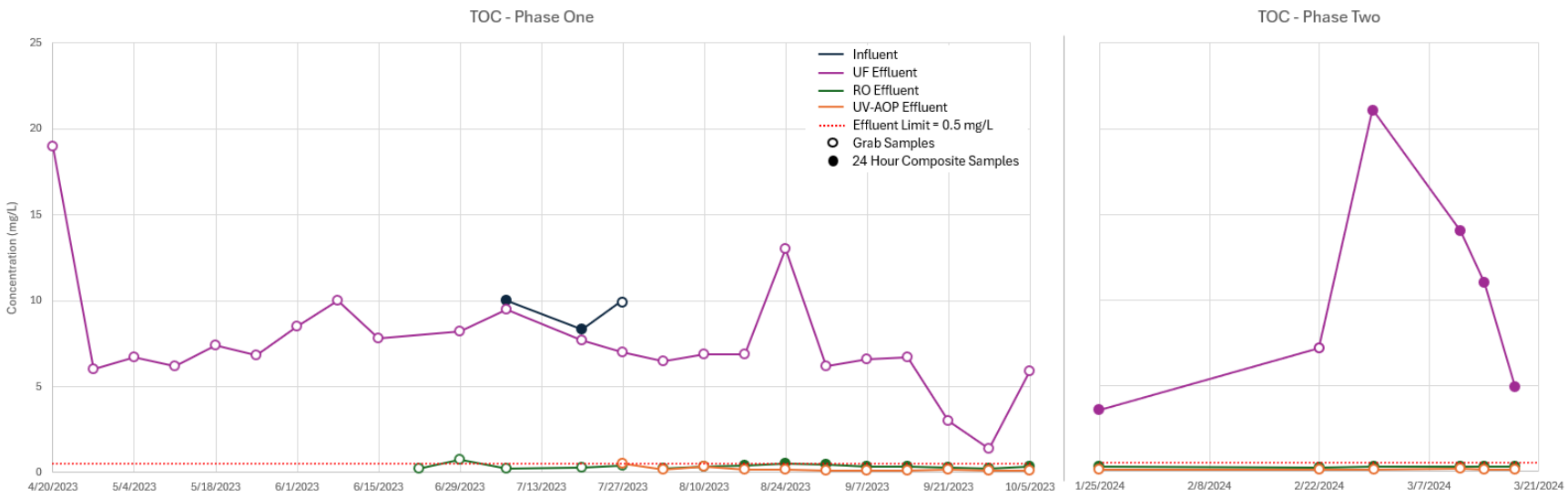

Figure 29. TOC Removal for Phase One and Two

Based on the grab and composite sampling results for TOC, the following observations were made:

- During Phase One when the PFRO was in operation, TOC removal rates from Influent through RO Effluent averaged 97.4% based on grab samples and 96.8% removal from composite samples.
- During Phase Two when the CCRO was in operation, the TOC removal rate averaged 97.6% based from composite samples.
- The TOC pilot target of 0.5 mg/L was consistently met in the RO Effluent, prior to UV-AOP treatment. During Phase One, UV-AOP treatment provided further removal below the 0.5 mg/L target.

The results for TOC removal are as expected for a UF-RO-UV/AOP treatment train, as the process has been succesfully demonstrated for TOC removal at several California pilot and full-scale facilities.

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UF and RO Performance

In addition to water quality of treatment process effluents, various parameters were monitored to analyze the integrity of the membrane treatment processes including normalized specific membrane flux (or permeability), differential pressure and conductivity for RO systems, and transmembrane pressure (TMP) for UF. Normalized specific flux is membrane flux adjusted for temperature and osmotic pressure. The membrane systems operated based on an uncorrected flux setpoint and normalized specific flux was continuously calculated to properly evaluate membrane performance and as an indicator for fouling or scaling. Temperature was also monitored to analyze how performance was impacted by colder process water temperatures. Turbidity and hardness were also factors evaluated for the UF and RO systems, respectively. The following subsections include discussion of UF and RO performance, membrane cleaning procedures, and RO membrane autopsies.

UF Membranes

The UF pilot system operation was divided into 10 runs which were characterized by flow and flux setpoints, as well as backwash and maintenance wash intervals. Each run concluded with an acidic and a basic CIP. The goal of each run was to operate for 30-45 days without reaching the maximum TMP and thus reaching the target CIP interval.

The setpoints were altered multiple times during the first two runs while the system was receiving Sand Filter effluent due to high headloss in the filters and water quality issues. The first run ended with two sets of CIPs performed on the membranes due to an extremely high rate of fouling. The second run resulted in shutdown on June 10 and 15 due to reaching the maximum TMP and ended with CIPs occurring before the 30-day target.

Secondary effluent as the feed flow provided more stable operation for the UF system. Runs 3 through 5 successfully operated for more than 30 days without reaching the maximum TMP. During this time, the fouling rate decreased, allowing a less frequent MW interval. Late in Run 5, the MW frequency was increased to aid with large volume RO water quality sampling. These runs occurred during warmer weather months which correlates to the lower fouling rate.

Starting with Run 6, acidic MWs were eliminated due to minimum recovery observed. The frequency of the basic MWs increased after the fouling rate started to increase again due to colder temperatures. The maximum TMP was reached in Runs 6, 8, and 9 prior to reaching the 30-day target due to colder water temperatures. When this happened, the system was shut down and restarted at a lower flux setpoint until the next CIP occurred within the target interval range. The membranes were replaced on November 1 between Phase One and Phase Two, after the downstream PFRO pilot system was decommissioned (at the start of Run 7). DuPont elected to wait until the transition between pilot phases to replace the membranes that were previously fouled from the upstream chemical phosphorus removal process. Table 22 outlines the UF system's operational setpoints and cleaning intervals used during the study.

Table 22. UF Operational Setpoints

Run	Start Date	End Date	Duration (days)	Flow Setpoints (gpm)	Flux Setpoints (gfd)	BW Interval (min)	MW Interval and Chemical Dose	CIP Chemical Dose	Pretreatment
1	4/12/2023	5/24/2023	42	15, 13, 19	14.8, 12.8, 18.7	24	48 hr 300 mg/L NaOCl 96 hr 0.10% HCl	Initial CIP: 500 mg/L NaOCl May 23: 0.5% Citric Acid with 0.11% HCl and 750 mg/L NaOCl May 24: 1% Citric Acid with 0.11% HCl and 1000 mg/L NaOCl	Sand Filters A and B, 200-micron strainer
2	5/25/2023	6/15/2023	21	19, 25	18.7, 24.6	24, 20	48 or 24 hr 300 mg/L NaOCl 96 or 48 hr 0.10% HCl	0.5% Citric Acid with 0.1% HCl and 1000 mg/L NaOCl	Sand Filter A, 200-micron strainer
3	6/15/2023	7/20/2023	35	25	24.6	20	24 or 56 hr 300 mg/L NaOCl 48 or 168 hr 0.10% HCl	0.5% Citric Acid with 0.1% HCl and 1000 mg/L NaOCl	Secondary Effluent, 200-micron strainer
4	7/20/2023	8/23/2023	34	30.7	30	20	56 hr 300 mg/L NaOCl 168 hr 0.10% HCl	0.5% Citric Acid with 0.1% HCl and 1500 mg/L NaOCl	Secondary Effluent, 200-micron strainer
5	8/23/2023	9/26/2023	34	30.7	30	20	48 or 56 hr 300 mg/L NaOCl 168 hr 0.10% HCl	0.5% Citric Acid with 0.1% HCl and 1500 mg/L NaOCl	Secondary Effluent, 200-micron strainer
6	9/26/2023	10/31/2023	35	30.7, 25.4	30, 25	20	56 or 48 hr 300 mg/L NaOCl	0.5% Citric Acid with 0.1% HCl and 1500 mg/L NaOCl	Secondary Effluent, 200-micron strainer
7	11/1/2023	12/5/2023	34	30.7	30	20	48 hr 300 mg/L NaOCl	0.5% Citric Acid with 0.1% HCl and 1000 mg/L NaOCl	Secondary Effluent, 200-micron strainer
8	12/5/2023	1/2/2024	27	30.7, 25.4	30, 25	20	48 hr 300 mg/L NaOCl	0.5% Citric Acid with 0.1% HCl and 1500 mg/L NaOCl	Secondary Effluent, 200-micron strainer
9	1/2/2024	2/8/2024	37	25.4, 20.4	25, 20	20	48 hr 300 mg/L NaOCl	0.5% Citric Acid with 0.1% HCl and 1500 mg/L NaOCl	Secondary Effluent, 200-micron strainer
10	2/8/2024	3/19/2024	40	20.4	20	20	48 hr 300 mg/L NaOCl	0.5% Citric Acid with 0.1% HCl and 1500 mg/L NaOCl	Secondary Effluent, 200-micron strainer

The UF membrane permeability normalized to 20°C remained relatively steady throughout the process except when the membranes were receiving Sand Filter effluent. During that time, the permeability decreased by about 76% from April 12 through May 23, 2023 (41 days) until the first CIPs were performed. From May 25 through June 15, 2023 (23 days), the permeability decreased by about 66.8% before another round of CIPs were triggered. Once the UF membranes began receiving WWTP secondary effluent, the stability of the membrane operation was improved as shown by the 23.3% decrease in permeability for the rest of the study. Operation in series with the Sand Filters negatively impacted the long term operation of the membranes, and the membranes had to be replaced on November 1. However, once the membranes were replaced, the permeability returned to approximately 3.5 gfd/psi whereas the initial permeability of the original membranes was much higher at approximately 6.2 gfd/psi. This is because the water quality of the Sand Filter Effluent was initially higher than the WWTP secondary effluent (prior to all the operational issues that occurred) which allowed for a higher membrane permeability.

The maximum TMP was reached four times, on October 25 and December 24, 2023, and January 1 and January 4, 2024, which is likely attributable to the decrease in water temperatures. Figure 30 displays a graph of these UF operational parameters, permeability and TMP, as well as the temperature and the CIP schedule. Due to the volume of data collected during the study, the graph provides hourly averages of these parameters.

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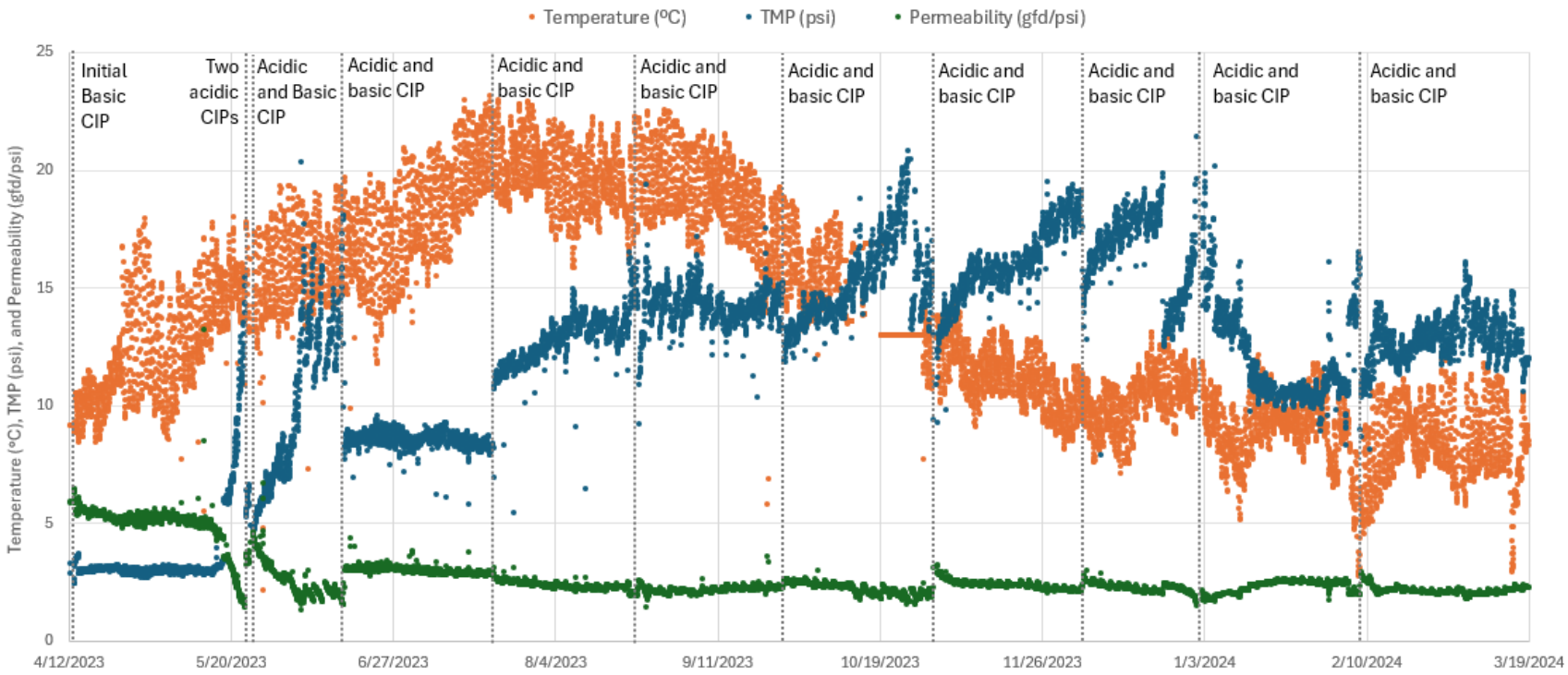

Figure 30. UF Transmembrane Pressure vs Temperature vs Permeability (Hourly Averages)

One important goal of the UF system is to pretreat the water before it flows through the RO membranes to prevent solids from clogging the RO membrane pores. Therefore, feed and effluent turbidity was monitored throughout the study as an indication of the TSS level in the water. For this study, there was a treatment target of 0.5 NTU in the UF effluent.

On average, the UF system provided 95% turbidity removal to achieve an average effluent turbidity of 0.21 NTU. Approximately 84% of the time, the effluent turbidity was below the target limit for the study. The feed water to the UF system consisted of Sand Filter effluent from April 12 through June 14, 2023 and WWTP secondary effluent from June 15, 2023 through March 19, 2024. The feed turbidity was approximately 20% lower on average when secondary effluent was fed to the UF membranes versus the Sand Filter effluent. However, the Sand Filter effluent showed a significantly higher variance of approximately 60% in turbidity than WWTP secondary effluent. Figure 31 displays a graph of the influent and effluent turbidity measurements for the UF system. It is important to note that the feed and effluent turbidity meters had upper limits of 100 NTU and 1 NTU, respectively, which may have skewed the results slightly.

In addition to water quality monitoring, DuPont's UF pilot unit was equipped with Air Hold Test (AHT) equipment that allowed for routine integrity testing of the UF membranes. AHT for UF membranes is a direct integrity test accepted by the EPA which allows for calculation of *Cryptosporidium* LRV. The UF pilot was equipped to perform an AHT once a day automatically for approximately 10 minutes. The AHT measures decay rate within a fiber lumen by use of low pressure air at approximately 15 psi, allowing for up to a 1.6 psi/min decay rate. The parameters DuPont employed for AHT of the pilot unit conforms to the most stringest standards for the *USEDP LT2ESWTR Membrane Filtration Guidance Manual (EPA 815-D-03-008)*. Following completion of the pilot, DuPont calculated *Cryptosporidium* LRV based on the equations provided in the US EPA Membrane Filtration Guidance Manual. During piloting, the average start pressure was 15.9 psi with an average pressure decay rate of 0.64 psi/min, which resulted in an average LRV of 4.1. For UF membrane treatment, a LRV of above 4-log removal of *Cryptosporidium* indicated the UF pilot maintained integrity throughout operation and would demonstrate >2-log removal credits for *Cryptosporidium* for the full-scale system.

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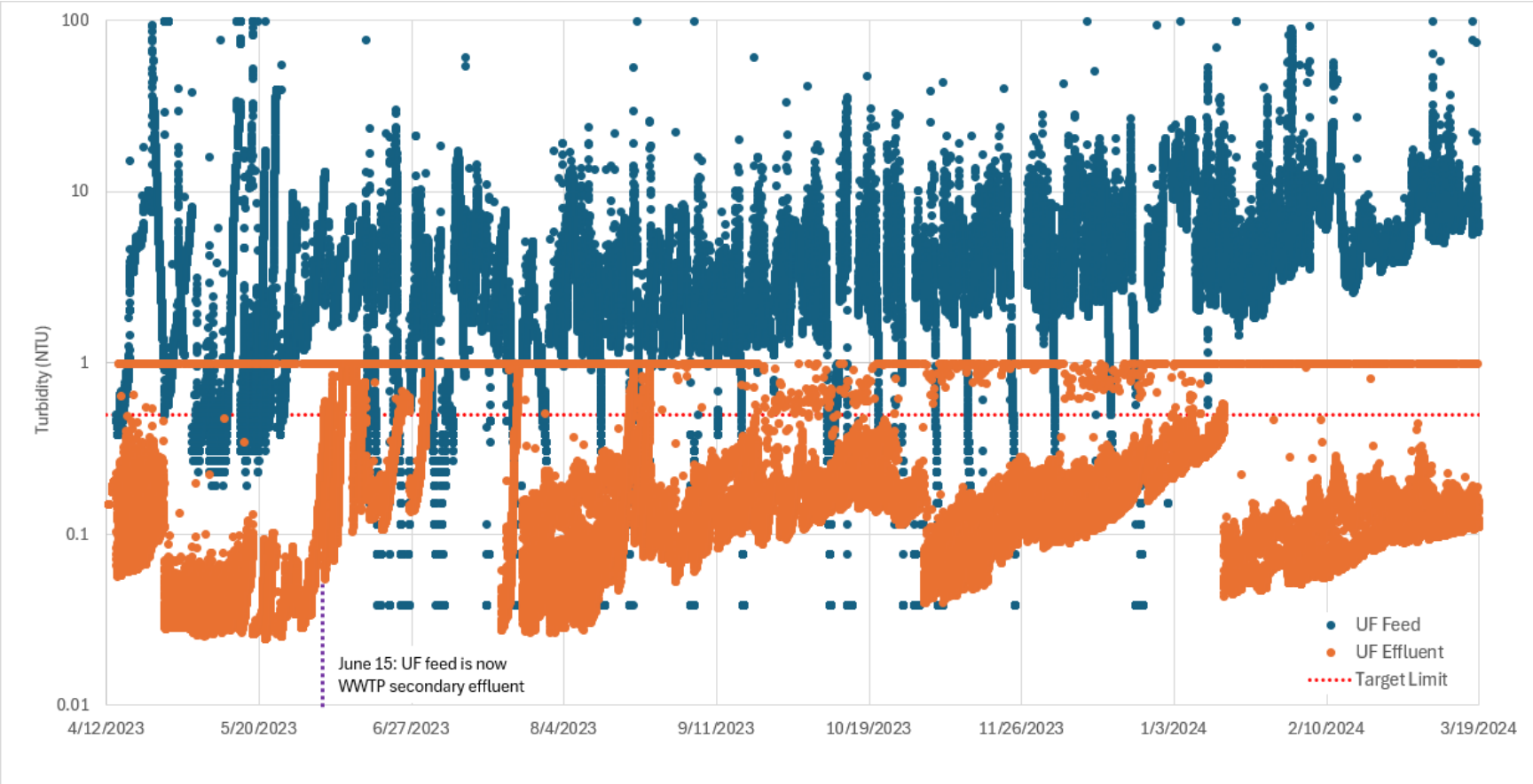

Figure 31. UF Influent and Effluent Turbidity

RO Membranes

The RO systems operated under multiple cycles throughout the study with the goal of reaching the recovey setpoint before the maximum differential or maximum feed pressure was reached. Neither RO system underwent a CIP during this study.

PFRO General Operations

The PFRO exhibited relatively stable operation throughout the study, as evidenced by the slow decline in normalized specific flux of about 33.3% over approximately 4 months, equating to an average of 0.28% decay per day. On August 1, there was a steady decrease in normalized specific flux (~10%) that was the result of upstream headloss in a plugged micronic filter. The plugging limited flow to the PFRO and caused the decrease in the normalized specific flux, which was restored to normal after the micronic filter was replaced. Prior to this, the headloss through micronic filters had been rapidly increasing, prompting the filter replacement and thus recovering the flux. The rate of decline of the membrane flux does not appear to have been affected by the temperature, even as the water temperature began to decrease in the colder months. Figure 32 displays PFRO normalized specific flux versus temperature.

The system was shutdown on June 15 while the feed flow to the UF was switched to secondary effluent, resulting in a data gap. There was scheduled WWTP maintenance on August 31 that also required the pilot systems to be shutdown. However, when the PFRO was turned back on, there were issues with the acid pump resulting in the system remaining offline for most of the time through September 3 until the issue was resolved. Various other operational issues occurred during this time, as discussed in more detail in Appendix B – Operational Phases. However, these issues did not appear to affect the performance of the PFRO.

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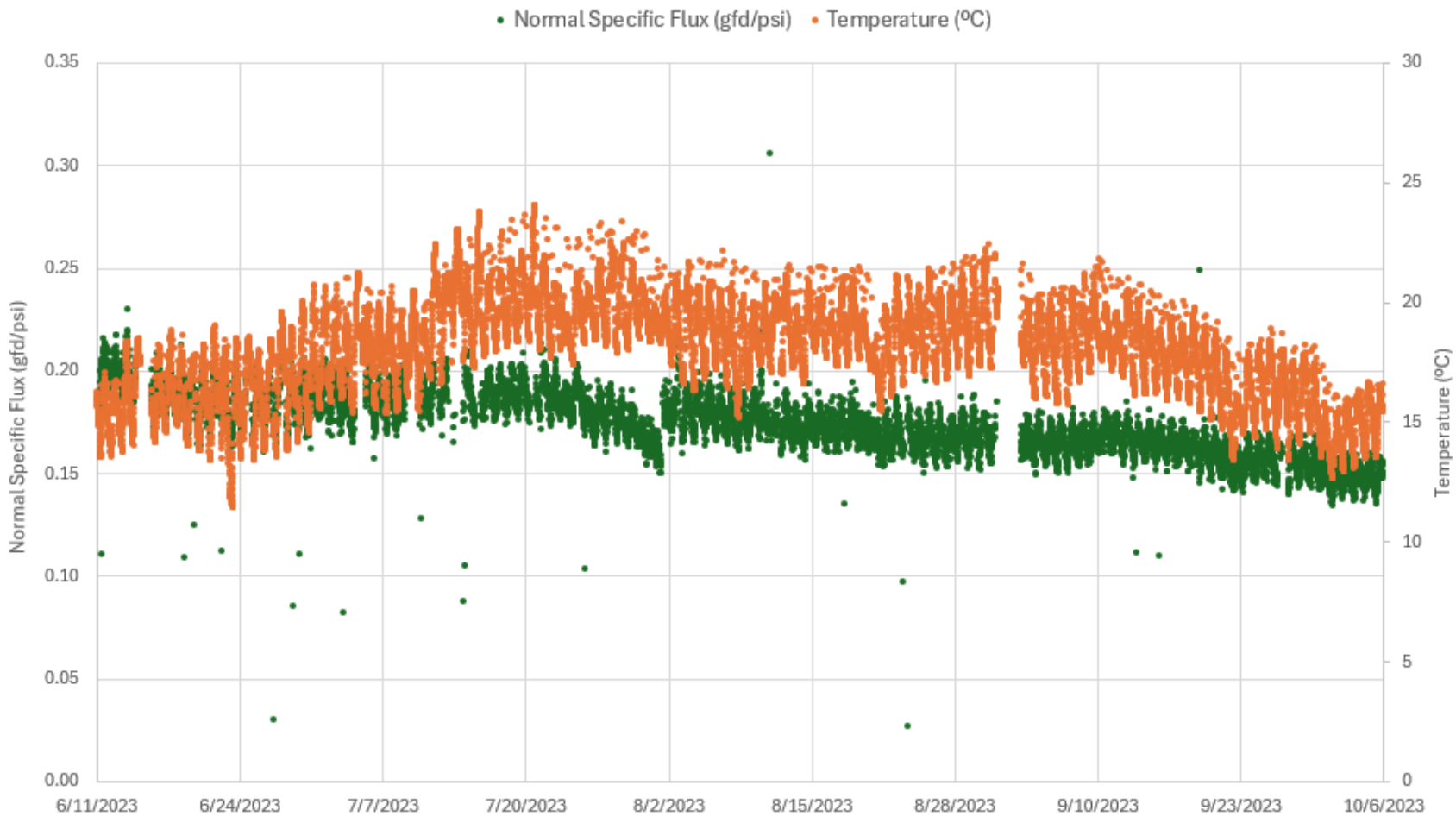

Figure 32. PFRO Normalized Specific Flux versus Temperature

CCRO General Operation

The CCRO system also demonstrated stable operation during the study as evidenced by the 20% total decline in normalized specific flux over about two months, equating to an average of 0.33% per day. Operating in winter months, the CCRO treated flows with significantly lower temperatures than the PFRO. Therefore, it would be expected for the CCRO to exhibit fouling at a higher rate than the PFRO. There are data gaps on February 12 through 17 and March 2 through 3 due to hardware and power issues, respectively, but did not appear to affect operation prior to shutdown except for two flux outliers. On March 6, the system was shut down due to a pH probe failure resulting in replacing the sensor. Once the system was back online on March 7, the flux had increased once the probe was properly dosing the system again. Figure 33 illustrates the change in normalized specific flux and temperature for the CCRO system.

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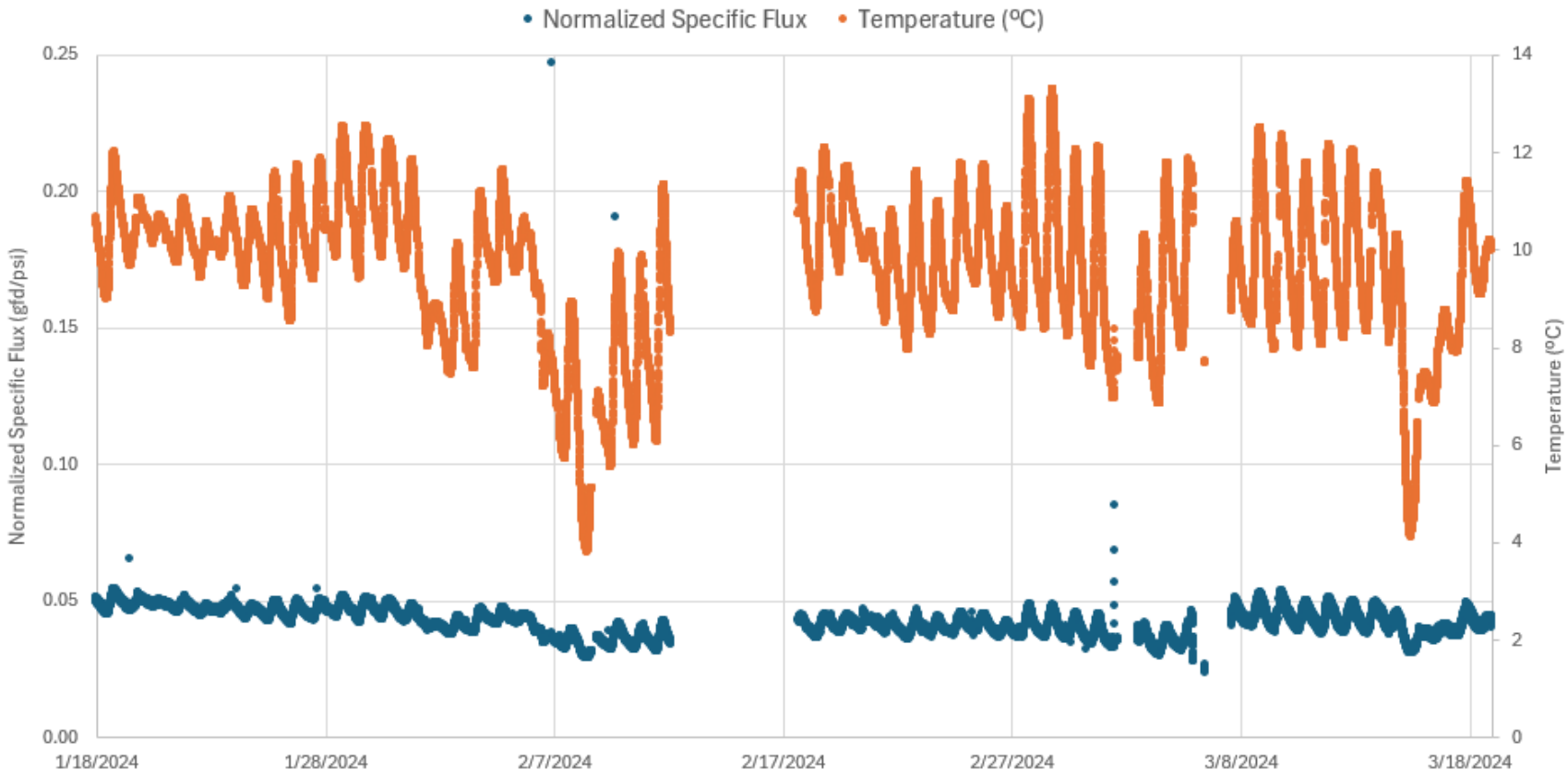

Figure 33. CCRO Normalized Specific Flux versus Temperature

Recovery

The PFRO operated with a recovery set point of 86% for the majority of the study. Initially, the system operated at a recovery setpoint of 82% while the system stabilized before increasing to 86%. It was increased to 90% on July 25 but only ran at this higher set point until July 31 (6 days) before it was lowered back to 86% due to lower than 90% recovery attained. Otherwise, the unit was successfully able to achieve 86% recovery under stable conditions. Differential pressure through the membranes remained steady through August 22 with an increase of about 17.2% over the 72 days. After this, the system experienced a sudden large increase in DP and then slowly decreased again until it reached approximately the same DP as before the increase. From this day, September 18, until the end of the study the DP exhibited normal stable behavior again (8.8% increase over 18 days). This can likely be attributed to various significant operational issues that arose during this timeframe but did not affect the overall performance of the unit, which remained successful in achieving the target recovery. Figure 34 displays the PFRO differential pressure and recovery setpoints demonstrated throughout the study. The operating recovery was not included on the graph for simplicity as the system attained the setpoint throughout almost the entire study. The DP data reflects two areas where DP increased. This is due to the nature of the PFRO process, which frequently switches between production and flushing cycles, where the flushing cycles result in a much lower DP.

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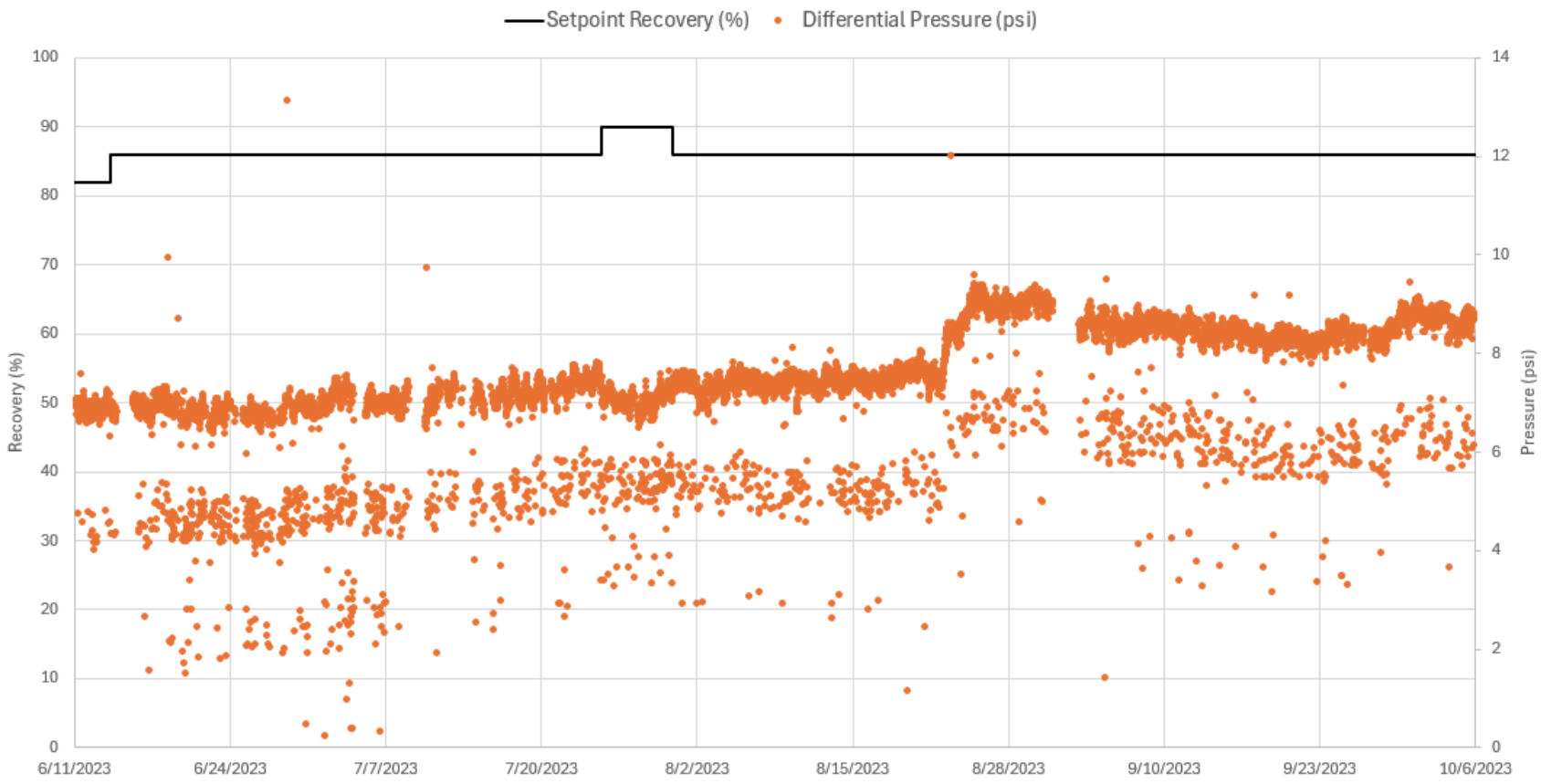

Figure 34. PFRO Recovery versus Differential Pressure

The CCRO began operation with a recovery set point of 85% and was steadily increased to 90% as the operating parameters remained stable at each setpoint. Each cycle successfully ended after reaching the recovery set point, except for a few cycles on March 6 where the cycle ended after reaching the maximum feed pressure of 425 psi. This was due to electrical issues to the entire treatment facility allowing feed water with significantly higher conductivity than previously encountered to enter the unit and resulted in a recovery of about 76%. The system was shut down after this until the power issues were resolved on March 7, system was flushed, and operation continued as normal. The differential pressure also remained fairly steady exhibiting a total increase of approximately 29% throughout the two month operation. The rate of DP increase did start to increase toward the end of the study, around March 13, indicating that a CIP would likely be necessary soon. However, it is possible that the system experienced this increased DP quicker than typical due to the issues observed on March 6. A graph of these CCRO parameters, recovery setpoint, differential pressure, and feed pressure, is shown in Figure 35. Operating recovery is not shown on the graph for simplicity and because there was only one day where the recovery setpoint was not reached, as mentioned.

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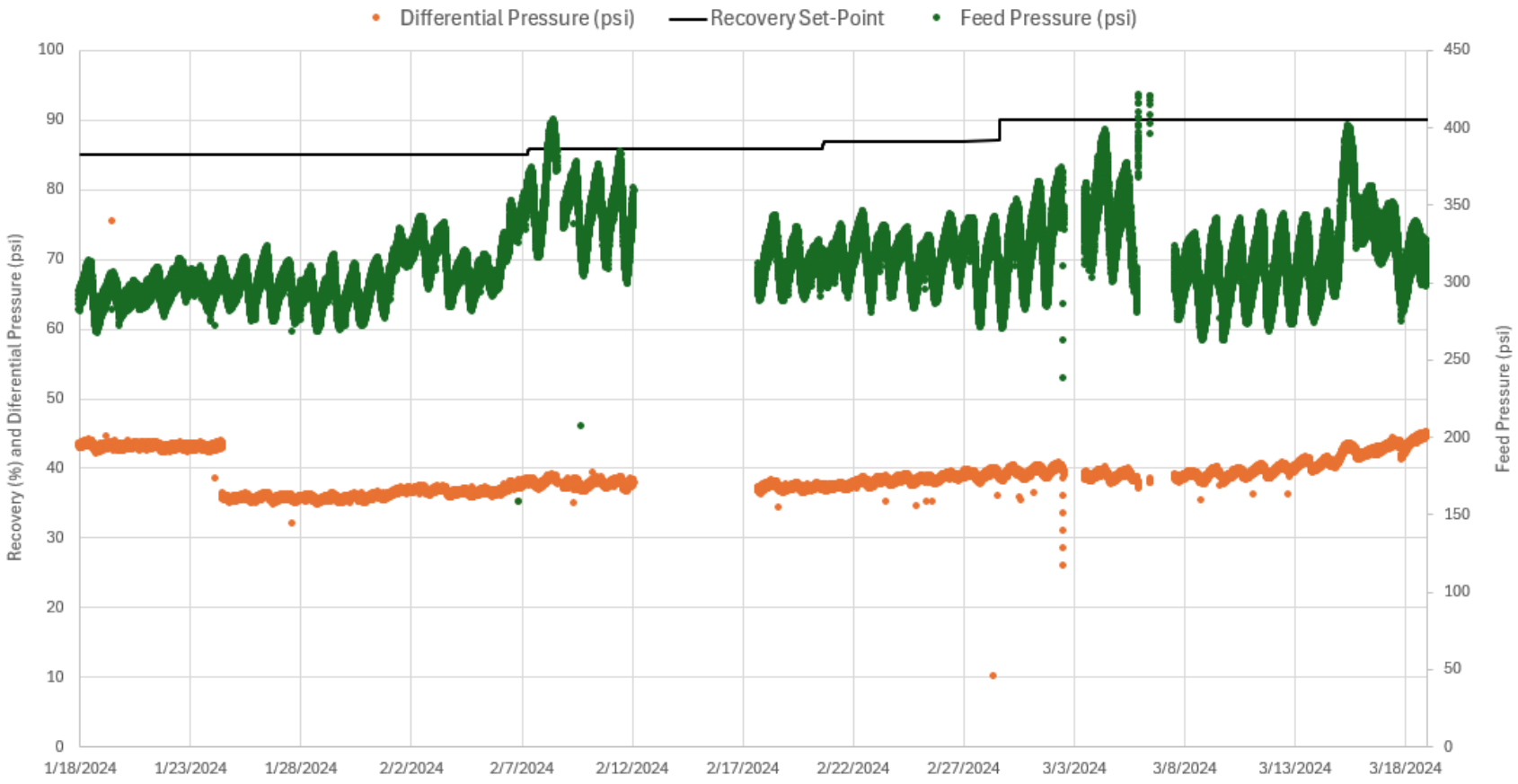

Figure 35. CCRO Recovery versus Differential and Feed Pressure

Conductivity Removal

Conductivity is a measure of the water's ability to conduct electricity and is an indicator of the TDS concentration. It was monitored throughout the operation of the RO systems as a performance indicator where stable permeate conductivity demonstrates a low membrane fouling rate.

The PFRO provided a 92.4% removal rate on average but there was a high variability in the permeate conductivity. It is assumed permeate conductivity was higher than anticipated due to bypass of the brine to the permeate stream through the seals in between membrane elements during the high energy pulse flow process. The CCRO provided a more stable permeate conductivity with 97.9% removal on average. Both results show a minimal fouling rate of the RO membranes. Table 23 summarizes the conductivity of each stream for the PFRO and CCRO throughout the study.

Table 23. PFRO and CCRO Conductivity

Constituent	Stream	Units	PFRO			CCRO		
			Average	Range	No. of Samples	Average	Range	No. of Samples
Conductivity	Feed	µS/cm	1126	-3.6 - 17,682	11,000	885	701 - 2,500	38,213
	Permeate	µS/cm	85.8	11.9 - 1019	11,000	20.2	5.4 - 997	38,213
	Brine	µS/cm	4,640	289 - 15,961	11,000	4,732	2,480 - 19,984	38,213

Hardness Removal

Hardness is defined as the concentration of dissolved calcium and magnesium in the water. It is also a parameter regulated in the Basin Plan WQOs and is thus anticipated to be included in the NPDES permit. The Lake WQO for Hardness is 125 mg/L. Depending on the hardness profile, these constituents can cause scaling on the RO membranes and were monitored to provide insight on its effect on membrane performance as well as monitoring against the pilot treatment target.

All RO Effluent Hardness samples from both the CCRO and PFRO resulted in a non-detect (ND), meaning the testing method could not provide a concentration as it was below the method detection limit (MDL) of the test method (3 mg/L). These results indicate an average removal rate of at least 98.8% for both RO systems. Table 24 provides a summary of the Hardness concentrations throughout the study and Figure 36 displays these results graphically.

Table 24. Hardness Grab and 24-Hour Composite Sample Results

Constituent	Stream	Units	Grab Samples			24-hr Composite Samples		
			Average	Range	No. of Samples	Average	Range	No. of Samples
Hardness as $CaCO_3$	UF Effluent	mg/L	250	200 - 280	25	240	230 - 250	5
	PFRO Effluent	mg/L	3[1]	3 - 3	5	3[1]	3 - 3	10
	CCRO Effluent	mg/L	--	--	--	3[1]	3 - 3	6

[1] All results adjusted from ND to the MDL.

Because purified water from RO systems is demineralized it can cause metallic corrosion. For the full-scale system, the purified water will be stabilized to adjust the pH and calcium carbonate to prevent corrosion. A typical chemical used for this stabilization is lime, which will increase the hardness of the purified water, but not enough to exceed the WQO limit. The level of stabilization and chemical used for stabilization is site and water quality specific, and will therefore be determined during final design of the full-scale system.

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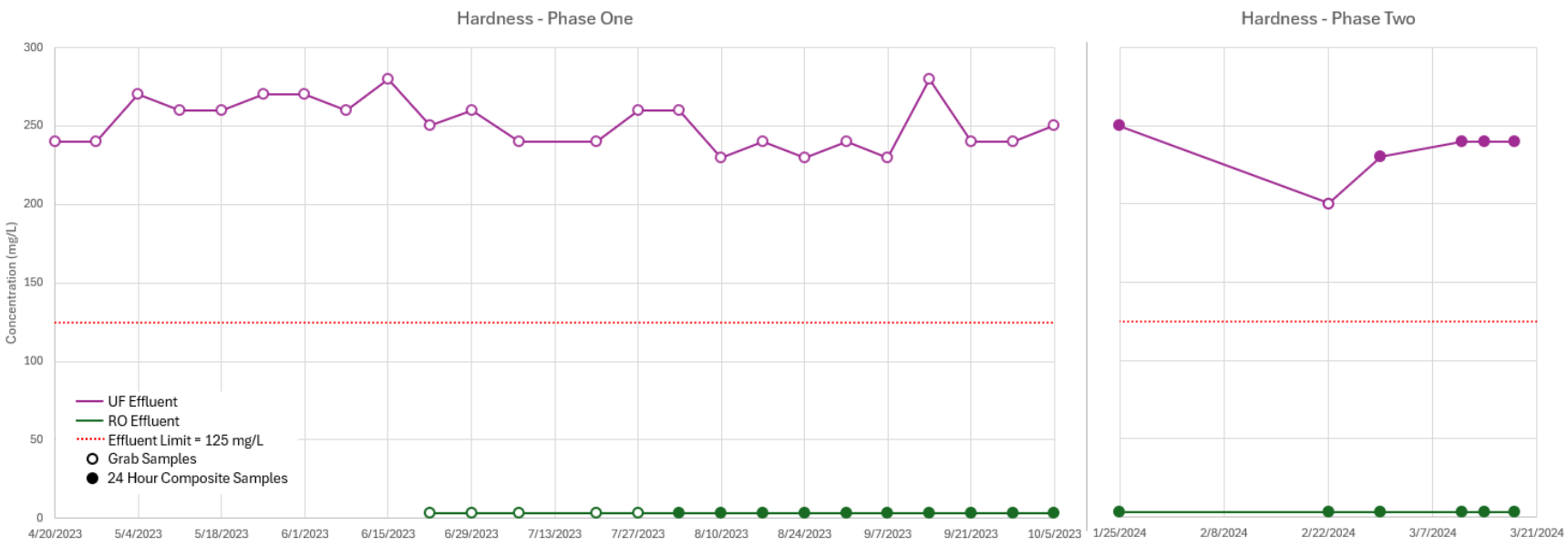

Figure 36. Hardness Removal for Phase One and Two

Silica Characterization

Another key monitoring parameter for RO systems is influent silica, which typically governs RO performance as the primary scalant for RO membranes. Silica was monitored during the study to help the RO manufacturers adjust chemical dosing rates and operational parameters for their systems, and to provide enough data to support full-scale design of the RO system for Replenish Big Bear. Silica in the UF Effluent (RO feed) averaged 22 mg/L based on grab samples and 20 mg/L based on composite samples. While these are considered high for RO feed, they are below the 30 mg/L range that RO manufacturers are able to remove through RO without significant scaling and impacts to membrane permeability. CCRO and PFRO Effluent silica was below 0.5 mg/L on average; therefore, nearly all of the influent silica for the full-scale process will have to be removed through the brine minimization process. Table 25 and Figure 37 provide a tabular and graphical summary of the silica data, respectively.

Table 25 Silica Grab and Composite Sample Results

Constituent	Stream	Units	Grab Samples			24-hr Composite Samples		
			Average	Range	No. of Samples	Average	Range	No. of Samples
Silica	UF Effluent	mg/L	21.9	17 - 24	22	20	19 - 23	5
	PFRO Effluent	mg/L	0.38	0.32 - 0.42	4	0.44	0.37 - 0.54	9
	CCRO Effluent	mg/L	--	--	--	0.13	0.088 - 0.18	6

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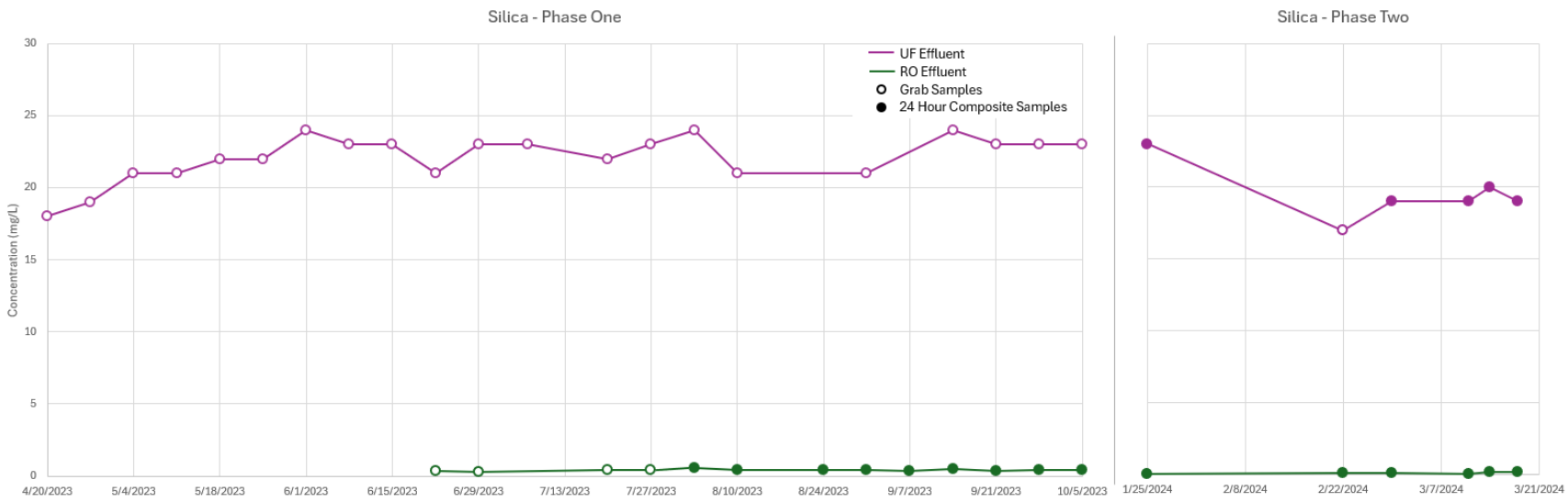

Figure 37 Influent Silica and Silica Removal for Phase One and Phase Two

Membrane Autopsies

A membrane autopsy was performed on the PFRO and CCRO membranes at the completion of the pilot study to identify actual rate of fouling throughout operation. During the membrane autopsy, both the lead membrane and tail membrane for each of the PFRO and CCRO process units underwent element testing, external and internal inspection, foulant analysis, flat sheet performance testing and cleaning study, and flat sheet damage testing. A summary of the PFRO and CCRO autopsy results relating to the level of fouling during the study is provided in Table 26 and Table 27, respectively. Figure 38 and Figure 39 display images of the scroll ends for the PFRO lead and tail membranes, respectively, indicating foulant material present on the membranes. CCRO lead and tail membrane scroll end images are included in Figure 40 and Figure 41, respectively.

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Table 26. PFRO Membrane Autopsy Results

Test	Test Description	Lead Membrane		Tail Membrane	
		Result	Within Normal Conditions?	Result	Within Normal Conditions?
Element Weight	Can be indicative of the degree of fouling.	34 lbs	✓	34 lbs	✓
Full Element Performance Testing	Tested against manufacturer's published test conditions.	80% of normal flow	x	67% of normal flow	x
		99.4% rejection	✓	99.4% rejection	✓
		13 psi DP	✓	6 psi DP	✓
Fiberglass Casing Inspection	Inspected for damage due to excessive DP from heavy fouling.	Good mechanical condition	✓	Good mechanical condition	✓
Permeate Water Tube Inspection	Inspected for foulant.	Free of damage	✓	Free of damage	✓
Anti-Telescoping Devices Inspection	Inspected for severe fouling.	Good physical condition	✓	Good physical condition	✓
Scroll Ends Inspection	Inspected for foulant.	Feed End: Heavy brown and tan discoloration	x	Feed End: Heavy brown and tan discoloration	x
		Concentrate End: Brown and tan discoloration	x	Concentrate End: Brown and tan discoloration	x
Membrane Surface Inspection	Inspected for foulant.	Light coat of tan-colored foulant	x	Medium coat of tan-colored foulant	x
Feed Spacer Inspection	Inspected for foulant.	No foulant	✓	No foulant	✓
Permeate Carriers and Membrane Backings Inspection	Inspected for foulant.	No visible signs of foulant	✓	No visible signs of foulant	✓
Foulant Density Measurement and Composition Testing	Quantify degree of fouling and determine composition of the foulant.	Wet foulant density of 0.08 mg/cm2	x	Wet foulant density of 0.21 mg/cm2	x
		78% moisture content	x	87% moisture content	x
		97% organic content	x	87% organic content	x
Biological Activity Testing	Tests for live aerobic bacteria content indicative of biological fouling.	Moderate aerobic bacteria activity (100-10,000 CFU/mL)	x	Moderate aerobic bacteria activity (100-10,000 CFU/mL)	x

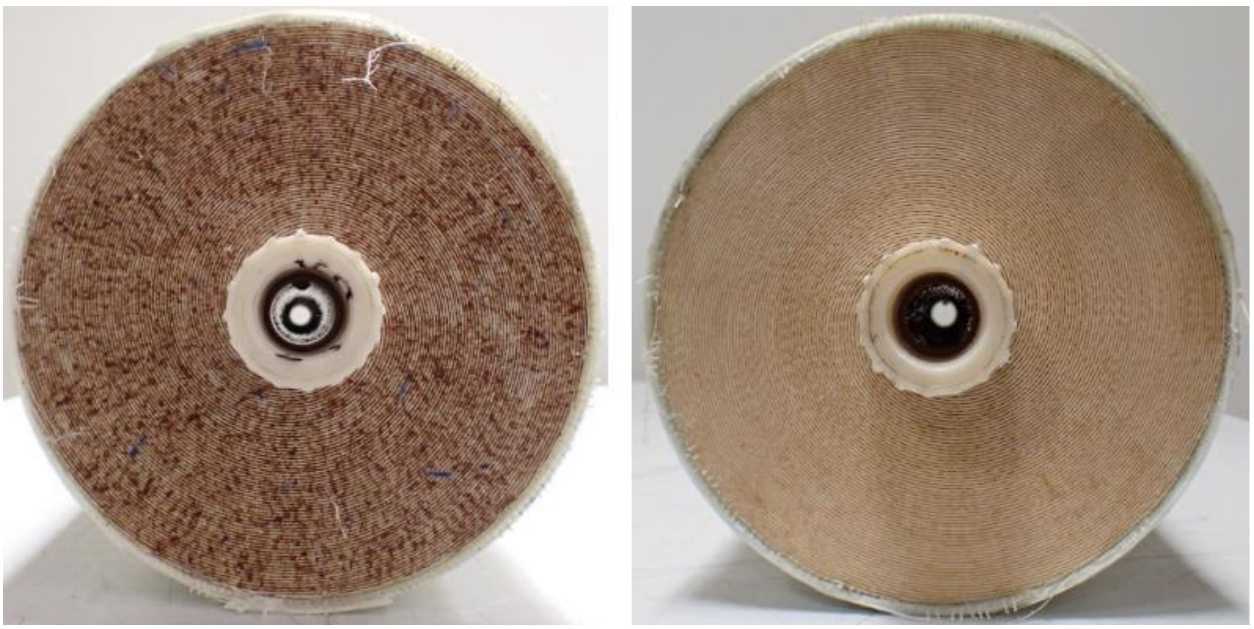

Figure 38. PFRO Lead Membrane Feed Scroll End (Left) and Concentrate Scroll End (Right)
Photos showing discoloration from fouling.

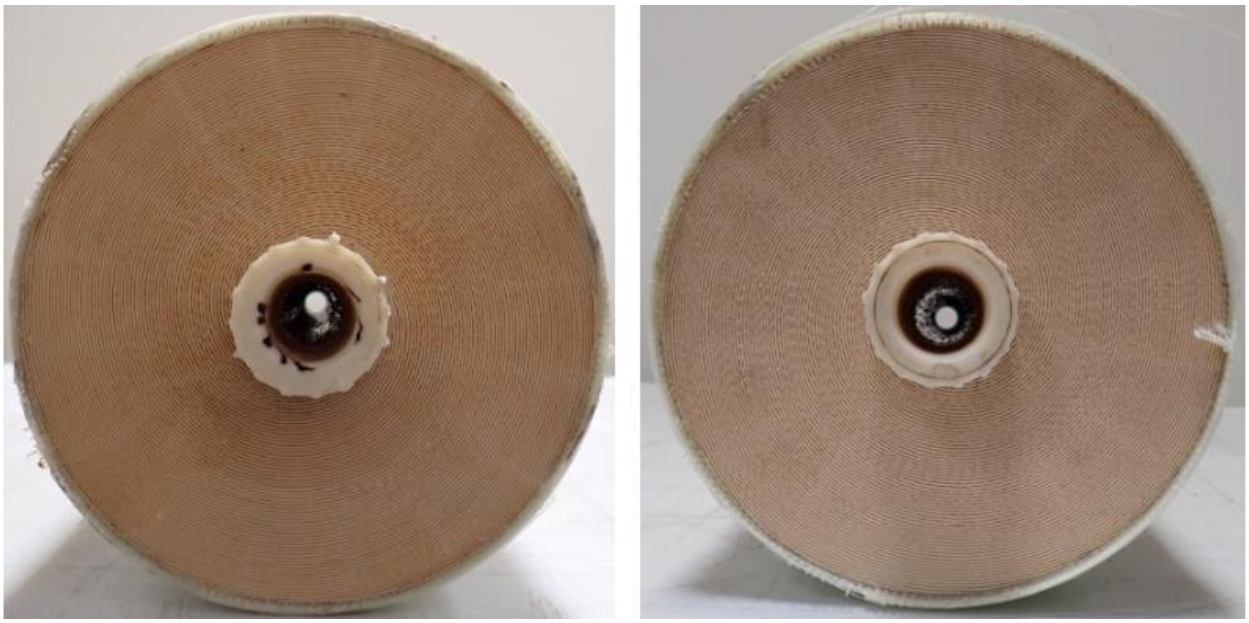

Figure 39. PFRO Tail Membrane Feed Scroll End (Left) and Concentrate Scroll End (Right)
Photos showing discoloration from fouling.

Table 27. CCRO Membrane Autopsy Results

Test	Test Description	Lead Membrane		Tail Membrane	
		Result	Within Normal Conditions?	Result	Within Normal Conditions?
Element Weight	Can be indicative of the degree of fouling.	35 lbs	✓	35 lbs	✓
Full Element Performance Testing	Tested against manufacturer's published test conditions.	Within range of normal flow	✓	Within range of normal flow	✓
		99.8% rejection	✓	99.8% rejection	✓
		6 psi DP	✓	6 psi DP	✓
Fiberglass Casing Inspection	Inspected for damage due to excessive DP from heavy fouling.	Good mechanical condition	✓	Good mechanical condition	✓
Permeate Water Tube Inspection	Inspected for foulant.	Free of damage	✓	Free of damage	✓
Anti-Telescoping Devices Inspection	Inspected for severe fouling.	Good physical condition	✓	Good physical condition	✓
Scroll Ends Inspection	Inspected for foulant.	Feed End: Heavy brown and tan discoloration	X	Feed End: Heavy brown and tan discoloration	X
		Concentrate End: No foulant observed	✓	Concentrate End: No foulant observed	✓
Membrane Surface Inspection	Inspected for foulant.	Light coat of tan-colored foulant	X	Light coat of brown-colored foulant	X
Feed Spacer Inspection	Inspected for foulant.	No foulant	✓	No foulant	✓
Permeate Carriers and Membrane Backings Inspection	Inspected for foulant.	No visible signs of foulant	✓	No visible signs of foulant	✓
Foulant Density Measurement and Composition Testing	Quantify degree of fouling and determine composition of the foulant.	Wet foulant density of 0.06 mg/cm^2	X	Wet foulant density of 0.09 mg/cm^2	X
		97% moisture content	X	98% moisture content	X
		95% organic content	X	94% organic content	X
Biological Activity Testing	Tests for live aerobic bacteria content indicative of biological fouling.	Moderate aerobic bacteria activity (100-10,000 CFU/mL)	X	Moderate aerobic bacteria activity (100-10,000 CFU/mL)	X

Figure 40. CCRO Lead Membrane Feed Scroll End (Left) and Concentrate Scroll End (Right)
Photos showing discoloration from fouling.

Figure 41. CCRO Tail Membrane Feed Scroll End (Left) and Concentrate Scroll End (Right)
Photos showing discoloration from fouling.

UV-AOP Performance

Evaluation of the UV-AOP system was intended to include a UV-AOP performance test for log reduction of NDMA and 1,4-Dioxane to verify efficacy of the UV-AOP system to meet its performance targets, which are consistent with Title 22 Regulations. Only 1,4-Dioxane testing was performed due to inadequate supplies and resources for the NDMA test. Trojan developed a performance testing plan in accordance with past testing performed for indirect potable reuse projects and site-specific water quality testing from the pilot facility.

A hydroxyl radical (OH) scavenging test of PFRO Effluent from Phase One pilot operations was performed by Trojan prior to the performance test. This analysis helps in developing parameters of the test plan based on the understanding of how much oxidant dosing is required to meet the performance objectives. The higher the hydroxyl radical scavenging demand, the more oxidant dosing that is required. A scavenging demand value of 8,530/s was calculated based on the analysis in Table 28. The results are consistent with other RO effluents Trojan has tested and represents a very low scavenging demand.

Table 28 Hydroxyl Radical Scavenging Test Results

Total Chlorine (mg/L)	Free Chlorine (mg/L)	pH	Alkalinity (mg/L as $CaCO_3$)	$\%UVT_{254}$ (%)	Nitrate (mg/L as nitrate)
0.01	0.01	5.63	20.47	99.9	0.05

In coordination with WSC, Trojan developed the performance test plan steps captured in Table 29, which were carried out by WSC and BBARWA Staff in May 2024. Notes relevant to the performance test are included in Table 29.

Table 29 UV-AOP Performance Test Plan

Step	Description	Notes
1	Start-up the UV system	UV-AOP system was started up at 5:20PM on March 14, 2024. Operated downstream of UF and RO processes.
2	Confirm flow rate target is within +/- 5% of target	Flow target was 9.5 gpm.
3	Set lamp power	Lamp power was intended to be adjusted throughout the performance test; however, Trojan was unable to remotely troubleshoot an HMI issue that would allow field users to change lamp power. Lamp power was therefore set to 100% for the duration of the test.
4	Set H_2O_2 pump to desired flow rate	The first test was a control test with the H_2O_2dosing pump turned off. Oxidation of 1,4-Dioxane requires both an oxidant and UV light, so the expected log reduction of 1,4-Dioxane for the first test was 0. H_2O_2pumping rate was then increased from 0.2 mg/L to 1.5 mg/L in a stepwise manner for the subsequent 6 tests.
5	Inject 1,4-Dioxane	1,4-Dioxane was set to a constant dosing rate of 2 µg/L.
6	Wait 15 minutes for steady state	Steady state time of 15 minutes was determined using the volume in the UV reactor and influent flow rate. Steady state time was measured from the time H_2O_2dosing rates were adjusted.
7	Collect water sample and record data	UV-AOP Influent and UV-AOP Effluent samples (with duplicates) were collected for 1,4-Dioxane analysis and sent to Eurofins lab in refrigerated and pre-preserved sample bottles. Eurofins performed 1,4-Dioxane analysis per EPA Method 522.

Influent 1,4-Dioxane measurements were within +/-10% of targeted influent concentrations, indicating laboratory analysis and dosing had high accuracy even at concentrations near the analytical method's reporting limit (RL). The control test (Test ID 1) resulted in a log removal of 0.28, whereas the expected log removal is 0 since 1,4-Dioxane cannot be removed through UF photolysis alone. This indicates that some radicals may have been formed from constituents within the feed water since hydrogen peroxide was not dosed. All test runs with oxidant dosing resulted in attainment of the 0.5 log removal goal. Log removals at hydrogen peroxide doses ranging from 0.2 to 1.5 mg/L and 100% lamp power ranged from 1.41 to 1.48. Since the non-control tests all resulted in non-detect results, the actual log reduction values could be greater than the measured values. UVT also exceeded 99.5% for all influent and effluent samples during the test, which is expected for RO effluent.

The results of the test confirm the UV-AOP system can meet the performance targets at design conditions of 99% UV Transmittance at 254 nm and an NDMA Reduction Equivalent Dose of ~1,000 mJ/cm^2. Trojan also calculated the equivalent NDMA log reductions at >6 due to the high applied UV doses observed during the performance test. Results of the performance test are summarized in Table 30.

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Table 30 UV-AOP Performance Testing Results

Test ID	Influent Flow (gpm)	Influent UVT [1] (%)	Effluent UVT [1] (%)	Lamp Power (%)	Estimated Influent H_2O_2 (mg/L)	Target Influent 1,4-Dioxane (µg/l)	Influent 1,4-Dioxane (µg/L)	Effluent 1,4-Dioxane [2] (µg/L)	Calculated Log Removal[3]	Predicted Log Removal
1	9.50	99.7	99.6	100	0	2.0	1.9	1.0	0.28	0.0
2	9.55	100	100	100	0.2	2.0	2.0	0.07	1.46	1.1
3	9.51	99.8	99.7	100	0.3	2.0	2.1	0.07	1.48	1.5
4	9.62	99.8	99.8	100	0.5	2.0	2.0	0.07	1.46	2.1
5	9.55	99.8	99.8	100	0.7	2.0	2.0	0.07	1.46	2.6
6	9.52	99.5	100	100	1.0	2.0	1.8	0.07	1.41	3.4
7	9.57	99.7	99.9	100	1.5	2.0	2.0	0.07	1.46	5.0

Notes:

1. UVT measured with 1-4 cm path length quartz cell using a RealUVT™ 254nm portable photometer (RealTech Inc.).
2. Reporting limit (RL) for 1,4-Dioxane EPA Method 522 is 0.07 ug/L. Non-detect results for 1,4-Dioxane listed as RL of 0.07 ug/L.
3. Trojan's measured log reduction for all non-control tests were assumed to be >2.0 since the UV-AOP Effluent 1,4-Dioxane results were reported as ND and therefore are expected to be below 0.07 µg/L.
4. All 1,4-Dioxane samples from Eurofins passed laboratory QA/QC tests.

Total System Recovery

Total system recovery is the total recovery attained through product water production between the RO and brine minimization processes. To quantify total system recovery, IDE's Desalter technology was piloted off-site in Israel with brine from the on-site PFRO pilot. CCRO brine was not tested to minimize cost of off-site piloting, furthermore, the PFRO and Desalter processes are both IDE supplied equipment which allowed for coordinated piloting through their high recovery RO system and brine minimization system. Two batches of approximately 5,000 gallons of brine were collected in September 2023 and October 2023 through continuous collection of brine during the intermittent pulse flow cycles from the PFRO. The first Desalter run achieved an 86% recovery and the second Desalter run achieved 90.8% recovery, corresponding to a 98% and 98.7% total system recovery, respectively. Both runs achieved the target recovery before reaching the max feed conductivity setpoint. A summary of the results is included in Table 31. A more detailed analysis of the Desalter water quality and ability to meet treatment objectives will be included in the Replenish Big Bear Preliminary Design Report.

Table 31 Desalter Recovery Results

Parameter	Pilot System Target	1st Desalter Run	2nd Desalter Run
PFRO Recovery	90%	86%	86%
Desalter Recovery	80%	86%	90.8%
Total System Recovery	98%	98%	98.7%

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Title 22 Monitoring

To help guide the final design process and regulatory discussions related to the proposed full-scale AWPF, additional constituents with established water quality limits were monitored to assess whether these limits would be met. The constituents with adopted and unadopted water quality limits – excluding Basin Plan WQOs which are covered in other parts of this report – were obtained from the following sources referenced in Title 22 for indirect potable reuse projects and sampled throughout piloting.

- Priority pollutants from the California Toxic Rule (CTR) per Title 40 of the Code of Federal Regulations (40 CFR) Part 131.38.
- Maximum Contaminant Levels (MCLs) for Inorganic and Organic Chemicals as identified in the California Code of Regulations (CCR).
- Disinfection byproducts as identified in the CCR.
- Division of Drinking Water chemicals with notification levels (NLs).
- Lead and copper based on EPA requirements.
- Constituents of Emerging Concern (CEC) as identified in the 2018 Water Quality Control Policy for Recycled Water.

For each of the above, the assessment considers the following for each result:

- Above the most stringent regulatory limit.
- Detected above the MDL but below the most stringent regulatory limit.
- Non-detect and below the most stringent regulatory limit.
- Did not meet quality control objectives and was omitted from the analysis.

Of the 304 constituents monitored for this effort, 16 were detected. Of the 16 detected, only 11 constituents have established objectives, which were all below the most stringent objective. The remaining constituents were not detected. Details regarding the approach to this assessment and a summary of the results are included in Appendix D of this report.

CONCLUSIONS

The Pilot Study was successfully run for approximately one year through both phases, allowing for complete evaluation of the key objectives presented in the Introduction:

Demonstrate efficacy of the proposed treatment process from a regulatory perspective.

- All pilot treatment targets were achieved, except for TIN, which was driven by low ammonia removal through the pilot treatment system. Design modifications to address this are discussed later in this section.
- The Sand Filters were ineffective during winter temperature conditions at removing nutrients without significant operational issues or fouling of downstream UF membranes. They also have a high operation and maintenance intensity.
- The CCRO high recovery system provided greater removal of TDS, sodium, sulfate, and hardness compared to the PFRO system, at a higher sustained product water recovery (90% compared to 86%).
- The UF and UV-AOP systems operated as expected based on their proven performance for this treatment application and established technologies.

Determine total system recovery from representative and scalable treatment processes.

- The Desalter process provided a total system recovery of 98% and 98.7% during two piloting runs, exceeding the pilot target of 98%.

Quantify treatment performance through seasonal variability.

- The Sand Filters were ineffective during winter temperature conditions at removing nutrients without significant fouling of downstream membranes or operational issues.
- While colder process temperatures partially reduced permeability of the UF and RO membranes, treatment objectives and recovery targets for these systems were attained during winter temperatures.

Provide operator training for the proposed treatment technologies.

- Sand Filters required more operation and maintenance intensity than anticipated and operator feedback indicated a preference to use an alternative nutrient removal process in the full-scale system.
- Process alarm conditions allowed for operator training and troubleshooting for conditions that may occur for the full-scale system.

Based on the evaluation of the Pilot Study objectives, the following key conclusions were made related to the design approach for the full-scale AWPF:

- Sand Filters (i.e., denitrification filters) are not recommended for the final design. An alternative TIN treatment step is required within the existing secondary treatment activated sludge process or as sidestream treatment of RO effluent. If activated sludge process improvements were considered for nitrogen and/or phosphorus removal, modifications to BBARWA's activated sludge system are expected to be more reliable than denitrification filters due to temperature limits of denitrification filters and impacts to UF membranes from direct metal salt feed upstream.
- Phosphorus removal through the RO system (without upstream Sand Filter phosphorus removal) met target limits and the estimated SNRP is below 0.02 mg/L-P; therefore, phosphorus removal provisions upstream of the AWPF may not be necessary.
- A total system recovery of 98.7% was obtained; however, alternative brine minimization processes should be evaluated to minimize operational intensity, chemical use, cost, and the need to dispose of pellets.

Results and conclusions from this Pilot Study will be applied during preliminary design (ongoing) to finalize the treatment process approach and to define design criteria for final design. The preliminary design efforts were initiated during the Pilot Study to supplement the piloting with bench-scale testing of an alternative brine minimization process. The bench-scale testing is for an engineered process (e.g., non-proprietary, unlike the IDE system that was piloted) that includes softening of the high recovery RO brine before the brine is further reduced through a downstream RO unit. CCRO brine was collected in March 2024 for bench scale testing of the softening process alternative. The bench-scale testing aims to explore the process and cost advantages compared to the Desalter. Additionally, results from the pilot may be used to simulate alternative TIN removal processes using a calibrated process model during preliminary design. The proposed full-scale treatment process will be detailed in a Preliminary Design Report, planned for completion in Fall 2024.

APPENDIX A – PILOTING PLAN

REPLENISH
Big Bear

Piloting Plan

Prepared for:

Big Bear Area Regional Wastewater Agency

July 2023

Prepared under the responsible charge of:
Matthew Rodrigues, P.E.

WSC

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LIST OF ACRONYMS

BBARWA	Big Bear Area Regional Wastewater Agency
CEC	Constituents of Emerging Concern
CIP	Clean-In-Place
DDW	Division of Drinking Water
EDCs	Endocrine Disrupting Chemicals
EPA	Environmental Protection Agency
FOA	Funding Opportunity Announcement
FY	Fiscal Year
IDE	IDE Technologies
IRWM	Integrated Regional Water Management
LRV	Log Reduction Values
MG	Million Gallons
MGD	Million Gallon per Day
mg/L	Milligrams Per Liter
MW	Maintenance Wash
NDMA	N-Nitroso-dimethylamine
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
Project	Replenish Big Bear
PVdF	Polyvinylidene Fluoride
RO	Reverse Osmosis
RWQCB	Regional Water Quality Control Board
SM	Standard Methods
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TMP	Trans-membrane Pressure
TOC	Total Organic Carbon
TP	Total Phosphorus
TSS	Total Suspended Solids
UF	Ultrafiltration
µm	micrometer
UV-AOP	Ultraviolet Disinfection-Advanced Oxidation Process
WAS	Waste Activated Sludge
WQO	Water Quality Objectives
WWTP	Wastewater Treatment Plant
ZLD	Zero Liquid Discharge

1 Introduction

Big Bear Area Regional Wastewater Agency (BBARWA) is the lead agency for Replenish Big Bear, a collaborative program that includes implementation of advanced treatement and conveyance improvements to BBARWA's wastewater management system to recover and purify Big Bear Valley's treated wastewater, a valuable and renewable local resource, and return it to the watershed to support multiple beneficial uses.

Municipal wastewater in Big Bear valley is currently treated at BBARWA's wastewater treatment plant (WWTP) and disposed in the Lucerne Valley. Replenish Big Bear will relocate the point of discharge to Stanfield Marsh, which is tributary to Big Bear Lake. Figure 1 displays an overview of the proposed effluent flow path to Stanfield Marsh (item 3 in figure) from the advanced water purification system at the existing BBARWA WWTP (item 1 in figure).

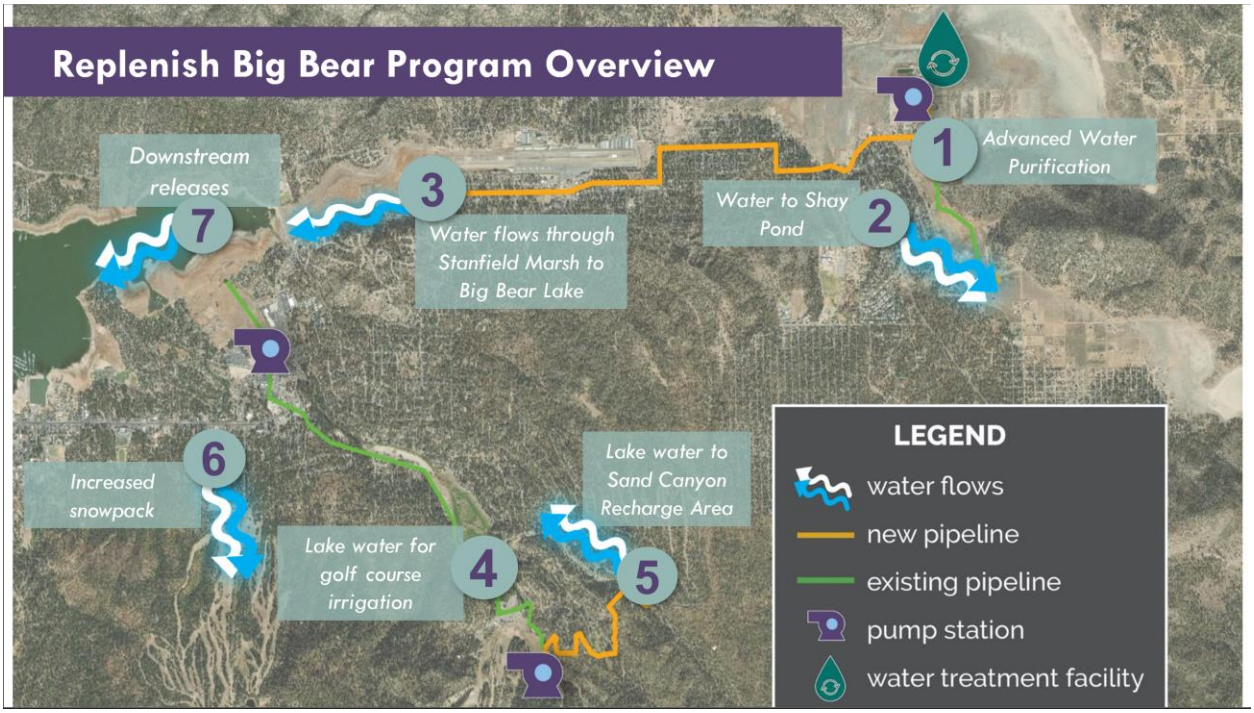

Figure 1 Replenish Big Bear Program Overview

Stringent effluent water quality requirements will be set to comply with basin water quality objectives for total dissolved solids (TDS), total inorganic nitrogen (TIN), and the Total Maximum Daily Load (TMDL) for total phosphorous (TP). The TIN and TP requirements of 0.15 mg/L-N and 0.035 mg/L-P, respectively, drive the required treatment process to the limits of technology with multiple chemical and physical treatment steps required to reach the target effluent water quality.

BBARWA has initiated a piloting study to confirm the proposed treatment process as a viable design approach to meet the target treatment levels and to demonstrate performance to the regulatory agencies: the Santa Ana Regional Water Quality Control Board (Santa Ana RWQCB) and Division of Drinking Water (DDW).

WSC has been coordinating with manufacturers and vendors (collectively referred to as "equipment suppliers") for the components of the proposed pilot treatment process through the Facilities Planning and Preliminary Engineering phase. The pilot treatment process includes two-stage continuous upflow sand filters (sand filters), an ultrafiltration membrane process (UF), a high recovery reverse osmosis membrane process (RO), ultraviolet disinfection with advanced oxidation (UV-AOP), and a brine minimization process. BBARWA will be contracting directly with the equipment suppliers for rental of pilot units and support services including mobilization, installation, startup, and support in operation of their pilot units. The pilot study will be performed at BBARWA's WWTP (Pilot Site).

This Pilot Plan was developed to document the following:

- the background and objectives for the piloting program;
- roles and responsibilities;
- description of the pilot testing criteria;
- decription of the pilot treatment process;
- water quality monitoring plan;
- operational plan; and
- next steps.

This Pilot Plan may be amended throughout the piloting phase to reflect modifications to the pilot treatment process, changes to the operational plan, water quality monitoring scope, or other aspects of this plan.

Objectives

Piloting the proposed treatment process is essential to demonstrating process performance to the Replenish Big Bear regulatory agencies for site-specific conditions considering the low TIN and TP treatment targets, the need to maximize total system recovery of product water, and the cold weather climate in Big Bear, CA that limits biological treatment activity. The regulatory agencies will seek the information, data, and conclusions necessary to permit the project with a reasonable level of confidence in the proposed treatment process.

The key objectives of the Replenish Big Bear Piloting Study are as follows:

1. **Demonstrate efficacy of the proposed treatment process** from a regulatory perspective.
2. **Determine total system recovery** from representative and scalable treatment processes.

3. Quantify **treatment performance through seasonal variability**.
4. **Provide operator training for** the proposed treatment technologies.

The purpose of this pilot does not involve pre-qualification or pre-selection of equipment suppliers for the proposed treatment process based on participation in this piloting study. Equipment suppliers were selected based on the capabilities of their technology, availability of their pilot units, and how well their technologies represented the proposed full-scale treatment process.

Pilot Sequencing and Schedule

Scheduling of mobilization and commissioning of the pilot units is dependent upon pilot unit rental agreement negotiations, pilot unit availability, and required modifications to the pilot unit before it is mobilized to the Pilot Site. The sequencing of mobilization for the pilot units is governed by the process flow of the pilot system and the objective to quantify treatment performance of the sand filters during winter conditions. The duration of the pilot was selected based on available budget and overall program schedule to meet the target design schedule. It is anticipated design will start in late 2023 following completion of the pilot study. A simplified schedule for the pilot study sequence is included in Figure 2.

The pilot study sequence will involve sequential mobilization and startup periods for each treatment process unit in order of the treatment train flow (sand filters, UF, RO, then UV-AOP). The brine minimization piloting will be performed offsite at IDE's research and development (R&D) facility in Israel. Lower feed water temperatures can affect the performance of the sand filters and the membranes by reducing denitrification performance and increasing specific energy with longer cleaning sequences, respectively. Therefore, prioritizing mobilization and startup of the sand filters meets the objective of quantifying treatment performance during winter conditions and allows for stability of biological treatment before downstream units are commissioned.

Following continual operation of all four pilot units in sequence for a minimum of two months, the sand filters will be taken offline to evaluate nutrient removal performance of the UF-RO filtration processes without upstream denitrification and chemical phosphorus removal. Quantifying treatment without the upstream sand filters informs design decisions for the level of intensity and barriers of treatment required to meet the effluent water quality objectives. A more detailed pilot sequence can be referenced in Section 5 - Operational Plan.

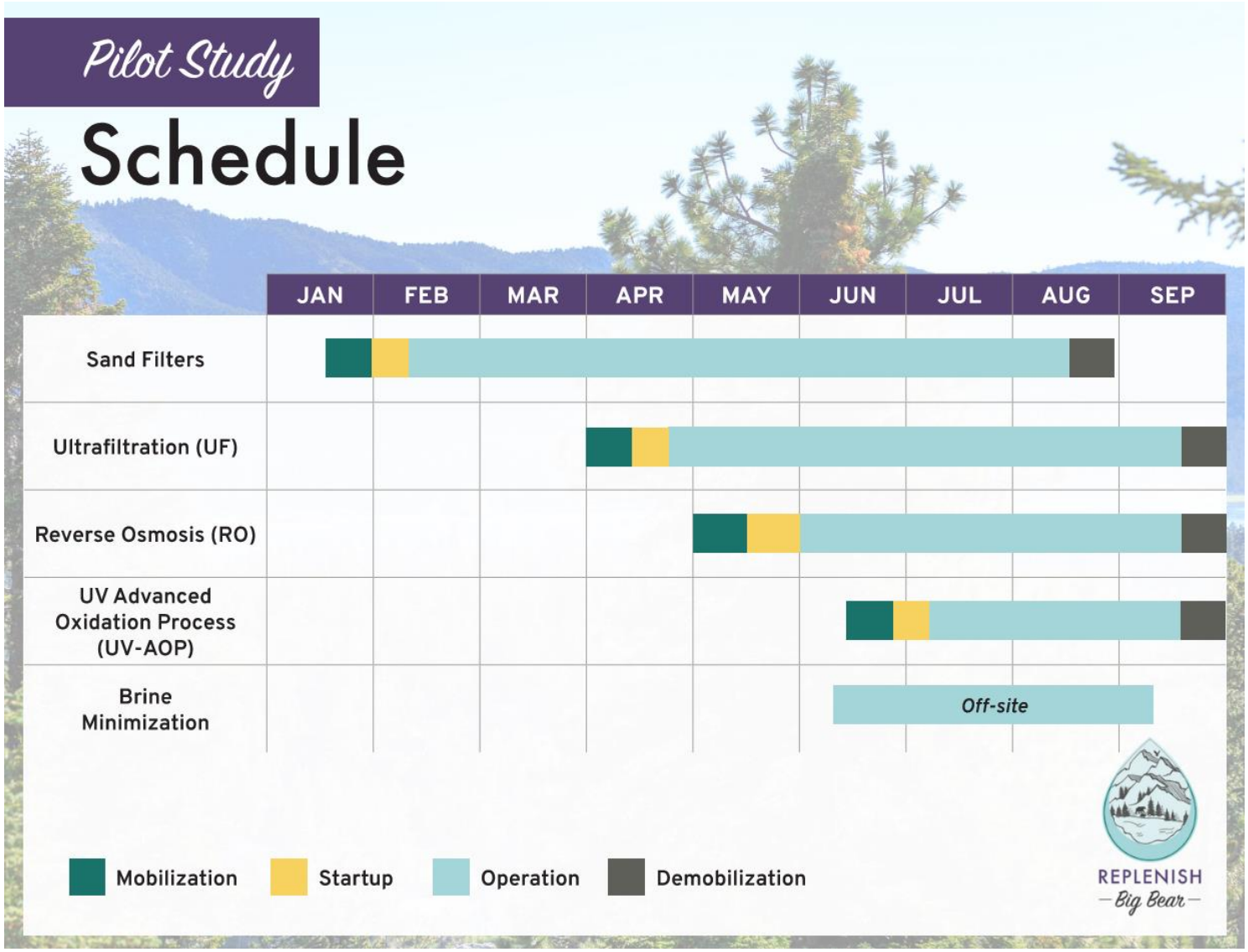

Figure 2 Pilot Study Schedule

Roles and Responsibilities

Roles and responsibilities for each phase of the pilot were developed in coordination with the equipment suppliers and are consistent across all pilot units. The responsibilities are based on contractual obligations per the respective rental agreements for the sand filter, UF, RO, and UV-AOP pilot units and are captured in Table 1. Pilot testing data management, documentation, and reporting roles and responsibilities are outlined in Section 4.

The brine minimization piloting will be performed offsite and involves a work sequence between BBARWA at the Pilot Site and IDE at their Israel R&D site. Figure 3 captures the general workflow and responsibilities between BBARWA and IDE. Should additional test runs be performed after the initial test run, and abbreviated version of the workflow would be performed to collect data for additional two-week test runs.

Table 1 Piloting Roles and Responsibilities

Responsibility	BBARWA	Equipment Supplier	WSC
Preparation and Scoping			
Provide Pilot Site specifications including available footprints, access points, pilot objectives, feed water quality, and water quality objectives			✓
Provide pilot unit feed water quality requirements, flow and pressure requirements, electrical connection capacities, supporting facility needs, and chemical consumption rates and specifications		✓	
Negotiate rental agreement terms	✓	✓	
Facilitate execution of rental agreements			✓
Mobilization and Demobilization of Pilot Unit			
Modify pilot unit to accommodate local site conditions and intended operational scheme, as needed, prior to mobilization or during startup		✓	
Plan and execute shipping contracts to mobilize and demobilize pilot unit	✓		
Offloading and onloading of equipment skid and materials at the Pilot Site location during mobilization and demobilization	✓		
Decommission and demobilize pilot unit from Pilot Site		✓	
Preparation of Pilot Site			
Prepare Pilot Site location for pilot unit mobilization and installation	✓		
Provide site lighting, electrical connections, and process water connections	✓		
Provide internet connection for remote monitoring of pilot units	✓		
Installation of the Pilot System			
Procure materials and tools required for the installation and operation of the Pilot to the Pilot System feed and other pilot units	✓		
Provide chemicals, storage, and secondary containment	✓		
Supervise installation and assembly of skids and equipment onsite		✓	
Install piping connections between pilot units, electrical connections, supporting facilities, and chemical feeds	✓		
Commissioning of the Pilot			
Perform commissioning and testing activities		✓	
Perform commissioning of pilot and stabilize operation		✓	
Train BBARWA O&M Staff to monitor, inspect and operate the Pilot		✓	
Provide all relevant & necessary drawings and O&M manuals essential for the pilot unit's operation		✓	
Ongoing Operation of the Pilot			
Routine inspections, regular monitoring, and equipment calibration	✓	Support	Support
Routine maintenance procedures (seals replacements, leakage repairs, etc.)	✓	Support	Support
Perform corrective maintenance (equipment breakage, valve replacement, etc.)	✓	Support	Support
Maintain remote monitoring of pilot unit operation and notify BBARWA of any operational concerns or adjustments required		✓	
Operational troubleshooting	Support	✓	Support
Program automated cleaning and maintenance activities		✓	
Perform water quality sampling, analysis, and documentation	✓	✓	
Provide routine monitoring and data outputs		✓	
Perform routine review and analysis of water quality analysis and monitoring data			✓

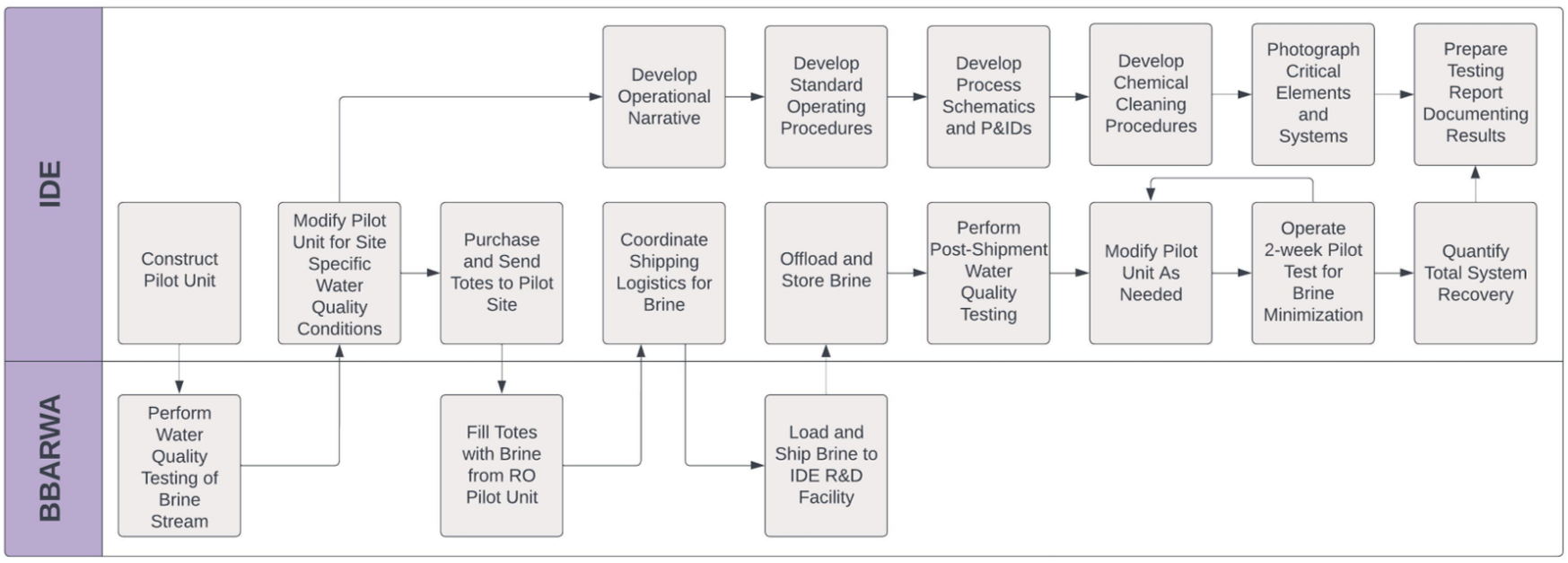

Figure 3 Brine Minimization Testing and Work Sequence

2 Pilot Testing Criteria

The Replenish Big Bear Pilot will be installed downstream of the existing secondary treatment process which produces undisinfected clarified effluent from an extended aeration oxidation ditch. This section captures the pilot system feed water quality from the existing WWTP process and the anticipated effluent water quality requirements for the program which influence the effluent objectives for the pilot.

Feed Water Quality

The existing WWTP includes coarse screening and grit removal for preliminary treatment of raw influent wastewater followed by an oxidation ditch activated sludge system with secondary clarification (Figure 4). Effluent from the secondary clarifiers is stored in onsite flow equalization ponds before being discharged as undisinfected effluent. Secondary treated effluent from the effluent flow equalization ponds will be conveyed to the pilot system as a representative process stream for the full-scale system. Table 2 summarizes the existing secondary effluent water quality characterisitics that were provided to the equipment suppliers to support development of their pilot unit proposals and planning.

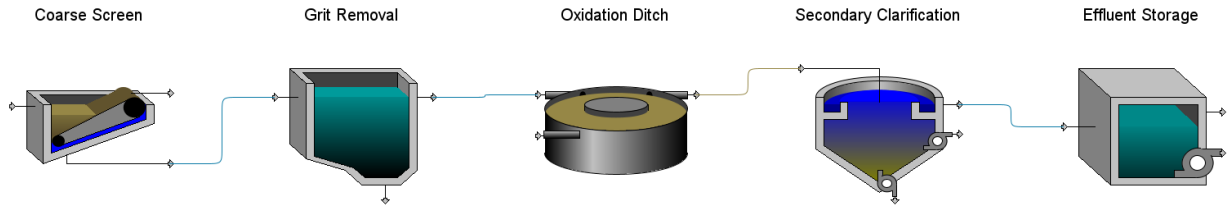

Figure 4 Simplified Process Flow Diagram of Existing WWTP

Table 2 Expected Pilot Feed Water Quality

Parameter	Secondary Effluent (2018-2021)					
	Units	Min	Avg	Max	# of Samples	Sample Type
General Water Chemistry						
Ammonia as N (NH_3-N)	mg/L-N	0.2	1.7	7.5	10	Grab
BOD	mg/L	2	10	34	116	Composite and Grab
Chloride (Cl)	mg/L	34	57	87	59	Composite and Grab
Electrical Conductivity	umhos/cm	566	754	890	741	Grab
Nitrate as N (NO_3-N)	mg/L-N	0.2	2.0	5.7	11	Grab
Nitrite as N (NO_2-N)	mg/L-N	0.2	0.2	0.6	11	Grab
Total Inorganic Nitrogen (TIN)	mg/L-N	0.2	2.0	5.9	35	Composite and Grab
pH	pH Units	6.9	7.7	8.4	742	Grab
Sulfate (SO_4)	mg/L	29	39	44	53	Composite and Grab
TDS	mg/L	350	432	500	35	Composite and Grab
Total Kjeldahl Nitrogen (TKN)	mg/L-N	1.6	3.9	13.0	10	Grab
Total Phosphorus (TP)	mg/L-P	0.2	1.5	8.5	34	Composite and Grab
TSS	mg/L	1.0	6.9	22.0	105	Composite and Grab
Temperature	°C	3.0		24.0	-	-
Total Alkalinity	mg/L as $CaCO_3$	240	290	400	11	Grab
Metals						
Aluminum (Al)	µg/L	18	102	660	11	Grab
Antimony (Sb)	µg/L	0.1	0.3	1.0	11	Grab
Arsenic (As)	µg/L	0.4	2.2	11.0	11	Grab
Barium (Ba)	µg/L	25	42	58	11	Grab
Beryllium (Be)	µg/L	0.2	0.3	1.0	11	Grab
Boron (B)	µg/L	82	187	270	11	Grab
Cadmium (Cd)	µg/L	0.1	0.3	1.3	11	Grab
Calcium (Ca)	µg/L	56	69	130	11	Grab
Chromium (+6)	µg/L	0.1	0.2	0.5	11	Grab
Chromium (Total Cr)	µg/L	0.2	1.8	10.0	11	Grab
Copper (Cu)	µg/L	6.5	10.0	32.0	11	Grab
Iron (Fe)	µg/L	52	161	820	11	Grab
Lead (Pb)	µg/L	0.5	0.8	2.6	11	Grab
Magnesium (Mg)	µg/L	20	27	53	11	Grab
Manganese (Mn)	µg/L	7	29	70	11	Grab
Nickel (Ni)	µg/L	0.5	5.1	20.0	11	Grab
Potassium (K)	µg/L	7.0	15.5	25.0	11	Grab
Selenium (Se)	µg/L	1.0	1.9	4.8	11	Grab
Silica (SiO_2)[1]	mg/L	21	25.5	28	4	Grab
Silver (Ag)	µg/L	0.3	0.8	2.8	11	Grab
Sodium (Na)	µg/L	34	61	120	11	Grab
Thallium (Tl)	µg/L	0.2	0.3	0.9	11	Grab
Vanadium (V)	µg/L	1.8	8.0	25.0	11	Grab
Zinc (Zn)	µg/L	19	56	120	11	Grab

Notes

1. Silica results are based on four (4) winter season samples of secondary effluent.

Effluent Water Quality Requirements

At the time of commissioning the pilot system, the effluent water quality requirements for Replenish Big Bear will have not yet been defined. BBARWA has closely coordinated with the Santa Ana RWQCB and DDW to assess the Basin Plan Water Quality Objectives (1) (Basin Plan WQO) and Big Bear Lake TMDL requirements and understand anticipated National Pollutant Discharge Elimination System (NPDES) effluent water quality requirements. As previously introduced, the effluent water quality requirements that have the greatest influence on design of the full-scale treatment process (and therefore the pilot treatment process) are TIN, TP, and TDS.

In addition to the water quality objectives, the other key pilot system target is total system product water recovery (i.e., "total recovery"). Evaluation of brine management strategies concluded that offsite brine minimization and zero liquid discharge (ZLD) processes were cost prohibitive for full-scale implementation. The preferred brine management strategy is to minimize the brine volume from the RO system onsite with a brine reduction technology and convey the remaining brine stream to onsite evaporation ponds within BBARWA's existing property boundary. Total land area for the evaporation ponds is governed primarily by the volume of brine conveyed to the ponds (as impacted by total recovery) and the high precipitation rates in winter months in the Big Bear. The target system recovery is based on the maximum land area available for BBARWA to construct evaporation ponds to manage a brine stream from a 2.2 MGD treatment process (inclusive of a safety factor for redundancy). The target total recovery for the pilot system is 98% which is independent of potential regulatory requirements.

The anticipated NPDES limits for TDS, TIN, and TP are matched to the Basin Plan WQO and Big Bear Lake TMDL requirements, while TOC and 1,4-dioxane are consistent with indirect potable reuse regulations that are representative of the anticipated limits for Replenish Big Bear. The pilot system targets represent the treatment criteria that would be applied to design of the full-scale system and are equal to or more stringent that the anticipated NPDES limits. Table 3 outlines the anticipated NPDES effluent water quality requirements for Replenish Big Bear and pilot system targets.

Table 3 Anticipated Effluent Requirements and Pilot System Targets

Constituent/Parameter	Units	Anticipated NPDES Limit	Pilot System Target
Total Inorganic Nitrogen (TIN)	mg/L-N	0.15	0.1
Total Phosphorus (TP)	mg/L-P	0.035	0.03
Total Dissolved Solids (TDS)	mg/L	175	50
Total Organic Carbon (TOC)	mg/L	0.5	0.5
1,4-dioxane	Log reduction	0.5	0.5
Total Recovery	%	N/A	98
Total Mercury	ng/L	10	-

3 Pilot System

The pilot treatment process at the BBARWA WWTP will include the following pilot-scale unit processes representing the full-scale treatment technologies listed:

- Two Stage Sand Filter - Nexom Blue Nite® and Blue PRO® Filtration
- UF Membranes - DuPont MEMCOR® CPII Ultrafiltration System
- High Recovery RO Membranes - IDE Pulse Flow RO (PFRO)
- UV-AOP - Trojan TROJANUVTELOS™ System

Offsite piloting facilities include an IDE brine minimization process (MaxH2O Desalter) which will be operated at IDE's R&D facility in Israel. Brine from the RO membrane process will be collected in batches and shipped to IDE's R&D facility for short-term piloting periods. The brine minimization process includes an additional RO membrane unit, sand filter, and feed tanks as part of its configuration and provides recovered product water to increase total recovery, a brine reject, and pellets formed from soluble salts. Figure 5 shows the process flow diagram for the pilot treatment process with a designation around the brine minimization process that will be operated in IDE's R&D facility for this pilot project.

The stringent treatment targets for the pilot system require operation of the pilot system with all unit processes in series to provide multiple barriers of treatment. While unit processes may be bypassed during test phases to test a less robust treatment train, the baseline operation will involve continuous operation of all unit processes in-series. A summary of treatment purpose by unit process is summarized in Table 4.

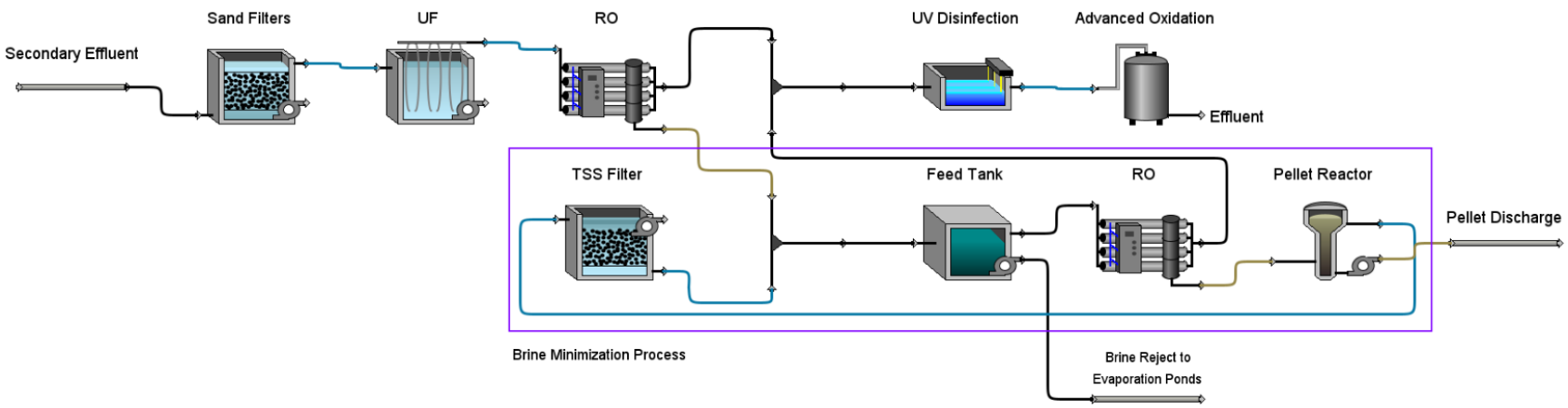

Figure 5. Replenish Big Bear Pilot System Process Flow Diagram
Purple box represents offsite brine minimization process

Table 4 Unit Process Treatment Purpose

Constituent Treated/Reduced	Sand Filter	UF	RO	UV-AOP	Brine Minimization
Inorganic Nitrogen	✓		✓		
Phosphorus	✓		✓		
Metals	✓				✓
TSS	✓	✓			
TDS			✓		✓
Brine Reduction					✓
Pathogen Reduction		✓	✓	✓	
Organics			✓	✓	
Contaminants of Emerging Concern (CECs)			✓	✓	

This following subsections present a description of each unit process, equipment and process specifications provided by the equipment suppliers, and utility and chemical requirements for each pilot unit. A summary of key specifications related to BBARWA's pilot unit responsibilities and the flow balance between pilot units is captured at the end of this section.

Sand Filter

The sand filters will consist of Nexom's Blue NITE® Biological Denitrification technnology for nitrate removal and Blue PRO® Reactive Filtration technology for phosphorus removal. The first stage filter (Filter A) will be dosed both supplemenal carbon and a metal salt for nitrate and phosphorus removal. The second stage filter (Filter B) will be dosed with only a metal salt for further phosphorus removal. Each filter operates as a continuous upflow filter with a media washbox at the top of the filter that removes solids and excess biomass (i.e., denitrifiers from Blue NITE® stage). The sand filters will operate at a maximum of 5 gallons per minute per square foot (gpm/sf) loading rate with 7 square feet (sf) of surface area in each filter and a backwash rate for each filter of 3 gpm. Due to the geometry of the pilot system, the proportion of backwash flow to loading flows is much higher for the pilot system than for the full-scale system (2).

In addition to the two filters, the sand filter pilot includes a trailer that houses the equipment controls, feed pumps, a composite sampler, influent and effluent piping, electrical connection cables, and the chemical pumps and mixers. All process connections and piping for the sand filter pilot system are 2-inch diameter. The influent process water and backwash water will be secondary effluent from the WWTP's Horseshoe Ponds (effluent storage ponds), supplied by a hose bibb connection in the building that houses the piloting system. Pressure head from the hose bibb connection is greater than 90 pounds per square inch (psi) and may need to be reduced before feed to the centrifugal pump on the trailer that feeds Filter A. Effluent flow from Filter A is pumped through a second centrifugal pump in the trailer to Filter B. Filter B effluent will flow by gravity to the UF pilot system. The filters are each sized to handle an average flow of 25 gpm and a maximum flow of 35 gpm (2).

Filter A will be commissioned first at a loading rate less than 4 gpm/sf with waste activated sludge (WAS) as a seed to initiate growth of denitrfying bacteria. Loading rates will be increased by 1 gpm/sf at a time when effluent nitrate remains below 0.8 milligram per liter as nitrogen (mg/L-N) for a minimum of three days at each loading rate. Once the effluent flow from Filter A is sufficient to feed the Filter B when accounting for reject rates, Filter B will be commissioned.

The sand filters are the first barrier of treatment to nitrogen and phosphorus constituents. Target nitrate and TP effluent concentrations from the sand filter pilot system are 0.8 mg/L-N and 0.05 mg/L-P, respectively. MicroC will be used for the supplemental carbon source and both ferric chloride and aluminum sulfate will be tested for chemical phosphorus treatment.

Table 5 includes a summary of the sand filter pilot unit specifications and Figure 6 shows the pilot unit after installation at another piloting site.

Table 5 Sand Filter Specifications (2)

General	
Denitrification Process	Blue NITE® Biological Denitrification
Phosphorus Removal Process	Blue PRO® Reactive Filtration
Filter Media	Centra-flo Granular Media (coated with hydrous ferric oxide)
Filter Model	CF7 Prefabricated Up-Flow Sand Filters
Configuration	2 Stage Filters In Series
Max Flow (per filter)	35 gpm
Design Flow (per filter)	25 gpm
Filtration Area per Filter Stage	7 ft^2
Max Filter Loading Rate	5 gpm/ft^2
Operational	
Feed Water Connection Type	Camlock
Backwash Connection Type	Hose Bibb Connection
Pipeline Size (All)	2 in
Backwash Type	Continuous
Backwash Flow	3 gpm
Power Requirements	208-240 V/3-phase/60 Hz/125 A Or 460 V/3-phase/60 Hz/60 A
Influent Flow Monitoring	Mag Meter
Chemicals	
Ferric Chloride (40%)	20 gal/week
Aluminum Sulfate (50%)	53 gal/week
MicroC	13 gal/week
Physical	
Trailer Length	50 ft
Trailer Width	8.5 ft
Filter Length	10 ft
Filter Width	5 ft
Filter Height (With Platform)	22 ft
Influent Pipeline Length	50 ft
Effluent Pipeline Length	50 ft
Backwash Reject Pipeline Length	50 ft
Electrical Connection Length	50 ft
Effluent Treatment Objectives	
TSS	< 5 mg/L
Total Phosphorus (TP)	0.05 mg/L-P
Nitrate + Nitrite (NO_x-N)	< 0.8 mg/L-N

Figure 6 Nexom Sand Filters Pilot Unit

UF

The UF pilot system is a skid-mounted pressurized UF membrane module with a 0.04 micrometer (µm) hollow-fiber polyvinylidene fluoride (PVdF) membrane supplied by DuPont. UF filtration is a pretreatment step to remove particulates, organics, bacteria, viruses, and colloids before high pressure RO filtration. Biofouling of the membranes will be controlled with intermittent maintenance washes (MW) and clean-in-place (CIP) procedures and air scouring. Sodium hypochlorite and hydrochloric acid are used for both MW and CIP procedures and citric acid is used for CIP procedures (3).

The UF pilot system can operate within a range of 5 to 40 gpm and will be offline during MW and CIP procedures. Effluent from the sand filters will flow by gravity into a 150 gallon UF feed tank before it is pumped into the pressurized UF membrane. Effluent from the UF system will be stored in a 1,000 gal storage tank upstream of the RO pilot system to allow for continuous feed to the RO unit during UF MW and CIP procedures (3).

The UF pilot unit supplied by DuPont includes the membrane module, associated piping, valving, and instruments, chemical pumps, and an air compressor. Influent feed and UF effluent connections are both 1.5-inch (3).

The UF pilot system will be commissioned after the sand filter operation is stabilized with both Filter A and Filter B online. Startup and commissioning is a three-day activity performed by a DuPont field process engineer during which BBARWA operator training will occur. Commissioning includes verifying hydraulics, chemical feeds and electrical connections are functioning (3). The UF pilot system's treatment target is 0.5 NTU to demonstrate the UF membranes are appropriately performing RO pretreatment and the membranes have not been damaged or compromised.

Table 6 summarizes the UF pilot system specifications and Figure 7 shows the UF pilot unit offloaded at the Pilot Site.

Table 6 Ultrafiltration Specifications (3)

General	
UF Membranes	MEMCOR L40N
Membrane Type	Hollow Fiber
Membrane Material	Polyvinylidene Fluoride (PVDF)
Filtration Flow Direction	Outside to Inside
Backwash Type	Air Scour with Liquid Backwash
Nominal Membrane Pore Size	0.04 µm
Design Flow	5-40 gpm
Feed Water Pressure	25-30 psi
Operational	
Power Requirements – Pilot Unit	480 V, 3-phase, 35 A
Power Requirements – Air Compressor	480 V, 3-phase, 15 A
Power Requirements – Ancillary Equipment	120 V, 1-phase, 20 A
Operating Temperature Range	32 – 104 °F
Feed pH Range	6.0 – 9.0
Typical Maximum Trans-Membrane Pressure (TMP)	20 psi
Maximum Allowable TMP	± 22 psi
Typical Chlorine Concentration During Cleaning	50 – 200 mg/L @ 77°F
Maximum Chlorine Concentration During Cleaning	1,000 mg/L @ 77°F
Maximum Exposure to Chlorine in Feed or During Storage	< 1 mg/L avg < 5 mg/L max
Maximum Total Chlorine Exposure	1,000 g*h/L @ 77°F
Chemical	
Hydrochloric Acid (31%)	1 gal/month
Sodium Hypochlorite (12.5%)	2.5 gal/month
Physical	
Influent Connection Size	2 in Union
Effluent Connection Size	1.5 in Union
Backwash and Waste Drain Connection Size	3 in Flange
Alternate CIP Makeup Connection Size	1.5 in Union
Compressed Air Connection Size	0.75 in NPT (BSP)
Pilot Unit Length	11ft-2in
Pilot Unit Width	7ft-3in
Pilot Unit Height	7ft-11in
Effluent Treatment Objectives	
Turbidity (NTU)	0.5

Figure 7 DuPont UF Pilot Unit

RO

The RO pilot unit is a skid mounted Pulse Flow Reverse Osmosis (PFRO) system supplied by IDE Technologies (IDE). The PFRO system operates in production and flushing cycles to obtain higher recovery rates than conventional RO systems. The production cycle operates with 100% of the feed flow passing to the permeate side of the membrane with the brine valve closed. In between each production stage is a flushing stage that provides a ”pulse flow” surge with high shearing velocity to clean the membranes. Operation of the RO membranes with changing osmotic and hydraulic pressures allows the PFRO unit to prevent the formation of biofouling without chloramine dosing. Hydrochloric acid and sodium hydroxide will be used for pH adjustment and an antiscalant will be dosed to prevent scaling formation on the membrane surface (4).

UF permeate will have sufficient hydraulic head to be conveyed to the 1,000 gal storage tank upstream of the RO pilot unit, which will then flow into the feed tank located on the RO pilot unit skid. A booster pump will pump the UF permeate through cartridge filters before flow is conveyed by a high pressure feed pump through the RO membranes. RO permeate will flow into a product tank and the brine will flow into a dedicated brine tank. A “rear permeate stream” with more saline product water will be recycled to the high pressure feed pump for further treatment. RO permeate will be conveyed to a feed tank for the UV-AOP process and brine will be sent to the in-plant sewer for conveyance to the WWTP headworks.

Feed flow to the RO system may be as low as 15 gpm while the sand filter loading rates are being increased, and as high as 25 gpm once all pilot units are commissioned and in stable operation. The RO pilot unit will be commissioned with an operational modification that allows for flows as low as 15 gpm. During operation at lower flow rates, the back pressure orifice at the permeate end of the RO membranes will be manipulated, coupled with feed flow circulation in the high pressure feed pump so the unit can be fed a minimum of 15 gpm (4).

IDE will supply the following equipment with the RO pilot unit (4):

- Feed Tank
- Booster Pump
- Cartridge Filters
- Control and Power Panel
- High Pressure Feed Pump
- 8” Pressure Vessel and Membrane
- Product Tank
- Brine Tank
- Valving
- Chemical Dosing Systems
- Secondary Containment for Chemical

Process connections include gravity feed piping from the RO storage tank to the feed tank, gravity feed piping from the RO product tank to the UV-AOP storage tank, and a 2” NPT connection from the brine tank to the drainage point (4).

The RO pilot unit will be configured and connected to appurtenances onsite over the course of two weeks. Following pilot unit setup, the system will operate for 240 hours at 80-90% product recovery

followed by continued operation at 90% or greater recovery with 100% uptime. Operator training will occur during the initial operational period (4).

Target treatment objectives for the RO unit are 0.03 mg/L-P total phosphorus, 0.1 mg/L-N TIN, and 50 mg/L TDS. Surrogate compounds will be monitored to quantify log reductions values (LRV) for enteric virus, *Giardia*, and *Cryptosporidium*; however, RO treatment targets were not set for LRV due to unknown regulatory conditions surrounding LRV that may be applied to Replenish Big Bear. Monitoring for LRV credits during piloting will provide the Replenish Big Bear agencies and regulatory agencies background data for further evaluating LRV targets for Replenish Big Bear.

Table 7 includes a summary of the RO pilot unit specifications and Figure 8 shows the RO pilot unit .

Table 7 Reverse Osmosis Specifications (4)

General	
Technology	Pulse Flow (PF)
Membrane Type	Spiral-wound with Polyamide Thin-Film Composite Membrane
Number of Membranes	Two
Design Flow (with existing pump)	22-25 gpm
Design Flow (with new pump)	15-25 gpm
Operational	
Power Requirements	480V, 60Hz, 80A
Chemical	
Hydrochloric Acid (32%)	66 gal/month
Antiscalant (Avista Vitec 4000)	~10 gal/month
Sodium Hydroxide (50%)	14 gal/month
Physical	
Pilot Length	18ft-5in
Pilot Width	7ft-4in
Pilot Height	7ft-4in
Skid Weight	6 tons
Effluent Treatment Objectives	
Product Recovery	90%
Permeate TDS	50
TIN (mg/L-N)	0.1
TP (mg/L-P)	0.03

Figure 8 IDE PFRO Pilot Unit

UV-AOP

The final treatment step in the onsite pilot process train is a UV-AOP process provided by Trojan Technologies. The UV-AOP process is intended to remove low-molecular weight contaminants such as 1,4-dioxane, N-Nitroso-dimethylamine (NDMA), pharmaceuticals, and endocrine disrupting chemicals (EDCs) and provide log reduction of microorganisms. Together, the UV light and an oxidant (e.g., sodium hypochlorite or hydrogen peroxide) remove contaminants through UV-photolysis and reactions from oxidizing radicals (5).

The UV-AOP pilot unit will operate between 15 and 25 gpm with a minimum UV transmittance (UVT_{254nm}) of 95% downstream of the RO pilot unit. RO permeate will flow by gravity from the RO product tank to a storage tank upstream of the UV-AOP pilot unit. RO permeate will be pumped to a 3-in flanged connection on the UV-AOP pilot unit and UV-AOP effluent will be conveyed to the in-plant sewer. Both sodium hypochlorite and hydrogen peroxide will be tested as oxidants for efficacy against the treatment targets (5).

Trojan will supply the following equipment as one integral UV-AOP pilot unit (5):

- Stainless Steel Chamber with Lamps
- Control and Power Panel
- Spare Lamps
- UVT Monitor
- Magnetic Flow Meter
- Peristaltic Pump for Oxidant
- Static Mixer

Commissioning for the UV-AOP will be a two-day process including operator training. Trojan representatives will test chemical injection, lamp power and transmittance, and hydraulic connections during startup. Analysis of hydroxyl radical scavenging demand will be required prior to quantifying oxidant dosing. Testing of RO effluent will also be performed to quantify pH to understand what pH adjustment would need be performed for applying sodium hypochlorite as the oxidant, since chlorine oxidation in a UV-AOP process requires a lower pH, whereas hydrogen peroxide is independent of pH (5).

Treatment targets for the UV-AOP treatment process and their corresponding justification for selection are as follows:

- 0.5 log reduction of 1,4-dioxane
    - Standard treatment objective for indirect potable reuse projects in CA.
- 1 log reduction of NDMA
    - Common treatment performance surrogate compound for potable reuse projects in CA.
- 6 log reduction of *Cryptosporidium*, *Giardia*, and adenovirus
    - Maximum LRV credit for a unit process per California indirect potable reuse regulations and standard LRV for UV-AOP process.

Table 8 summarizes the UV-AOP pilot unit specifications and Figure 9 shows the Trojan UV-AOP pilot unit.

Table 8 UV-AOP Specifications (5)

General	
Model	TrojanUV UV-Oxidation System
Feed Water Flow	15-25 gpm
Feed Water Pressure	10 psi (max)
Feed Water Temperature	
Number of Lamps	2
Lamp Type	High Output 253.7 nm Low Pressure (500W)
Minimum Water UVT_{254nm}	95%
Operational	
Power Requirement	208-240VAC/1 Phase/6A
Chemicals	
Sodium Hypochlorite (12.5%)	<10 gal/month
Hydrogen Peroxide (27%)	<10 gal/month
Physical	
Pilot Length	10ft
Pilot Width	5ft
Pilot Height	7ft
Pilot Weight	1,400lbs
Piping Connections	3-inch, 150 lb ANSI Flange
Effluent Treatment Objectives	
1,4-dioxane	0.5 log reduction
NDMA	1.0 log reduction
Cryptosporidium, *Giardia*, adenovirus	6 log inactivation

Figure 9 Trojan UV-AOP Pilot Unit

Brine Minimization

Determining total system recovery is a key objective of the piloting phase. The preferred brine management strategy for Replenish Big Bear is to minimize brine volume through the treatment process and discharge the brine into evaporation ponds located in the Big Bear Valley. The limited area available for brine evaporation ponds near the BBARWA WWTP requires a high total system recovery to keep the brine evaporation pond area within the available space for construction.

Through discussions with brine management technology vendors, it was determined IDE's MaxH2O Desalter was the most feasible technology to consider for brine minimization of the brine stream from the RO system. The MaxH2O technology employs a UF and RO membrane filtration step to further concentrate brine before it flows through a fluidized bed reactor to precipitate super saturated salts, mainly silica, calcium carbonate, and calcium sulfate. The precipitated salts are discharged as pellets which can be used as material for other purposes such as for production of cement mix. The RO brine stream that overflows from the fluidized bed reactor is filtered through a sand filter and fed back to the feed tank. Once the saturation limit of the process stream in the feed tank reaches the limits for RO filtration, that process stream is conveyed as brine reject, which in the case of Replenish Big Bear would be discharged to brine evaporation ponds. Figure 10 illustrates and describes the process flow and operational strategy of the MaxH2O system.

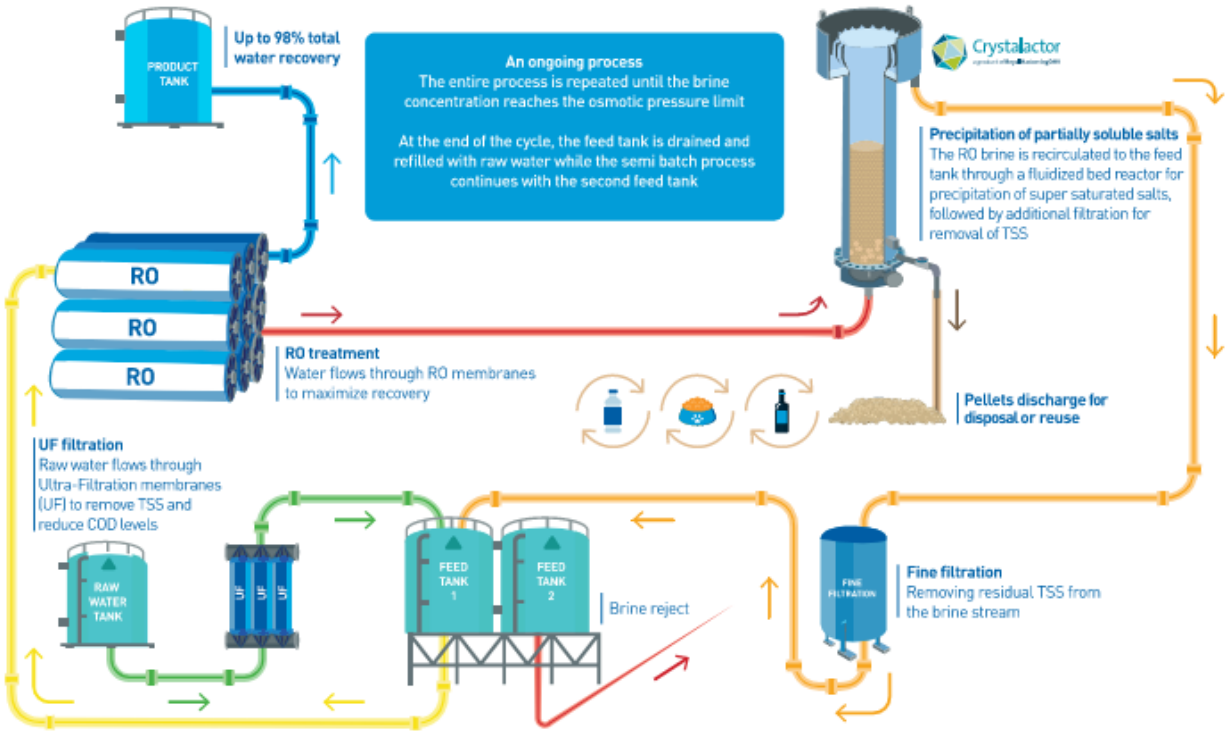

Figure 10 IDE MaxH2O Desalter Process Flow and Operational Description

To minimize costs for piloting the MaxH2O Desalter, piloting of the technology will be performed offsite at IDE's R&D facility in Israel. Brine from the RO pilot unit will be collected in totes and shipped to the R&D facility to operated a small scale Max H2O pilot at a rate of 1 meter cubed per day (m^3/d) (264 gal/d) for a two week period. It is anticipated there will be three piloting periods at the R&D facility. IDE will perform water quality testing and calculate total system recovery based on the data collected. The target total system recovery for Replenish Big Bear and the brine minimization piloting is 98%.

Summary

The specifications that are most critical for BBARWA's consideration are chemical requirements, feed flow minimums and maximums, and electrical requirements. Each of these specifications are BBARWA's responsibility and must be planned for prior to mobilization of the pilot units. These specifications are summarized for each pilot unit in Table 9.

Table 9 Pilot Unit Key Specifications Summary

Pilot Unit	Chemical Requirements	Feed Flow	Electrical Requirements
Sand Filter	Chemical Phosphorus Removal • Ferric Chloride (40%): 20 gal/week, or • Aluminum Sulfate (50%): 53 gal/week Denitrification • Micro-C: 13 gal/week	10-35 gpm	125A at 240V, or 60A at 480V
UF	Maintenance Wash • Hydrochloric Acid (31%): 0.5 gal/month • Sodium Hypochlorite (12.5%): 1.8 gal/month Clean-In-Place • Hydrochloric Acid (31%): 0.5 gal/month • Sodium Hypochlorite (12.5%): 0.7 gal/month	20-40 gpm	20A at 120V and 50A at 480V
RO	Scaling Prevention • Hydrochloric Acid (32%): 66 gal/month • Antiscalant: ~10 gal/month Biofouling Prevention • Sodium Hydroxide (50%): 14 gal/month	15-30 gpm	80A at 480V
UV-AOP	Oxidant • Sodium Hypochlorite (12.5%), or • Hydrogen Peroxide (27%): <10 gal/month	15-25 gpm	6A at 240V (1.3 kVA, 1 phase)

Flow to the pilot units is limited by the design and max flow rates of the pilot units within the pilot treatment process. Flow and pressure from BBARWA's secondary effluent exceeds the flow and pressure requirements for the sand filters and will be limited to a maximum of 30 gpm. The flow balance shown in Figure 11 illustrates the targeted flow balance through the pilot treatment process, including the reject rates and waste streams from the respective pilot units. Adjustments to pilot unit operations and piping and valve configurations will be performed as needed to minimize risk of pilot units receiving inadequate flow and pressure from upstream pilot units.

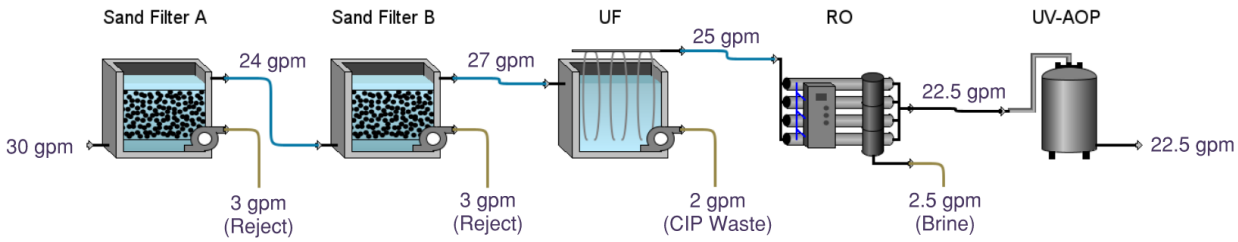

Figure 11 Flow Balance Through Pilot System

4 Water Quality and Online Monitoring

Operation and performance of the pilot units will be monitored through a combination of online instrumentation, onsite water quality testing by BBARWA lab staff, and third party laboratory water quality analysis. This section summarizes the approach and scope for each.

Online Instrumentation

The pilot units include online instrumentation that is either standard for the pilot unit or installed specifically for the Replenish Big Bear pilot system. Online instrumentation provides either intermittent or continuous monitoring of various parameters which the equipment suppliers can monitor remotely and some of which BBARWA operations staff can review through the pilot units human machine interface (HMI) or the digital outputs directly on the instrument. This level of monitoring helps to evaluate operational performance of the pilot units, potential issues and equipment failures, and key parameters for evaluating of performance against treatment objectives. Some of the instrumentation is also programmed for feedback control of chemical dosing (e.g., effluent nitrate sensor on sand filters to control upstream carbon dosing).

Table 10 provides detail of the online instrumentation for each pilot unit, excluding general control instrumentation such as pressure switches and level indicators. General maintenance procedures for the online instrumentation will be performed by BBARWA operations staff.

Table 10 Online Instrumentation List for Pilot Units

Process	Stream	Parameter	Type of Instrument
Sand Filters	Influent	Flow	Continuous
	Effluent	Flow	Continuous
		Nitrate	Continuous
	Backwash	Flow	Continuous
	Reject	Flow	Continuous
UF	Influent	Flow	Continuous
		Turbidity	Intermittent
		Pressure	Continuous
		Temperature	Continuous
	Effluent	Flow	Continuous
		Turbidity	Intermittent
		Pressure	Continuous
RO	Influent	Flow	Continuous
		Pressure	Continuous
		Temperature	Continuous
		Conductivity	Continuous
		pH	Continuous
		Oxidation-Reduction Potential	Continuous
	Effluent	Flow	Continuous
		Pressure	Continuous
		Conductivity	Continuous
	Brine	Flow	Continuous
		Pressure	Continuous
		Conductivity	Continuous
		pH	Continuous
UV-AOP	Influent	Flow	Continuous
	In-Vessel	UV Transmittance	Continuous

Water Quality Monitoring

Water quality monitoring of pilot unit influent and effluent flow streams will be performed by BBARWA staff onsite and offsite by a third party water quality laboratory. BBARWA's water quality monitoring will be limited to analysis of grab samples for nitrogen and phosphorus constituents of sand filter influent and effluent during startup through stabilization of operation. BBARWA's sand filter monitoring will inform progress of denitrifier growth and activity in Filter A and decisions to increase filter loading rates and chemical dosing. A more robust monitoring plan will be initiated in coordination with Eurofins Eaton Analytical's Pomona, CA laboratory (Eurofins) once the UF unit is commissioned.

The monitoring plan will occur weekly throughout the duration of the pilot phase and include analysis and monitoring for the following purposes:

- Nutrient Removal
- TDS Removal
- Sand Filter Performance
- UF/RO Performance
- UV-AOP Performance
- General Chemistry Monitoring
- CEC Surrogate Monitoring
- CEC Removal
- LRV Credit Estimation

There are varying levels of analysis that will occur throughout the pilot program. The roles and responsibilities associated with water quality testing data management, documentation, and reporting are summarized in Table 11.

Table 11 Water Quality Analysis and Reporting Roles and Responsibilities

Responsibility	BBARWA	Equipment Supplier	Third Party Laboratory	WSC
Water Quality Analysis				
Process monitoring on-site	✓			
Remote monitoring		✓		
Sample collection	✓			
Water quality analysis			✓	
Recording water quality data	✓		✓	✓
Data scrubbing				✓
Data Collection and Distribution				
Online instrumentation data collection		✓		
Water quality analysis results			✓	
Reporting				
Compiling results into a report		✓		✓
Reporting results to the regulatory agencies	✓			✓

The work sequence for weekly sampling will be performed as follows:

1. WSC will provide a sampling plan for the following three (3) weeks to Eurofins at least seven (7) business days ahead of sample collection.
2. Eurofins will send labeled bottles with necessary preservatives to the Pilot Site.
3. BBARWA will initiate composite samplers on Wednesday mornings and collect composite and grab samples on Thursday mornings.
4. Eurofins' courier service will pick up samples from the Pilot Site Thursday mornings for transport to Eurofins.
5. Eurofins will perform water quality analysis per that week's sampling plan and provide results within three (3) weeks, unless expedited analysis has been requested, in which case results can be provided in less than a week for an additional cost.

Modifications to the monitoring plan may be implemented based on results of water quality analysis, unscheduled operational or maintenance issues with the pilot units, or for budgetary purposes. The results of the monitoring plan will help evaluate the objectives of demonstrating efficacy of the proposed treatment process and quantifying treatment performance through seasonal variability.

Details of the water quality monitoring plan are captured in Figure 12 which illustrates the sample locations and Table 12 that outlines the constituents to be analyzed, the associated analytical method, and frequency of analysis by constituent. As noted in Table 12, the Influent (AWTF-INF) and RO effluent (AWTP-RO-EFF) samples will be 24-hour composites and the remainder will be grab samples. BBARWA will evaluate procurement of additional composite samplers to improve quality of the data collected by increasing the number of sample locations that are composite. Table 13 also includes a summary of Eurofins sampling preparation, handling, and storage requirements for each constituent and corresponding analytical methods.

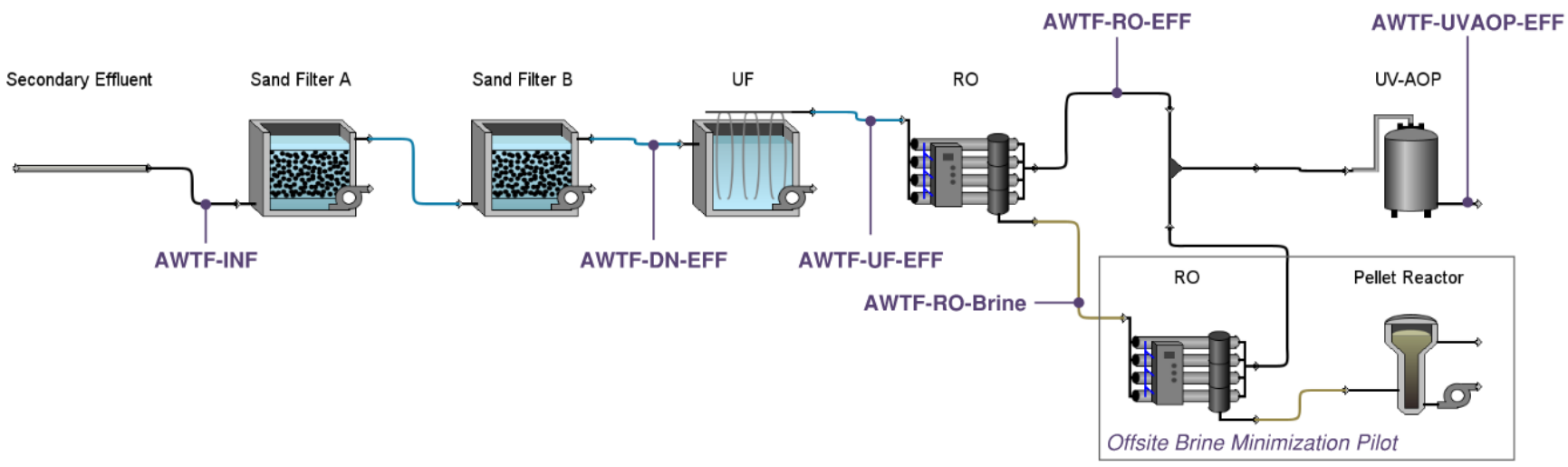

Figure 12 Pilot System Sample Locations

Table 12 Water Quality Monitoring Plan

W = Weekly; **M** = Monthly; **2x/M** = Twice a Month

Purpose	Constituent	Analytical Method	AWTP-INF (24-hr Comp.)	AWTP-DN-EFF (Grab)	AWTP-UF-EFF (Grab)	AWTP-RO-EFF (24-hr Comp.)	AWTP-UVAOP-EFF (Grab)	AWTP-RO-Brine (Grab)
Nutrient Removal	Dissolved Phosphorus	SM 4500 PE	W	W	W	W		
	Orthophosphate as P	SM 4500 PE	W	W	W	W		M
	Phosphorus, Total	SM 4500 PE	W	W	W	W		
	Ammonia as N	SM 4500-NH3	W	W	W	W		
	Nitrate as N	EPA 353.2	W	W	W	W		
	Nitrite as N	EPA 353.2	W	W	W	W		
	Total Inorganic Nitrogen	Calculation	Calculated					
	Total Kjeldahl Nitrogen-N	EPA 353.2/351.2	W	W	W	W		
	Total Nitrogen	Calculation	Calculated					
TDS Removal	Total Dissolved Solids (TDS)	SM 2540 D	W	W	W	W		
Sand Filter Performance	Biochemical Oxygen Demand (BOD)	SM 5210 B	W	W				M
	Soluble BOD (sBOD)	SM 5210 B	W	W				
	Chemical Oxygen Demand (COD)	EPA 410.4	W	W				M
	Soluble COD (sCOD)	EPA 410.4	W	W				
	Total Suspended Solids (TSS)	SM 2540 D	W	W				
UF/RO Performance	Hardness, Total (as CaCO3)	SM 2340 B			W	W		
	Chloride	EPA 300.0		M	W	W		
	Silica	EPA 200.8		W	W	W		M
	Calcium	EPA 200.8		M	W	W		M
	Potassium	EPA 200.8			W	W		
	Sodium	EPA 200.8			W	W		
	Strontium	EPA 200.8	W	W	W	W		
	Sulfate	EPA 300.0		2x/M	W	W		
	Total Organic Carbon (TOC)	SM 5310 C		2x/M	W	W		M
UV-AOP Performance	1,4-Dioxane	EPA 522	W			W	W	
General Chemistry	pH	Field	W	W	W	W	W	
	Alkalinity	SM 2320B	W	2x/M			W	M
CEC Surrogates	Dissolved Organic Carbon (DOC)	SM 5310 C	W	W	W	W	W	
	Electrical Conductivity	SM 2510 B		2x/M	W	W		
CEC Removal	N-Nitroso dimethylamine (NDMA)	EPA 521	M				M	
	N-Nitroso morpholine (NMOR)	EPA 521	M				M	
	Perfluoro octane sulfonate (PFOS)	EPA 533	M				M	
	Perfluorooctanoic acid (PFOA)	EPA 533	M				M	
	Sucralose	EPA 1694M List A	M				M	
	Sulfamethoxazole	EPA 1694M List C	M				M	
LRV Credit Estimation	Cryptosporidium oocysts	EPA 1623	3x				3x	
	Enteric Virus	TBD	3x				3x	
	Giardia cysts	EPA 1623	3x				3x	

Table 13 Eurofins Sampling Preparation and Handling Methods

Constituent and Analytical Method	Preservative	Container	Volume Required	Holding Time
1,4 Dioxane 522_PERC	Sodium Sulfite/Sodium Bisulfate	Amber Glass 125 mL	200 mL	28 Days
Alkalinity, Total 2320B	None	Plastic 250 mL	50 mL	14 Days
Ammonia SM4500NH3_C	Sulfuric Acid	Amber Glass 1L	1000 mL	28 Days
Anions - Chloride, Ion Chromatography 300_OF_28D_PREC	None	Plastic 125mL	60 mL	28 Days
Anions - Nitrate/Nitrate as N, Ion Chromatography 300_ORGFMS	None	Plastic 250 mL	10 mL	48 Hours
Anions – Sulfate, Ion Chromatography 300_OF_28D_PREC	None	Plastic 125 mL	60 mL	28 Days
BOD, 5 Day Soluble SM5210B_BODCalc	None	Plastic 1L	1000 mL	48 Hours
BOD, 5-Day SM5210B_Calc	None	Plastic 1L	1000 mL	48 Hours
COD 410.4	Sulfuric Acid	Plastic 250 mL	10 mL	28 Days
COD, Soluble 410.4	None	Plastic 250 mL	10 mL	28 Days
Conductivity, Specific Conductance 2510B	None	Plastic 250 mL	50 mL	28 Days
Metals (ICP) – Ca, Mg, K, Si, Na, Sr 200.7	Nitric Acid	Plastic 500 mL	60 mL	180 Days
Nitrogen – Ammonia 350.1	Sulfuric Acid	Plastic 250 mL	100 mL	28 Days
Nitrogen – Nitrate-Nitrite 353.2	None	Plastic 125 mL	120 mL	48 Hours
Nitrogen – Total Kjeldahl 351.2	Sulfuric Acid	Plastic 250 mL	100 mL	28 Days
Nitrosamines (GC/MS/MS) – NDMA + NMOR 521.1	Sodium Thiosulfate	Amber Glass 500 mL	1000 mL	14 Days
Orthophosphate 4500_P_E_Ortho	None	Plastic 125 mL	125 mL	48 Hours
Perfluorinated Alkyl Acids (LC/MS) – PFOS+PFOA 537.1_DW_PREC	Trizma	Plastic 250 mL	750 mL	14 Days
Perfluorinated and Polyfluorinated Alkyl Substances in Drinking Water – PFAS 533	Ammonium Acetate	Plastic 250 mL	750 mL	28 Days
pH (Electrometric) 150.1	None	Plastic 250 mL	60 mL	Immediately
Pharmaceuticals and Personal Care Products (LC/MS/MS) – Sucralose LCMS_PPCP_POS	Ascorbic Acid and Sodium Omadine	VOA Vial 40 mL Amber	120 mL	20 Days
Pharmaceuticals and Personal Care Products (LC/MS/MS) – Sulfamethoxazole LCMS_PPCP_POS	Sodium Azide/Ascorbic Acid	VOA Vial 40 mL Amber	120 mL	20 Days
Phosphorus 500_P_E	None	Plastic 125 mL	60 mL	28 Days
Phosphorus, Dissolved 4500_P_E	None	Plastic 125 mL– dissolved	70 mL	28 Days
Solids, Total Dissolved (TDS) 2540C_Calcd	None	Plastic 500 mL	300 mL	7 Days
Solids, Total Suspended (TSS) 2540D	None	Plastic 500 mL	500 mL	7 Days
TOC – Dissolved Organic Carbon 5310C	Sulfuric Acid	VOA Vial 40 mL Amber	120 mL	28 Days
TOC 5310C	Sulfuric Acid	Amber Glass 125 mL	80 mL	28 Days
TOC 5310C	Sulfuric Acid	Amber Glass 125 mL	80 mL	28 Days
Total Hardness (as CaCO3) by calculation SM2340B	None	No Container	0 No Unit	6 Months
Turbidity, Nephelometric 180.1	None	Amber Glass 1L	250 mL	48 Hours

5 Operational Plan

The operational plan for the Replenish Big Bear pilot includes sequential startup of the pilot units in order of the treatment process flow, from the sand filters through UV-AOP. This section summarizes the general operational plan for each pilot unit as sequential steps from startup through decommissioning. Table 14 at the end of this section summarizes the operational steps for each pilot unit by month.

Sand Filters

The sand filters must undergo a seeding phase with low influent loading rates to encourage growth of denitrifying bacteria in Filter A. Once Filter A denitrifiers are established and the effluent flow rate (i.e., loading rate to Filter B) rate is sufficient, Filter B can be commissioned. Establishing the denitrifiers in Filter A can take several weeks when influent temperatures are low. Since each stage of the sand filters has a relatively high flow rate of 3 gpm compared to the pilot system influent flow rate (30 gpm), operation of both filters must be established before downstream pilot units can be commissioned (2).

The general operational sequence for the sand filters is as follows (2):

1. Startup Filter A by seeding with waste activated sludge and begin dosing external carbon (Micro-C).
2. Operational training for BBARWA staff.
3. Operate at reduced loading rate of 1-2 gpm/sf.
4. Once Filter A effluent nitrate Levels are below ~0.8 mg/L-N consistently for at least three (3) days, increase loading rate to 2-3 gpm/sf.
5. Start conveying Filter A effluent to Filter B at loading rate of 1.5-2.5 gpm/sf (Filter A loading rate less 3 gpm Filter A reject rate).
6. Once nitrate levels are below ~0.8 mg/L-N consistently for at least three (3) days, increase loading rate to 3-4 gpm/sf range.
7. Stabilize and maintain normal operation at target operational parameters.
8. When six (6) weeks remains in the sand filter operational period, switch from ferric chloride to aluminum sulfate for chemical phosphorus removal in Filter B to begin evaluating dosing vs removal rates between the two chemicals.
9. Stabilize and maintain normal operation at target operational parameters.
10. Decommission and demobilize the pilot unit from the Pilot Site.

UF

The UF unit can be started up within a day provided there is sufficient flow and pressure from the upstream sand filter effluent. Flow will be gradually increased while flux rates and TMP are monitored by the equipment supplier. Once startup is completed, normal operations begin immediately, and programming is initiated for automated cleaning cycles (3).

The general operational sequence for the UF pilot unit is as follows (3):

1. Startup pilot unit.
2. Operational training for BBARWA staff.
3. Attain target flux rate and TMP.
4. Maintain normal operation at target operational parameters.
5. Carry out automated MW and operator initiated CIP procedures on a weekly and monthly basis, as programmed by the equipment supplier.
    - MW (45 minute duration) are performed to increase time between the more intensive CIP cleaning procedures (2.5 hours).
6. Following decommissioning of upstream sand filters, maximize feed flow to test frequency of maintenance cleans versus flux rate and TMP measurements.
7. Continue normal operations at target operational parameters.
8. Decommission and demobilize the pilot unit from the Pilot Site.

RO

Once upstream flow from the UF pilot unit is available, the RO pilot unit will be started up at a lower recovery target while the equipment supplier monitors recovery, system pressures, integration with upstream equipment, and chemical cleaning efficacies. Once operation is stabilized at a lower recovery rate (anticipated to be 10 days), recovery will be increased to the target recovery rate and normal operation will proceed with automated cleaning cycles.

The general operational sequence for the RO pilot unit is as follows (4):

1. Startup pilot unit.
2. Operational training for BBARWA staff.
3. Operate for 240 hours (10 days) at an initial permeate recovery rate of 80-90%.
4. Operate continuously at a target permeate recovery rate of 90%.
5. Carry out automated soda cleaning cycles (every 4 hours) to reduce biofouling and automated acid cleaning cycles (every 4 hours) to reduce carbonate scale formation.
6. Periodically coordinate brine collection for offsite brine minimization piloting
7. Decommission and demobilize the pilot unit from the Pilot Site.

UV-AOP

The startup procedure and establishment of normal operations of the UV-AOP pilot unit requires appropriate flow and chemical dosing, which can be achieved once flow is available from the upstream RO pilot unit. A buffer tank between the RO and UV-AOP units will be installed to allow operational volume for the UV-AOP unit to operate while the RO is offline for intermittent chemical cleanings. The startup period for the UV-AOP unit can be completed within one day.

The general operational sequence for the UV-AOP pilot unit is as follows (5):

1. Startup with hydrogen peroxide as oxidant.

2. Operational training for BBARWA staff.
3. Maintain normal operation at target operational parameters for one (1) month.
4. Perform radical scavenging demand testing of RO permeate.
5. Perform performance test to quantify 1,4-Dioxane and NDMA LRVs with hydrogen peroxide as the oxidant.
6. Switch to sodium hypochlorite for oxidant.
7. Maintain normal operation at target operational parameters for one (1) month.
8. Perform performance test to quantify 1,4-Dioxane and NDMA LRVs with sodium hypochlorite as the oxidant.
9. Decommission and demobilize the pilot unit from the Pilot Site.

Standard Operating Procedures

Each equipment supplier will provide BBARWA and WSC with Operation and Maintenance Manuals that provide detail for the following aspects of pilot unit operation and maintenance:

- General Equipment Description
- Equipment Specifications
- Startup, Commissioning, and Decommissioning Procedures
- Safety Considerations
- Operational Modes
- Routine Maintenance and Inspection Procedures
- Troubleshooting
- HMI Instructions and Set-Points

Due to the length of these manuals and their level of detail, they are not appended to the Pilot Plan but will be stored in a central location for access by BBARWA and WSC. Where appropriate, amendments to this Pilot Plan may include reference or addition of material from the O&M Manuals.

6 Next Steps

Following completion of the piloting phase, each equipment supplier will provide a Pilot Report specific to their pilot unit summarizing the operation, performance, and key considerations for full-scale systems. BBARWA and WSC will review the Pilot Reports and develop a Replenish Big Bear Pilot Report that incorporates the equipment supplier's Pilot Reports and the following information:

- Executive summary.
- Review of piloting objectives and general piloting plan.
- Summary of piloting operation schedule that was executed.
- Presentation of piloting results including results of pilot unit test plans and water quality analysis.
- Comparison of results to piloting objectives.
- Presentation of operational issues and adjustments that occurred.
- Implications and considerations for full-scale design and implementation of the Replenish Big Bear program.
- Recommended next steps and follow up efforts for informing design decisions.

The Replenish Big Bear Pilot Report will be made available to the Santa Ana RWQCB and DDW for their review and comment. Following regulatory agency reviews, the Pilot Report may be amended. The report will become a valuable reference for the design team during the design phase of the program.

Table 14 Operational Schedule for Pilot Units

Month	Sand Filters	UF	RO	UV-AOP	Brine Minimization
January	Mobilization	Not Yet Mobilized	Not Yet Mobilized	Not Yet Mobilized	No Offsite Piloting
February	Commissioning and Startup	Not Yet Mobilized	Not Yet Mobilized	Not Yet Mobilized	No Offsite Piloting
March	Stabilize Denitrification in Filter A	Not Yet Mobilized	Not Yet Mobilized	Not Yet Mobilized	No Offsite Piloting
April	Increase Loading Rate to Filter A and Initiate Chemical Phosphorus Removal in Filter B	Mobilization, Commissioning and Startup at Reduced Flowrate	Not Yet Mobilized	Not Yet Mobilized	No Offsite Piloting
May	Increase Loading Rate to Filter A and Filter B	Increase Flowrate and Continue Normal Operation	Mobilization, Commissioning and Startup	Not Yet Mobilized	No Offsite Piloting
June	Normal Operation and Switch from Ferric to Alum for Chemical Phosphorus Removal	Normal Operation	Finalize Initial Startup Period of Lower Recovery and Start Normal Operation at Higher Recovery	Mobilization, Commissioning and Startup	Coordinate Logistics of Brine Minimization Testing
July	Normal Operation	Normal Operation	Normal Operation	Normal Operation and Performance Testing with Hydrogen Peroxide as Oxidant	Coordinate Logistics of Brine Minimization Testing and Prepare Pilot System
August	Conclude Normal Operations and Decommission Pilot Unit	Normal Operation	Normal Operation	Normal Operation and Performance Testing with Sodium Hypochlorite as Oxidant	Offsite Pilot Tests
September	--	Conclude Normal Operations and Decommission Pilot Unit	Conclude Normal Operations and Decommission Pilot Unit	Conclude Normal Operations and Decommission Pilot Unit	Conclude Offsite Pilot Tests

REFERENCES

1. **California Water Boards.** Santa Ana River Basin Plan. [Online] Amended 2019. https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/.

2. **Nexom.** Blue PRO & Blue NITE Treatment Pilot Rental Agreement.

3. **DuPont Water Solutions.** MEMCOR Pilot Unit Rental Agreement. 2023.

4. **IDE Technologies.** PFRO Demo Unit Rental Agreement. 2023.

5. **Trojan Technologies.** TrojanUV UV-Oxidation Pilot System Rental Agreement. 2023.

6. —. *UV-Advanced Oxidation Pilot System Performance Test Plan.* June 7, 2023.

7. **WSC, Inc.** *Treatment Process Alternatives Technical Memorandum.* 2020.

APPENDIX B – OPERATIONAL PHASES

Phase One

Operation of Phase One consisted of eight treatment train arrangements due to the sequential startup of the pilot units in order of treatment process flow and modifications of process flow path and chemical dosing.

Phase One Arrangement One

The first portion of the Pilot Study involved stabilization of Sand Filter A commencing on February 23rd, 2023. Stabilization consisted of a seeding phase with waste activated sludge and external carbon (MicroC) to promote growth of necessary denitrifying bacteria in the Filter while operating at a reduced loading rate. Once Filter A Effluent nitrate levels reached 0.8 mg/L-N or lower consistently for three days, loading rate was increased, which occurred on March 15th, 2023. The pilot system operated in this arrangement for approximately 4.5 weeks, from February 23rd through March 26th, 2023 (Figure 42). Colder influent temperatures and lower influent dissolved oxygen levels prolonged this stabilization process from the typical estimate of 2 weeks for stabilization.

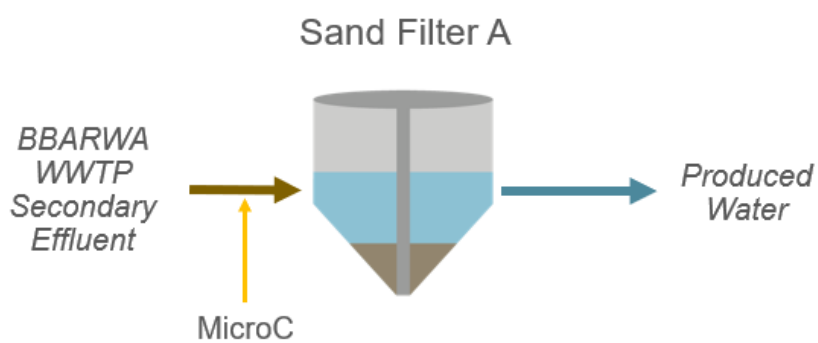

Figure 42. Phase One Arrangement One Process Flow Diagram

This part of the Pilot Study involved adjusting air flow to ensure the reject rate remained around 3 gpm and headloss remains in the target range. The following summarizes the key operational changes and issues that were encountered during this time:

- February 23rd, 2023: 9 gpm of flow sent to Filter A with 30 mg/L MicroC dosing and 38 SCFH of air flow.
- February 25th, 2023: The unit's air compressor failed and was replaced with a BBARWA supplied air compressor.

- March 15th, 2023: Flow to Filter A increased to about 20 gpm.
- March 17th, 2023: Air flow decreased to 36 SCFH.
- March 21st, 2023: Headloss through Filter A jumped from 65 to 80 inches and reject rate decrease to about 2.75 gpm after increasing flow to 20 gpm. This caused sand to build up at the top of the Filter. The washbox was cleaned at night before lowering the flow 9 gpm and the air flow to 34 SCFH throughout the night.
- March 22nd, 2023: Flow increased back to 20 gpm and reject rate is back to 3 gpm. Airlift pressure is 10 psi. Later in the day, the air flow was decreased to 34 SCFH to see if that would improve the bed turnover rate.
- March 23rd, 2023: Air flow was further lowered to 32 SCFH. Bed turnover rate has improved.

Phase One Arrangement Two

Once the biology of Filter A had stabilized, Filter A effluent began flowing to Filter B on March 27th, 2023, and dosing of Ferric Chloride to both Filter A and B began. Stabilization of the Sand Filters operating together occurred until nitrate effluent levels consistently reached 0.8 mg/L or less for three days (Figure 43).

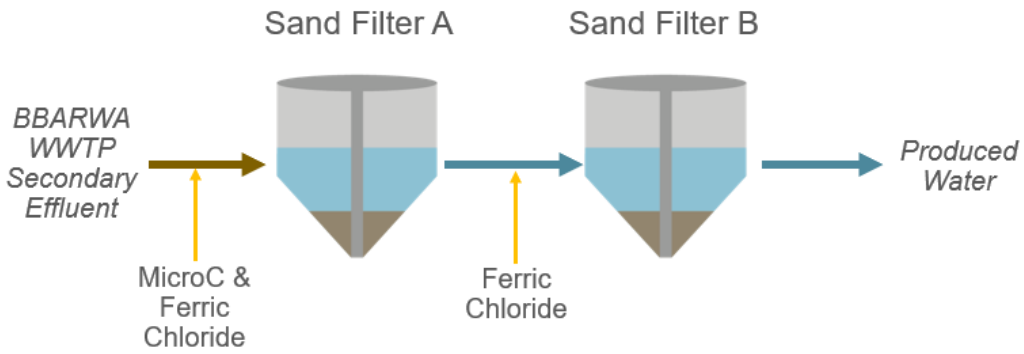

Figure 43. Phase One Arrangement Two Process Flow Diagram

The following summarizes operational changes and issues that were encountered during this time:

- April 2nd, 2023: Chemical pump failed with an E04 error which resulted in an elevated Filter A effluent nitrate concentration.
- April 10th, 2023: Ferric dose was decreased to 25 mg/L for Filter A and 30 mg/L for Filter B due to the TNT test for phosphorus producing negative effluent phosphorus concentrations.

- April 11th, 2023: Filter B was air lanced in quadrants A and B.
- April 12th, 2023: Filter A chemical pumps were found to be turned off in the morning, so they were reset. At 4:05 pm, ferric dosing was turned off to Filter A to evaluate if dosing only Filter B will suffice. The denitrification respiration can also be affected if the phosphorus level is too low in Filter A.

Phase One Arrangement Three

The UF membranes were installed onsite on April 11th, 2023, and an initial CIP was performed with 500 ppm of sodium hypochlorite overnight. Sand Filter B effluent began flowing by gravity to a 150-gallon feed tank and then pumped through the UF membranes on April 13th, 2023. Initial setpoints for the UF system included a backwash every 24 minutes, acid MW every 48 hours, basic MW every 96 hours, and flux at 14.8 gfd. Operation of the Sand Filters and UF membranes occurred in this arrangement until May 24th, 2023 (Figure 44).

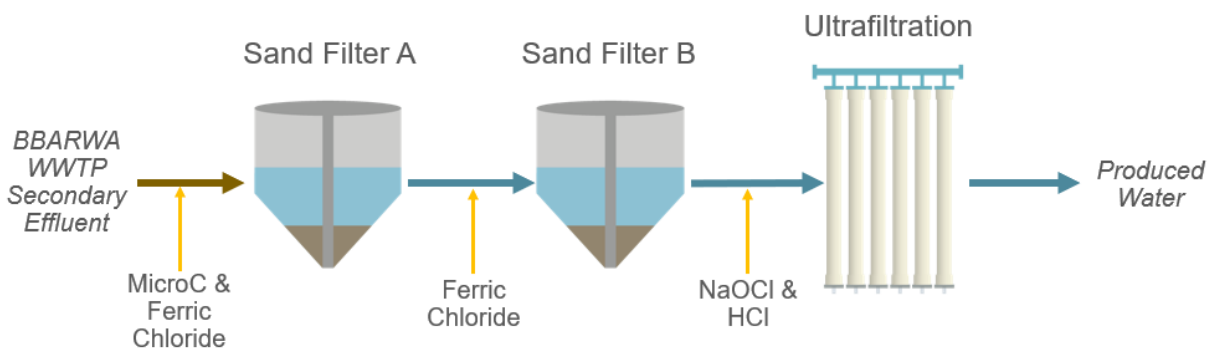

Figure 44. Phase One Arrangement Three Process Flow Diagram

During this operational period, the Sand Filters experienced bed packing that required air lancing cleanings and removal of sand to lower the headloss. Chemical dosing was altered many times to attempt to fix the issue as well. However, this caused the treatment train to be shutdown often throughout this part of the study for cleanings and increased the frequency of the UF membrane cleaning events greatly. The following summarizes the key operational changes and issues that were encountered during this time:

- April 13th, 2023: UF System started receiving 13 gpm of Sand Filter effluent. A 24 minute backwash (BW) was performed. The integrity test showed 0.14 psi/min. A chlorine maintenance wash (MW) was performed around 2 pm with 300 ppm and pH of 9.7. Flow was increased to 15 gpm later on in the day. Sand Filter B was air lanced in quadrant A.

- April 14th, 2023: An acid MW using a diluted HCl solution of 0.08% at pH of 2.28 occurred. The dose was increased to 0.1% during the wash. After the MW, the flow was decreased back down to 13 gpm. The system experienced periodic standby throughout the night as the Sand Filters were only providing about 14 gpm of effluent.
- April 19th, 2023: Sand Filter effluent weir was adjusted down to increase the reject rate from 2.5 gpm to 3 gpm.
- April 23rd, 2023: UF system was shutdown at 1:37 pm and restarted remotely at 2:28 pm.
- April 24th, 2023: Sand Filter effluent was showing elevated phosphorus concentrations so ferric chloride dosing to Filter A was turned back on at 20 mg/L and Filter B dosing was increased to 40 mg/L.
- April 26th, 2023: Sand Filter chemical pumps were found to be turned off in the morning and thus turned back on in auto. MicroC dosing to Filter A was decreased to 25 mg/L. UF turbidity meters were cleaned at 8:30 am.
- May 1st, 2023: MicroC dosing to Filter A was further decreased to 15 mg/L due to elevated Filter B effluent phosphorus concentration.
- May 3rd, 2023: MicroC dosing to Filter A was reduced to 10 mg/L. Ferric chloride dosing to Filter B was reduced to 35 mg/L. UF turbidity meters were cleaned at 10:30 am.
- May 4th, 2023: Effluent weir on Filter A was adjusted to achieve a reject rate of 3.5 gpm. Quadrant A was air lanced on Filter B.
- May 5th, 2023: Switched to using the nitrate probe to control MicroC dosing rates to Filter A and set up a multiplier so the dose rate is higher than what it was manually set for. However, the nitrate probe outputs were unreliable and MicroC dosing continued to be adjusted manually.
- May 7th, 2023: Filter A was clogged and a cleaning was performed to unclog it.
- May 8th, 2023: Filter A was clogged again. It was air lanced many times and sand was cleared out of the backwash. This required the UF system to be shut down while the cleaning occurred. MicroC dosing was increased to 30 mg/L to Filter A.
- May 9th, 2023: There was still some sand packing at the top of Filter A.
- May 10th, 2023: MicroC dosing decreased to 20 mg/L.
- May 11th, 2023: The Sand Filters are not producing enough effluent for the downstream UF. However, maintaining a larger flow through the Sand Filters will be tough due to large headloss of over 50 inches at times. UF system was shut down due to power issues on May 11, 2023.

- Based on the data, there is more bed volume than needed for the influent loading rate and so 30 inches of sand was removed on May 15, 2023, to reduce headloss by about 15 inches and increase effluent flow to 20 gpm or more.
- May 14th, 2023: Filter A was completely clogged again and headloss was over 90 inches. Sand was packed out at the weir and water was flowing out of the leveling tube. Air lancing was performed 6 times. The UF system shut down while Filter A was cleaned.
- May 15th, 2023: MicroC dosing was decreased to 15 mg/L due to sustained low influent nitrate levels.
- May 16th, 2023: Once Sand Filter issues were addressed, the UF system turned back on and flow increased to 20 gpm. The HMI screen was manually replaced. Feed flow was limited to 17 gpm to CP2 for 4 hours due to a manual valve being partially closed.
- May 18th, 2023: Ferric chloride was leaking due to a crack in the elbow which was fixed. Filter A feed flow was increased to 28 gpm, allowing UF feed flow to increase to 20 gpm and filtrate flow was set to 19 gpm at 1 pm.
- May 19th, 2023: Filter B effluent weir was adjusted to increase the reject flow. Filter B is now clogged since the addition of sand from Filter A.
- May 23rd, 2023: UF system's Link2site modem was replaced due to a hardware issue. An acid CIP was performed at 7:50 am. For the CIP, heating 150 gallons of water from 16.2 degrees C to 30 degrees C took 80 minutes. Strainer BW interval was changed to 2 hours and the pre strainer gauge was pegged at 10 hours. Another acid CIP was performed at 12:25 pm.
- May 24th, 2023: At 7:45 am, the BW interval was changed to every 5 minutes for 2 hours. Strainer BW interval was changed to 1 hour due to feed turbidity reading 40 NTU without flow. At 8:30 am, both turbidity meters were cleaned. Feed turbidity had been cleaned almost daily for a while. At 9:45 am, an acid CIP was performed. The feed tank was cleaned during the CIP by draining and filling 3-4 times. At 2:09 pm, a chlorine CIP was performed.

Phase One Arrangement Four

Due to the large impact the issues with the Sand Filters were causing to the UF system, Filter B was shut off. Residual iron carryover to the UF system was also causing performance issues and so dosing was turned off to Filter A. The rest of the Pilot Study did not include operation of Sand Filter B due to continued algae growth despite being offline. Operation under this arrangement occurred from May 25th, 2023, through June 10th, 2023 (Figure 45).

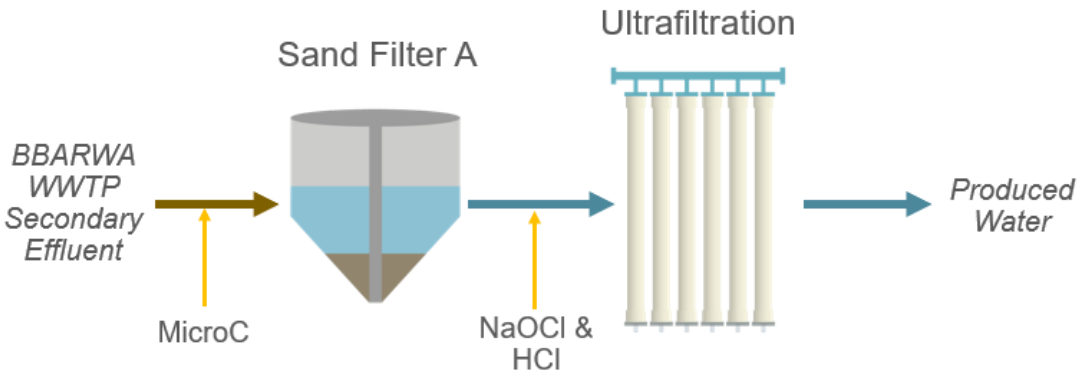

Figure 45. Phase One Arrangement Four Process Flow Diagram

Filter A continued to have operational issues characterized by very dark effluent samples with a bad odor. The following summarizes the key operational changes and issues that were encountered during this time:

- May 25th, 2023: Ferric dosing turned off to both Sand Filters at 2 pm. Filter B was turned off 2 hours later to allow for all the residual ferric to flush out of the filter. Filter A feed flow was decreased to 24.5 gpm to allow UF system to recover after numerous cleanings.
- May 26th, 2023: UF system was restarted. System was temporarily stopped to clean the strainer due to a DP alarm. MicroC dose is currently at 5 ppm.
- May 28th, 2023: Acid MW was performed at about 8 am.
- May 30th, 2023: Filter A influent valve from discharge of pump 2 was shut.
- May 31st, 2023: Reject weir was moved up for Filter A to achieve 3.5 gpm.
- June 1st, 2023: Filter A effluent samples were very dark. The sample line was flushed to try and fix that.
- June 2nd, 2023: Water in the top of Filter A was clear, however, the effluent line is septic with a bad odor. Ammonia and phosphorus concentrations were both elevated in the Filter A effluent. The sample line was flushed again but the effluent samples were still very dark. It was later determined that the effluent sample line was still hooked up to discharge of pump 2 and so it was moved to Filter A effluent and the samples cleared up.
- June 5th, 2023: Flow rate to Filter A was increased to 28.5 gpm and reject rate increased to 4.5 gpm. Subsequently, UF flow was increased to 25 gpm. BW interval was also set to 20 minutes. Acid MW initiated 3 hours early and MW interval was decreased to every 24 hours for chlorine and 48 hours for acid.

- June 6th, 2023: Chlorine MW was initiated at about 7:10 am for the UF system. Acid MW set to occur 5 minutes after the chlorine MW.
- June 10th, 2023: UF system shutdown after reaching the maximum TMP due to excessive biosolids carryover from Filter A.

Phase One Arrangement Five

The PFRO system was installed onsite and underwent commissioning from June 9th through June 10th, 2023, operating at 86% recovery. The PFRO receives UF filtrate stored in a 1,000-gallon buffer tank using a booster pump and discharges permeate to another 1,000-gallon storage tank. Brine is discharged into a dedicated drain line that returns back to the WWTP headworks. The Sand Filters, UF, and PFRO operated in series from June 11th through June 14th, 2023 (Figure 46).

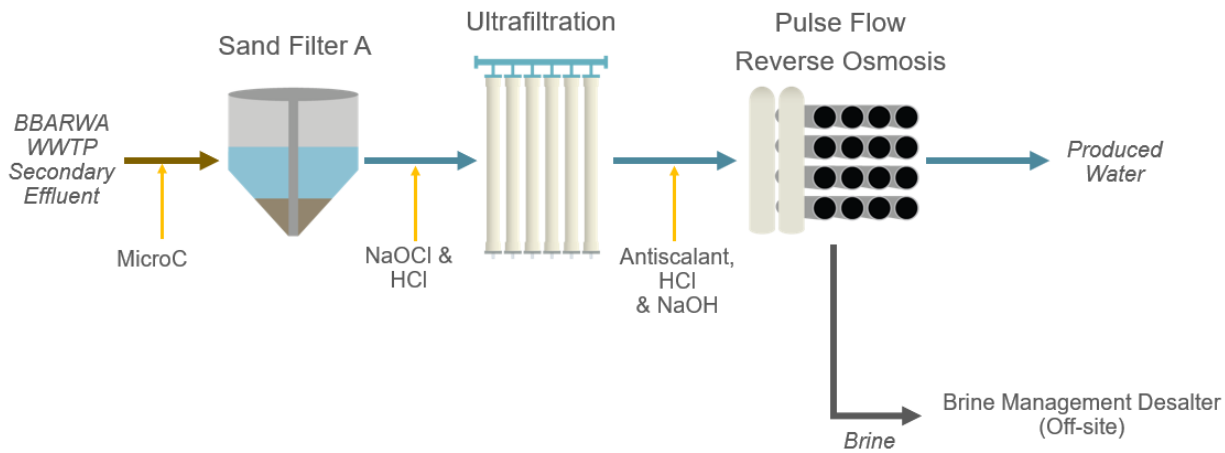

Figure 46. Phase One Arrangement Five Process Flow Diagram

Due to excessive biofouling on the UF membranes causing more frequent cleanings than typical operations, major operational changes occurred for Sand Filter A to attempt to mitigate the issue. The following summarizes operational changes and issues that were encountered during this time:

- June 11th, 2023: UF system restarted and PFRO unit began receiving 21.8 gpm of feed flow and operated at 82% recovery, producing 17.9 gpm of permeate.
- June 11th through 14th, 2023: Preparations were made to split operation into two parallel streams: Sand Filter A and the UF/PFRO units. These modifications included: piping rearrangements to split pilot feed flow to the two trains, cleaning of Filter A and UF unit, cleaning of the UF feed tank, clean the Filter A effluent hose, and set up sodium hypochlorite dosing to the top of Filter A with a dose representative of what the UF system would be able to handle.

- June 14th, 2023: PFRO recovery was increased to 86%. Brine line was turned off for a short period to fix a leak from the membrane. Acid dosing was decreased due to calcium phosphate test results showing ND for most of the operational time.

Phase One Arrangement Six

On June 15th, 2023, the pilot was split into two parallel treatment trains: Sand Filter A operating in parallel with the UF-PFRO treatment train (Figure 47). This change was made due to the excessive fouling on the downstream UF membranes and to assess the ability for UF and RO to remove nutrients, consistent with the operational plan noted in the Piloting Plan. This evaluation period lasted until July 5th, 2023.

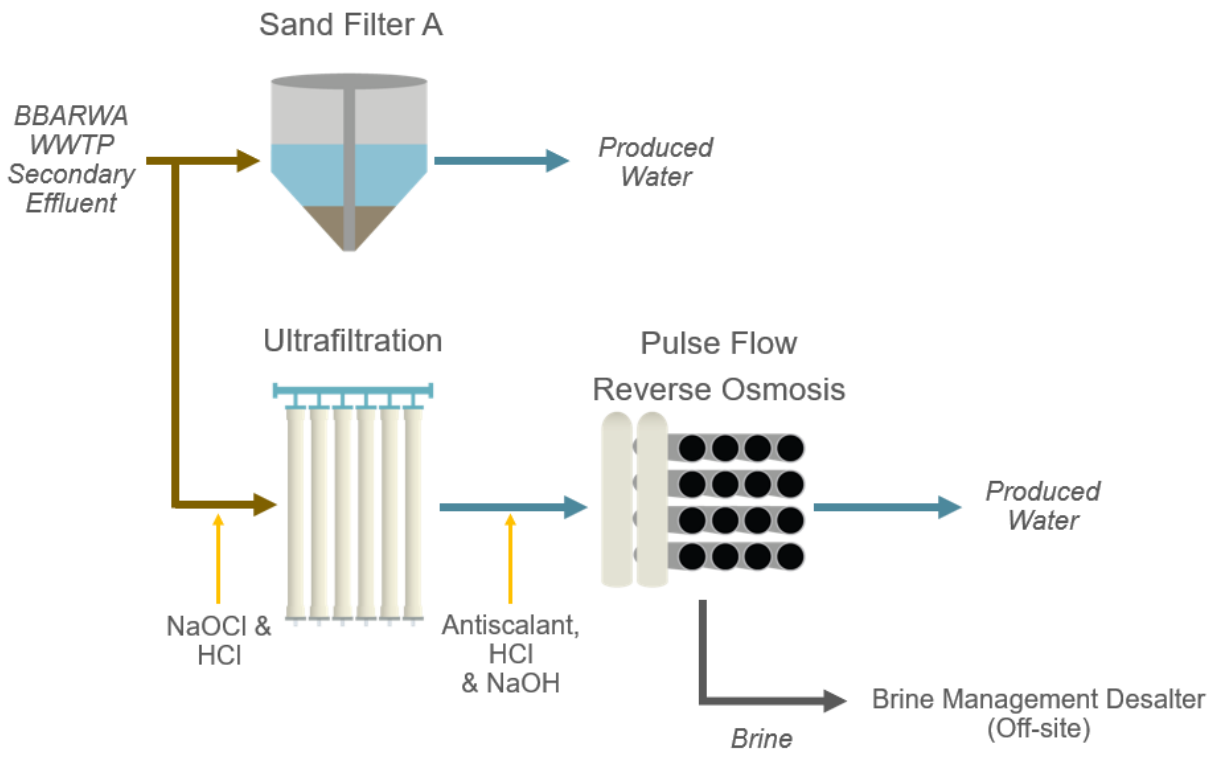

Figure 47. Phase One Arrangement Six Process Flow Diagram

This part of the study involves allowing any residual growth to flush out of Filter A and various initial operational issues with the PFRO. The following summarizes the key operational changes and issues that were encountered during this time:

- June 15th, 2023: Filter A effluent is now discharged to the drain and secondary effluent is flowing directly into the UF unit. MicroC dosing was turned off to Filter A to help flush out media without encouraging growth. This change occurred between the acid and basic CIPs performed today on the UF unit.

- June 16th, 2023: The valves connected to the permeate tank were found to be open, allowing potable water to enter the tank. They were closed around 3 pm.
- June 19th, 2023: At approximately 1 pm, a power outage occurred to the UF system that caused a shutdown.
- June 22nd, 2023: PFRO unit found to turned off in the morning and thus was restarted.
- June 28th, 2023: The PFRO antiscalant pump rate was increased from 0.19 gal/hr to 0.30 gal/hr. The pump then failed.
- June 29th, 2023: The PFRO antiscalant pump was switched out for a spare, however it was still not pumping. At about 1:23 pm, there was a power outage to the UF unit due to blown fuses. The system was restarted at about 4 pm.
- June 30th, 2023: The discharge line on the PFRO antiscalant pump was replaced and fixed the pumping issue. The rate was decreased back to 0.19 gal/hr.
- July 3rd, 2023: Sand Filter nitrate probe was not working. The sodium hydroxide tank level was found to be increasing.
- July 5th, 2023: Sand Filter nitrate probe was moved from the effluent to the inlet to act as feedforward control for external carbon dosing. The valve on the sodium hypochlorite tank was replaced and the actuator alignment was adjusted. This has fixed the tank level issue.

Phase One Arrangement Seven

Operation continued in the two train configuration, but the UV-AOP unit was added downstream of the PFRO on July 6th, 2023. The UV-AOP was initially operated by receiving pumped flow from the PFRO permeate tank continuously for 14 days. After that, the UV-AOP was only turned on when sampling needed to occur, with at least 30 minutes of operation to achieve steady state before samples were drawn. Effluent from the UV-AOP was discharged to the in-plant sewer to return to the WWTP Headworks. Both sodium hypochlorite and hydrogen peroxide were used to determine efficacy against treatment targets. Sodium hypochlorite was dosed for the August 3, 2023, and August 10, 2023, sampling dates, while all other sampling events occurred when hydrogen peroxide was being applied as the oxidant. Commissioning of the UV-AOP unit occurred for two days and involved testing the unit, analyzing the hydroxyl radical scavenging demand to determine oxidant dosing, and analyzing PFRO effluent to understand the appropriate pH adjustment required when using sodium hypochlorite. This system configuration was in operation until the Sand Filters were taken offline on September 8th, 2023 (Figure 48).

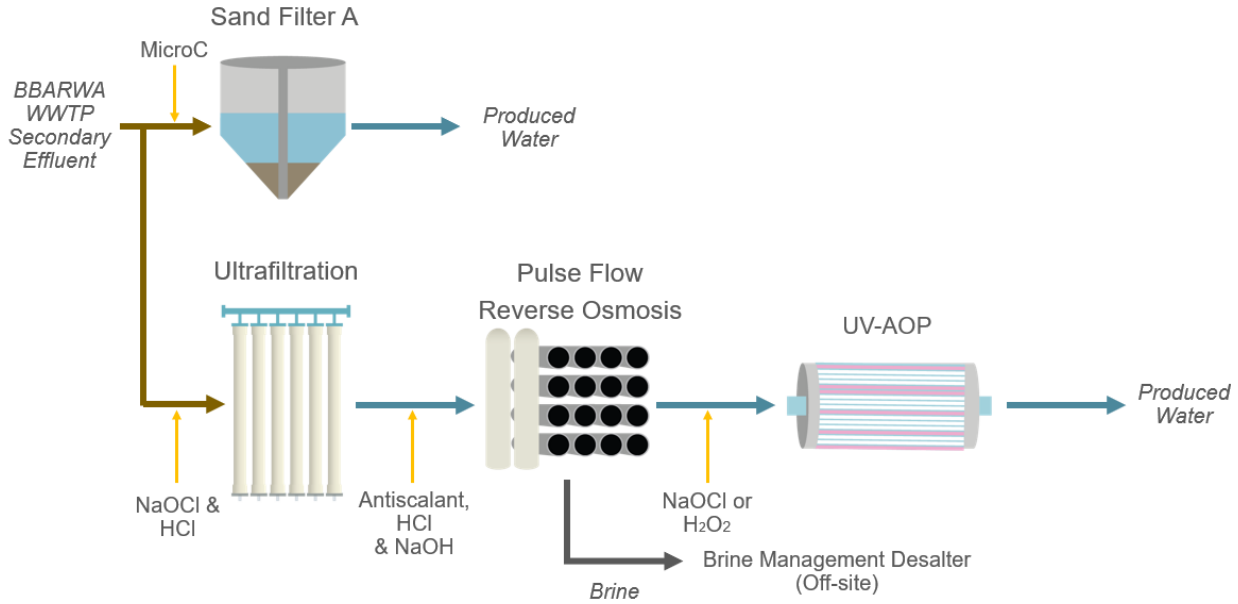

Figure 48. Phase One Arrangement Seven Process Flow Diagram

The PFRO unit encountered many operational issues during this part of the study including frequent micronic filter replacements, tank leaks, pumps not operating properly, and the pH probe not reading correct measurements. This caused various shutdowns throughout the PFRO piloting period. The UF unit also encountered a few shutdowns due to various hardware and electrical issues. MircoC dosing was turned back on to Filter A and adjusted throughout. The following summarizes the key operational changes and issues that were encountered during this time:

- July 6th, 2023: The UV-AOP pilot unit began receiving PFRO permeate flow at 18 gpm.
- July 7th, 2023: MW intervals changed to 56 hours for base cleanings and 168 hours for acid cleanings of the UF system.
- July 10th, 2023: MicroC dosing was turned back on to Filter A in the morning at 5 mg/L. UF system was shut down between about 12 am and 2:55 am likely due to a power loss from the Memlog being reset. The PFRO unit was not running due to high feed pH. The micronic filters were replaced and HCl pump was primed which lowered the feed pH back to the target of 6.5 and thus the unit was back online by 10 am. The sodium hypochlorite tank was still leaking.
- July 11th, 2023: The two actuators on the sodium hypochlorite tank were switched until replacements can be installed. The antiscalant pump was also primed.
- July 12th, 2023: Brine tank plug was removed and now the sodium hypochlorite tank leak appears to have been resolved.

- July 13th, 2023: HCl pump was not pumping and had failed. The spare pump was also not working.
- July 14th, 2023: The acid injection check valve was replaced which solved the pumping problem. The system was restarted.
- July 20th, 2023: An acid CIP was performed on the UF membranes and the feed turbidity meter was calibrated at about 10 am. The filtrate turbidity meter was also calibrated at about 10:15 am. Flow rate was increased to 30.7 gpm which correlates to a flux of 30 gfd.
- July 25th, 2023: The PFRO recovery setpoint was increased to 90% at 5 am.
- July 28th, 2023: A leak was found at the base of the fitting for the brine pressure indicator and repaired.
- July 31st, 2023: A test on the generator for the UF system was performed at about 1:22 pm. Later, the UF was shut down to blown fuses. The PFRO recovery was decreased back down to 86%.
- August 1st, 2023: Suction pressure to the PFRO was gradually decreasing which may have been caused by the fluctuating generator power the day before.
- August 3rd, 2023: MicroC dosing rate was lowered from 5 mg/L to 1 mg/L. because nitrates have been low in the feed water.
- August 7th, 2023: UF system was shut down in the morning for power tie in for another unit and restarted in the afternoon. The HCl tote was replaced.
- August 8th, 2023: MicroC dosing rate to Filter A was increased to 3 mg/L. The acid consumption of the PFRO unit for feed pH adjustment had increased by about 50% in the last 100 hours. It was determined that there was an issue with the influent pH probe measuring inaccurate pH.
- August 9th, 2023: PFRO feed pH probe is still reading incorrectly.
- August 23rd, 2023: Acidic and basic CIPs were performed on the UF today and so the PFRO was shut down for approximately 8 hours during this time.
- August 24th, 2023: The micronic filters in the PFRO unit were replaced. Feed pH probe is still not reading the correct pH.
- August 25th, 2023: The PFRO feed pH probe was recalibrated.
- August 29th, 2023: The micronic filters in the PFRO unit were replaced.

- August 31st, 2023: Plant maintenance occurred which required the pilot units to be turned off for a few hours. Once the PFRO was turned back on, the system would not continue operating. The acid pump was not working properly and would turn off when a higher than needed feed pH was observed. The check valve on the acid feed line was replaced. The unit was turned off.
- September 3rd, 2023: It was determined that the set points for the feed pH had been reset after the shutdown for plant maintenance which was causing the system to not run properly. The set points were fixed and the system turned back on.
- September 4th, 2023: Headloss is looking better through the micronic filters since they had been replaced.
- September 5th, 2023: PFRO feed pH probe was replaced and calibrated twice. The acid pump was having the same issues as before where it won't speed up to lower the pH. Unit was shut down and restarted. The micronic filters were reseated.
- September 8th, 2023: Last day of running the Sand Filter.

Phase One Arrangement Eight

The Sand Filters were taken offline on September 8th, 2023, and the other three processes continued to operate in series until the end of Phase One on October 6th, 2023 (Figure 49).

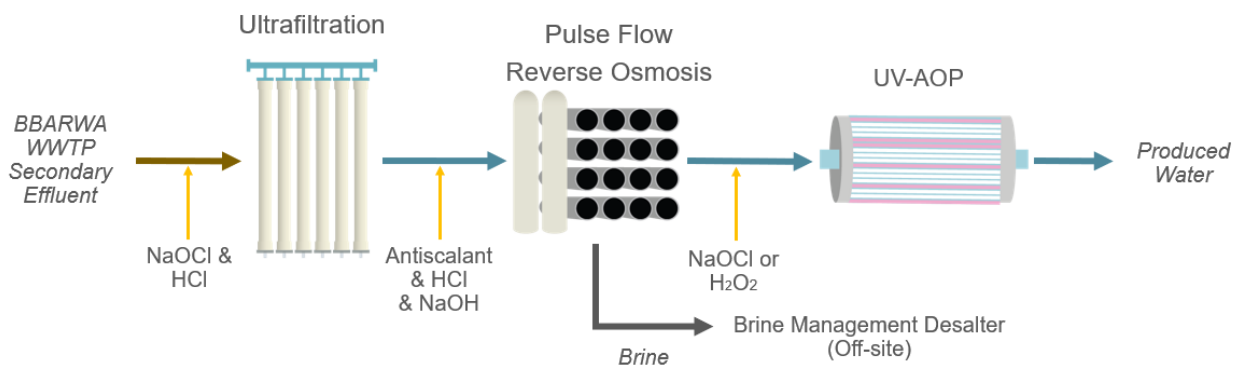

Figure 49. Phase One Arrangement Eight Process Flow Diagram

The PFRO continued to have issues with the micronic filters needing frequent replacements, pumps, and pH probe. The following summarizes the key operational changes and issues that were encountered during this time:

- September 11th, 2023: PFRO feed pH probe was reading slightly lower than the lab instrument pH meter.
- September 15th, 2023: Headloss through the micronic filters jumped 7 psi within a few hours to a total headloss of about 25 psi. These filters were subsequently replaced.

- September 18th, 2023: PFRO feed pH probe was calibrated.
- September 27th, 2023: Micronic filters were replaced again.
- October 2nd, 2023: PFRO pressure alarms were set to 540 psi to accommodate lower water temperatures.
- October 3rd, 2023: A power outage occurred during a PFRO basic cleaning. The acid pump was not increasing speed when the pH was higher than 6.5 due to a programming issue that had to be corrected.
- October 6th, 2023: PFRO unit was taken offline at 1:30 pm after going through the regular brine flushing cycle.

Phase One Brine Minimization

Brine from the PFRO was drained from the brine storage tank into totes and sent to IDE's R&D facility in Israel for testing in two batches. The first batch consisted of 20 totes shipped on September 16th, 2023, and the second batch included 18 totes shipped on October 13th, 2023. Once IDE received the totes, the brine was dosed with 100 mL of 12.5% sodium hypochlorite to prevent microbial activity. A water quality analysis was performed on the brine before and after shipment to ensure the water quality was not compromised during shipment. The first run of brine testing lasted for two weeks testing brine from the first batch and the second run lasted one week testing brine from the second shipment.

The Desalter unit operation included two RO feed tanks that receive UF pretreated brine and product from the FBR. One feed tank was in use at a time as brine was continuously sent through the RO and FBR until either the recovery or the maximum brine conductivity limit was reached at which point, reject brine is discharged from the feed tank. The next cycle would continue using the standby feed tank for operation. Product was continuously discharged to a dedicated product tank and pellets were frequently removed from the bottom of the reactor to keep the pellets near the target average size (Figure 50).

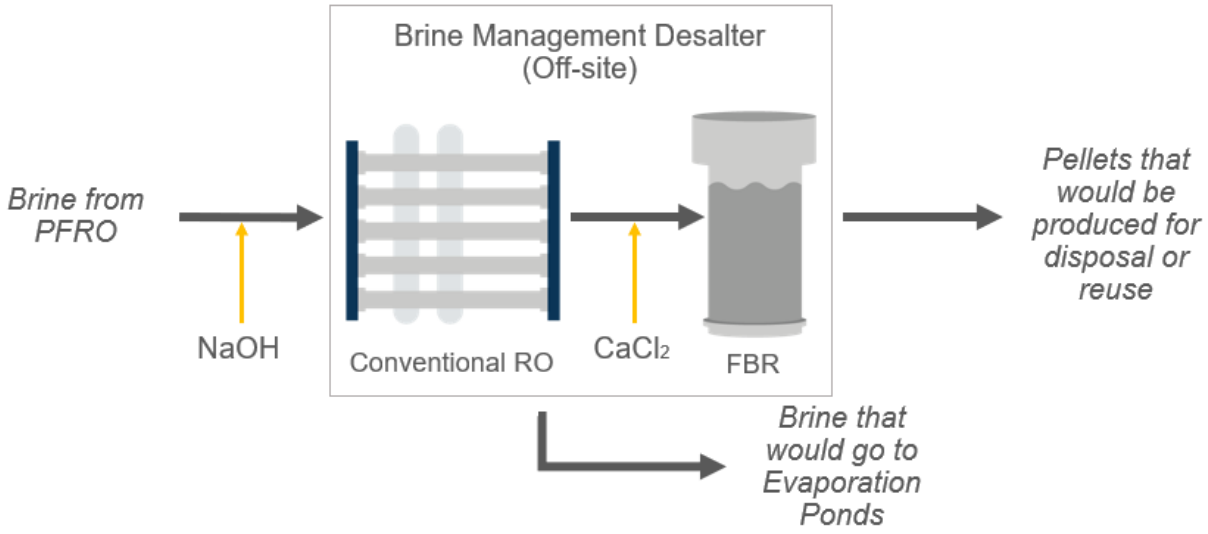

Figure 50. Phase One Brine Minimization Process Flow Diagram

The first run of the Desalter encountered a few mechanical issues that caused shutdown of the system and thus resulted in lower recovery of the system for that cycle. There were also some unusual weather patterns that required short shutdowns of the system but had minimal impact on the treatment process. The second Desalter run operated smoothly and continuously. The following summarizes the key operational issues that were encountered during both brine testing runs:

- January 28th, 2024: First brine testing run began operating at an 86% recovery setpoint. Booster pump's outlet PVC pipe that feeds the RO cracked soon after operation began resulting in shutdown for 6 hours.
- January 30th, 2024: Sodium hypochlorite peristaltic pump that is used to control pH in the FBR failed, resulting in a decrease of salt removal efficiency and subsequent lower recovery for that cycle.
- February 1st, 2024: There was a power failure resulting in shutdown of the system delaying the start of the next cycle.
- February 2nd, 2024: The power failure from the day before caused a shutdown of the FBR recirculation pump that recycles pellets. This caused shutdown of the entire system for about 7 hours and resulted in a slightly lower total recovery for the cycle.
- February 13th, 2024: First brine testing run ended.
- May 5th, 2024: Second brine testing run began operating at a 90% recovery setpoint.
- May 10th, 2024: Second brine testing run ended.

Phase Two

Phase Two began on January 17th, 2024, and operated until March 19th, 2024, and involved operating the CCRO along with the same UF and UV-AOP units. The CCRO commissioning included a 5 day stabilization/conditioning phase to allow the membranes to acclimate to feed water conditions. This phase operated at an average flux of 11 gfd and base recovery of 85%. A similar process flow occurred as the Phase One Arrangement Eight except the CCRO took the place of the PFRO (Figure 51).

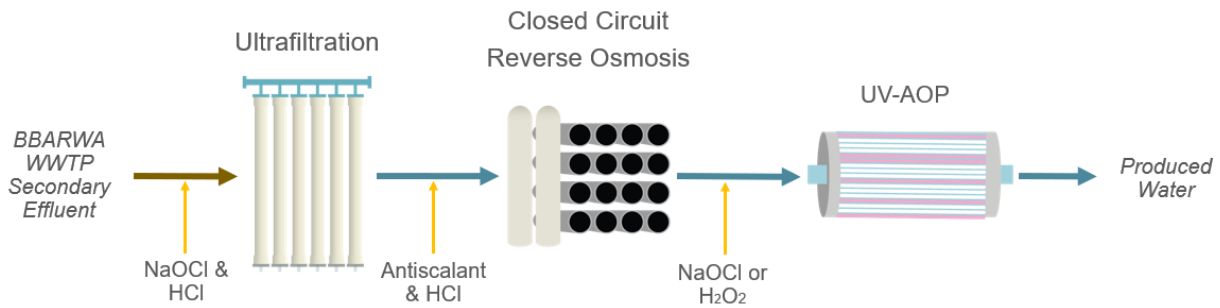

Figure 51. Phase Two Process Flow Diagram

The CCRO operated with minimal issues throughout Phase Two. Antiscalant dosing was adjusted throughout to address colder water temperatures. The recovery setpoint was increased throughout as the operational criteria showed stable performance. The following summarizes the key operational changes and issues that were encountered during this time:

- January 17th, 2024: CCRO completed commissioning and feed flow started being through the entire treatment train. CCRO continued to operate at 85% recovery.
- January 25th, 2024: Normalized permeate flow, salt passage, and DP stabilized providing the baseline for operation.
- January 29th, 2024: Antiscalant dosing to the CCRO unit was increased from 2.4 mg/L to 4.2 mg/L due to colder water temperatures.
- January 30th, 2024: UF Membrane integrity tests showed 0.59 psi/min possibly indicating a few broken fibers.
- February 5th, 2024: CCRO acid consumption had been slowly increasing and the control of pH has worsened over time.
- February 7th, 2024: CCRO recovery setpoint was steadily increased to 86% as permeate flow and DP remained stable. The pH loop was returned to address the increasing acid consumption.

- February 8th, 2024: Antiscalant dosing increased to 5.4 mg/L to account for colder temperatures.
- February 11th, 2024: Control of the CCRO acid pump had been more regular since the pH loop was returned.
- February 12th, 2024: The CCRO system experienced a fault that resulted in system shutdown. It appears to be a hardware issue but was unable to identify.
- February 17th, 2024: CCRO system issue has been fixed and restarted.
- February 20th, 2024: CCRO recovery setpoint was steadily increased to 87%.
- February 28th, 2024: CCRO recovery setpoint was steadily increased to 90%.
- March 2nd through March 3rd, 2024: Power failure to the UF and CCRO occurred which impacted operation.
- March 6th through March 7th, 2024: CCRO pH probe failure required system shutdown until a replacement was installed. The new sensor called for a significantly lower volume of HCl usage to meet the pH target of 6.5. This triggered a PF cycle due to reaching the maximum feed pressure of 425 psi.
- March 19th, 2024: Last day of running the pilot system units for Phase Two.

APPENDIX C – DATA SCRUBBING METHODOLOGY

Laboratory water quality analysis reports will include flags to indicate quality control and quality assurance measures were not met or warrant further evaluation before the corresponding analytical result is applied for its intended purpose. The following table includes a summary of the flags (e.g., data qualifiers) captured in third-party lab reports and WSC's approach to interpreting the data in terms of including or omitting the relevant data point in the analytical results.

Flag	Description	Approach to Data Interpretation
J	Result is less than the Reporting Limit (RL) but greater than or equal to the Method Detection Limit (MDL) and the concentration is an approximate value.	Include values in analysis.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.	Include values in analysis.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.	Include values in analysis
^2	Calibration Blank (ICB and/or CCB) is outside acceptance limits.	Remove data from analysis.
***-**	Lab Control Spike (LCS) and/or Lab Control Spike Duplicate (LCSD) is outside acceptance limits, low biased.	Check specific LCS and/or LCSD to determine how far outside range the result is. Results <5% outside of recovery ranges may be included in analysis. Both results need to meet this criterion to be kept in the analysis, otherwise, remove data from analysis.
***+**	LCS and/or LCSD is outside acceptance limits, high biased.	Check specific LCS/LCSD to determine how far outside range the result is. Results <5% outside of recovery ranges may be included in analysis. Both results need to meet this criterion to be kept in the analysis, otherwise, remove data from analysis.
***1**	LCS/LCSD Relative Percent Difference (RPD) exceeds control limits.	Remove data from analysis. Check specific LCS/LCSD to determine how far outside range the result is. Results <5% outside of recovery ranges may be included in analysis. Both results need to meet this criterion to be kept in the analysis.
***3**	ISTD response or retention time outside acceptable limits.	Remove data from analysis.
F1	Matrix Spike (MS) and/or Matrix Spike Duplicate (MSD) recovery exceeds control limits.	Remove data from analysis. Check specific MS/MSD to determine how far outside range the result is. Results <5% outside of recovery ranges may be included in analysis. Both results need to meet this criterion to be kept in the analysis.
F2	MS/MSD RPD exceeds control limits.	If RPD is >20%, remove data from analysis.

Flag	Description	Approach to Data Interpretation
B	Analyte was found in the associated method blank.	Check QC sample results: If analyte measurement in method blank is less than method RL, include corresponding sample result in analysis. If analyte measurement in method blank is more than method RL, remove corresponding sample result from analysis.
b	Result Detected in the Unseeded Control blank (USB).	Check QC sample results: If analyte measurement in method blank is less than method RL, include corresponding sample result in analysis. If analyte measurement in method blank is more than method RL, remove corresponding sample result from analysis.
^1-	Initial Calibration Verification (ICV) is outside acceptance limits, low biased.	Remove data from analysis.
^3+	Reporting Limit Check Standard is outside acceptance limits, high biased.	Remove data from analysis.
Q3	Sample received with improper chemical preservation.	Include values in analysis. This qualifier was only flagged for two Sucralose samples.
S1+	Surrogate recovery exceeds control limits, high biased.	Remove data from analysis.
S1-	Surrogate recovery exceeds control limits, low biased.	Remove data from analysis.
^2 B	Calibration Blank (ICB and/or CCB) is outside acceptance limits & Analyte was found in the associated method blank.	See approach for respective flags above.
B ^2	Calibration Blank (ICB and/or CCB) is outside acceptance limits & Analyte was found in the associated method blank.	See approach for respective flags above.
J H	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value & Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.	See approach for respective flags above.
H F1	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements & MS and/or MSD recovery exceeds control limits.	See approach for respective flags above.
B ^3+	Analyte was found in the associated method blank & Reporting Limit Check Standard is outside acceptance limits, high biased.	See approach for respective flags above.
U	Result is less than the sample detection limit.	Adjust result to MDL.
^+*+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased & LCS and/or LCSD is outside acceptable limits, high biased.	Remove data from analysis.

APPENDIX D – TITLE 22 MONITORING ANALYSIS

Date:	7/18/2024
Prepared by:	Antonia Estevez-Olea, PE – Water Systems Consulting (WSC)
Reviewed by:	Laine Carlson, PE - WSC Mike Trouchon – Larry Walker Associates
Project:	Replenish Big Bear
Subject:	Appendix D: Advanced Water Purification Facility Pilot Water Quality Data Evaluation to Support Final Design and NPDES Permit Discussions

Overview

This appendix presents the purified water quality data produced by the Pilot Facility. These data were proactively collected to help guide the final design process and regulatory discussions with the Santa Ana Regional Water Quality Control Board (Regional Board) and California State Water Resources Control Board Division of Drinking Water (DDW). Note that the Big Bear Area Regional Wastewater Agency (BBARWA) is not yet required to collect this information, as Title 22 of the Code of Regulations, Articles 5.1 through 5.2, only requires groundwater recharge project proponents to collect water quality data for recycled water once their project is operating. The frequency and list of constituents that are required to be monitored will be specified in the final permit issued by the Regional Board.

Pilot Facility Constituents Monitored

To help guide the final design process and regulatory discussions related to the proposed full-scale Advanced Water Purification Facility (AWPF), water quality constituents with established water quality objectives were monitored to assess whether these objectives could be met by the Pilot Facility. The constituents with adopted and unadopted water quality objectives were obtained from the following sources referenced in Title 22 for indirect potable reuse projects.

- The Santa Ana River Basin Plan (Basin Plan) Water Quality Objectives (WQOs) for Big Bear Lake[1]. The main goal of a Basin Plan is to protect and improve water quality and the beneficial uses supported by the water within a region. **Source:** https://www.waterboards.ca.gov/santaana/water_issues/programs/basin_plan/
- Priority pollutants from the California Toxic Rule (CTR) per Title 40 of the Code of Federal Regulations (40 CFR) Part 131.38. The United States Environmental Protection Agency (USEPA) established the CTR in 2000 to protect human health and the environment by setting numeric water quality criteria for priority toxic pollutants. The requirements are important for protecting aquatic ecosystems, protecting human health, and deriving water quality-based effluent limitations. **Source:** https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-131/subpart-D/section-131.38
- The Maximum Contaminant Levels (MCLs) for Inorganic and Organic Chemicals as identified in Table 64431-A and Table 64444-A of the California Code of Regulation (CCR), Title 22, Chapter 15. Radionuclide chemicals in Tables 64442 and 64443 of the CCR, Title 22, Chapter 15. An MCL is the level of a contaminant in drinking water below which there is no known or expected risk to health. **Source:** https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/ccr/mcls_epa_vs_dwp.pdf
- Disinfection byproducts in Table 64533-A of the CCR, Title 22, Chapter 15.5. Disinfection byproducts (DBPs) are formed when chlorine used to disinfect treated effluent reacts with ammonia in the effluent to create DBPs. Water quality objectives for DBPs exist to balance the human health benefits of disinfected, treated effluent with the risk of exposure to DBPs. **Source:** https://www.law.cornell.edu/regulations/california/22-CCR-64533
- Division of Drinking Water chemicals with notification levels (NLs). Notification levels are health-based advisory levels established by the DDW for chemicals in drinking water that lack MCLs. NLs are similar to goals rather than water quality objectives but certain requirements and recommendations apply when chemicals are found at concentrations greater than their notification levels. **Source:** https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/NotificationLevels.html
- Lead and copper. USEPA set lead and copper limits to protect public health and reduce exposure to lead in drinking water. **Source:** https://www.law.cornell.edu/cfr/text/40/131.38 and https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/ccr/mcls_epa_vs_dwp.pdf

[1] Big Bear Lake has the most stringent WQO of the proposed receiving waters.

- Selected Constituents of Emerging Concern (CECs) identified in the 2018 Water Quality Control Policy for Recycled Water, Attachment A. Most CECs are unregulated, but CEC monitoring is required for all operating IPR facilities. **Sources:** https://www.waterboards.ca.gov/water_issues/programs/recycled_water/policy.html

Pilot Facility Sample Locations

The Pilot Facility, operated in two phases, was used to help assess the performance of the proposed treatment process for nutrients and other key constituents. Phase One of the Pilot Facility operated from February 2023 through October 2023. It included the operation of the Nexom Denitrification Sand Filters, DuPont Ultrafiltration (UF) Membranes, IDE Pulse Flow Reverse Osmosis (PFRO) Membranes, and Trojan UV-AOP system. BBARWA collected water quality grab samples of the purified water after full advanced treatment on July 20, 2023, September 14, and September 21, 2023. A schematic of the sample location (labeled as AWPF-UVAOP-EFF) is shown in **Figure 1**.

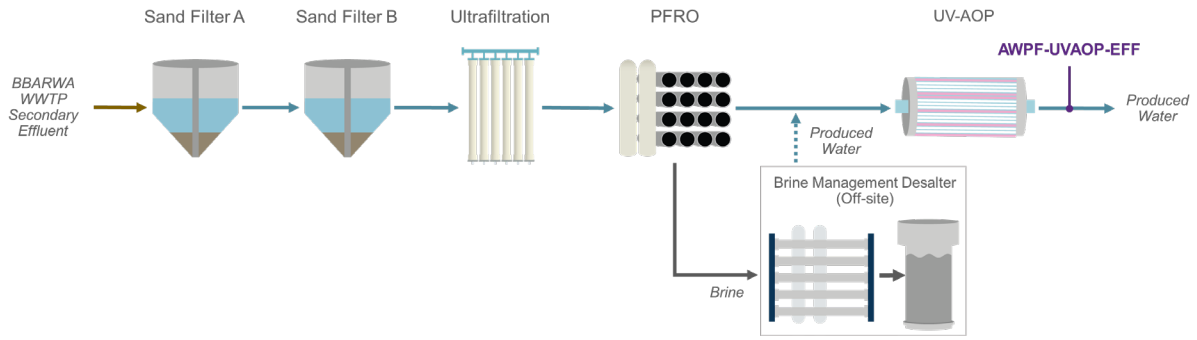

Figure 1. Phase One Sampling Location

Phase Two of the Pilot Facility operated from January 2024 through March 2024. Phase Two included in-series operation of the DuPont UF Membranes, DuPont Closed Circuit Reverse Osmosis (CCRO) Membranes, and Trojan UV-AOP system. One additional grab sample was collected on March 12, 2024, for constituents that were detected at least once during Phase One. A schematic of the sample location (labeled as AWPF-UVAOP-EFF) is shown in **Figure 2**.

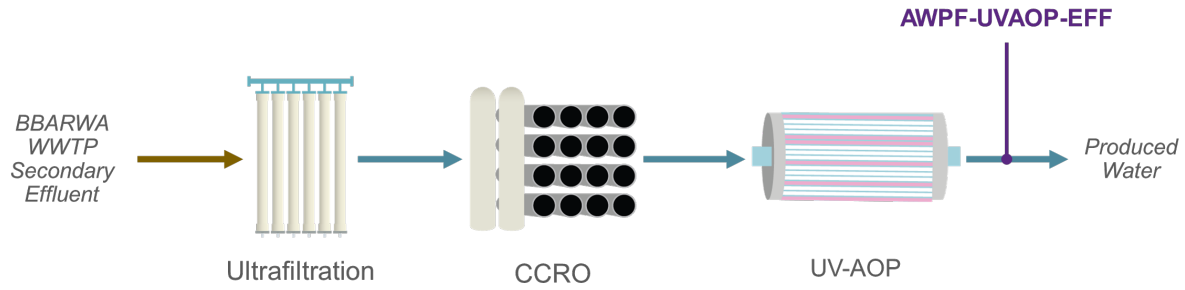

Figure 2. Phase Two Sampling Location

Results and Evaluation

Table 1 includes the monitoring results and the most stringent regulatory objective for each constituent. Some analytical methods test for multiple constituents, so constituents without water quality objectives were also analyzed. Results for these constituents are included as reference only. This table does not include the constituents evaluated in detail in the Pilot Report, including chloride, nutrients, total dissolved solids, sulfate, and sodium. These results are discussed in the Pilot Report. The results in **Table 1** are categorized as follows:

Result Cell Shading	**Result Category**
Red	The result is above the most stringent regulatory objective (there are no results in this category except TIN, which is discussed in the Pilot Report).
Blue	The result is detected above the MDL but is below the most stringent regulatory objective.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control objectives and should not be included in future analyses. Refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Conclusions

In addition to the constituents analyzed and discussed in the Pilot Report, BBARWA analyzed more than three hundred additional water quality constituents. The purified water produced by the Pilot Facility did not exceed any of the established regulatory objectives, except for total inorganic nitrogen (TIN), which is discussed in the Pilot Report. In addition to those discussed in the Pilot Report, 304 other constituents were monitored, of which 16 were detected. Of the 16 detected, only 11 constituents have established objectives, which were all below the most stringent objective. The remaining constituents were not detected. Therefore, the purified water produced by the Pilot Facility is of very high quality and would meet all relevant water quality objectives that regulators use to protect water quality and the beneficial uses it supports.

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	630-20-6	1,1,1,2-Tetrachloroethane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	630-20-6	1,1,1,2-Tetrachloroethane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	630-20-6	1,1,1,2-Tetrachloroethane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	630-20-6	1,1,1,2-Tetrachloroethane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	71-55-6	1,1,1-Trichloroethane	ND	<	0.079	ug/L	*+ *1	0.5	0.079	MCL/PP	200	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	71-55-6	1,1,1-Trichloroethane	ND	<	0.079	ug/L		0.5	0.079	MCL/PP	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	71-55-6	1,1,1-Trichloroethane	ND	<	0.079	ug/L		0.5	0.079	MCL/PP	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	71-55-6	1,1,1-Trichloroethane	ND	<	0.079	ug/L		0.5	0.079	MCL/PP	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	79-34-5	1,1,2,2-Tetrachloroethane	ND	<	0.1	ug/L	B	0.5	0.1	MCL/PP	0.17	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	79-34-5	1,1,2,2-Tetrachloroethane	ND	<	0.1	ug/L		0.5	0.1	MCL/PP	0.17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	79-34-5	1,1,2,2-Tetrachloroethane	ND	<	0.1	ug/L		0.5	0.1	MCL/PP	0.17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	79-34-5	1,1,2,2-Tetrachloroethane	ND	<	0.1	ug/L		0.5	0.1	MCL/PP	0.17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND	<	0.33	ug/L		2	0.33	MCL	1200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND	<	0.33	ug/L		2	0.33	MCL	1200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	79-00-5	1,1,2-Trichloroethane	0.08	Estimated	0.08	ug/L	J	0.5	0.075	MCL/PP	0.6	ug/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	79-00-5	1,1,2-Trichloroethane	ND	<	0.075	ug/L		0.5	0.075	MCL/PP	0.6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	79-00-5	1,1,2-Trichloroethane	ND	<	0.075	ug/L		0.5	0.075	MCL/PP	0.6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	79-00-5	1,1,2-Trichloroethane	ND	<	0.075	ug/L		0.5	0.075	MCL/PP	0.6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-35-4	1,1-Dichlorethylene	ND	<	0.11	ug/L		0.5	0.11	PP	0.057	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-35-4	1,1-Dichlorethylene	ND	<	0.11	ug/L		0.5	0.11	PP	0.057	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-35-4	1,1-Dichlorethylene	ND	<	0.11	ug/L		0.5	0.11	PP	0.057	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-34-3	1,1-Dichloroethane	ND	<	0.13	ug/L		0.5	0.13	MCL/PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-34-3	1,1-Dichloroethane	ND	<	0.13	ug/L		0.5	0.13	MCL/PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-34-3	1,1-Dichloroethane	ND	<	0.13	ug/L		0.5	0.13	MCL/PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-34-3	1,1-Dichloroethane	ND	<	0.13	ug/L		0.5	0.13	MCL/PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	75-35-4	1,1-Dichloroethene	ND	<	0.33	ug/L		0.5	0.33				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	75-35-4	1,1-Dichloroethene	ND	<	0.33	ug/L		0.5	0.33				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-35-4	1,1-Dichloroethene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	563-58-6	1,1-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	563-58-6	1,1-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	563-58-6	1,1-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	563-58-6	1,1-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	87-61-6	1,2,3-Trichlorobenzene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	87-61-6	1,2,3-Trichlorobenzene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	87-61-6	1,2,3-Trichlorobenzene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	87-61-6	1,2,3-Trichlorobenzene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	SRL 524M	96-18-4	1,2,3-Trichloropropane	0.0037	Estimated	0.0037	ug/L	J	0.005	0.00068	MCL	0.005	ug/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/14/2023	SRL 524M	96-18-4	1,2,3-Trichloropropane	ND	<	0.00068	ug/L	Q3 *3	0.005	0.00068	MCL	0.005	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/21/2023	SRL 524M	96-18-4	1,2,3-Trichloropropane	ND	<	0.00068	ug/L		0.005	0.00068	MCL	0.005	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	SRL 524M	96-18-4	1,2,3-Trichloropropane	ND	<	0.00068	ug/L		0.005	0.00068	MCL	0.005	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	120-82-1	1,2,4-Trichlorobenzene	ND	<	0.07	ug/L		0.5	0.07	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	120-82-1	1,2,4-Trichlorobenzene	ND	<	0.07	ug/L		0.5	0.07	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	120-82-1	1,2,4-Trichlorobenzene	ND	<	0.07	ug/L		0.5	0.07	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	120-82-1	1,2,4-Trichlorobenzene	ND	<	0.07	ug/L		0.5	0.07	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	95-63-6	1,2,4-Trimethylbenzene	ND	<	0.11	ug/L		0.5	0.11	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	95-63-6	1,2,4-Trimethylbenzene	ND	<	0.11	ug/L		0.5	0.11	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	95-63-6	1,2,4-Trimethylbenzene	ND	<	0.11	ug/L		0.5	0.11	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	95-63-6	1,2,4-Trimethylbenzene	ND	<	0.11	ug/L		0.5	0.11	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	504.1	96-12-8	1,2-Dibromo-3-Chloropropane	ND	<	0.002	ug/L		0.01	0.002	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	504.1	96-12-8	1,2-Dibromo-3-Chloropropane	ND	<	0.002	ug/L		0.01	0.002	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	504.1	96-12-8	1,2-Dibromo-3-Chloropropane	ND	<	0.002	ug/L		0.01	0.002	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	504.1	106-93-4	1,2-Dibromoethane	ND	<	0.004	ug/L		0.01	0.004	MCL	0.05	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	504.1	106-93-4	1,2-Dibromoethane	ND	<	0.004	ug/L		0.01	0.004	MCL	0.05	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	504.1	106-93-4	1,2-Dibromoethane	ND	<	0.004	ug/L		0.01	0.004	MCL	0.05	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	95-50-1	1,2-Dichlorobenzene	ND	<	0.16	ug/L		0.5	0.16	MCL	600	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	95-50-1	1,2-Dichlorobenzene	ND	<	0.16	ug/L		0.5	0.16	MCL	600	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	107-06-2	1,2-Dichloroethane	ND	<	0.12	ug/L		0.5	0.12	MCL/PP	0.38	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	107-06-2	1,2-Dichloroethane	ND	<	0.12	ug/L		0.5	0.12	MCL/PP	0.38	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	107-06-2	1,2-Dichloroethane	ND	<	0.12	ug/L		0.5	0.12	MCL/PP	0.38	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	107-06-2	1,2-Dichloroethane	ND	<	0.12	ug/L		0.5	0.12	MCL/PP	0.38	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	78-87-5	1,2-Dichloropropane	ND	<	0.071	ug/L		0.5	0.071	MCL	0.52	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	78-87-5	1,2-Dichloropropane	ND	<	0.071	ug/L		0.5	0.071	MCL	0.52	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	78-87-5	1,2-Dichloropropane	ND	<	0.071	ug/L		0.5	0.071	MCL	0.52	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	78-87-5	1,2-Dichloropropane	ND	<	0.071	ug/L		0.5	0.071	MCL	0.52	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	122-66-7	1,2-Diphenylhydrazine	ND	<	2.2	ug/L		10	2.2	PP	0.04	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	108-67-8	1,3,5-Trimethylbenzene	ND	<	0.066	ug/L		0.5	0.066	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	108-67-8	1,3,5-Trimethylbenzene	ND	<	0.066	ug/L		0.5	0.066	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	108-67-8	1,3,5-Trimethylbenzene	ND	<	0.066	ug/L		0.5	0.066	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	108-67-8	1,3,5-Trimethylbenzene	ND	<	0.066	ug/L		0.5	0.066	DW NL	330	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	541-73-1	1,3-Dichlorobenzene	ND	<	0.16	ug/L		0.5	0.16	PP	400	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	541-73-1	1,3-Dichlorobenzene	ND	<	0.16	ug/L		0.5	0.16	PP	400	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	142-28-9	1,3-Dichloropropane	ND	<	0.1	ug/L		0.5	0.1				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	142-28-9	1,3-Dichloropropane	ND	<	0.1	ug/L		0.5	0.1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	142-28-9	1,3-Dichloropropane	ND	<	0.1	ug/L		0.5	0.1				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	142-28-9	1,3-Dichloropropane	ND	<	0.1	ug/L		0.5	0.1				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	542-75-6	1,3-Dichloropropene, Total	ND	<	0.11	ug/L		0.5	0.11	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	542-75-6	1,3-Dichloropropene, Total	ND	<	0.11	ug/L		0.5	0.11	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	542-75-6	1,3-Dichloropropene, Total	ND	<	0.11	ug/L		0.5	0.11	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	106-46-7	1,4-Dichlorobenzene	ND	<	0.11	ug/L		0.5	0.11	MCL/PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	106-46-7	1,4-Dichlorobenzene	ND	<	0.11	ug/L		0.5	0.11	MCL/PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/27/2023	522	123-91-1	1,4-Dioxane	ND	<	0.042	ug/L		0.069	0.042	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/3/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.068	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/10/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.069	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.068	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/24/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.069	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/31/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.069	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/7/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.069	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.068	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	522	123-91-1	1,4-Dioxane	ND	<	0.041	ug/L		0.069	0.041	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/28/2023	522	123-91-1	1,4-Dioxane	ND	<	0.042	ug/L		0.069	0.042	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	10/5/2023	522	123-91-1	1,4-Dioxane	ND	<	0.042	ug/L		0.07	0.042	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	1/25/2024	522	123-91-1	1,4-Dioxane	ND	<	0.042	ug/L		0.07	0.042	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	2/22/2024	522	123-91-1	1,4-Dioxane	ND	<	0.023	ug/L		0.069	0.023	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	2/29/2024	522	123-91-1	1,4-Dioxane	ND	<	0.023	ug/L		0.07	0.023	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/11/2024	522	123-91-1	1,4-Dioxane	ND	<	0.023	ug/L		0.069	0.023	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/14/2024	522	123-91-1	1,4-Dioxane	ND	<	0.024	ug/L		0.071	0.024	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/18/2024	522	123-91-1	1,4-Dioxane	ND	<	0.023	ug/L		0.07	0.023	DW NL/CEC	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	90-12-0	1-Methylnaphthalene	ND	<	1.6	ug/L		10	1.6				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	306-83-2	2,2-Dichloro-1,1,1-trifluoroethane	ND	<	5	ug/L		10	5				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	306-83-2	2,2-Dichloro-1,1,1-trifluoroethane	ND	<	5	ug/L		10	5				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	594-20-7	2,2-Dichloropropane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	594-20-7	2,2-Dichloropropane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	594-20-7	2,2-Dichloropropane	ND	<	0.15	ug/L		0.5	0.15				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	594-20-7	2,2-Dichloropropane	ND	<	0.15	ug/L	*+	0.5	0.15				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	1613B	1746-01-6	2,3,7,8-TCDD	ND	<	2	pg/L		4.8	2	MCL/PP	0.013	pg/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	1613B	1746-01-6	2,3,7,8-TCDD	ND	<	2.1	pg/L		5	2.1	MCL/PP	0.013	pg/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	1613B	1746-01-6	2,3,7,8-TCDD	ND	<	2.1	pg/L		4.9	2.1	MCL/PP	0.013	pg/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	93-76-5	2,4,5-T	ND	<	0.03	ug/L		0.2	0.03				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	93-76-5	2,4,5-T	ND	<	0.03	ug/L		0.2	0.03				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	93-76-5	2,4,5-T	ND	<	0.03	ug/L		0.2	0.03				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	93-72-1	2,4,5-TP (Silvex)	ND	<	0.022	ug/L		0.2	0.022	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	93-72-1	2,4,5-TP (Silvex)	ND	<	0.022	ug/L		0.2	0.022	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	93-72-1	2,4,5-TP (Silvex)	ND	<	0.022	ug/L		0.2	0.022	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	95-95-4	2,4,5-Trichlorophenol	ND	<	1.8	ug/L		10	1.8				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	88-06-2	2,4,6-Trichlorophenol	ND	<	1.6	ug/L		10	1.6	PP	2.1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	94-75-7	2,4-D	ND	<	0.028	ug/L		0.1	0.028	MCL	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	94-75-7	2,4-D	ND	<	0.028	ug/L		0.1	0.028	MCL	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	94-75-7	2,4-D	ND	<	0.028	ug/L		0.1	0.028	MCL	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	94-82-6	2,4-DB	ND	<	0.52	ug/L		2	0.52				Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	94-82-6	2,4-DB	ND	<	0.52	ug/L		2	0.52				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	94-82-6	2,4-DB	ND	<	0.52	ug/L		2	0.52				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	120-83-2	2,4-Dichlorophenol	ND	<	1.8	ug/L		10	1.8	PP	93	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	105-67-9	2,4-Dimethylphenol	ND	<	1.3	ug/L		10	1.3	PP	540	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	51-28-5	2,4-Dinitrophenol	ND	<	21	ug/L		50	21	PP	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	121-14-2	2,4-Dinitrotoluene	ND	<	0.013	ug/L		0.098	0.013	PP	0.11	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	121-14-2	2,4-Dinitrotoluene	ND	<	0.013	ug/L		0.099	0.013	PP	0.11	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	121-14-2	2,4-Dinitrotoluene	ND	<	0.014	ug/L		0.11	0.014	PP	0.11	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	121-14-2	2,4-Dinitrotoluene	ND	<	0.013	ug/L		0.099	0.013	PP	0.11	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	87-65-0	2,6-Dichlorophenol	ND	<	1.7	ug/L		10	1.7				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	606-20-2	2,6-Dinitrotoluene	ND	<	1.7	ug/L		10	1.7				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	78-93-3	2-Butanone (MEK)	ND	<	1.1	ug/L		5	1.1				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	78-93-3	2-Butanone (MEK)	ND	<	1.1	ug/L		5	1.1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	78-93-3	2-Butanone (MEK)	ND	<	1.1	ug/L		5	1.1				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	78-93-3	2-Butanone (MEK)	ND	<	1.1	ug/L		5	1.1				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	624.1	110-75-8	2-Chloroethyl vinyl ether	ND	<	0.94	ug/L		2	0.94				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	110-75-8	2-Chloroethyl vinyl ether	ND	<	1.1	ug/L		2	1.1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	110-75-8	2-Chloroethyl vinyl ether	ND	<	1.1	ug/L		2	1.1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	91-58-7	2-Chloronaphthalene	ND	<	1.6	ug/L		10	1.6	PP	1700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	95-57-8	2-Chlorophenol	ND	<	1.7	ug/L		10	1.7	PP	120	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	95-49-8	2-Chlorotoluene	ND	<	0.11	ug/L		0.5	0.11	DW NL	140	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	95-49-8	2-Chlorotoluene	ND	<	0.11	ug/L		0.5	0.11	DW NL	140	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	591-78-6	2-Hexanone	ND	<	3.3	ug/L		10	3.3				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	591-78-6	2-Hexanone	ND	<	2.2	ug/L		5	2.2				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	591-78-6	2-Hexanone	ND	<	2.2	ug/L		5	2.2				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	591-78-6	2-Hexanone	ND	<	3.3	ug/L		10	3.3				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	91-57-6	2-Methylnaphthalene	ND	<	1.5	ug/L		10	1.5				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	95-48-7	2-Methylphenol	ND	<	2.3	ug/L		10	2.3				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	88-74-4	2-Nitroaniline	ND	<	1.5	ug/L		10	1.5				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	88-75-5	2-Nitrophenol	ND	<	1.9	ug/L		10	1.9				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	91-94-1	3,3'-Dichlorobenzidine	ND	<	2	ug/L		10	2	PP	0.04	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	51-36-5	3,5-Dichlorobenzoic acid	ND	<	0.069	ug/L		0.5	0.069				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	51-36-5	3,5-Dichlorobenzoic acid	ND	<	0.069	ug/L		0.5	0.069				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	51-36-5	3,5-Dichlorobenzoic acid	ND	<	0.069	ug/L		0.5	0.069				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	15831-10-4	3/4-Methylphenol	ND	<	2.7	ug/L		10	2.7				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	16655-82-6	3-Hydroxycarbofuran	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	16655-82-6	3-Hydroxycarbofuran	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	16655-82-6	3-Hydroxycarbofuran	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	99-09-2	3-Nitroaniline	ND	<	2.1	ug/L		10	2.1				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	72-54-8	4,4'-DDD	ND	<	0.015	ug/L		0.099	0.015	PP	0.00083	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	72-54-8	4,4'-DDD	ND	<	0.016	ug/L		0.11	0.016	PP	0.00083	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	72-55-9	4,4'-DDE	ND	<	0.018	ug/L		0.099	0.018	PP	0.00059	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	72-55-9	4,4'-DDE	ND	<	0.019	ug/L		0.11	0.019	PP	0.00059	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	50-29-3	4,4'-DDT	ND	<	0.031	ug/L		0.099	0.031	PP	0.00059	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	50-29-3	4,4'-DDT	ND	<	0.033	ug/L		0.11	0.033	PP	0.00059	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	534-52-1	4,6-Dinitro-o-cresol	ND	<	15	ug/L		50	15	PP	13.4	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	101-55-3	4-Bromophenyl phenyl ether	ND	<	1.9	ug/L		10	1.9				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	106-47-8	4-Chloroaniline	ND	<	1.7	ug/L		10	1.7				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	7005-72-3	4-Chlorophenyl phenyl ether	ND	<	2.1	ug/L		10	2.1				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	106-43-4	4-Chlorotoluene	ND	<	0.22	ug/L		0.5	0.22	DW NL	140	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	106-43-4	4-Chlorotoluene	ND	<	0.22	ug/L		0.5	0.22	DW NL	140	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	<	2.6	ug/L		5	2.6	DW NL	120	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	108-10-1	4-Methyl-2-pentanone (MIBK)	ND	<	2.6	ug/L		5	2.6	DW NL	120	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	100-01-6	4-Nitroaniline	ND	<	2.1	ug/L		10	2.1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	100-02-7	4-Nitrophenol	ND	<	3.8	ug/L		10	3.8				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	83-32-9	Acenaphthene	ND	<	1.6	ug/L		10	1.6	PP	1200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	208-96-8	Acenaphthylene	ND	<	0.014	ug/L		0.098	0.014				Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	208-96-8	Acenaphthylene	ND	<	0.014	ug/L		0.099	0.014				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	208-96-8	Acenaphthylene	ND	<	0.015	ug/L		0.11	0.015				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	208-96-8	Acenaphthylene	ND	<	0.014	ug/L		0.099	0.014				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	67-64-1	Acetone	ND	<	16	ug/L		20	16				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	67-64-1	Acetone	ND	<	16	ug/L		20	16				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	98-86-2	Acetophenone	ND	<	1.3	ug/L		10	1.3				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	50594-66-6	Acifluorfen	ND	<	0.035	ug/L		0.2	0.035				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	50594-66-6	Acifluorfen	ND	<	0.035	ug/L		0.2	0.035				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	50594-66-6	Acifluorfen	ND	<	0.035	ug/L		0.2	0.035				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	624.1	107-02-8	Acrolein	ND	<	1.7	ug/L		5	1.7	PP	320	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	107-02-8	Acrolein	ND	<	4.6	ug/L	*+	5	4.6	PP	320	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	107-02-8	Acrolein	ND	<	4.6	ug/L	*+	5	4.6	PP	320	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	107-13-1	Acrylonitrile	ND	<	1.4	ug/L		2	1.4	PP	0.059	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	107-13-1	Acrylonitrile	ND	<	1.4	ug/L		2	1.4	PP	0.059	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	15972-60-8	Alachlor	ND	<	0.022	ug/L		0.049	0.022	MCL	2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	15972-60-8	Alachlor	ND	<	0.022	ug/L		0.049	0.022	MCL	2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	15972-60-8	Alachlor	ND	<	0.023	ug/L		0.053	0.023	MCL	2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	15972-60-8	Alachlor	ND	<	0.022	ug/L		0.049	0.022	MCL	2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	116-06-3	Aldicarb	ND	<	0.16	ug/L		0.5	0.16				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	116-06-3	Aldicarb	ND	<	0.16	ug/L		0.5	0.16				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	116-06-3	Aldicarb	ND	<	0.16	ug/L		0.5	0.16				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	1646-88-4	Aldicarb sulfone	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	1646-88-4	Aldicarb sulfone	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	1646-88-4	Aldicarb sulfone	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	1646-87-3	Aldicarb sulfoxide	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	1646-87-3	Aldicarb sulfoxide	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	1646-87-3	Aldicarb sulfoxide	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	309-00-2	Aldrin	ND	<	0.002	ug/L		0.01	0.002	PP	0.00013	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	309-00-2	Aldrin	ND	<	0.002	ug/L		0.01	0.002	PP	0.00013	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	309-00-2	Aldrin	ND	<	0.002	ug/L		0.01	0.002	PP	0.00013	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	319-84-6	alpha-BHC	ND	<	0.018	ug/L		0.099	0.018	PP	0.0039	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	319-84-6	alpha-BHC	ND	<	0.019	ug/L		0.11	0.019	PP	0.0039	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	5103-71-9	alpha-Chlordane	ND	<	0.028	ug/L		0.049	0.028				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	5103-71-9	alpha-Chlordane	ND	<	0.029	ug/L		0.049	0.029				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	98-55-5	Alpha-Terpineol	ND	<	2.5	ug/L		10	2.5				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7429-90-5	Aluminum	ND	<	11	ug/L		20	11	MCL	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7429-90-5	Aluminum	ND	<	11	ug/L		20	11	MCL	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7429-90-5	Aluminum	ND	<	11	ug/L		20	11	MCL	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	62-53-3	Aniline	ND	<	2.4	ug/L		10	2.4				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	120-12-7	Anthracene	ND	<	0.019	ug/L		0.02	0.019	PP	9600	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	120-12-7	Anthracene	ND	<	0.019	ug/L		0.02	0.019	PP	9600	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	120-12-7	Anthracene	ND	<	0.02	ug/L		0.021	0.02	PP	9600	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	120-12-7	Anthracene	ND	<	0.019	ug/L		0.02	0.019	PP	9600	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-36-0	Antimony	ND	<	0.48	ug/L		1	0.48	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-36-0	Antimony	ND	<	0.48	ug/L		1	0.48	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-36-0	Antimony	ND	<	0.48	ug/L		1	0.48	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-38-2	Arsenic	ND	<	0.49	ug/L		1	0.49	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-38-2	Arsenic	ND	<	0.49	ug/L	^2	1	0.49	MCL	10	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-38-2	Arsenic	ND	<	0.49	ug/L		1	0.49	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	1912-24-9	Atrazine	ND	<	0.047	ug/L		0.049	0.047	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	1912-24-9	Atrazine	ND	<	0.047	ug/L		0.049	0.047	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	1912-24-9	Atrazine	ND	<	0.051	ug/L		0.053	0.051	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	1912-24-9	Atrazine	ND	<	0.047	ug/L		0.049	0.047	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	103-33-3	Azobenzene	ND	<	1.5	ug/L		10	1.5				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-39-3	Barium	ND	<	0.21	ug/L		2	0.21	MCL	1000	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-39-3	Barium	ND	<	0.21	ug/L		2	0.21	MCL	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-39-3	Barium	ND	<	0.21	ug/L		2	0.21	MCL	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	114-26-1	Baygon	ND	<	0.25	ug/L		0.5	0.25				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	114-26-1	Baygon	ND	<	0.25	ug/L		0.5	0.25				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	114-26-1	Baygon	ND	<	0.25	ug/L		0.5	0.25				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	25057-89-0	Bentazon	ND	<	0.063	ug/L		0.5	0.063	MCL	18	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	25057-89-0	Bentazon	ND	<	0.063	ug/L		0.5	0.063	MCL	18	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	25057-89-0	Bentazon	ND	<	0.063	ug/L		0.5	0.063	MCL	18	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	56-55-3	Benz(a)anthracene	ND	<	0.011	ug/L		0.049	0.011	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	56-55-3	Benz(a)anthracene	ND	<	0.011	ug/L		0.049	0.011	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	56-55-3	Benz(a)anthracene	ND	<	0.012	ug/L		0.053	0.012	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	56-55-3	Benz(a)anthracene	ND	<	0.011	ug/L		0.049	0.011	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	71-43-2	Benzene	ND	<	0.12	ug/L		0.5	0.12	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	71-43-2	Benzene	ND	<	0.12	ug/L		0.5	0.12	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	71-43-2	Benzene	ND	<	0.12	ug/L		0.5	0.12	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	71-43-2	Benzene	ND	<	0.12	ug/L		0.5	0.12	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	92-87-5	Benzidine	ND	<	25	ug/L	*1 *-	50	25	PP	0.00012	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	56-55-3	Benzo[a]anthracene	ND	<	2.3	ug/L		10	2.3	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	50-32-8	Benzo[a]pyrene	ND	<	0.011	ug/L		0.02	0.011	MCL/PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	50-32-8	Benzo[a]pyrene	ND	<	0.011	ug/L		0.02	0.011	MCL/PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	50-32-8	Benzo[a]pyrene	ND	<	0.012	ug/L		0.021	0.012	MCL/PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	50-32-8	Benzo[a]pyrene	ND	<	0.011	ug/L		0.02	0.011	MCL/PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	205-99-2	Benzo[b]fluoranthene	ND	<	0.011	ug/L		0.02	0.011	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	205-99-2	Benzo[b]fluoranthene	ND	<	0.011	ug/L		0.02	0.011	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	205-99-2	Benzo[b]fluoranthene	ND	<	0.012	ug/L		0.021	0.012	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	205-99-2	Benzo[b]fluoranthene	ND	<	0.011	ug/L		0.02	0.011	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	191-24-2	Benzo[g,h,i]perylene	ND	<	0.012	ug/L		0.049	0.012				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	191-24-2	Benzo[g,h,i]perylene	ND	<	0.012	ug/L		0.049	0.012				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	191-24-2	Benzo[g,h,i]perylene	ND	<	0.013	ug/L		0.053	0.013				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	191-24-2	Benzo[g,h,i]perylene	ND	<	0.012	ug/L	^+ *+	0.049	0.012				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	207-08-9	Benzo[k]fluoranthene	ND	<	0.017	ug/L		0.02	0.017	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	207-08-9	Benzo[k]fluoranthene	ND	<	0.017	ug/L		0.02	0.017	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	207-08-9	Benzo[k]fluoranthene	ND	<	0.018	ug/L		0.021	0.018	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	207-08-9	Benzo[k]fluoranthene	ND	<	0.017	ug/L		0.02	0.017	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	65-85-0	Benzoic acid	ND	<	5.5	ug/L		50	5.5				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	100-51-6	Benzyl alcohol	ND	<	3.2	ug/L		10	3.2				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-41-7	Beryllium	ND	<	0.18	ug/L		1	0.18	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-41-7	Beryllium	ND	<	0.18	ug/L		1	0.18	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-41-7	Beryllium	ND	<	0.18	ug/L		1	0.18	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	319-85-7	beta-BHC	ND	<	0.02	ug/L		0.099	0.02	PP	0.014	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	319-85-7	beta-BHC	ND	<	0.021	ug/L		0.11	0.021	PP	0.014	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	111-91-1	Bis(2-chloroethoxy)methane	ND	<	1.8	ug/L		10	1.8				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	111-44-4	Bis(2-chloroethyl)ether	ND	<	10	ug/L		25	10	PP	0.031	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	108-60-1	Bis(2-chloroisopropyl) ether	ND	<	2.9	ug/L		10	2.9	PP	1400	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	117-81-7	Bis(2-ethylhexyl) phthalate	ND	<	0.15	ug/L		0.59	0.15	PP	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	117-81-7	Bis(2-ethylhexyl) phthalate	ND	<	0.15	ug/L		0.59	0.15	PP	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	117-81-7	Bis(2-ethylhexyl) phthalate	ND	<	0.16	ug/L		0.63	0.16	PP	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	117-81-7	Bis(2-ethylhexyl) phthalate	ND	<	0.15	ug/L		0.59	0.15	PP	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.7 Rev 4.4	7440-42-8	Boron	0.12	=	0.12	mg/L		0.05	0.0048	BP/DW NL	0.75	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.7 Rev 4.4	7440-42-8	Boron	0.15	=	0.15	mg/L		0.05	0.0048	BP/DW NL	0.75	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.7 Rev 4.4	7440-42-8	Boron	0.12	=	0.12	mg/L		0.05	0.0048	BP/DW NL	0.75	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	200.7 Rev 4.4	7440-42-8	Boron	0.041	Estimated	0.041	mg/L	J	0.05	0.0048	BP/DW NL	0.75	mg/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	314-40-9	Bromacil	ND	<	0.028	ug/L		0.098	0.028				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	314-40-9	Bromacil	ND	<	0.029	ug/L		0.099	0.029				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	314-40-9	Bromacil	ND	<	0.031	ug/L		0.11	0.031				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	314-40-9	Bromacil	ND	<	0.029	ug/L	^3+	0.099	0.029				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	300.1	15541-45-4	Bromate	ND	<	0.87	ug/L		5	0.87	MCL/DBP	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	300.1	15541-45-4	Bromate	ND	<	0.87	ug/L		5	0.87	MCL/DBP	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	300.1	15541-45-4	Bromate	ND	<	0.87	ug/L		5	0.87	MCL/DBP	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	108-86-1	Bromobenzene	ND	<	0.086	ug/L		0.5	0.086				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	108-86-1	Bromobenzene	ND	<	0.086	ug/L		0.5	0.086				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	108-86-1	Bromobenzene	ND	<	0.086	ug/L		0.5	0.086				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	108-86-1	Bromobenzene	ND	<	0.086	ug/L		0.5	0.086				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	6251B	5589-96-8	Bromochloroacetic acid	ND	<	0.053	ug/L		1	0.053				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B	5589-96-8	Bromochloroacetic acid	ND	<	0.053	ug/L		1	0.053				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B	5589-96-8	Bromochloroacetic acid	ND	<	0.053	ug/L		1	0.053				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	74-97-5	Bromochloromethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	74-97-5	Bromochloromethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	74-97-5	Bromochloromethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	74-97-5	Bromochloromethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-27-4	Bromodichloromethane	ND	<	0.12	ug/L	B	0.5	0.12				No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-27-4	Bromodichloromethane	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-27-4	Bromodichloromethane	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-27-4	Bromodichloromethane	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	74-96-4	Bromoethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	74-96-4	Bromoethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	74-96-4	Bromoethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	74-96-4	Bromoethane	ND	<	0.18	ug/L		0.5	0.18				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-25-2	Bromoform	ND	<	0.14	ug/L		0.5	0.14	MCL/DBP	4.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-25-2	Bromoform	ND	<	0.14	ug/L		0.5	0.14	MCL/DBP	4.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-25-2	Bromoform	ND	<	0.14	ug/L		0.5	0.14	MCL/DBP	4.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-25-2	Bromoform	ND	<	0.14	ug/L		0.5	0.14	MCL/DBP	4.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	23184-66-9	Butachlor	ND	<	0.032	ug/L		0.049	0.032				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	23184-66-9	Butachlor	ND	<	0.033	ug/L		0.049	0.033				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	23184-66-9	Butachlor	ND	<	0.035	ug/L		0.053	0.035				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	23184-66-9	Butachlor	ND	<	0.033	ug/L		0.049	0.033				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	85-68-7	Butyl benzyl phthalate	ND	<	0.062	ug/L	B	0.49	0.062	PP	3000	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	85-68-7	Butyl benzyl phthalate	ND	<	0.062	ug/L		0.49	0.062	PP	3000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	85-68-7	Butyl benzyl phthalate	ND	<	3.7	ug/L		10	3.7	PP	3000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	85-68-7	Butyl benzyl phthalate	ND	<	0.067	ug/L	B	0.53	0.067	PP	3000	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	85-68-7	Butyl benzyl phthalate	ND	<	0.062	ug/L		0.49	0.062	PP	3000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-43-9	Cadmium	ND	<	0.081	ug/L		0.5	0.081	MCL/PP	1.7	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-43-9	Cadmium	ND	<	0.081	ug/L		0.5	0.081	MCL/PP	1.7	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-43-9	Cadmium	ND	<	0.081	ug/L		0.5	0.081	MCL/PP	1.7	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	58-08-2	Caffeine	ND	<	0.02	ug/L		0.049	0.02				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	58-08-2	Caffeine	ND	<	0.02	ug/L		0.049	0.02				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	58-08-2	Caffeine	ND	<	0.021	ug/L		0.053	0.021				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	58-08-2	Caffeine	ND	<	0.02	ug/L		0.049	0.02				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	63-25-2	Carbaryl	ND	<	0.16	ug/L		0.5	0.16				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	63-25-2	Carbaryl	ND	<	0.16	ug/L		0.5	0.16				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	63-25-2	Carbaryl	ND	<	0.16	ug/L		0.5	0.16				Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	86-74-8	Carbazole	ND	<	2.6	ug/L		10	2.6				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	1563-66-2	Carbofuran	ND	<	0.1	ug/L		0.5	0.1	MCL	18	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	1563-66-2	Carbofuran	ND	<	0.1	ug/L		0.5	0.1	MCL	18	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	1563-66-2	Carbofuran	ND	<	0.1	ug/L		0.5	0.1	MCL	18	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-15-0	Carbon disulfide	ND	<	0.085	ug/L	B	0.5	0.085	DW NL	160	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-15-0	Carbon disulfide	ND	<	0.085	ug/L		0.5	0.085	DW NL	160	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-15-0	Carbon disulfide	ND	<	0.085	ug/L		0.5	0.085	DW NL	160	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-15-0	Carbon disulfide	ND	<	0.085	ug/L		0.5	0.085	DW NL	160	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	56-23-5	Carbon tetrachloride	ND	<	0.087	ug/L		0.5	0.087	MCL	0.25	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	56-23-5	Carbon tetrachloride	ND	<	0.087	ug/L		0.5	0.087	MCL	0.25	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	56-23-5	Carbon tetrachloride	ND	<	0.087	ug/L		0.5	0.087	MCL	0.25	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	56-23-5	Carbon tetrachloride	ND	<	0.087	ug/L		0.5	0.087	MCL	0.25	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	300.1	14866-68-3	Chlorate	ND	<	1.2	ug/L		10	1.2	DW NL	800	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	300.1	14866-68-3	Chlorate	ND	<	1.2	ug/L		10	1.2	DW NL	800	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	300.1	14866-68-3	Chlorate	ND	<	1.2	ug/L		10	1.2	DW NL	800	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	57-74-9	Chlordane	ND	<	0.032	ug/L		0.1	0.032	MCL/PP	0.00057	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	57-74-9	Chlordane	ND	<	0.032	ug/L		0.1	0.032	MCL/PP	0.00057	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	57-74-9	Chlordane	ND	<	0.032	ug/L		0.1	0.032	MCL/PP	0.00057	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	300	14998-27-7	Chlorite	ND	<	1	ug/L		10	1	MCL/DBP	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	300	14998-27-7	Chlorite	ND	<	1	ug/L		10	1	MCL/DBP	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	300	14998-27-7	Chlorite	ND	<	1	ug/L		10	1	MCL/DBP	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	108-90-7	Chlorobenzene	ND	<	0.067	ug/L		0.5	0.067	PP	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	108-90-7	Chlorobenzene	ND	<	0.067	ug/L		0.5	0.067	PP	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	108-90-7	Chlorobenzene	ND	<	0.067	ug/L		0.5	0.067	PP	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	108-90-7	Chlorobenzene	ND	<	0.067	ug/L		0.5	0.067	PP	70	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-00-3	Chloroethane	ND	<	0.078	ug/L		0.5	0.078				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-00-3	Chloroethane	ND	<	0.078	ug/L		0.5	0.078				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-00-3	Chloroethane	ND	<	0.078	ug/L		0.5	0.078				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-00-3	Chloroethane	ND	<	0.078	ug/L		0.5	0.078				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	67-66-3	Chloroform	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	67-66-3	Chloroform	ND	<	0.19	ug/L		0.5	0.19				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	67-66-3	Chloroform	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	67-66-3	Chloroform	ND	<	0.19	ug/L		0.5	0.19				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	67-66-3	Chloroform	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	67-66-3	Chloroform	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-47-3	Chromium	ND	<	0.8	ug/L	*+	1	0.8	MCL	50	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-47-3	Chromium	ND	<	0.8	ug/L		1	0.8	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-47-3	Chromium	ND	<	0.8	ug/L		1	0.8	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	218.6 CR3	16065-83-1	Chromium (III)	ND	<	1	ug/L		1	1	PP	207	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	218.6 CR3	16065-83-1	Chromium (III)	ND	<	1	ug/L		1	1	PP	207	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	218.6 CR3	16065-83-1	Chromium (III)	ND	<	1	ug/L		1	1	PP	207	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	218-01-9	Chrysene	ND	<	0.014	ug/L		0.02	0.014	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	218-01-9	Chrysene	ND	<	0.014	ug/L		0.02	0.014	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	218-01-9	Chrysene	ND	<	0.015	ug/L		0.021	0.015	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	218-01-9	Chrysene	ND	<	0.014	ug/L		0.02	0.014	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	156-59-2	cis-1,2-Dichloroethene	ND	<	0.21	ug/L		0.5	0.21				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	156-59-2	cis-1,2-Dichloroethene	ND	<	0.21	ug/L		0.5	0.21				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	156-59-2	cis-1,2-Dichloroethylene	ND	<	0.14	ug/L		0.5	0.14	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	156-59-2	cis-1,2-Dichloroethylene	ND	<	0.14	ug/L		0.5	0.14	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	156-59-2	cis-1,2-Dichloroethylene	ND	<	0.14	ug/L		0.5	0.14	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	156-59-2	cis-1,2-Dichloroethylene	ND	<	0.14	ug/L	*1	0.5	0.14	MCL	6	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	10061-01-5	cis-1,3-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	10061-01-5	cis-1,3-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	10061-01-5	cis-1,3-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	10061-01-5	cis-1,3-Dichloropropene	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	5103-71-9	cis-Chlordane	ND	<	0.029	ug/L		0.049	0.029				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	5103-71-9	cis-Chlordane	ND	<	0.031	ug/L		0.053	0.031				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	9223B		Coliform, Total	ND	<	1	MPN/100mL		1	1				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	9223B		Coliform, Total	ND	<	1	MPN/100mL		1	1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	9223B		Coliform, Total	ND	<	1	MPN/100mL		1	1				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-50-8	Copper	ND	<	0.27	ug/L		2	0.27	MCL /PP	9.3	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-50-8	Copper	ND	<	0.27	ug/L		2	0.27	MCL /PP	9.3	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-50-8	Copper	ND	<	0.27	ug/L		2	0.27	MCL /PP	9.3	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	7/20/2023	335.4	57-12-5	Cyanide, Total	ND	<	0.002	mg/L		0.005	0.002	MCL/PP	0.0052	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	335.4	57-12-5	Cyanide, Total	ND	<	0.002	mg/L		0.005	0.002	MCL/PP	0.0052	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	335.4	57-12-5	Cyanide, Total	ND	<	0.002	mg/L		0.005	0.002	MCL/PP	0.0052	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	75-99-0	Dalapon	ND	<	0.12	ug/L		1	0.12	MCL	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	75-99-0	Dalapon	ND	<	0.12	ug/L		1	0.12	MCL	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	75-99-0	Dalapon	ND	<	0.12	ug/L		1	0.12	MCL	200	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	319-86-8	delta-BHC	ND	<	0.033	ug/L		0.099	0.033				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	319-86-8	delta-BHC	ND	<	0.035	ug/L		0.11	0.035				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	103-23-1	Di(2-ethylhexyl)adipate	0.082	Estimated	0.082	ug/L	J B	0.59	0.062	MCL	400	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	103-23-1	Di(2-ethylhexyl)adipate	0.092	Estimated	0.092	ug/L	J B	0.59	0.062	MCL	400	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	103-23-1	Di(2-ethylhexyl)adipate	0.14	Estimated	0.14	ug/L	J B	0.63	0.067	MCL	400	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	103-23-1	Di(2-ethylhexyl)adipate	ND	<	0.062	ug/L		0.59	0.062	MCL	400	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	333-41-5	Diazinon	ND	<	0.025	ug/L		0.098	0.025	DW NL	1.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	333-41-5	Diazinon	ND	<	0.025	ug/L		0.099	0.025	DW NL	1.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	333-41-5	Diazinon	ND	<	0.026	ug/L		0.11	0.026	DW NL	1.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	333-41-5	Diazinon	ND	<	0.025	ug/L		0.099	0.025	DW NL	1.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	333-41-5	Diazinon (Qualitative)	ND	<	0.025	ug/L		0.099	0.025	DW NL	1.2	ug/l	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	53-70-3	Dibenz(a,h)anthracene	ND	<	0.032	ug/L		0.049	0.032	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	53-70-3	Dibenz(a,h)anthracene	ND	<	0.033	ug/L		0.049	0.033	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	53-70-3	Dibenz(a,h)anthracene	ND	<	0.035	ug/L		0.053	0.035	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	53-70-3	Dibenz(a,h)anthracene	ND	<	0.033	ug/L		0.049	0.033	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	132-64-9	Dibenzofuran	ND	<	1.6	ug/L		10	1.6				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	6251B	631-64-1	Dibromoacetic acid	ND	<	0.054	ug/L		1	0.054	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B	631-64-1	Dibromoacetic acid	ND	<	0.054	ug/L		1	0.054	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B	631-64-1	Dibromoacetic acid	ND	<	0.054	ug/L		1	0.054	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	6251B	631-64-1	Dibromoacetic acid	ND	<	0.054	ug/L		1	0.054	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	124-48-1	Dibromochloromethane	ND	<	0.062	ug/L		0.5	0.062	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	124-48-1	Dibromochloromethane	ND	<	0.062	ug/L		0.5	0.062	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	124-48-1	Dibromochloromethane	ND	<	0.062	ug/L		0.5	0.062	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	124-48-1	Dibromochloromethane	ND	<	0.062	ug/L		0.5	0.062	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	74-95-3	Dibromomethane	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	74-95-3	Dibromomethane	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	74-95-3	Dibromomethane	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	74-95-3	Dibromomethane	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	1918-00-9	Dicamba	ND	<	0.017	ug/L		0.1	0.017				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	1918-00-9	Dicamba	ND	<	0.017	ug/L		0.1	0.017				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	1918-00-9	Dicamba	ND	<	0.017	ug/L		0.1	0.017				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	6251B	79-43-6	Dichloroacetic acid	ND	<	0.11	ug/L		1	0.11	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B	79-43-6	Dichloroacetic acid	ND	<	0.11	ug/L		1	0.11	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B	79-43-6	Dichloroacetic acid	ND	<	0.11	ug/L		1	0.11	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	6251B	79-43-6	Dichloroacetic acid	ND	<	0.11	ug/L		1	0.11	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-71-8	Dichlorodifluoromethane	ND	<	0.099	ug/L	B *+	0.5	0.099	DW NL	1000	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-71-8	Dichlorodifluoromethane	ND	<	0.099	ug/L		0.5	0.099	DW NL	1000	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-71-8	Dichlorodifluoromethane	ND	<	0.099	ug/L		0.5	0.099	DW NL	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-71-8	Dichlorodifluoromethane	ND	<	0.099	ug/L		0.5	0.099	DW NL	1000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-09-2	Dichloromethane	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-09-2	Dichloromethane	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-09-2	Dichloromethane	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-09-2	Dichloromethane	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	120-36-5	Dichlorprop	ND	<	0.056	ug/L		0.5	0.056				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	120-36-5	Dichlorprop	ND	<	0.056	ug/L		0.5	0.056				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	120-36-5	Dichlorprop	ND	<	0.056	ug/L		0.5	0.056				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	60-57-1	Dieldrin	ND	<	0.005	ug/L		0.01	0.005	PP	0.00014	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	60-57-1	Dieldrin	ND	<	0.005	ug/L		0.01	0.005	PP	0.00014	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	60-57-1	Dieldrin	ND	<	0.005	ug/L		0.01	0.005	PP	0.00014	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	60-57-1	Dieldrin	ND	<	0.017	ug/L		0.2	0.017	PP	0.00014	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	84-66-2	Diethyl phthalate	ND	<	0.05	ug/L		0.49	0.05	PP	23000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	84-66-2	Diethyl phthalate	ND	<	0.05	ug/L		0.49	0.05	PP	23000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	84-66-2	Diethyl phthalate	ND	<	1.9	ug/L		10	1.9	PP	23000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	84-66-2	Diethyl phthalate	ND	<	0.054	ug/L		0.53	0.054	PP	23000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	84-66-2	Diethyl phthalate	ND	<	0.05	ug/L		0.49	0.05	PP	23000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	108-20-3	Diisopropyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	108-20-3	Diisopropyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	108-20-3	Diisopropyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	108-20-3	Diisopropyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	108-20-3	Di-isopropyl ether (DIPE)	ND	<	0.21	ug/L		0.5	0.21				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	108-20-3	Di-isopropyl ether (DIPE)	ND	<	0.21	ug/L		0.5	0.21				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	60-51-5	Dimethoate	ND	<	0.032	ug/L	*-	0.098	0.032				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	60-51-5	Dimethoate	ND	<	0.033	ug/L		0.099	0.033				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	60-51-5	Dimethoate	ND	<	0.035	ug/L		0.11	0.035				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	60-51-5	Dimethoate	ND	<	0.033	ug/L		0.099	0.033				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	131-11-3	Dimethyl phthalate	ND	<	0.038	ug/L		0.49	0.038	PP	313000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	131-11-3	Dimethyl phthalate	ND	<	0.038	ug/L		0.49	0.038	PP	313000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	131-11-3	Dimethyl phthalate	ND	<	1.6	ug/L		10	1.6	PP	313000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	131-11-3	Dimethyl phthalate	ND	<	0.041	ug/L		0.53	0.041	PP	313000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	131-11-3	Dimethyl phthalate	ND	<	0.039	ug/L		0.49	0.039	PP	313000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	84-74-2	Di-n-butyl phthalate	ND	<	0.073	ug/L	B	0.98	0.073	PP	2700	ug/L	No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	84-74-2	Di-n-butyl phthalate	ND	<	0.073	ug/L		0.99	0.073	PP	2700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	84-74-2	Di-n-butyl phthalate	0.094	Estimated	0.094	ug/L	J	1.1	0.078	PP	2700	ug/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	84-74-2	Di-n-butyl phthalate	ND	<	0.073	ug/L		0.99	0.073	PP	2700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	117-84-0	Di-n-octyl phthalate	ND	<	5.3	ug/L		10	5.3				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	88-85-7	Dinoseb	ND	<	0.024	ug/L		0.2	0.024	MCL	7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	88-85-7	Dinoseb	ND	<	0.024	ug/L		0.2	0.024	MCL	7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	88-85-7	Dinoseb	ND	<	0.024	ug/L		0.2	0.024	MCL	7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	549.2	2764-72-9	Diquat	ND	<	0.35	ug/L		0.41	0.35	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	549.2	2764-72-9	Diquat	ND	<	0.35	ug/L		0.4	0.35	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	549.2	2764-72-9	Diquat	ND	<	0.33	ug/L		0.39	0.33	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	959-98-8	Endosulfan I (Alpha)	ND	<	0.057	ug/L		0.099	0.057	PP	0.056	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	959-98-8	Endosulfan I (Alpha)	ND	<	0.061	ug/L		0.11	0.061	PP	0.056	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	33213-65-9	Endosulfan II (Beta)	ND	<	0.051	ug/L		0.099	0.051	PP	0.056	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	33213-65-9	Endosulfan II (Beta)	ND	<	0.055	ug/L		0.11	0.055	PP	0.056	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	1031-07-8	Endosulfan sulfate	ND	<	0.039	ug/L		0.099	0.039	PP	110	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	1031-07-8	Endosulfan sulfate	ND	<	0.042	ug/L		0.11	0.042	PP	110	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	548.1	145-73-3	Endothall	ND	<	2.7	ug/L		5	2.7	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	548.1	145-73-3	Endothall	ND	<	2.7	ug/L		5	2.7	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	548.1	145-73-3	Endothall	ND	<	2.7	ug/L		5	2.7	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	72-20-8	Endrin	ND	<	0.005	ug/L		0.01	0.005	MCL	0.036	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	505	72-20-8	Endrin	ND	<	0.005	ug/L		0.01	0.005	MCL	0.036	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	505	72-20-8	Endrin	ND	<	0.005	ug/L		0.01	0.005	MCL	0.036	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	72-20-8	Endrin	ND	<	0.038	ug/L	*+	0.099	0.038	MCL	0.036	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	7421-93-4	Endrin aldehyde	ND	<	0.083	ug/L		0.099	0.083	PP	0.76	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	7421-93-4	Endrin aldehyde	ND	<	0.089	ug/L	^3+	0.11	0.089	PP	0.76	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	9223B	68583-22-2	Escherichia coli	ND	<	1	MPN/100mL		1	1	BP	<126	MPN/100mL	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	9223B	68583-22-2	Escherichia coli	ND	<	1	MPN/100mL		1	1	BP	<126	MPN/100mL	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	9223B	68583-22-2	Escherichia coli	ND	<	1	MPN/100mL		1	1	BP	<126	MPN/100mL	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	64-17-5	Ethanol	ND	<	65	ug/L		100	65				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	64-17-5	Ethanol	ND	<	65	ug/L		100	65				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	100-41-4	Ethylbenzene	ND	<	0.11	ug/L		0.5	0.11	MCL	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	100-41-4	Ethylbenzene	ND	<	0.11	ug/L		0.5	0.11	MCL	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	100-41-4	Ethylbenzene	ND	<	0.11	ug/L		0.5	0.11	MCL	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	100-41-4	Ethylbenzene	ND	<	0.11	ug/L		0.5	0.11	MCL	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	8015C	107-21-1	Ethylene glycol	ND	<	1.7	mg/L		5	1.7	DW NL	14	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	8015C	107-21-1	Ethylene glycol	ND	<	1.7	mg/L		5	1.7	DW NL	14	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	8015C	107-21-1	Ethylene glycol	ND	<	1.7	mg/L		5	1.7	DW NL	14	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	637-92-3	Ethyl-t-butyl ether (ETBE)	ND	<	0.27	ug/L		0.5	0.27				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	637-92-3	Ethyl-t-butyl ether (ETBE)	ND	<	0.27	ug/L		0.5	0.27				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	206-44-0	Fluoranthene	ND	<	0.0098	ug/L		0.098	0.0098	PP	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	206-44-0	Fluoranthene	ND	<	0.0099	ug/L		0.099	0.0099	PP	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	206-44-0	Fluoranthene	ND	<	0.011	ug/L		0.11	0.011	PP	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	206-44-0	Fluoranthene	ND	<	0.0099	ug/L		0.099	0.0099	PP	300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	86-73-7	Fluorene	ND	<	0.049	ug/L		0.049	0.049	PP	1300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	86-73-7	Fluorene	ND	<	0.049	ug/L		0.049	0.049	PP	1300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	86-73-7	Fluorene	ND	<	0.053	ug/L		0.053	0.053	PP	1300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	86-73-7	Fluorene	ND	<	0.049	ug/L		0.049	0.049	PP	1300	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	SM 4500 F C	16984-48-8	Fluoride	0.023	Estimated	0.023	mg/L	J	0.05	0.013	BP/MCL	0.9	mg/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/14/2023	SM 4500 F C	16984-48-8	Fluoride	0.026	Estimated	0.026	mg/L	J	0.05	0.013	BP/MCL	0.9	mg/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/21/2023	SM 4500 F C	16984-48-8	Fluoride	0.015	Estimated	0.015	mg/L	J	0.05	0.013	BP/MCL	0.9	mg/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	3/12/2024	SM 4500 F C	16984-48-8	Fluoride	ND	<	0.013	mg/L		0.05	0.013	BP/MCL	0.9	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	556	50-00-0	Formaldehyde	19	=	19	ug/L		5.2	1.9	DW NL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	556	50-00-0	Formaldehyde	18	=	18	ug/L		5	1.8	DW NL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	556	50-00-0	Formaldehyde	17	=	17	ug/L		5.1	1.8	DW NL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	5103-74-2	gamma-Chlordane	ND	<	0.021	ug/L		0.049	0.021				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	5103-74-2	gamma-Chlordane	ND	<	0.021	ug/L		0.049	0.021				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	PPCP NEG	25812-30-0	Gemfibrozil	ND	<	1.8	ng/L	H H3	5	1.8	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	9/21/2023	PPCP NEG	25812-30-0	Gemfibrozil	ND	<	1.8	ng/L	H H3	5	1.8	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	7/20/2023	547	1071-83-6	Glyphosate	ND	<	1.6	ug/L		6	1.6	MCL	700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	547	1071-83-6	Glyphosate	ND	<	1.6	ug/L		6	1.6	MCL	700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	547	1071-83-6	Glyphosate	ND	<	1.6	ug/L		6	1.6	MCL	700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	900	12587-46-1	Gross Alpha	-0.0307	<	1.12	pCi/L	U	3	1.12		15	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/14/2023	900	12587-46-1	Gross Alpha	0.221	<	0.98	pCi/L	U	3	0.98		15	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/21/2023	900	12587-46-1	Gross Alpha	0.984	<	1.26	pCi/L	U	3	1.26		15	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	7/20/2023	900	12587-47-2	Gross Beta	1.07	=	1.07	pCi/L		4	0.7		4	pCi/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	900	12587-47-2	Gross Beta	0.985	=	0.985	pCi/L		4	0.968		4	pCi/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	900	12587-47-2	Gross Beta	0.606	<	0.937	pCi/L	U	4	0.937		4	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	76-44-8	Heptachlor	ND	<	0.003	ug/L		0.01	0.003	MCL	0.00021	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	76-44-8	Heptachlor	ND	<	0.003	ug/L		0.01	0.003	MCL	0.00021	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	76-44-8	Heptachlor	ND	<	0.003	ug/L		0.01	0.003	MCL	0.00021	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	76-44-8	Heptachlor	ND	<	0.013	ug/L	^3+	0.04	0.013	MCL	0.00021	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	1024-57-3	Heptachlor epoxide (isomer B)	ND	<	0.005	ug/L		0.01	0.005	MCL	0.0001	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	1024-57-3	Heptachlor epoxide (isomer B)	ND	<	0.005	ug/L		0.01	0.005	MCL	0.0001	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	1024-57-3	Heptachlor epoxide (isomer B)	ND	<	0.005	ug/L		0.01	0.005	MCL	0.0001	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	1024-57-3	Heptachlor epoxide (isomer B)	ND	<	0.023	ug/L		0.049	0.023	MCL	0.0001	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	87-68-3	Hexachloro-1,3-butadiene	ND	<	0.21	ug/L		0.5	0.21				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	87-68-3	Hexachloro-1,3-butadiene	ND	<	0.21	ug/L		0.5	0.21				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	118-74-1	Hexachlorobenzene	ND	<	0.04	ug/L		0.049	0.04	MCL	0.00075	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	118-74-1	Hexachlorobenzene	ND	<	0.04	ug/L		0.049	0.04	MCL	0.00075	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	118-74-1	Hexachlorobenzene	ND	<	0.043	ug/L		0.053	0.043	MCL	0.00075	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	118-74-1	Hexachlorobenzene	ND	<	0.04	ug/L		0.049	0.04	MCL	0.00075	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	87-68-3	Hexachlorobutadiene	ND	<	0.085	ug/L		0.5	0.085	PP	0.44	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	87-68-3	Hexachlorobutadiene	ND	<	0.085	ug/L		0.5	0.085	PP	0.44	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	87-68-3	Hexachlorobutadiene	ND	<	0.085	ug/L		0.5	0.085	PP	0.44	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	87-68-3	Hexachlorobutadiene	ND	<	0.085	ug/L		0.5	0.085	PP	0.44	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	77-47-4	Hexachlorocyclopentadiene	ND	<	0.037	ug/L		0.049	0.037	PP	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	77-47-4	Hexachlorocyclopentadiene	ND	<	0.037	ug/L		0.049	0.037	PP	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	77-47-4	Hexachlorocyclopentadiene	ND	<	0.04	ug/L		0.053	0.04	PP	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	77-47-4	Hexachlorocyclopentadiene	ND	<	0.038	ug/L		0.049	0.038	PP	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	67-72-1	Hexachloroethane	ND	<	1.6	ug/L		10	1.6	PP	1.9	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	218.6	18540-29-9	Hexavalent Chromium	0.16	=	0.16	ug/L		0.02	0.0048	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	218.6	18540-29-9	Hexavalent Chromium	0.22	=	0.22	ug/L		0.02	0.0048	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	218.6	18540-29-9	Hexavalent Chromium	0.26	=	0.26	ug/L		0.02	0.0048	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	8321B	2691-41-0	HMX	ND	<	0.031	ug/L		0.095	0.031	DW NL	350	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	8321B	2691-41-0	HMX	ND	<	0.032	ug/L		0.097	0.032	DW NL	350	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	8321B	2691-41-0	HMX	ND	<	0.034	ug/L		0.1	0.034	DW NL	350	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	193-39-5	Indeno[1,2,3-cd]pyrene	ND	<	0.026	ug/L		0.049	0.026	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	193-39-5	Indeno[1,2,3-cd]pyrene	ND	<	0.027	ug/L		0.049	0.027	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	193-39-5	Indeno[1,2,3-cd]pyrene	ND	<	0.029	ug/L		0.053	0.029	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	193-39-5	Indeno[1,2,3-cd]pyrene	ND	<	0.027	ug/L		0.049	0.027	PP	0.0044	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	PPCP NEG	66108-95-0	Iohexol	ND	<	8.9	ng/L	H H3	20	8.9	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	9/21/2023	PPCP NEG	66108-95-0	Iohexol	ND	<	8.9	ng/L	H H3	20	8.9	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	7/20/2023	200.7 Rev 4.4	7439-89-6	Iron	ND	<	0.0022	mg/L		0.01	0.0022	CTR	0.3	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.7 Rev 4.4	7439-89-6	Iron	ND	<	0.0022	mg/L		0.01	0.0022	CTR	0.3	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.7 Rev 4.4	7439-89-6	Iron	ND	<	0.0022	mg/L		0.01	0.0022	CTR	0.3	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	78-59-1	Isophorone	ND	<	0.02	ug/L		0.49	0.02	PP	8.4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	78-59-1	Isophorone	ND	<	0.02	ug/L		0.49	0.02	PP	8.4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	78-59-1	Isophorone	ND	<	0.021	ug/L		0.53	0.021	PP	8.4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	78-59-1	Isophorone	ND	<	0.02	ug/L		0.49	0.02	PP	8.4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	67-63-0	Isopropanol	ND	<	120	ug/L		250	120				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	67-63-0	Isopropanol	ND	<	120	ug/L		250	120				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	98-82-8	Isopropylbenzene	ND	<	0.084	ug/L		0.5	0.084	DW NL	770	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	98-82-8	Isopropylbenzene	ND	<	0.084	ug/L		0.5	0.084	DW NL	770	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	98-82-8	Isopropylbenzene	ND	<	0.084	ug/L		0.5	0.084	DW NL	770	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	98-82-8	Isopropylbenzene	ND	<	0.084	ug/L		0.5	0.084	DW NL	770	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7439-92-1	Lead	ND	<	0.29	ug/L		0.5	0.29	MCL/PP	3.2	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7439-92-1	Lead	ND	<	0.29	ug/L		0.5	0.29	MCL/PP	3.2	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7439-92-1	Lead	ND	<	0.29	ug/L		0.5	0.29	MCL/PP	3.2	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	58-89-9	Lindane	ND	<	0.007	ug/L		0.01	0.007	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	505	58-89-9	Lindane	ND	<	0.007	ug/L		0.01	0.007	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	505	58-89-9	Lindane	ND	<	0.007	ug/L		0.01	0.007	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	58-89-9	Lindane	ND	<	0.022	ug/L		0.04	0.022	MCL	0.2	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	179601-23-1	m,p-Xylenes	ND	<	0.23	ug/L		0.5	0.23	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	179601-23-1	m,p-Xylenes	ND	<	0.23	ug/L		0.5	0.23	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	179601-23-1	m,p-Xylenes	ND	<	0.23	ug/L		0.5	0.23	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	179601-23-1	m,p-Xylenes	ND	<	0.23	ug/L		0.5	0.23	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7439-96-5	Manganese	ND	<	0.41	ug/L		2	0.41	DW NL	50	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7439-96-5	Manganese	ND	<	0.41	ug/L		2	0.41	DW NL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7439-96-5	Manganese	ND	<	0.41	ug/L		2	0.41	DW NL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	541-73-1	m-Dichlorobenzene (1,3-DCB)	ND	<	0.084	ug/L		0.5	0.084				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	541-73-1	m-Dichlorobenzene (1,3-DCB)	ND	<	0.084	ug/L		0.5	0.084				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	541-73-1	m-Dichlorobenzene (1,3-DCB)	ND	<	0.084	ug/L		0.5	0.084				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	541-73-1	m-Dichlorobenzene (1,3-DCB)	ND	<	0.084	ug/L		0.5	0.084				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	1631E	7439-97-6	Mercury	0.85	=	0.85	ng/L		0.5	0.2	MCL	2000	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	1631E	7439-97-6	Mercury	ND	<	0.2	ng/L		0.5	0.2	MCL	2000	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	9/28/2023	1631E	7439-97-6	Mercury	ND	<	0.2	ng/L		0.5	0.2	MCL	2000	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	10/5/2023	1631E	7439-97-6	Mercury	0.44	Estimated	0.44	ng/L	J	0.5	0.2	MCL	2000	ng/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	3/12/2024	1631E	7439-97-6	Mercury	ND	<	0.2	ng/L		0.5	0.2	MCL	2000	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	2032-65-7	Methiocarb	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	2032-65-7	Methiocarb	0.13	Estimated	0.13	ug/L	J	0.5	0.11				Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	2032-65-7	Methiocarb	0.14	Estimated	0.14	ug/L	J	0.5	0.11				Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	16752-77-5	Methomyl	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	16752-77-5	Methomyl	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	16752-77-5	Methomyl	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	72-43-5	Methoxychlor	ND	<	0.022	ug/L		0.05	0.022	MCL	30	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	505	72-43-5	Methoxychlor	ND	<	0.022	ug/L		0.05	0.022	MCL	30	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	505	72-43-5	Methoxychlor	ND	<	0.022	ug/L		0.05	0.022	MCL	30	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	72-43-5	Methoxychlor	ND	<	0.032	ug/L		0.099	0.032	MCL	30	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	74-83-9	Methyl Bromide	ND	<	0.12	ug/L		0.5	0.12	PP	48	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	74-83-9	Methyl Bromide	ND	<	0.12	ug/L		0.5	0.12	PP	48	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	74-83-9	Methyl Bromide	ND	<	0.12	ug/L		0.5	0.12	PP	48	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	74-83-9	Methyl Bromide	ND	<	0.12	ug/L		0.5	0.12	PP	48	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	74-87-3	Methyl chloride	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	74-87-3	Methyl chloride	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	74-87-3	Methyl chloride	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	74-87-3	Methyl chloride	ND	<	0.11	ug/L		0.5	0.11				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	1634-04-4	Methyl tertiary butyl ether (MTBE)	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	1634-04-4	Methyl tertiary butyl ether (MTBE)	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	1634-04-4	Methyl tertiary butyl ether (MTBE)	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	1634-04-4	Methyl tertiary butyl ether (MTBE)	ND	<	0.074	ug/L		0.5	0.074	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	SM 5540C		Methylene Blue Active Substances	ND	<	0.03	mg/L		0.1	0.03	BP/MCL	0.05	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	SM 5540C		Methylene Blue Active Substances	ND	<	0.03	mg/L		0.1	0.03	BP/MCL	0.05	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	SM 5540C		Methylene Blue Active Substances	ND	<	0.03	mg/L		0.1	0.03	BP/MCL	0.05	mg/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	75-09-2	Methylene Chloride	ND	<	0.57	ug/L		2	0.57	PP	4.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	75-09-2	Methylene Chloride	ND	<	0.57	ug/L		2	0.57	PP	4.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	51218-45-2	Metolachlor	ND	<	0.043	ug/L		0.049	0.043				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	51218-45-2	Metolachlor	ND	<	0.043	ug/L		0.049	0.043				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	51218-45-2	Metolachlor	ND	<	0.046	ug/L		0.053	0.046				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	51218-45-2	Metolachlor	ND	<	0.043	ug/L		0.049	0.043				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	21087-64-9	Metribuzin	ND	<	0.016	ug/L	*+ ^3+	0.049	0.016				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	21087-64-9	Metribuzin	ND	<	0.016	ug/L	^3+	0.049	0.016				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	21087-64-9	Metribuzin	ND	<	0.017	ug/L	^3+	0.053	0.017				No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	21087-64-9	Metribuzin	ND	<	0.016	ug/L		0.049	0.016				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	2212-67-1	Molinate	ND	<	0.015	ug/L		0.098	0.015	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	2212-67-1	Molinate	ND	<	0.015	ug/L		0.099	0.015	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	2212-67-1	Molinate	ND	<	0.016	ug/L		0.11	0.016	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	2212-67-1	Molinate	ND	<	0.015	ug/L		0.099	0.015	MCL	20	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	6251B	79-08-3	Monobromoacetic acid	ND	<	0.055	ug/L		1	0.055	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B	79-08-3	Monobromoacetic acid	ND	<	0.055	ug/L		1	0.055	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B	79-08-3	Monobromoacetic acid	ND	<	0.055	ug/L		1	0.055	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	6251B	79-08-3	Monobromoacetic acid	ND	<	0.055	ug/L		1	0.055	MCL/DBP	RL (1)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	6251B	79-11-8	Monochloroacetic acid	ND	<	0.41	ug/L		2	0.41	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B	79-11-8	Monochloroacetic acid	ND	<	0.41	ug/L		2	0.41	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B	79-11-8	Monochloroacetic acid	ND	<	0.41	ug/L		2	0.41	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	6251B	79-11-8	Monochloroacetic acid	ND	<	0.41	ug/L		2	0.41	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	91-20-3	Naphthalene	ND	<	0.15	ug/L		0.5	0.15	DW NL	17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	91-20-3	Naphthalene	ND	<	0.15	ug/L		0.5	0.15	DW NL	17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	91-20-3	Naphthalene	ND	<	0.15	ug/L		0.5	0.15	DW NL	17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	91-20-3	Naphthalene	ND	<	0.15	ug/L		0.5	0.15	DW NL	17	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	104-51-8	n-Butylbenzene	ND	<	0.056	ug/L		0.5	0.056	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	104-51-8	n-Butylbenzene	ND	<	0.056	ug/L		0.5	0.056	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	104-51-8	n-Butylbenzene	ND	<	0.056	ug/L		0.5	0.056	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	104-51-8	n-Butylbenzene	ND	<	0.056	ug/L		0.5	0.056	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	124-18-5	n-Decane	ND	<	2.7	ug/L		10	2.7				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-02-0	Nickel	ND	<	0.38	ug/L		5	0.38	MCL	52	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-02-0	Nickel	ND	<	0.38	ug/L		5	0.38	MCL	52	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-02-0	Nickel	ND	<	0.38	ug/L		5	0.38	MCL	52	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	98-95-3	Nitrobenzene	ND	<	9.9	ug/L		25	9.9	PP	17	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	521.1	62-75-9	N-Nitrosodimethylamine (NDMA)	ND	<	0.56	ng/L	*3	2.1	0.56	DW NL/CEC	10	ng/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	521.1	62-75-9	N-Nitrosodimethylamine (NDMA)	ND	<	0.56	ng/L		2.1	0.56	DW NL/CEC	10	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	62-75-9	N-Nitrosodimethylamine (NDMA)	ND	<	1.5	ug/L		10	1.5	DW NL/CEC	10	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	3/14/2024	521.1	62-75-9	N-Nitrosodimethylamine (NDMA)	0.59	Estimated	0.59	ng/L	J	2.1	0.57	DW NL/CEC	10	ng/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	621-64-7	N-Nitrosodi-n-propylamine	ND	<	2	ug/L		10	2				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	86-30-6	N-Nitrosodiphenylamine	ND	<	1.9	ug/L		10	1.9	PP	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	521.1	59-89-2	N-Nitrosomorpholine (NMOR)	1.3	Estimated	1.3	ng/L	J *3	2.1	0.51	CEC			No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	521.1	59-89-2	N-Nitrosomorpholine (NMOR)	ND	<	0.5	ng/L	B	2.1	0.5	CEC			No	Analyte was found in the method blank. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	3/14/2024	521.1	59-89-2	N-Nitrosomorpholine (NMOR)	ND	<	0.52	ng/L		2.1	0.52	CEC			Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	593-45-3	n-Octadecane	ND	<	2.4	ug/L		10	2.4				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	103-65-1	N-Propylbenzene	ND	<	0.088	ug/L		0.5	0.088	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	103-65-1	N-Propylbenzene	ND	<	0.088	ug/L		0.5	0.088	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	103-65-1	N-Propylbenzene	ND	<	0.088	ug/L		0.5	0.088	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	103-65-1	N-Propylbenzene	ND	<	0.088	ug/L		0.5	0.088	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	95-49-8	o-Chlorotoluene	ND	<	0.057	ug/L		0.5	0.057				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	95-49-8	o-Chlorotoluene	ND	<	0.057	ug/L		0.5	0.057				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	95-49-8	o-Chlorotoluene	ND	<	0.057	ug/L		0.5	0.057				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	95-49-8	o-Chlorotoluene	ND	<	0.057	ug/L		0.5	0.057				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	95-50-1	o-Dichlorobenzene (1,2-DCB)	ND	<	0.076	ug/L		0.5	0.076				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	95-50-1	o-Dichlorobenzene (1,2-DCB)	ND	<	0.076	ug/L		0.5	0.076				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	95-50-1	o-Dichlorobenzene (1,2-DCB)	ND	<	0.076	ug/L		0.5	0.076				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	95-50-1	o-Dichlorobenzene (1,2-DCB)	ND	<	0.076	ug/L		0.5	0.076				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	531.2	23135-22-0	Oxamyl	ND	<	0.17	ug/L		0.5	0.17	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	531.2	23135-22-0	Oxamyl	ND	<	0.17	ug/L		0.5	0.17	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	531.2	23135-22-0	Oxamyl	ND	<	0.17	ug/L		0.5	0.17	MCL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	95-47-6	o-Xylene	ND	<	0.072	ug/L		0.5	0.072	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	95-47-6	o-Xylene	ND	<	0.072	ug/L		0.5	0.072	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	95-47-6	o-Xylene	ND	<	0.072	ug/L		0.5	0.072	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	95-47-6	o-Xylene	ND	<	0.072	ug/L		0.5	0.072	MCL for Xylenes	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	59-50-7	Parachlorometacresol	ND	<	1.8	ug/L		10	1.8				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	549.2	4685-14-7	Paraquat	ND	<	0.18	ug/L		2	0.18				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	549.2	4685-14-7	Paraquat	ND	<	0.18	ug/L		2	0.18				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	549.2	4685-14-7	Paraquat	ND	<	0.18	ug/L		1.9	0.18				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	12674-11-2	PCB-1016	ND	<	0.022	ug/L		0.07	0.022	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	12674-11-2	PCB-1016	ND	<	0.022	ug/L		0.07	0.022	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	12674-11-2	PCB-1016	ND	<	0.022	ug/L		0.07	0.022	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	11104-28-2	PCB-1221	ND	<	0.079	ug/L		0.1	0.079	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	11104-28-2	PCB-1221	ND	<	0.079	ug/L		0.1	0.079	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	11104-28-2	PCB-1221	ND	<	0.079	ug/L		0.1	0.079	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	11141-16-5	PCB-1232	ND	<	0.085	ug/L		0.1	0.085	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	11141-16-5	PCB-1232	ND	<	0.085	ug/L		0.1	0.085	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.

Legend:

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Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/21/2023	505	11141-16-5	PCB-1232	ND	<	0.085	ug/L		0.1	0.085	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	53469-21-9	PCB-1242	ND	<	0.072	ug/L		0.1	0.072	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	53469-21-9	PCB-1242	ND	<	0.072	ug/L		0.1	0.072	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	53469-21-9	PCB-1242	ND	<	0.072	ug/L		0.1	0.072	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	12672-29-6	PCB-1248	ND	<	0.023	ug/L		0.1	0.023	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	12672-29-6	PCB-1248	ND	<	0.023	ug/L		0.1	0.023	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	12672-29-6	PCB-1248	ND	<	0.023	ug/L		0.1	0.023	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	11097-69-1	PCB-1254	ND	<	0.035	ug/L		0.1	0.035	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	11097-69-1	PCB-1254	ND	<	0.035	ug/L		0.1	0.035	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	11097-69-1	PCB-1254	ND	<	0.035	ug/L		0.1	0.035	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	505	11096-82-5	PCB-1260	ND	<	0.033	ug/L		0.07	0.033	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	11096-82-5	PCB-1260	ND	<	0.033	ug/L		0.07	0.033	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	11096-82-5	PCB-1260	ND	<	0.033	ug/L		0.07	0.033	PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	106-43-4	p-Chlorotoluene	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	106-43-4	p-Chlorotoluene	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	106-43-4	p-Chlorotoluene	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	106-43-4	p-Chlorotoluene	ND	<	0.12	ug/L		0.5	0.12				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	106-46-7	p-Dichlorobenzene (1,4-DCB)	ND	<	0.092	ug/L		0.5	0.092				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	106-46-7	p-Dichlorobenzene (1,4-DCB)	ND	<	0.092	ug/L		0.5	0.092				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	106-46-7	p-Dichlorobenzene (1,4-DCB)	ND	<	0.092	ug/L		0.5	0.092				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	106-46-7	p-Dichlorobenzene (1,4-DCB)	ND	<	0.092	ug/L		0.5	0.092				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	87-86-5	Pentachlorophenol	ND	<	0.005	ug/L		0.04	0.005	MCL/PP	0.28	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	87-86-5	Pentachlorophenol	ND	<	0.005	ug/L		0.04	0.005	MCL/PP	0.28	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	87-86-5	Pentachlorophenol	ND	<	0.005	ug/L		0.04	0.005	MCL/PP	0.28	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	314	14797-73-0	Perchlorate	ND	<	0.37	ug/L		2	0.37	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	314	14797-73-0	Perchlorate	ND	<	0.37	ug/L		2	0.37	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	314	14797-73-0	Perchlorate	ND	<	0.37	ug/L		2	0.37	MCL	6	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	533	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	<	0.43	ng/L		2	0.43	MCL	4	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	533	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	<	0.43	ng/L		2	0.43	MCL	4	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	3/14/2024	533	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND	<	0.43	ng/L		2	0.43	MCL	4	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	533	335-67-1	Perfluorooctanoic acid (PFOA)	ND	<	0.38	ng/L		2	0.38	MCL	4	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	533	335-67-1	Perfluorooctanoic acid (PFOA)	ND	<	0.38	ng/L		2	0.38	MCL	4	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	3/14/2024	533	335-67-1	Perfluorooctanoic acid (PFOA)	ND	<	0.38	ng/L		2	0.38	MCL	4	ng/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	85-01-8	Phenanthrene	ND	<	0.0079	ug/L		0.039	0.0079				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	85-01-8	Phenanthrene	ND	<	0.0079	ug/L		0.039	0.0079				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	85-01-8	Phenanthrene	ND	<	0.0085	ug/L		0.042	0.0085				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	85-01-8	Phenanthrene	ND	<	0.0079	ug/L		0.04	0.0079				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	108-95-2	Phenol	ND	<	0.92	ug/L		10	0.92	PP	21000	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	515.4	6607	Picloram	ND	<	0.015	ug/L		0.1	0.015	MCL	500	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	515.4	6607	Picloram	ND	<	0.015	ug/L		0.1	0.015	MCL	500	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	515.4	6607	Picloram	ND	<	0.015	ug/L		0.1	0.015	MCL	500	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	99-87-6	p-Isopropyltoluene	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	99-87-6	p-Isopropyltoluene	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	99-87-6	p-Isopropyltoluene	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	99-87-6	p-Isopropyltoluene	ND	<	0.099	ug/L		0.5	0.099				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	1336-36-3	Polychlorinated biphenyls, Total	ND	<	0.085	ug/L		0.1	0.085	MCL/PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	1336-36-3	Polychlorinated biphenyls, Total	ND	<	0.085	ug/L		0.1	0.085	MCL/PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	1336-36-3	Polychlorinated biphenyls, Total	ND	<	0.085	ug/L		0.1	0.085	MCL/PP	0.00017	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	1918-16-7	Propachlor	ND	<	0.02	ug/L		0.049	0.02	DW NL	90	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	1918-16-7	Propachlor	ND	<	0.02	ug/L		0.049	0.02	DW NL	90	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	1918-16-7	Propachlor	ND	<	0.021	ug/L		0.053	0.021	DW NL	90	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	1918-16-7	Propachlor	ND	<	0.02	ug/L		0.049	0.02	DW NL	90	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	129-00-0	Pyrene	ND	<	0.0079	ug/L		0.049	0.0079	PP	960	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	129-00-0	Pyrene	ND	<	0.0079	ug/L		0.049	0.0079	PP	960	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	129-00-0	Pyrene	ND	<	0.0085	ug/L		0.053	0.0085	PP	960	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	129-00-0	Pyrene	ND	<	0.0079	ug/L		0.049	0.0079	PP	960	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	625.1	110-86-1	Pyridine	ND	<	3.4	ug/L		10	3.4				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	903	13982-63-3	Radium-226	0.0486	<	0.1	pCi/L	U	1	0.1	Radionuclide	5	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/14/2023	903	13982-63-3	Radium-226	-0.00491	<	0.154	pCi/L	U	1	0.154	Radionuclide	5	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/21/2023	903	13982-63-3	Radium-226	0.109	<	0.206	pCi/L	U	1	0.206	Radionuclide	5	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	7/20/2023	904	15262-20-1	Radium-228	0.369	<	0.545	pCi/L	U	1	0.545	Radionuclide	5	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/14/2023	904	15262-20-1	Radium-228	0.105	<	0.565	pCi/L	U	1	0.565	Radionuclide	5	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/21/2023	904	15262-20-1	Radium-228	0.396	<	0.533	pCi/L	U	1	0.533	Radionuclide	5	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	7/20/2023	8321B	121-82-4	RDX	ND	<	0.026	ug/L		0.095	0.026	DW NL	0.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	8321B	121-82-4	RDX	ND	<	0.026	ug/L		0.097	0.026	DW NL	0.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	8321B	121-82-4	RDX	ND	<	0.027	ug/L		0.1	0.027	DW NL	0.3	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	135-98-8	sec-Butylbenzene	ND	<	0.1	ug/L		0.5	0.1	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	135-98-8	sec-Butylbenzene	ND	<	0.1	ug/L		0.5	0.1	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	135-98-8	sec-Butylbenzene	ND	<	0.1	ug/L		0.5	0.1	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	135-98-8	sec-Butylbenzene	ND	<	0.1	ug/L		0.5	0.1	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7782-49-2	Selenium	ND	<	1	ug/L		5	1	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7782-49-2	Selenium	ND	<	1	ug/L		5	1	MCL	5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7782-49-2	Selenium	ND	<	1	ug/L	^2	5	1	MCL	5	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-22-4	Silver	ND	<	0.12	ug/L		0.5	0.12	CTR	4	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-22-4	Silver	ND	<	0.12	ug/L		0.5	0.12	CTR	4	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-22-4	Silver	ND	<	0.12	ug/L		0.5	0.12	CTR	4	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	122-34-9	Simazine	ND	<	0.027	ug/L		0.049	0.027	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	122-34-9	Simazine	ND	<	0.028	ug/L		0.049	0.028	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	122-34-9	Simazine	ND	<	0.03	ug/L		0.053	0.03	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	122-34-9	Simazine	ND	<	0.028	ug/L		0.049	0.028	MCL	4	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	200.7 Rev 4.4	7440-24-6	Strontium	1.5	Estimated	1.5	ug/L	J	5	1.5				Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	7/20/2023	905	10098-97-2	Strontium-90	-0.295	<	0.295	pCi/L	U	3	0.295	Radionuclide	8	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/14/2023	905	10098-97-2	Strontium-90	0.164	<	0.308	pCi/L	U	3	0.308	Radionuclide	8	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/21/2023	905	10098-97-2	Strontium-90	0.0126	<	0.284	pCi/L	U	3	0.284	Radionuclide	8	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	100-42-5	Styrene	ND	<	0.11	ug/L		0.5	0.11	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	100-42-5	Styrene	ND	<	0.11	ug/L		0.5	0.11	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	100-42-5	Styrene	ND	<	0.11	ug/L		0.5	0.11	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	100-42-5	Styrene	ND	<	0.11	ug/L		0.5	0.11	MCL	100	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	PPCP NEG	56038-13-2	Sucralose	81	Estimated	81	ng/L	J H	100	49	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	9/14/2023	PPCP NEG	56038-13-2	Sucralose	65	Estimated	65	ng/L	J H H3 Q3	100	49	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	9/14/2023	PPCP NEG	56038-13-2	Sucralose	76	Estimated	76	ng/L	J H H3 Q3	100	49	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	3/14/2024	PPCP NEG	56038-13-2	Sucralose	ND	<	49	ng/L		100	49	CEC			Yes	
AWPF-UVAOP-EFF	Grab	8/17/2023	PPCP POS	723-46-6	Sulfamethoxazole	ND	<	0.007	ug/L		0.01	0.007	CEC			Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	PPCP POS	723-46-6	Sulfamethoxazole	ND	<	3.2	ng/L	H H3	10	3.2	CEC			No	Sample was analyzed beyond the specified holding time. Result does not meet regulatory requirements. Included as reference.
AWPF-UVAOP-EFF	Grab	3/14/2024	PPCP POS	723-46-6	Sulfamethoxazole	ND	<	3.2	ng/L		10	3.2	CEC			Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	994-05-8	Tert-amyl methyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	994-05-8	Tert-amyl methyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	994-05-8	Tert-amyl methyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	994-05-8	Tert-amyl methyl ether	ND	<	0.11	ug/L		3	0.11				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	75-65-0	tert-Butyl alcohol (TBA)	ND	<	3.8	ug/L		10	3.8	DDW NL	12	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	75-65-0	tert-Butyl alcohol (TBA)	ND	<	3.8	ug/L		10	3.8	DDW NL	12	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	637-92-3	Tert-butyl ethyl ether	ND	<	0.17	ug/L		3	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	637-92-3	Tert-butyl ethyl ether	ND	<	0.17	ug/L		3	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	637-92-3	Tert-butyl ethyl ether	ND	<	0.17	ug/L		3	0.17				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	637-92-3	Tert-butyl ethyl ether	ND	<	0.17	ug/L		3	0.17				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	98-06-6	tert-Butylbenzene	ND	<	0.094	ug/L		0.5	0.094	DW NL	260	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	98-06-6	tert-Butylbenzene	ND	<	0.094	ug/L		0.5	0.094	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	98-06-6	tert-Butylbenzene	ND	<	0.094	ug/L		0.5	0.094	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	98-06-6	tert-Butylbenzene	ND	<	0.094	ug/L		0.5	0.094	DW NL	260	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	127-18-4	Tetrachloroethene (PCE)	ND	<	0.28	ug/L		0.5	0.28				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	127-18-4	Tetrachloroethene (PCE)	ND	<	0.28	ug/L		0.5	0.28				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	127-18-4	Tetrachloroethene (PCE)	ND	<	0.28	ug/L		0.5	0.28				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	127-18-4	Tetrachloroethene (PCE)	ND	<	0.28	ug/L		0.5	0.28				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	127-18-4	Tetrachloroethylene	ND	<	0.21	ug/L		0.5	0.21	MCL/PP	0.8	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	127-18-4	Tetrachloroethylene	ND	<	0.21	ug/L		0.5	0.21	MCL/PP	0.8	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	109-99-9	Tetrahydrofuran	ND	<	6.8	ug/L		10	6.8				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	109-99-9	Tetrahydrofuran	ND	<	6.8	ug/L		10	6.8				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-28-0	Thallium	ND	<	0.32	ug/L		1	0.32	MCL	1.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-28-0	Thallium	ND	<	0.32	ug/L		1	0.32	MCL	1.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-28-0	Thallium	ND	<	0.32	ug/L		1	0.32	MCL	1.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	28249-77-6	Thiobencarb	ND	<	0.017	ug/L		0.2	0.017	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	28249-77-6	Thiobencarb	ND	<	0.017	ug/L		0.2	0.017	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	28249-77-6	Thiobencarb	ND	<	0.018	ug/L		0.21	0.018	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	28249-77-6	Thiobencarb	ND	<	0.017	ug/L		0.2	0.017	MCL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	8321B	118-96-7	TNT	ND	<	0.029	ug/L		0.095	0.029	DDW NL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	8321B	118-96-7	TNT	ND	<	0.029	ug/L		0.097	0.029	DDW NL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	8321B	118-96-7	TNT	ND	<	0.031	ug/L		0.1	0.031	DDW NL	1	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	108-88-3	Toluene	ND	<	0.057	ug/L		0.5	0.057	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	108-88-3	Toluene	ND	<	0.057	ug/L		0.5	0.057	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	108-88-3	Toluene	ND	<	0.057	ug/L		0.5	0.057	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	108-88-3	Toluene	ND	<	0.057	ug/L		0.5	0.057	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B		Total Haloacetic Acids	ND	<	0.054	ug/L		2	0.054	MCL/DBP	60	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B		Total Haloacetic Acids	ND	<	0.054	ug/L		2	0.054	MCL/DBP	60	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	6251B		Total Haloacetic Acids	ND	<	0.054	ug/L		2	0.054	MCL/DBP	60	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	505	8001-35-2	Toxaphene	ND	<	0.083	ug/L		0.5	0.083	MCL	0.0002	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	505	8001-35-2	Toxaphene	ND	<	0.083	ug/L		0.5	0.083	MCL	0.0002	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/21/2023	505	8001-35-2	Toxaphene	ND	<	0.083	ug/L		0.5	0.083	MCL	0.0002	ug/L	Yes	The MDL of the lowest analytical method available is higher than the most stringent objective; lower approved analytical methods will be considered once available.
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	156-60-5	trans-1,2-Dichloroethene	ND	<	0.24	ug/L		0.5	0.24	PP	700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	156-60-5	trans-1,2-Dichloroethene	ND	<	0.24	ug/L		0.5	0.24	PP	700	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	156-60-5	trans-1,2-Dichloroethylene	ND	<	0.11	ug/L		0.5	0.11	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	156-60-5	trans-1,2-Dichloroethylene	ND	<	0.11	ug/L		0.5	0.11	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	156-60-5	trans-1,2-Dichloroethylene	ND	<	0.11	ug/L		0.5	0.11	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	156-60-5	trans-1,2-Dichloroethylene	ND	<	0.11	ug/L		0.5	0.11	MCL	10	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	10061-02-6	trans-1,3-Dichloropropene	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	10061-02-6	trans-1,3-Dichloropropene	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	10061-02-6	trans-1,3-Dichloropropene	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	10061-02-6	trans-1,3-Dichloropropene	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	5103-74-2	trans-Chlordane	ND	<	0.021	ug/L		0.049	0.021				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	5103-74-2	trans-Chlordane	ND	<	0.022	ug/L		0.053	0.022				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	39765-80-5	trans-Nonachlor	ND	<	0.026	ug/L		0.049	0.026				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	39765-80-5	trans-Nonachlor	ND	<	0.026	ug/L		0.049	0.026				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	39765-80-5	trans-Nonachlor	ND	<	0.027	ug/L		0.053	0.027				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	39765-80-5	trans-Nonachlor	ND	<	0.026	ug/L		0.049	0.026				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	6251B	76-03-9	Trichloroacetic acid	0.44	Estimated	0.44	ug/L	J	1	0.1	MCL/DBP	RL (2)	ug/L	Yes	Estimated. The result is lower than the RL but above the MDL.
AWPF-UVAOP-EFF	Grab	9/14/2023	6251B	76-03-9	Trichloroacetic acid	ND	<	0.1	ug/L		1	0.1	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	6251B	76-03-9	Trichloroacetic acid	ND	<	0.1	ug/L		1	0.1	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	6251B	76-03-9	Trichloroacetic acid	ND	<	0.1	ug/L		1	0.1	MCL/DBP	RL (2)	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	79-01-6	Trichloroethene	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	79-01-6	Trichloroethene	ND	<	0.17	ug/L		0.5	0.17				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	79-01-6	Trichloroethylene (TCE)	ND	<	0.097	ug/L		0.5	0.097	MCL/PP	2.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	79-01-6	Trichloroethylene (TCE)	ND	<	0.097	ug/L		0.5	0.097	MCL/PP	2.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	79-01-6	Trichloroethylene (TCE)	ND	<	0.097	ug/L		0.5	0.097	MCL/PP	2.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	79-01-6	Trichloroethylene (TCE)	ND	<	0.097	ug/L		0.5	0.097	MCL/PP	2.7	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	75-69-4	Trichlorofluoromethane	ND	<	0.29	ug/L		0.5	0.29	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	75-69-4	Trichlorofluoromethane	ND	<	0.29	ug/L		0.5	0.29	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-69-4	Trichlorofluoromethane (Freon 11)	ND	<	0.18	ug/L		0.5	0.18	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-69-4	Trichlorofluoromethane (Freon 11)	ND	<	0.18	ug/L		0.5	0.18	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-69-4	Trichlorofluoromethane (Freon 11)	ND	<	0.18	ug/L		0.5	0.18	MCL	150	ug/L	Yes	

Legend:

Red	The result is above the most stringent regulatory limit.
Blue	The result is detected above the method detection limit (MDL) but is below the most stringent regulatory limit.
Gray	The result is not detected (qualifier "<").
Light Gray	The result did not meet quality control and should not be included in future analyses. For additional information, refer to the "Notes" column.
White	The result is detected but there is no established regulatory objective; the sample was taken as part of an analytical method that included this constituent and is included for reference only.

Client Sample ID	Sample Type	Collection Date	Analysis Method	CAS	Analyte	Laboratory Result (ND = Not Detected)	Qualifier	Result Used for Analysis (MDL or RL for ND)	Unit	Flag	Reporting Limit (RL)	Method Detection Limit (MDL)	Regulatory Drivers	Most Stringent Regulatory Objective	Most Stringent Regulatory Objective Units	Include in Analysis	Notes
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-69-4	Trichlorofluoromethane (Freon 11)	ND	<	0.18	ug/L		0.5	0.18	MCL	150	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	76-13-1	Trichlorotrifluoroethane	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	76-13-1	Trichlorotrifluoroethane	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	76-13-1	Trichlorotrifluoroethane	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	76-13-1	Trichlorotrifluoroethane	ND	<	0.14	ug/L		0.5	0.14				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	525.2	1582-09-8	Trifluralin	ND	<	0.043	ug/L		0.098	0.043				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	525.2	1582-09-8	Trifluralin	ND	<	0.043	ug/L		0.099	0.043				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	525.2	1582-09-8	Trifluralin	ND	<	0.046	ug/L		0.11	0.046				Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	525.2	1582-09-8	Trifluralin	ND	<	0.043	ug/L		0.099	0.043				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2		Trihalomethanes, Total	ND	<	0.062	ug/L		0.5	0.062	MCL/DBP	80	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2		Trihalomethanes, Total	ND	<	0.062	ug/L		0.5	0.062	MCL/DBP	80	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	906	10028-17-8	Tritium	-31.5	<	284	pCi/L	U	500	284	Radionuclide	20000	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/14/2023	906	10028-17-8	Tritium	6.31	<	284	pCi/L	U	500	284	Radionuclide	20000	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	9/21/2023	906	10028-17-8	Tritium	138	<	272	pCi/L	U	500	272	Radionuclide	20000	pCi/L	Yes	Result is less than the sample detection limit.
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-61-1	Uranium	ND	<	0.078	pCi/L		0.67	0.078	Radionuclide	20	pCi/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-61-1	Uranium	ND	<	0.12	ug/L		1	0.12				Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-61-1	Uranium	ND	<	0.078	pCi/L		0.67	0.078	Radionuclide	20	pCi/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-61-1	Uranium	ND	<	0.12	ug/L		1	0.12				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-61-1	Uranium	ND	<	0.078	pCi/L		0.67	0.078	Radionuclide	20	pCi/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-61-1	Uranium	ND	<	0.12	ug/L		1	0.12				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-62-2	Vanadium	ND	<	0.62	ug/L	B *+	3	0.62	DW NL	50	ug/L	No	Sample did not meet quality controls. This result is not valid and should not be used for analysis.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-62-2	Vanadium	ND	<	0.62	ug/L		3	0.62	DW NL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-62-2	Vanadium	ND	<	0.62	ug/L		3	0.62	DW NL	50	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	108-05-4	Vinyl acetate	ND	<	3.1	ug/L		4	3.1				Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	108-05-4	Vinyl acetate	ND	<	3.1	ug/L		4	3.1				Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	524.2	75-01-4	Vinyl Chloride	ND	<	0.077	ug/L		0.3	0.077	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	624.1	75-01-4	Vinyl chloride	ND	<	0.47	ug/L		0.5	0.47	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/14/2023	524.2	75-01-4	Vinyl Chloride	ND	<	0.077	ug/L		0.3	0.077	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	624.1	75-01-4	Vinyl chloride	ND	<	0.47	ug/L		0.5	0.47	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	9/21/2023	524.2	75-01-4	Vinyl Chloride	ND	<	0.077	ug/L		0.3	0.077	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	75-01-4	Vinyl Chloride	ND	<	0.077	ug/L		0.3	0.077	MCL	0.5	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	3/12/2024	524.2	1330-20-7	Xylenes	ND	<	0.3	ug/L		0.5	0.3	MCL	1750	ug/L	Yes	
AWPF-UVAOP-EFF	Grab	7/20/2023	200.8	7440-66-6	Zinc	ND	<	4.3	ug/L		20	4.3	CTR	120	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/14/2023	200.8	7440-66-6	Zinc	ND	<	4.3	ug/L		20	4.3	CTR	120	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.
AWPF-UVAOP-EFF	Grab	9/21/2023	200.8	7440-66-6	Zinc	ND	<	4.3	ug/L		20	4.3	CTR	120	ug/L	Yes	The PP limit, which is the most stringent limit, is hardness dependent. Most stringent limit subject to change.

Big Bear Area Regional
Wastewater Agency

Jim Miller – Chair
Rick Herrick – Vice-Chair
John Russo – Director
Kendi Segovia – Director
Larry Walsh – Director

AGENDA ITEM: 6.A.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

REVIEWED BY: Christine Bennett, Finance Manager; John Shimmin, Plant Manager; Bridgette Burton, Administrative Services Manager/Board Secretary

SUBJECT: General Manager's Report

DISCUSSION:

Administration

Taxpayer Protection and Government Accountability Act – Initiative 1935

The "Taxpayer Protection and Government Accountability Act" ("Measure") is a voter initiative that attempts to increase the procedural and substantive requirements for state and local governments to adopt, increase and defend necessary revenue raising measures, and would have retroactively invalidated certain local taxes and fees implemented prior to the Measure's passage. On June 20, 2024, the California Supreme Court issued a preemptory writ of mandate striking the Measure from appearing on the November ballot. In Legislature of the State of California et al. v. Weber (Hiltachk), the Court unanimously ruled that the Measure "would fundamentally restructure the most basic of governmental powers" and "strip the Legislature of the authority to promptly raise revenues when necessary." The Court determined the Measure constitutes an impermissible revision for three key reasons. First, the Measure would strip the Legislature of its authority to promptly raise revenues when necessary by eliminating the Legislature's ability to levy taxes without prior voter approval, or set fees without approval by both houses of the Legislature, including fees set by State agencies. Second, the Measure shifts power among the Legislature, state executive agencies, and the electorate over the setting of fees. Third, the Measure would transform the authority of local government agencies, such as cities or special districts, to set fees. The Court's ruling was based on Constitutional law and precedent that allow for voters to seek an amendment to the Constitution, but "far reaching changes in the nature of our basic governmental plan as to amount to a revision" exceed the power of the citizen's initiative. The Court's ruling not only protects the "indispensable" revenue raising powers of state and local governments, but also provides clear and reasoned guidance on the primacy of the Constitution, and the limits on the initiative power.

Assembly Bill 2192 (Carillo, Juan)

If enacted, this measure would raise the cost limits for projects outlined in the California Uniform Public Construction Cost Accounting Act (CUPCCA) and differentiate the limits for negotiated contracts and purchase orders from those for force account work. Specifically, it would increase the maximum project cost for force account work by public agency employees from $60,000 to $70,000, and set the new limit for negotiated contracts and purchase orders at $100,000. Additionally, it would raise the threshold for projects subject to CUPCCA's informal bidding procedures from $200,000 to $220,000, and also increase the threshold for projects requiring formal bidding from over $200,000 to over $220,000, among other technical amendments.

Lucerne Valley Solar Panels (no update)

This process is underway.

Operations

Headworks Grit System Rehabilitation Project (no update)

The project is substantially complete.

LPS Generator & Fuel System Project

The Agency received the permit from the South Coast Air Quality Management District (SCAQMD).

2024 Treatment Plant Data

The influent flow (MG) chart is attached.

Flow Percentages			
Member Agency	**April**	**May**	**June**
City of Big Bear Lake	57.54%	52.62%	51.29%
Big Bear City CSD	38.10%	43.58%	44.36%
County of San Bernardino CSA 53B	4.36%	3.80%	4.35%

Solar Production

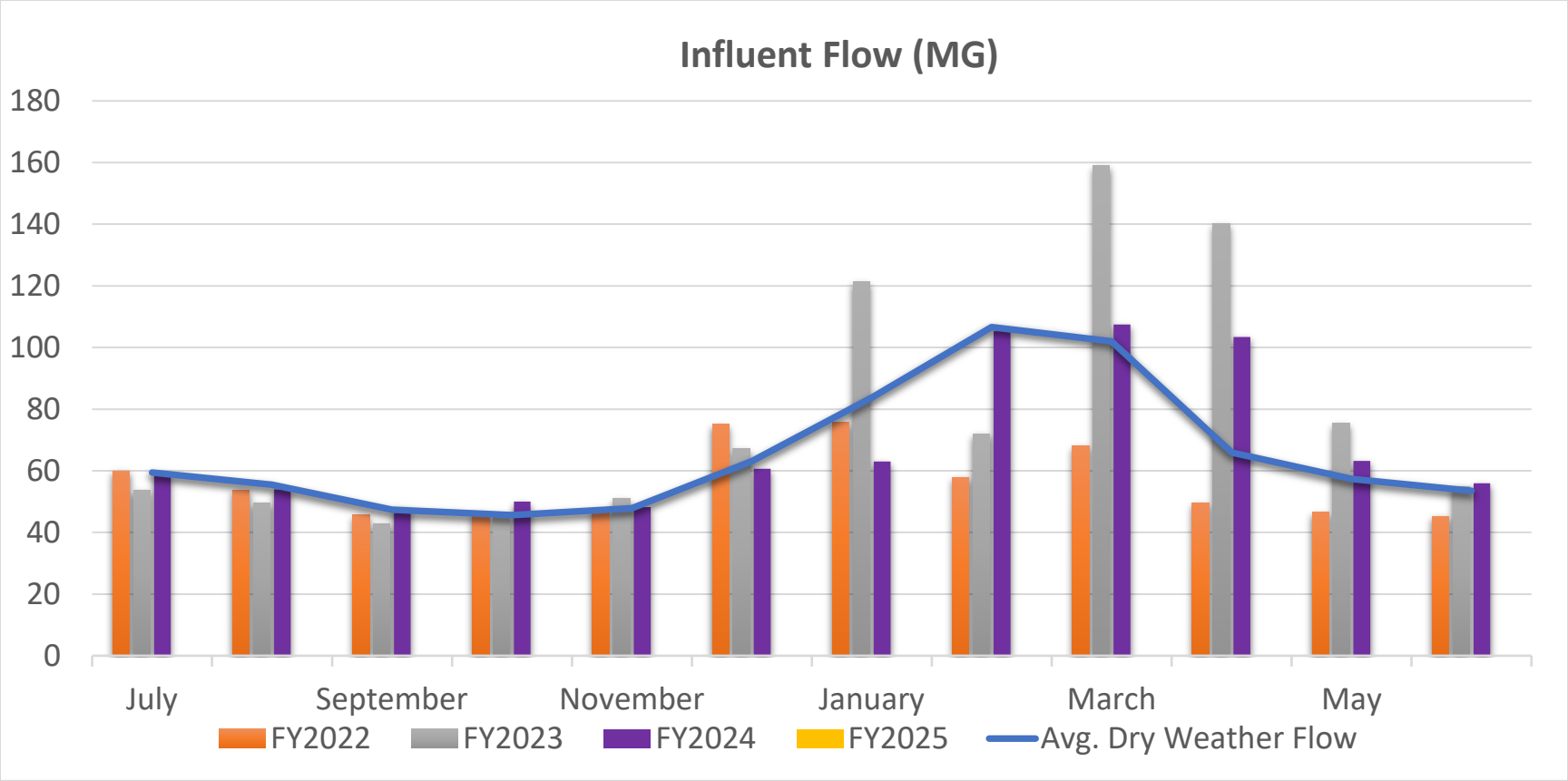
The May and June 2024 monthly performance reports are attached.

Actual Net Generation (kWh)			
Month	**FY 2022**	**FY 2023**	**FY 2024**
July		215,598.25	285,573.00
August		229,947.25	261,893.00
September		230,749.75	280,457.00
October		276,600.50	293,122.50
November		241,524.25	247,757.00
December	29,294.26	190,418.50	206,571.00
January	212,982.42	192,716.50	202,574.00
February	260,767.19	224,106.25	204,564.50
March	295,923.69	269,443.75	244,171.50
April	319,902.94	316,650.00	301,025.00
May	330,560.38	302,288.50	311,556.50
June	316,253.50	287,765.00	294,047.50
Total	**1,765,684.38**	**2,977,808.50**	**3,133,312.50**

Connections

Connections						FYE 6/30		
Month	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**CBBL**	**CSD**	**CSA 53B**
July	7	3	11	2	5	3	2	0
August	2	12	5	13	4	1	3	0
September	7	3	7	8	69[1]	64	5	0
October	5	10	9	6	6	2	4	0
November	2	2	5	4	2	1	1	0
December	1	2	3	2	3	2	1	0
January	1	2	2	0	2	0	2	0
February	1	0	6	0	1	0	1	0
March	1	3	9	2	2	0	2	0
April	7	12	12	4	5	0	4	1
May	5	6	7	8	12	5	7	0
June	6	13	11	10	8	3	5	0
Total	**45**	**68**	**87**	**59**	**119**	**81**	**37**	**1**

[1] Hampton Inn in the City of Big Bear Lake was 62 connections.


Influent Flow (MG)
180
160
140
120
100
80
60
40
20
0
July
September
November
January
March
May
FY2022
FY2023
FY2024
FY2025
Avg. Dry Weather Flow

MONTHLY REPORT
May 2024

Plant Name:	Big Bear Area Regional Wastewater Agency
Plant ID:	P-3998
Capacity (DC):	1660010.0
Resource:	Solar
Address:	121 Palomino Drive - 92314 Big Bear - California/United States
Configuration:	Mohawk, GM CPY Gate code for main gate is 1014 Locked gates for solar panels is 0607. If you get there before 330 pm see Troy.

MONTHLY REPORT

As Contracted Energy Last Month (kWh)

Time	Net Generation (kWh)		
	A	F	Δ
01 May 2024	10,580.50	6,905.26	53.22%
02 May 2024	10,359.50	6,905.26	50.02%
03 May 2024	10,476.50	6,905.26	51.72%
04 May 2024	9,399.00	6,905.26	36.11%
05 May 2024	10,538.00	6,905.26	52.61%
06 May 2024	10,692.50	6,905.26	54.85%
07 May 2024	10,601.50	6,905.26	53.53%
08 May 2024	10,678.00	6,905.26	54.64%
09 May 2024	10,689.00	6,905.26	54.79%
10 May 2024	7,238.00	6,905.26	4.82%
11 May 2024	10,549.00	6,905.26	52.77%
12 May 2024	9,672.00	6,905.26	40.07%
13 May 2024	8,828.00	6,905.26	27.84%
14 May 2024	9,315.50	6,905.26	34.90%
15 May 2024	6,833.00	6,905.26	-1.05%
16 May 2024	10,376.50	6,905.26	50.27%
17 May 2024	10,050.00	6,905.26	45.54%
18 May 2024	10,629.50	6,905.26	53.93%
19 May 2024	10,510.00	6,905.26	52.20%
20 May 2024	10,691.50	6,905.26	54.83%
21 May 2024	10,528.00	6,905.26	52.46%
22 May 2024	10,387.50	6,905.26	50.43%
23 May 2024	10,467.00	6,905.26	51.58%
24 May 2024	9,181.00	6,905.26	32.96%
25 May 2024	10,474.00	6,905.26	51.68%
26 May 2024	10,386.00	6,905.26	50.41%
27 May 2024	10,285.00	6,905.26	48.94%
28 May 2024	10,352.50	6,905.26	49.92%
29 May 2024	10,267.00	6,905.26	48.68%
30 May 2024	10,262.00	6,905.26	48.61%
31 May 2024	10,259.00	6,905.26	48.57%
Totals	311,556.50	214,063.21	45.54%

Energy Produced Last Month (kWh)

Time	Net Generation (kWh)		
	A	F	Δ
01 May 2024	10,580.50	9,394.41	12.63%
02 May 2024	10,359.50	9,394.41	10.27%
03 May 2024	10,476.50	9,394.41	11.52%
04 May 2024	9,399.00	9,394.41	0.05%
05 May 2024	10,538.00	9,394.41	12.17%
06 May 2024	10,692.50	9,394.41	13.82%
07 May 2024	10,601.50	9,394.41	12.85%
08 May 2024	10,678.00	9,394.41	13.66%
09 May 2024	10,689.00	9,394.41	13.78%
10 May 2024	7,238.00	9,394.41	-22.95%
11 May 2024	10,549.00	9,394.41	12.29%
12 May 2024	9,672.00	9,394.41	2.95%
13 May 2024	8,828.00	9,394.41	-6.03%
14 May 2024	9,315.50	9,394.41	-0.84%
15 May 2024	6,833.00	9,394.41	-27.27%
16 May 2024	10,376.50	9,394.41	10.45%
17 May 2024	10,050.00	9,394.41	6.98%
18 May 2024	10,629.50	9,394.41	13.15%
19 May 2024	10,510.00	9,394.41	11.88%
20 May 2024	10,691.50	9,394.41	13.81%
21 May 2024	10,528.00	9,394.41	12.07%
22 May 2024	10,387.50	9,394.41	10.57%
23 May 2024	10,467.00	9,394.41	11.42%
24 May 2024	9,181.00	9,394.41	-2.27%
25 May 2024	10,474.00	9,394.41	11.49%
26 May 2024	10,386.00	9,394.41	10.56%
27 May 2024	10,285.00	9,394.41	9.48%
28 May 2024	10,352.50	9,394.41	10.20%
29 May 2024	10,267.00	9,394.41	9.29%
30 May 2024	10,262.00	9,394.41	9.24%
31 May 2024	10,259.00	9,394.41	9.20%
Totals	311,556.50	291,226.74	6.98%

MONTHLY REPORT

Last Three Months Performance

Produced Energy (kWh)

Time	Net Generation (kWh)	
	F	W
Feb 2024	183,730.82	197,795.91
Mar 2024	251,268.35	242,969.41
Apr 2024	266,504.83	295,065.17
Totals	701,503.99	735,830.49

Availability (%) and PR

Time	Availability (%)			Performance Ratio (fraction)		
	A	F	Δ	A	F	Δ
Feb 2024	100.00	99.00	1.01%	1.02	0.00	100.00%
Mar 2024	99.83	99.00	0.84%	0.88	0.00	100.00%
Apr 2024	100.00	99.00	1.01%	0.79	0.00	100.00%
Totals	99.94	99.00	0.95%	0.90	0.00	100.00%

Closed Events Last 3 Months

Open Events Last 3 Months

Definitions

Energy (kwh): Radiant light and heat from the Sun

Irradiation (kwh): The power per unit area produced by the Sun in the form of electromagnetic radiation. The solar irradiance integrated over time is called solar irradiation, solar exposure, or insolation.

Produced Energy (kwh): Energy generated by your system, transferred through an API

As Contracted Energy: (kWh) Energy proposed to be generated by your system contractually

Change (Δ): The % difference between actual and forecasted production

Availability (%): The Max theoretical generation capacity

PR (Performance Ratio): The ratio measured output to the expected output for a given reporting period based on the system name-plate rating

MONTHLY REPORT
June 2024

Plant Name:	Big Bear Area Regional Wastewater Agency
Plant ID:	P-3998
Capacity (DC):	1660010.0
Resource:	Solar
Address:	121 Palomino Drive - 92314 Big Bear - California/United States
Configuration:	Mohawk, GM CPY Gate code for main gate is 1014 Locked gates for solar panels is 0607. If you get there before 330 pm see Troy.

MONTHLY REPORT

As Contracted Energy Last Month (kWh)

Time	Net Generation (kWh)		
	A	F	Δ
01 Jun 2024	10,316.50	6,601.32	56.28%
02 Jun 2024	10,130.00	6,601.32	53.45%
03 Jun 2024	9,550.50	6,601.32	44.68%
04 Jun 2024	10,097.00	6,601.32	52.95%
05 Jun 2024	9,919.50	6,601.32	50.27%
06 Jun 2024	9,887.50	6,601.32	49.78%
07 Jun 2024	9,798.00	6,601.32	48.42%
08 Jun 2024	10,132.00	6,601.32	53.48%
09 Jun 2024	9,857.50	6,601.32	49.33%
10 Jun 2024	10,324.50	6,601.32	56.40%
11 Jun 2024	10,151.00	6,601.32	53.77%
12 Jun 2024	10,092.00	6,601.32	52.88%
13 Jun 2024	10,154.50	6,601.32	53.83%
14 Jun 2024	9,928.50	6,601.32	50.40%
15 Jun 2024	10,127.00	6,601.32	53.41%
16 Jun 2024	10,062.50	6,601.32	52.43%
17 Jun 2024	10,118.50	6,601.32	53.28%
18 Jun 2024	10,155.50	6,601.32	53.84%
19 Jun 2024	9,975.50	6,601.32	51.11%
20 Jun 2024	9,931.50	6,601.32	50.45%
21 Jun 2024	9,966.00	6,601.32	50.97%
22 Jun 2024	9,361.00	6,601.32	41.81%
23 Jun 2024	8,388.00	6,601.32	27.07%
24 Jun 2024	7,814.00	6,601.32	18.37%
25 Jun 2024	9,055.50	6,601.32	37.18%
26 Jun 2024	9,076.50	6,601.32	37.50%
27 Jun 2024	9,702.00	6,601.32	46.97%
28 Jun 2024	10,090.50	6,601.32	52.86%
29 Jun 2024	9,986.00	6,601.32	51.27%
30 Jun 2024	9,898.50	6,601.32	49.95%
Totals	294,047.50	198,039.45	48.48%

Energy Produced Last Month (kWh)

Time	Net Generation (kWh)		
	A	F	Δ
01 Jun 2024	10,316.50	9,328.59	10.59%
02 Jun 2024	10,130.00	9,328.59	8.59%
03 Jun 2024	9,550.50	9,328.59	2.38%
04 Jun 2024	10,097.00	9,328.59	8.24%
05 Jun 2024	9,919.50	9,328.59	6.33%
06 Jun 2024	9,887.50	9,328.59	5.99%
07 Jun 2024	9,798.00	9,328.59	5.03%
08 Jun 2024	10,132.00	9,328.59	8.61%
09 Jun 2024	9,857.50	9,328.59	5.67%
10 Jun 2024	10,324.50	9,328.59	10.68%
11 Jun 2024	10,151.00	9,328.59	8.82%
12 Jun 2024	10,092.00	9,328.59	8.18%
13 Jun 2024	10,154.50	9,328.59	8.85%
14 Jun 2024	9,928.50	9,328.59	6.43%
15 Jun 2024	10,127.00	9,328.59	8.56%
16 Jun 2024	10,062.50	9,328.59	7.87%
17 Jun 2024	10,118.50	9,328.59	8.47%
18 Jun 2024	10,155.50	9,328.59	8.86%
19 Jun 2024	9,975.50	9,328.59	6.93%
20 Jun 2024	9,931.50	9,328.59	6.46%
21 Jun 2024	9,966.00	9,328.59	6.83%
22 Jun 2024	9,361.00	9,328.59	0.35%
23 Jun 2024	8,388.00	9,328.59	-10.08%
24 Jun 2024	7,814.00	9,328.59	-16.24%
25 Jun 2024	9,055.50	9,328.59	-2.93%
26 Jun 2024	9,076.50	9,328.59	-2.70%
27 Jun 2024	9,702.00	9,328.59	4.00%
28 Jun 2024	10,090.50	9,328.59	8.17%
29 Jun 2024	9,986.00	9,328.59	7.05%
30 Jun 2024	9,898.50	9,328.59	6.11%
Totals	294,047.50	279,857.80	5.07%

MONTHLY REPORT

Last Three Months Performance

Produced Energy (kWh)

Time	Net Generation (kWh)	
	F	W
Mar 2024	251,268.35	242,969.41
Apr 2024	266,504.83	295,065.17
May 2024	291,226.74	310,210.32
Totals	808,999.92	848,244.90

Availability (%) and PR

Time	Availability (%)			Performance Ratio (fraction)		
	A	F	Δ	A	F	Δ
Mar 2024	99.83	99.00	0.84%	0.88	0.00	100.00%
Apr 2024	100.00	99.00	1.01%	0.79	0.00	100.00%
May 2024	100.00	99.00	1.01%	0.71	0.00	100.00%
Totals	99.94	99.00	0.95%	0.79	0.00	100.00%

Closed Events Last 3 Months

Open Events Last 3 Months

Definitions

Energy (kwh): Radiant light and heat from the Sun

Irradiation (kwh): The power per unit area produced by the Sun in the form of electromagnetic radiation. The solar irradiance integrated over time is called solar irradiation, solar exposure, or insolation.

Produced Energy (kwh): Energy generated by your system, transferred through an API

As Contracted Energy: (kWh) Energy proposed to be generated by your system contractually

Change (Δ): The % difference between actual and forecasted production

Availability (%): The Max theoretical generation capacity

PR (Performance Ratio): The ratio measured output to the expected output for a given reporting period based on the system name-plate rating

Big Bear Area Regional
Wastewater Agency

Jim Miller – Chair
Rick Herrick – Vice-Chair
John Russo – Director
Kendi Segovia – Director
Larry Walsh – Director

AGENDA ITEM: 6.B.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

SUBJECT: Replenish Big Bear Report

DISCUSSION:

A. Construction

1. Not applicable at this time.

B. Final Design

1. The next steps for Replenish Big Bear (RBB) include the Basis of Design Validation Report, confirmation of the pipeline alignment to Big Bear Lake, and initiation of utility research, survey, and geotechnical investigations. The Basis of Design Validation will confirm the final treatment train and update the cost estimate.

2. Per the Governing Board's direction, the final design will be reviewed at a Replenish Big Bear Committee meeting before full Governing Board consideration.

3. Water Systems Consulting, Inc. (WSC) has begun updating former Facility Plan chapters and creating the Preliminary Design Report.

C. Planning

1. Environmental Review

a. California Environmental Quality Act (CEQA)

The Big Bear Area Regional Wastewater Agency's (BBARWA) Governing Board postponed certification of the Final Program Environmental Impact Report (PEIR) to July to allow the public additional time to review. The next steps include approval of the Replenish Big Bear Program as a whole, the Findings of Facts, the Mitigation Monitoring and Reporting Program (MMRP), and the Statement of Overriding Consideration (SOOC).

b. National Environmental Policy Act (NEPA)

The Environmental Protection Agency (EPA) originally advised BBARWA that Final PEIR certification would be required before NEPA could be completed for the Water Infrastructure and Finance Innovation Act (WIFIA) loan. After further review, the EPA determined that NEPA completion could be achieved without the Final PEIR certification.

The EPA determined that no significant environmental impacts are anticipated from the issuance of WIFIA credit assistance to BBARWA, and the proposed action does not constitute a major federal action significantly affecting the quality of the human environment, making the preparation of an Environmental Impact Statement unnecessary. The proposal conforms to the WIFIA Programmatic Environmental Assessment (PEA) associated finding of no significant impact and the documentation fully covers the proposed action and constitutes compliance with the requirements of NEPA. The WIFIA Programmatic Environmental Assessment Adequacy Memorandum and Federal Cross-Cutting Authorities Review Memorandum are attached.

The NEPA environmental review process for the WIFIA Loan is complete unless the Baldwin Lake pipeline option is chosen. If this pipeline option is chosen, the EPA will reinitiate consultation with the U.S. Fish and Wildlife Service.

Each federal grant agency has specific requirements for NEPA compliance. Therefore, NEPA compliance will be tailored to meet the needs of each individual agency. The EPA provided relevant documentation to the Title XVI and EPA's State and Tribal Assistance Grant (STAG) staff.

2. Preliminary Engineering

WSC will present the pilot study results at BBARWA's July 24, 2024 meeting.

3. Regulatory Analysis and Coordination

a. Report of Waste Discharge (ROWD) Santa Ana Region

BBARWA received the completed application letter regarding the ROWD from the Santa Ana Regional Water Quality Control Board. An ROWD is used to officially initiate the National Pollutant Discharge Elimination System (NPDES) permit process. This permit is required to discharge Program Water to Stanfield Marsh and Big Bear Lake.

b. Report of Waste Discharge (ROWD) Colorado Region

BBARWA met with the Colorado River Regional Board to discuss the permitting pathway on February 7, 2024, for the Lucerne Valley site. The Colorado River Regional Board recommended completing the Lucerne Valley site ROWD application a year before the treatment plant upgrades are completed. The typical timeframe to adopt a new permit is estimated at 6 – 12 months.

c. Division of Drinking Water (DDW) Permitting

The Division area survey was completed for the DDW permit. Tom Harder & Co. updated the Domestic Wells Workplan with the new lake buffer. WSC is reviewing the workplan and preparing a response plan to move discussions with DDW forward. The City of Big Bear Lake Department of Water and Power (DWP) surveyed the domestic wells on May 10 and June 3, 2024, and provided results to Tom Harder & Co.

d. Title 22

The Program Team continues to work on the Recycled Water Title 22 Engineering Report (ER).

D. Funding and Financing

Replenish Big Bear (BBARWA's Wastewater Treatment Upgrades Project) will be funded through a combination of rates, loans, grants, and sewer revenue bonds. Revenue, expenditure, and grant tables are attached to this report.

Additional funding is being pursued from key Big Bear Valley beneficiaries. Any additional grants or contributions from Program Partners or beneficiaries could reduce BBARWA's sewer user charge.

1. Five-Year Rate Schedule

BBARWA's Governing Board adopted a five-year sewer user charge/fee schedule on March 22, 2023. These fees are to fund RBB (BBARWA's Wastewater Treatment Upgrades Project) debt service and required reserves. Debt service includes interest only on the current bridge loan and future project funding, such as the WIFIA Loan. On March 27, 2024, BBARWA amended and adopted the sewer user charge/fee schedule for fiscal year 2025.

2. Short-Term Financing

On January 25, 2023, the BBARWA Governing Board authorized the execution of short-term financing (bridge loan) for $3,400,000 with a term of 3 years, an interest

rate of 4.25%, and debt service requirements of interest only (no principal payments) with a lump-sum payment in the final year. This loan is expected to be refunded or paid prior to maturity with the WIFIA loan (financing to repay this loan prior to maturity and to cover the costs of construction expected to begin in fiscal year 2025). BBARWA anticipates that the short-term financing will be expended by November 2024.

3. Private Placement Loan for Final Design

   It is anticipated that grant funding specific to planning and design will be sufficient to cover the cost of the final design; however, there is an approximately 120 day lag on grant reimbursement funding. Due to the timing of grant reimbursements, BBARWA will need to obtain additional funding to meet its obligations in a timely manner.

   At the July 24, 2024 regular meeting, the BBARWA Governing Board will consider awarding contracts to NHA Advisors for municipal advisory services for the issuance of a private placement loan, and Oppenheimer & Co. Inc. for placement agency services. The Governing Board will also consider retaining Best Best and Krieger, LLP (BB&K) for bond counsel.

4. WIFIA Loan

   The WIFIA loan will be used for construction funding.

   BBARWA and its consultants have been working with the EPA on obtaining federal financing in the form of a loan secured by the revenues of BBARWA, otherwise known as the WIFIA Loan, for RBB (BBARWA's Wastewater Treatment Upgrades Project). The EPA has certain underwriting requirements. To meet such requirements, BBARWA will need amendments to its Joint Exercise of Powers Agreement (JPA) and Operating Agreement No. 1. The modifications are required to clarify existing terms of the JPA and Operating Agreement No. 1 so that the EPA has a clear understanding of the credit for the WIFIA Loan process, the risks associated with lending to BBARWA, and to reduce the risk of a payment default.

   The WIFIA Build America Buy America (BABA) waiver was granted, with additional coordination with the United States Bureau of Reclamation (USBR) underway. The BABA Waiver is granted if the inclusion of the product produced in the United States will increase the cost of the overall project by more than 25 percent.

   WIFIA loan closure is dependent upon NEPA completion and the JPA Amendment.

5. Grants

   a. Integrated Regional Water Management (IRWM) Proposition 1 Round 1 (Prop 1 Round 1) Grant

      The next quarterly report is due on July 31, 2024.

   b. 2021 & 2022 Title XVI Grant

      BBARWA will submit a statement that the federal funds from the EPA are greater than the USBR funds. USBR will confirm by looking at the amounts on the EPA's website.

      These grant funds will be used for construction.

   c. 2023 Title XVI Grant

      BBARWA has been recommended for an additional $9,052,543 in federal grant funding through this grant program (letter attached). The next step is to have these funds included in the federal appropriations bill. Once funds have been appropriated, BBARWA will work with the grant agency to execute the grant agreement.

      These grant funds will be used for construction.

   d. 2022, 2023, and 2024 EPA STAG

      The grant agency requires a formal application before BBARWA can start drawing on these grant funds. WSC is preparing the application. The EPA is determining whether a single application can be submitted for the three funding requests. Funds will likely not become available until after October 2024.

      These grant funds will be used for the final design.

E. Agreements and Contracts

1. BBARWA adopted JPA Amendment No. 7 and Operating Agreement No. 1 Amendment No. 6 (Amendments) on December 19, 2023; the City of Big Bear Lake adopted the Amendments at its February 14, 2024 meeting. BBARWA is working with San Bernardino County.

2. BBARWA continues working with the Big Bear Municipal Water District (MWD) on an agreement.

3. BBARWA, Big Bear Mountain Resorts (BBMR), and DWP have executed the Replenish Big Bear Letter of Intent (LOI) which states, "BBMR will allow DWP to

use the BBMR pipeline to transport water in order to percolate Program Water in Sand Canyon for DWP's and CSD's (Big Bear City Community Services District) benefit." DWP is negotiating the final agreement with BBMR.

4. Active BBARWA Contracts:

    a. WSC – program management; preliminary engineering; regulatory analysis, coordination, and permitting; grant writing and support; pilot planning and study; funding and financing; and stakeholder coordination.

    b. WSC – final design (construction drawings) and bid packages.

    c. Tom Dodson and Associates (TDA) – environmental studies and Program Environmental Impact Report.

    d. NHA Advisors – WIFIA loan application and financial plan development.

F. Meetings

1. BBARWA met with WSC on May 22, 2024, to discuss Final PEIR comments received after the Response to Comments was published.

2. BBARWA met with WSC, TDA, and the EPA to discuss the WIFIA Endangered Species Act on May 22, 2024.

3. BBARWA met with NHA Advisors to discuss a loan for the final design on May 24, 2024.

4. BBARWA met with WSC to review the next steps for the Final PEIR on May 29, 2024, and on May 30, 2024, to discuss the outreach strategy.

5. On May 30, 2024, the Program Team met to review the draft pilot plan presentation.

6. BBARWA met with the County of San Bernardino on June 12, 2024, to discuss an opportunity for funds to better support the community.

7. BBARWA met with Trojan Technologies on June 6, 2024, to discuss water reuse.

8. BBARWA met with the EPA on June 10, 2024, to review the Fiscal Year 2022 and 2023 Community Grant funds assigned to the STAG program.

9. BBARWA met with WSC on June 11, 2024 to discuss the STAG application process, general RBB progress, outreach, and upcoming tasks.

10. The routine bi-weekly[1] meeting was held on July 2, 2024, and July 16, 2024, to discuss RBB progress.

G. Outreach/Media

1. The General Manager was invited to speak at Big Bear Middle School science students on May 24, 2024, as a follow-up to STEAM (science, technology, engineering, art, and math) night.

2. The Big Bear Grizzly newspaper published an article on RBB on July 4, 2024 (Replenish tapped for $9 million grant).

3. BBARWA provided a monthly RBB update to the Government Affairs - Regional Transportation Advisory Committee[2] (GA-RTAC) on June 13, 2024 and July 11, 2024.

[1] This is a routine bi-weekly meeting that includes consultants and General Managers from the Big Bear City Community Services District (CSD), the City of Big Bear Lake Department of Water and Power (DWP), the Big Bear Municipal Water District (MWD) and the General Manager and staff from BBARWA.

[2] This is a monthly recurring meeting of representatives from the Chamber of Commerce, Southwest Gas, Bear Valley Electric Service, Big Bear Municipal Water District, Big Bear Area Regional Wastewater Agency, Big Bear Mountain Resorts, Mountain Transit, San Bernardino County Sheriff Big Bear Office, CalTrans, California Highway Patrol, Big Bear Fire Department, Big Bear Airport, community advocates of Big Bear, South Coast Air Quality Management District, City of Big Bear Lake, Big Bear City Community Services District, Big Bear Association of Realtors, Operation Breakthrough, U.S. Forestry Service, and field representatives for County Supervisor Dawn Rowe, Congressman Jay Obernolte, CA State Senator Rosilicie Ochoa Bogh, and CA State Assemblyman Tom Lackey.

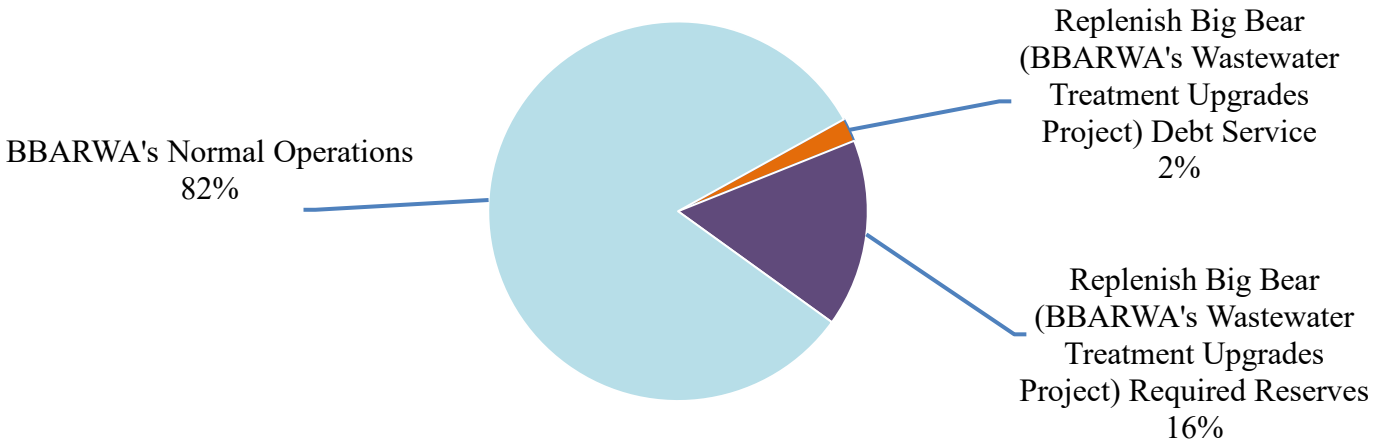
H. RBB Public Records Requests

	Date of Request	Requestor	Date Completed
1	7/17/2021	Joseph Kelly	7/27/2021
2	7/20/2021	Joseph Kelly	1/20/2022
3	7/20/2021	Joseph Kelly	1/20/2022
4	7/20/2021	Joseph Kelly	1/20/2022
5	7/22/2021	Joseph Kelly	8/19/2021
6	8/9/2021	Joseph Kelly	1/20/2022
7	8/9/2021	Joseph Kelly	1/20/2022
8	8/9/2021	Joseph Kelly	8/19/2021
9	8/19/2021	Joseph Kelly	1/20/2022
10	10/26/2021	Joseph Kelly	12/27/2021
11	7/22/2022	Joseph Kelly	7/27/2022
12	7/22/2022	Joseph Kelly	7/27/2022
13	8/2/2022	Joseph Kelly	8/2/2022
14	8/29/2022	Joseph Kelly	9/2/2022
15	9/25/2023	Joseph Kelly	11/9/2023
16	2/2/2024	Joseph Kelly	2/8/2024
17	2/20/2024	Tom Sitton	2/26/2024
18	2/21/2024 & 4/9/2024	Joseph Kelly	3/8/2024
19	3/28/2024 & 4/15/2024	Joseph Kelly	4/2/2024
20	4/2/2024	Joseph Kelly	7/1/2024
21	4/4/2024	Joseph Kelly	4/10/2024
22	4/12/2024	Joseph Kelly	5/6/2024
23	5/3/2024	Kristina Nehls	6/10/2024
24	5/6/2024	Joseph Kelly	In Progress
25	5/7/2024	Joseph Kelly	6/13/2024
26	6/12/2024	Joseph Kelly	6/12/2024

The BBARWA Governing Board adopted the sewer user charge for Fiscal Year 2025 in the maximum amount set forth below effective July 1, 2024, and projects the sewer user charge for future years, commencing Fiscal Year 2026, in the amounts below:

Annual Sewer User Charges – Member Agency Rate Impact[3]				
Collection Agency	**FY 2025 Effective July 1, 2024**	**FY 2026 Effective July 1, 2025**	**FY 2027 Effective July 1, 2026**	**FY 2028 Effective July 1, 2027**
Base Rate	$356.79	$421.02	$496.80	$586.22
City of Big Bear Lake	$367.67	$431.35	$509.03	$601.20
Big Bear City CSD	$348.33	$414.53	$489.12	$576.81
CSA 53B (Fawnskin)	$339.14	$388.79	$458.65	$539.49

FY 2025 Annual Sewer User Charges Breakdown



[3] The five-year sewer user charge schedule was adopted on March 22, 2023 (Resolution No. R. 03-2023) and was amended on March 27, 2024 (Resolution No. R. 03-2024). These fees are to fund RBB (BBARWA's Wastewater Treatment Upgrades Project) debt service and required reserves. Debt service includes interest only on the current short-term financing (bridge loan) and future project funding, such as the WIFIA Loan.

Grant Applications Outstanding		
Grant	**Status**	**Amount**
N/A		$
	Total	**$**

Grants Awarded or Recommended for Funding			
Grant	**Status**	**Amount**	**Remaining**
DCI Technical Assistance	Fully Funded	$500,000	$0
IRWM Prop 1 Round 1	In Process	$4,563,338	$2,748,537
	Subtotal State Grants	**$5,063,338**	**$2,748,537**
2021 & 2022 Title XVI[4]	In Process	$9,867,112	$9,867,112
2023 Title XVI	Recommended for Funding Pending Appropriations Legislation	$9,052,543	$9,052,543
2022, 2023 & 2024 EPA STAG	Included in Federal Budget; Formal Application Being Prepared	$2,960,000	$2,960,000
	Subtotal Federal Grants	**$21,879,655**	**$21,879,655**
	Grand Total	**$26,942,993**	**$24,628,192**

[4] Title XVI grant awards total $9,967,112 with $100,000 in administration costs subtracted.

Cost to BBARWA for Wastewater Treatment Upgrades Project	
Estimated Budget	$64,373,254
Contingency	22,281,263
Total Estimated Budget	**$86,654,517**
Grants Awarded or Recommended for Funding	-26,942,993
Costs Paid by Project Partners	-898,242
Total	**$58,813,282**

BBARWA's Wastewater Treatment Upgrades Project Expenditure by Category	Estimated Budget	Prior FYs Expenditures	FY 2024 Expenditures as of 5/31/2024	Remaining
Construction	$51,711,746			$51,711,746
Final Design	3,958,000		152,032	$3,805,968
Planning	6,810,000	3,060,584	1,624,110	$2,125,306
Financing Costs	726,850	76,850		$650,000
Debt Service Reserve Fund	692,216			$692,216
Accrued Interest on Short-Term Financing	474,442	40,942	144,500	$289,000
Subtotal	**$64,373,254**	**$3,178,376**	**1,920,642**	**$59,274,236**
Contingency	22,281,263			$22,281,263
Total	**$86,654,517**	**$3,178,376**	**1,920,642**	**$81,555,499**

Acronyms	
BABA	Build America Buy America - a law that requires federal agencies to use materials made in the United States for infrastructure projects
BBARWA	Big Bear Area Regional Wastewater Agency – Lead Agency
BB&K	Best Best & Krieger - Legal Counsel
BBMR	Big Bear Mountain Resorts
CEQA	California Environmental Quality Act
CSA 53B	San Bernardino County Community Services District 53B
CSD	Big Bear City Community Services District
DDW	Department of Drinking Water
DWP	City of Big Bear Lake, Department of Water and Power
EPA	Environmental Protection Agency
ER	Recycled Water Title 22 Engineering Report
FY	Fiscal Year (July 1st to June 30th)
GA-RTAC	Government Affairs/Regional Transportation Advisory Committee
IRWM	Integrated Regional Water Management - Grant Agency
JPA	Joint Exercise of Powers Agreement
LOI	Letter of Intent, the first step to a formal funding agreement
MMRP	Mitigation Monitoring and Reporting Program
MWD	Big Bear Municipal Water District
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System – permit required to put Program Water in Stanfield Marsh and Big Bear Lake
PEA	Programmatic Environmental Assessment – required by the EPA for the WIFIA Loan
PEIR	Program Environmental Impact Report
RBB	Replenish Big Bear Program
ROWD	Report of Waste Discharge – first step to the NPDES permit
SOOC	Statement of Overriding Consideration
STAG	State and Tribal Assistance Grant
STEAM	Science, Technology, Engineering, Art, and Math
TDA	Tom Dodson & Associates - Environmental Consultant
USBR	United States Bureau of Reclamation
WIFIA	EPA's Water Infrastructure and Finance Innovation Act – low-interest federal loan
WSC	Water Systems Consulting, Inc. - Primary Consultant

OFFICE OF WASTEWATER MANAGEMENT

WASHINGTON, D.C. 20460

WIFIA PROGRAMMATIC ENVIRONMENTAL ASSESSMENT ADEQUACY MEMORANDUM

In accordance with the Council of Environmental Quality's (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (40 CFR Part 1500), and the U.S. Environmental Protection Agency's procedures for implementing the National Environmental Policy Act (40 CFR Part 6), the EPA has completed an environmental review of the following proposed action:

Issuance of Water Infrastructure Finance and Innovation Act (WIFIA) Program Credit Assistance to Big Bear Area Regional Wastewater Agency's Replenish Big Bear Project

The EPA developed a Programmatic Environmental Assessment (PEA) to analyze the potential environmental impacts related to the issuance of credit assistance under the WIFIA program. The proposed federal action under consideration in the PEA was the approval or denial of WIFIA applications by either providing or not providing WIFIA credit assistance. The PEA evaluated the effects of design, construction, operation, and maintenance for a range of types of water and wastewater infrastructure projects that are eligible for WIFIA credit assistance. The EPA has determined that the above referenced project falls under one of the project types assessed in the PEA.

The prospective borrower has completed the WIFIA Programmatic Environmental Assessment's (PEA) Environmental Questionnaire and provided supplemental information to the WIFIA program about the project and its potential environmental effects. In carrying out its responsibilities under NEPA, the EPA has taken the following actions:

- Reviewed the PEA Environmental Questionnaire and supplemental information submitted by the prospective borrower or directly obtained by the EPA;
- Determined the adequacy of the information available for completing the environmental review under NEPA and cross-cutting authorities;
- Assessed site-specific environmental impacts of the above referenced WIFIA project;
- Determined that the reasonably foreseeable environmental effects are within the scope or context of the PEA.

The EPA has determined that no significant environmental impacts are anticipated from the issuance of WIFIA credit assistance to the applicant, and the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment, making the preparation of an Environmental Impact Statement (EIS) unnecessary. Based on the review documented above, I conclude that this proposal conforms to the WIFIA PEA and associated finding of no significant impact (FONSI), and that the documentation fully covers the proposed action, and constitutes the EPA's compliance with the requirements of the NEPA.

July 10, 2024

Jorianne Jernberg, Director
WIFIA Management Division
Office of Wastewater Management

Date

Enclosures
Completed PEA Environmental Questionnaire (and supporting documentation)
Completed Applicant Verification Memorandum (and supporting documentation)

FEDERAL CROSS-CUTTING AUTHORITIES REVIEW MEMORANDUM

From: Beth Lang, Environmental Scientist, WIFIA Program
To: Record
Subject: Federal Cross-Cutting Authorities Review for Big Bear Area Regional Wastewater Agency's Replenish Big Bear Project (WIFIA ID N22113CA)
Date: July 3, 2024

This memorandum summarizes the WIFIA Engineering and Environmental Team's evaluation of the applicability of federal environmental cross-cutting authorities, the impacts from the project, the results of coordination and consultations with other agencies, and documents the review process.

PROJECT DESCRIPTION:

The Replenish Big Bear project includes the construction of an advanced water purification facility (AWPF) and the Stanfield Marsh/Big Bear Lake Discharge project.

The AWPF includes upgrades at the existing regional wastewater treatment plant (WWTP) to construct a 2.2 million gallon per day (MGD) AWPF. Upgrades within the existing WWTP include oxidation ditches, denitrification filter, ultrafiltration and reverse osmosis, ultraviolet and advanced oxidation process, and a 0.22 MGD pellet reactor. New construction at the WWTP includes:

- Construction of between 23 and 57 acres of solar evaporation ponds to accommodate 22,000 to 55,000 gallons per day (gpd) of brine concentrate
- Installation of 1,350 linear feet of brine pipeline anticipated to be sized between 8-inches and 10-inches from the pellet reactor to the solar evaporation ponds
- Installation of a 50 gallon per minute (gpm) brine pump station
- Installation of one or more monitoring wells at the evaporation pond on the WWTP site
- Installation of an anticipated 1500 to 1600 gpm pump station at the Big Bear Area Regional Wastewater Agency (BBARWA) WWTP to pump purified water to Stanfield Marsh/Big Bear Lake

The Stanfield Marsh/Big Bear Lake Discharge project consist of constructing a purified water conveyance pipeline from the AWPF to Stanfield Marsh/Big Bear Lake and includes the construction of approximately 19,940 linear feet of 12-inch purified water transmission main, appurtenances, and a discharge at the east end of Stanfield Marsh.

PROJECT LOCATION:

The Replenish Big Bear project will be constructed in Big Bear City, San Bernardino County, California. The existing WWTP to be upgraded is located at 121 Palomino Drive, Big Bear City, California 92314. The purified water conveyance pipeline will run west from the AWPF to Stanfield Marsh. There are two pipeline alignment options under consideration: the Baldwin Lake Alignment and the East Neighborhoods Alignment.

1. ENVIRONMENTAL JUSTICE EXECUTIVE ORDERS NO.12898 AND 14096

PROJECT COMPONENT/ DEMOGRAPHIC UNIT	PEOPLE OF COLOR POPULATION (PERCENT)	LOW-INCOME POPULATION (PERCENT)	COMMUNITY WITH POTENTIAL EJ CONCERN
California	61	28	
San Bernardino County	73	34	
Big Bear City	31	43	
060710114042	26	50	Yes
060710114061	42	40	Yes
060710114062	32	39	Yes
060710114071	32	39	Yes

The project area contains four blockgroups with people of color populations of ranging from 26-42 percent. The project area blockgroups have low-income populations of 39-50 percent. San Bernardino County has a people of color population of 73 percent, and a low-income population of 34 percent. California has a people of color population of 61 percent and a low-income population of 28 percent. None of the blockgroups had people of color populations greater than 50 percent nor meaningfully greater than the state or county; therefore, the study area does not contain a population with environmental justice concerns based on people of color populations. All four blockgroups contain low-income populations meaningfully greater than the state and county; therefore, the study area does contain a population with environmental justice concerns based on low-income populations.

The project does not appear to be in or cause impacts to Indian country. Implementation of the project would not result in disproportionate and adverse human health or environmental effects on communities with environmental justice concerns.

Supporting Documentation:
Attachment A: EPA EJ Screen Reports
Attachment B: Final PEIR

2. ENDANGERED SPECIES ACT (16 U.S.C. §§ 1531, *ET SEQ.*)

EPA prepared the official endangered species list using the US Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) system on January 25, 2024, for the Replenish Big Bear Project, which identified 16 threatened or endangered species with the potential to occur in the project area. The official endangered species list identified three critical habitats wholly or partially within the project area; however, the project component footprints do not overlap with identified critical habitats.

BBARWA completed a Biological Resources and Jurisdictional Waters Assessment to determine if federally listed species and associated suitable habitat is present in the project area. The assessment

identified bird-foot checkerbloom individuals and suitable habitat within the project area for the solar evaporation ponds and Stanfield Marsh/Big Bear Lake Discharge project. Suitable habitat was also identified within the project area for the AWPF upgrades. Suitable habitat was identified for the ash-gray paintbrush within the project area for the AWPF upgrades and the Stanfield Marsh/Big Bear Lake Discharge project. Suitable habitat for the San Bernardino bluegrass, California dandelion, and the slender-petaled thelypodium was identified within the project area for the AWPF upgrades, solar evaporation ponds, and the Stanfield Marsh/Big Bear Lake Discharge project. Suitable habitat for the California spotted-owl is present within the general project area. While no individuals of these species were identified during the survey efforts, their presence cannot be ruled out due to the presence of suitable habitat. Mitigation measures as described in the Biological Resources and Jurisdictional Waters Assessment will be implemented. EPA made a may affect, not likely to adversely affect determination for the bird-foot checkerbloom, ash-gray paintbrush, San Bernardino bluegrass, California dandelion, slender-petaled thelypodium, and California spotted owl.

On February 21, 2024, EPA initiated consultation with the U.S. Fish and Wildlife Service (USFWS) on the above determinations. On May 31, 2024, EPA received concurrence on the may affect, not likely to adversely affect determination for the bird-foot checkerbloom, San Bernardino bluegrass, California dandelion, slender-petaled thelypodium, ash-gray paintbrush, and California spotted owl. If the Baldwin Lake pipeline alignment is selected, EPA will reinitiate consultation with USFWS for the bird-foot checkerbloom as this alignment would result in the relocation of individuals prior to construction.

No National Marine Fisheries Service listed species occur within the project area.

Supporting Documentation:

Attachment B: Final PEIR
Attachment C: IPaC Species List
Attachment D: Biological Resources and Jurisdictional Waters Assessment
Attachment E: Species Impact Table
Attachment F: Section 7 Consultation

3. BALD AND GOLDEN EAGLE PROTECTION ACT (16 U.S.C. §§ 668-668C)

Bald eagles are known to overwinter in the project vicinity and suitable foraging habitat is located within Baldwin Lake. However, no known nests occur within the project area and no construction is expected to occur within 660 feet of known bald eagle nests. Mitigation measures are in place to ensure that construction occurs when the lakebed is dry and therefore not capable of supporting foraging. BBARWA shall obtain a permit if necessary.

Attachment G: BBARWA PEA Questionnaire
Attachment B: Final PEIR

4. MARINE MAMMAL PROTECTION ACT (16 U.S.C. §§ 1361-1407)

The Project will not affect marine mammals; therefore, the regulations and requirements of this act do

not apply.

5. NATIONAL HISTORIC PRESERVATION ACT (NHPA) AS AMENDED (54 U.S.C. § 300101 ET SEQ.: HISTORIC PRESERVATION) AND ARCHAEOLOGICAL AND HISTORIC PRESERVATION ACT, AS AMENDED (54 U.S.C. §§ 312501-312508: PRESERVATION OF HISTORICAL AND ARCHAEOLOGICAL DATA)

A Cultural Resources Report completed for the project identified 17 sites including 14 historic-era road segments, a site containing prehistoric lithic scatter, the existing BBARWA wastewater treatment plant, and Baldwin Lake. The 14 historic-era road segments and the existing BBARWA wastewater treatment plant were determined to be ineligible for listing in the National Register of Historic Places (NRHP) under Criterion A through D. The prehistoric lithic scatter was determined to be not present in the area of potential effects (APE) as a result of survey efforts. Baldwin Lake as a whole may be eligible for listing in the NRHP as it has been designated a California Point of Historical Interest and its well-known association with events in early California history. However, the portion of the lakebed within the APE has been previously disturbed and is no longer representative of the historic Baldwin Lake lakebed.

On March 4, 2024, EPA initiated Section 106 consultation with the California State Historic Preservation Officer (SHPO) with a determination of no historic properties. On April 3, 2024, SHPO responded requesting further clarification on the eligibility of Baldwin Lake and impacts of the project on the resource. On May 16, 2024, EPA responded to SHPO stating that Baldwin Lake is being treated as eligible for listing in the NRHP. Project construction occuring within Baldwin Lake will occur within previously altered areas that are no longer representative of the historical Baldwin Lake lakebed and has little potential to affect the existing characteristics of Baldwin Lake. Therefore, EPA made a “no adverse effect” determination. SHPO concurred with this determination on May 17, 2024.

BBARWA requested a Sacred Land File and Native American Contact List from the Native American Heritage Commission and reached out to the 13 Tribes provided on December 30, 2022. Follow-up was carried out between January 13 and February 17, 2023. EPA contacted all 13 Tribes on January 25, 2024, with follow-up on February 9, 2024. No substantive comments have been received to date by EPA.

Supporting Documentation:

Attachment H: Section 106 Consultation
Attachment I: Cultural Resources Report
Attachment J: Sample Tribal Consultation Letter
Attachment B: Final PEIR

6. ARCHAEOLOGICAL RESOURCES PROTECTION ACT (16 U.S.C. §§ 470AA-MM) AND NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (25 U.S.C. § 3001 ET SEQ.)

The Project is not located on federal, Indian, of Native Hawaiian lands; therefore, the regulations and requirements of these acts do not apply.

Supporting Documentation:

Attachment K: U.S. Census Bureau and U.S. EPA American Indian Environmental Office's EPA Tribal Areas accessed through NEPAssist, March 1, 2024.

7. CLEAN WATER ACT (SECTION 404) (33 U.S.C. § 1251 ET SEQ.) AND RIVERS AND HARBORS ACT (SECTION 10) (33 U.S.C. 403) AND PROTECTION OF WETLANDS (EXECUTIVE ORDER NO. 11990 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12608 (1997))

The Stanfield Marsh/Big Bear Lake Discharge project will result in new discharge to a jurisdictional wetland; however, project impacts are expected to be entirely beneficial. BBARWA will apply for a Clean Water Act permit from the U.S. Army Corps of Engineers for the Stanfield Marsh/Big Bear Lake Discharge project. No impacts to wetlands are expected as a result of the construction of the remaining project components.

There are no Section 10 waters in the project area.

Supporting Documentation:

Attachment B: Final PEIR
Attachment G: BBARWA PEA Questionnaire
Attachment K: Fish and Wildlife Service's National Wetland Inventory Data accessed through NEPAssist, March 1, 2024

8. FLOOD PLAIN MANAGEMENT (EXECUTIVE ORDER NO. 11988 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12148 (1979) AND EXECUTIVE ORDER NO. 13690 (2015))

Portions of Stanfield Marsh, Big Bear City, and Baldwin Lake are within the 100-year floodplain. The area of Baldwin Lake that has previously been developed within BBARWA's existing WWTP has been built up to avoid exposure to the floodplain. As such, installation of facilities within BBARWA's WWTP site would not result in floodplain modification beyond that which has already occurred to enable the operation of this facility. The Solar Evaporation Ponds would be installed within an area that has not been raised above the floodplain, however, as part of Project design, these facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. This modification would ensure that the Solar Evaporation Pond operations are confined to an area outside of the floodplain, thereby minimizing conflicts thereof. This action would not conflict with the provision of Executive Order 11988 as this modification would not result in greater flooding of Baldwin Lake than that which currently occurs. The pipelines would be installed within areas that are within the floodplain; however, once installed, the soils and roadways would be returned to their original condition, thereby minimizing potential for permanent floodplain modification to occur as a result of Program implementation.

Supporting Documentation:

Attachment B: Final PEIR
Attachment G: BBARWA PEA Questionnaire
Attachment K: FEMA's National Flood Hazard Layer accessed through NEPAssist, March 1, 2024

9. SAFE DRINKING WATER ACT (42 U.S.C. §§ 300F-300J-26)

No sole source aquifers exist at or near the Project location; therefore, the regulations and requirements of this act do not apply.

Supporting Documentation:

Attachment B: Final PEIR
Attachment G: BBARWA PEA Questionnaire
Attachment K: Data.gov Sole Source Aquifer data accessed through NEPAssist, March 1, 2024

10. FARMLAND PROTECTION POLICY ACT (7 U.S.C. §§ 4201-4209)

Portions of the conveyance pipeline for the Stanfield Marsh/Big Bear Lake Discharge project and AWPF project are within land classified as prime farmland if irrigated. However, the the AWPF project component is occuring within existing footprint on land already developed in an urban area and the majority of the land for the conveyance pipeline is already developed land in an urban area. For the portion of the pipeline within land not developed, a soil disturbance, removal, and reconstruction plan will be developed to ensure the land is returned to prior conditions after construction. Therefore, the project component meets the following exemption outlined in Title 440 of the Natural resources Conservation Service's Conservation Program Manual, Part 523 ("Farmland Protection Policy Act Manual"):

Corridor subsurface projects (such as buried water, sewage, or electrical lines) that will develop a soil disturbance/removal and reconstruction plan (as defined in 30 CFR Sections 823.12 and 823.14) for all agricultural land uses. If a project is in cropland, as defined by USDA-NRCS, 30 CFR Section 823.15 applies and a soil disturbance/removal and reconstruction plan will be developed.

Supporting Documentation:

Attachment B: Programmatic EIR
Attachment G: BBARWA PEA Questionnaire
Attachment K: 2020 U.S. Census Bureau TIGER/Line Urban Areas data accessed through NEPAssist, March 1, 2024

11. COASTAL ZONE MANAGEMENT ACT (16 U.S.C. §§ 1451-1466)

The Project is not located within the coastal zone; therefore, the regulations and requirements of this act do not apply. (*See* https://coast.noaa.gov/czm/mystate/)

12. COASTAL BARRIERS RESOURCES ACT (16 U.S.C. §§ 3501-3510)

This project is not located within any coastal barriers. Therefore, the project would not conflict with the

Coastal Barrier Resources Act. (*See* https://www.fws.gov/program/coastal-barrier-resources-act/maps-and-data).

13. WILD AND SCENIC RIVERS ACT (16 U.S.C. §§ 1271-1287)

There are no Wild and Scenic Rivers within the project area; therefore, the regulations and requirements of this act do not apply. (*See* https://www.rivers.gov/river-app/index.html)

14. ESSENTIAL FISH HABITAT CONSULTATION PROCESS UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 U.S.C. §§ 1801-1891)

This project is not located within essential fish habitat. Therefore, the regulations and requirements of this act do not apply. (*See* https://www.habitat.noaa.gov/apps/efhmapper/)

Attachment G: BBARWA PEA Questionnaire
Attachment K: NOAA Fisheries Essential Fish Habitat data accessed through NEPAssist, March 1, 2024

15. MIGRATORY BIRD TREATY ACT (16 U.S.C. §§ 703-712)

This project does not involve the taking, killing, possession, transportation, or importation of migratory birds, their eggs, parts, or nests. Beneficial practices to avoid and minimize the incidental take of migratory birds, such as best management practices and conservation measures, will be implemented when necessary; therefore, this project would not be in conflict with this act.

Attachment B: Final PEIR
Attachment G: BBARWA PEA Questionnaire

16. CLEAN AIR ACT CONFORMITY (42 U.S.C. § 7506(C))

POLLUTANT	CURRENT STATUS	CLASSIFICIATION LEVEL
Ozone 8-hr (2008 Standard)	Nonattainment	Extreme
Ozone 8-hr (2015 Standard)	Nonattainment	Extreme
Lead (2008 Standard)	Attainment	
Sulfer Dioxide (2010 Standard)	Attainment	
PM 2.5 24-hr (2006 Standard)	Nonattainment	Serious
PM 2.5 Annual (1997 Standard)	Nonattainment	Moderate
PM 2.5 Annual (2012 Standard)	Nonattainment	Serious
PM 10 (1987 Standard)	Maintenance	Serious

Carbon Monoxide (1971 Standard)	Maintenance	Serious
Nitrogen Dioxide (1971 Standard)	Maintenance	

The project is consistent with all South Coast Air Quality Management District (SCAQMD) consistency criteria. Daily construction emissions are not expected to exceed the thresholds for criteria air pollutants. Criteria pollutants emissions are not expected to exceed the annual General Conformity de minimis thresholds or the daily criteria pollutant thresholds; therefore, no conformity determination is required.

Supporting Documentation:

Attachment B: Final PEIR
Attachment G: BBARWA PEA Questionnaire
Attachment K: U.S. EPA Non-Attainment Area data accessed through NEPAssist, March 1, 2024

17. WILDERNESS ACT (16 U.S.C. § 1131 ET SEQ.)

The project is not located in or near any Wilderness areas; therefore, the regulations and requirements of this Act do not apply. (*See* http://www.wilderness.net/map.cfm).

United States Department of the Interior

BUREAU OF RECLAMATION
P.O. Box 25007
Denver, CO 80225-0007

IN REPLY REFER TO:
84-27130
1.3.11

VIA ELECTRONIC MAIL

Big Bear Area Regional Wastewater Agency
Attn: Mr. David Lawrence, General Manager
122 Palomino Drive
Big Bear City, CA 92314-0000

Subject: Notice of Funding Opportunity No. R23AS00464 – WaterSMART:
Title XVI Water Infrastructure Improvements for the Nation (WIIN) Act Water Reclamation and Reuse Program Funding for Fiscal Years 2023 and 2024
Your Application Titled, "Replenish Big Bear"

Dear Mr. Lawrence:

The Bureau of Reclamation (Reclamation) is pleased to inform you that your application for WaterSMART: Title XVI WIIN Act Water Reclamation and Reuse Program funding was among those receiving the highest ratings and was included in the list of projects recommended for funding. Congress was informed of the recommendation on May 23, 2024.

Please note that Section 4009(c) of the WIIN Act stipulates that funding can only be provided after appropriations legislation is enacted designating funding to the projects identified by Reclamation by name. Once this requirement is met, Reclamation anticipates awarding available appropriations in the amount of $9,052,543 for your project. Therefore, a financial assistance agreement will not be executed until such appropriations legislation has been enacted.

In working with you to develop your financial assistance agreement, Reclamation will closely review the activities outlined in your proposal to ensure that activities eligible for funding are identified and that the proposed costs are allowable under financial assistance regulations and the Notice of Funding Opportunity (NOFO). If some costs or activities are determined to be ineligible or unallowable, Reclamation will work with you to refine the scope of work and budget for the project. In addition, Reclamation must have sufficient evidence prior to award that non-Federal cost share will be available. The final funding amount may be adjusted if necessary. Please note that a small portion of this amount may be set aside for Reclamation to ensure the project's Federal regulatory and statutory compliance, and to otherwise oversee the implementation of the project.

All new financial assistance awards for infrastructure projects must meet Buy America requirements. Office of Management and Budget (OMB) implementing guidance states that the Buy America provisions apply to projects carried out through BIL funding and annual appropriations. See OMB Memorandum M-22-11 for further details. Please note that a Department of the Interior (DOI) adjustment period waiver was approved through January 12, 2023 to allow for time to adjust projects as

necessary to be compliant with the Buy America requirements. See DOI Adjustment Period General Applicability Waiver for further details.

All projects being considered for award of funding are required to comply with all Federal environmental and cultural resource requirements, including the National Environmental Policy Act, Endangered Species Act, Clean Water Act, and the National Historic Preservation Act. If project activities that require environmental and cultural compliance approval begin prior to receipt of a written notice from Reclamation that all such clearances have been obtained, the costs of such activities will not be eligible for reimbursement or application as non-Federal cost share.

In addition, funding for construction activities will not be released until Reclamation makes a determination of financial capability for the project.

The Reclamation regional or area office that will be responsible for awarding and administering your agreement will contact you to finalize your award once reviews required to make this funding available are completed. In the meantime, if you have any questions regarding the process or your agreement, please contact Viranousack (Alex) Soubannarath, Lower Colorado Basin Regional Title XVI Coordinator, at 951-695-5310 or vsoubannarath@usbr.gov.

Thank you for your interest and participation in the WaterSMART: Water Recycling and Desalination Programs. The success of these programs depends on collaboration with partners to improve the reliability of water supplies.

Sincerely,

/s/ Diana Blake
Grants Officer

BIG BEAR AREA REGIONAL WASTEWATER AGENCY

Special Board Meeting Minutes
May 22, 2024

1. CALL TO ORDER

A Regular Meeting of the Governing Board of the Big Bear Area Regional Wastewater Agency was called to order by Chair Miller at 3:00 p.m. on May 22, 2024 at 121 Palomino Drive, Big Bear City, California.

BOARD MEMBERS PRESENT

Jim Miller, Chair
Rick Herrick, Vice-Chair
John Russo, Director
Kendi Segovia, Director
Larry Walsh, Director

BOARD MEMBERS ABSENT

None

STAFF MEMBERS PRESENT

David Lawrence, General Manager
Christine Bennett, Finance Manager
Bridgette Burton, Administrative Services Manager/Board Secretary
Sonja Kawa, Human Resources Coordinator/Accounting Technician

OTHERS

Laine Carlson, Vice-President, Water Systems Consulting, Inc.
Kaitlyn Dodson-Hamilton, Vice-President, Tom Dodson & Associates
Glenn Jacklin, General Manager, Big Bear City Community Services District
Megan Kilmer, Associate, Best Best & Krieger, LLP
Reggie Lamson, General Manager, City of Big Bear Lake Department of Water and Power
Charity Schiller, Partner, Best Best & Krieger, LLP
Ward Simmons, Partner, Best Best & Krieger, LLP

Members of the public who signed in included:
Joyce Crist, Big Bear City
Patrice Duncan, Sugarloaf
Kristina Nehls, Sugarloaf
Bob Ybarra, Sugarloaf

2. PLEDGE OF ALLEGIANCE

Director Russo

3. APPROVAL OF AGENDA

Upon motion by Vice-Chair Herrick, seconded by Director Segovia and carried, the Governing Board approved the agenda as presented and moved the public comment period to after the presentation.

Ayes:	Herrick, Russo, Segovia, Walsh, Miller
Noes:	None
Absent:	None
Abstain:	None

4. PUBLIC FORUM

Public comments are included in 5.A.

5. PRESENTATION AND INTRODUCTION

5.A. Replenish Big Bear Presentation

Laine Carlson presented Replenish Big Bear's background information, alternatives, and the path forward.

The Governing Board commented about the 2023 direct potable reuse regulations, 2014 sustainable groundwater management plan regulations, new water use regulations, the Big Bear Municipal Water District ad in the Big Bear Grizzly newspaper, how future treatment standards could require plant upgrades, overall water usage and its impact to RBB operations, water efficiency in the Valley, and the Big Bear Lake level over the past 50 years.

The Governing Board clarified that Replenish Big Bear is not a direct potable reuse project, the cost per gallon of Program Water, how the California Environmental Quality Act (CEQA) does not address individual private views or economic factors and focuses solely on environmental impacts, the purpose of tribal consultation, the possibility of plant upgrades if forever chemical standards change, and that the Program will not fill Big Bear Lake or drought-proof the Valley. The Governing Board further discussed the timeline and process for design, an updated cost estimate, grant funds to pay for the final design, and construction bids.

Joyce Crist commented that the public needs more time to digest this information and would like a forum where she can present her ideas.

Bobbi Hazelton commented on details related to final design, easements, cost, ownership of water, and voting.

Tom Sitton commented about the sources of revenue for the federal government and continued his comments from the City of Big Bear Lake council meeting.

Kristina Nehls commented on a letter from Bear Valley Mutual Water Company dated February 20th.

Barbara Nitkin commented on project financials, cash flow, loans, grants, and ownership and monetization of the design plans.

Jim Eakin commented about the value of the Lake to East Valley residents and how the Valley economy is driven by tourism.

Patrice Duncan commented about the 36 billion gallons of water being sent to Lucerne Valley and the Big Bear City Community Services District approving rate increases that include Replenish Big Bear.

Wilma M. Hayes expressed concern over increasing taxes.

Chair Miller adjourned at 4:50 p.m. and rejourned at 5:01 p.m. This meeting was conducted concurrently with the 5:00 p.m. regular meeting.

6. ADJOURNMENT

With no further business to come before the Governing Board, Chair Miller adjourned the meeting at 5:30 p.m.

ATTEST: _____

Bridgette Burton, Secretary to the Governing Board
Big Bear Area Regional Wastewater Agency

BIG BEAR AREA REGIONAL WASTEWATER AGENCY

Regular Board Meeting Minutes
May 22, 2024

1. CALL TO ORDER

A Regular Meeting of the Governing Board of the Big Bear Area Regional Wastewater Agency was called to order by Chair Miller at 5:01 p.m. on May 22, 2024 at 121 Palomino Drive, Big Bear City, California.

BOARD MEMBERS PRESENT

Jim Miller, Chair
Rick Herrick, Vice-Chair
John Russo, Director
Kendi Segovia, Director
Larry Walsh, Director

BOARD MEMBERS ABSENT

None

STAFF MEMBERS PRESENT

David Lawrence, General Manager
Christine Bennett, Finance Manager
Bridgette Burton, Administrative Services Manager/Board Secretary
Sonja Kawa, Human Resources Coordinator/Accounting Technician

OTHERS

Laine Carlson, Vice-President, Water Systems Consulting, Inc.
Kaitlyn Dodson-Hamilton, Vice-President, Tom Dodson & Associates
Glenn Jacklin, General Manager, Big Bear City Community Services District
Megan Kilmer, Associate, Best Best & Krieger, LLP
Reggie Lamson, General Manager, City of Big Bear Lake Department of Water and Power
Charity Schiller, Partner, Best Best & Krieger, LLP
Ward Simmons, Partner, Best Best & Krieger, LLP

Members of the public who signed in included:
None

2. PLEDGE OF ALLEGIANCE

Dispensed.

3. APPROVAL OF AGENDA

Upon motion by Vice-Chair Herrick, seconded by Director Segovia and carried, the Governing Board approved the agenda as presented.

Ayes: Herrick, Russo, Segovia, Walsh, Miller
Noes: None
Absent: None
Abstain: None

4. PUBLIC FORUM

None

5. PRESENTATION AND INTRODUCTION

5.A. Certificate of Achievement for Excellence in Financial Reporting for the Annual Comprehensive Financial Report, Government Finance Officers Association

The Finance Manager presented the Certificate of Achievement.

The Governing Board congratulated the Agency.

6. INFORMATION/COMMITTEE REPORTS

6.A. General Manager's Report

There were no comments from the Governing Board.

6.B. Replenish Big Bear Report

The General Manager highlighted that the EPA advised that the awarded $2.96 million would not be subject to repayment if the scope of work in the final grant agreement identified the final design and the final design was completed, and discussed the $3 - $3.5 million loan proposal, which would be used as non-federal match funds. The General Manager pointed out the new financial report attached to Item 7.B. that breaks out Replenish Big Bear costs.

The Governing Board clarified how the $3 - $3.5 million loan would be paid back, the amount and purpose of the current short-term financing, and why the Water Infrastructure and Finance Innovation Act (WIFIA) loan cannot be used for the final design. The Governing Board directed the General Manager to obtain loan terms and conditions for the Governing Board to consider.

7. CONSENT CALENDAR APPROVED ITEMS

7.A. Approval of the Minutes from the March 19, 2024 Special Meeting, March 27, 2024 Regular Meeting, April 4, 2024 Replenish Big Bear Committee Meeting, and April 24, 2024 Regular Meeting

7.B. Monthly Disbursements Report for April

7.C. Investment Report Identifying Agency Investments and Reporting Interest Income for April

7.D. Third Quarter Report, Nine Months Ended March 31, 2024

Upon motion by Vice-Chair Herrick seconded by Director Segovia and carried, the Governing Board approved the Consent Calendar as presented.

Ayes: Herrick, Russo, Segovia, Miller
Noes: Walsh
Absent: None
Abstain: None

8. ITEMS REMOVED FROM CONSENT CALENDAR

None

9. OLD BUSINESS

9.A. Replenish Big Bear Poll Discussion

The Board Secretary presented information regarding public opinion poll proposals.

The Governing Board discussed the poll, its purpose, and poll parameters.

Joyce Crist recommended a public forum at the Big Bear City Community Services District for the community to discuss multiple-choice options for the project.

Barbara Nitkin commented that she went door to door for four months to solicit input from residents and used title information to solicit input from non-residents for a petition in San Bernardino County Service Area 53B.

Wilma M. Hayes reminded the Governing Board of its fiscal responsibility and expressed concern over increased taxes.

Pat Enyart recommended a public forum for the community to ask questions and receive answers with a survey at the end of the forum.

Kristina Nehls commented about letter writers having significant issues with the Environmental Impact Report.

Tom Sitton expressed concern over loans and interest and reminded the Governing Board that the people are paying all the costs for the project.

Upon motion by Vice-Chair Herrick, seconded by Director Segovia and carried, the Governing Board chose to take no action on this item.

Ayes: Herrick, Russo, Segovia, Walsh, Miller
Noes: None
Absent: None
Abstain: None

10. NEW BUSINESS – DISCUSSION/ACTION ITEMS

10.A. Resolution No. R. 08-2024, A Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency Adopting Environmental Findings and Statement of Overriding Considerations Pursuant to the California Environmental Quality Act, Certifying the Replenish Big Bear Program Final Environmental Impact Report (SCH #2022110595), Adopting the Mitigation Monitoring and Reporting Program, and Approving the Program

Kaitlyn Dodson-Hamilton presented the Final Program Environmental Impact Report and discussed the Responses to Comments. Three letters were submitted in response to the Responses to Comments; Laine Carlson, Kaitlyn Dodson-Hamilton, and Charity Schiller verbally responded to the letters.

The Governing Board inquired about the brine sent to Israel, when the Agency received the brine testing data, the distribution of pilot data to the public, when specific public concerns would be addressed, and the impact of the Final Pilot Report on the Final Program Environmental Impact Report.

The Governing Board clarified the purpose of the pilot, Program Water meeting regulatory requirements, and Sand Canyon being a separate project. Further discussion involved the public needing additional time to review the Final Program Environmental Impact Report and Responses to Comments, legal exposure, the importance of public involvement, focusing on the Initial Study, significant impacts, concern from the public, the nature of a program vs. project-level Environmental Impact Report, the practicability of the Shay Pond Project, mitigation monitoring, an annual report, and routine inspection of environmental items.

Sandy Steers commented that the Environmental Impact Report is not sufficiently detailed or defined and requested additional time to review.

Barbara Nitkin commented about Supervisory Control and Data Acquisition (SCADA) operations and automation.

Tom Sitton expressed concern about the reverse osmosis filters.

Wilma M. Hayes commented about the brine samples sent to Israel.

Kristina Nehls commented about the cost change and water quality results and recommended additional time to figure out the issues with the Environmental Impact Report.

Upon motion by Vice-Chair Herrick, seconded by Chair Miller and carried, the Governing Board postponed the Final Program Environmental Impact Report certification and directed staff to draft additional language into the motion that includes an annual report and a final design review by the Replenish Big Bear Committee.

Ayes: Herrick, Russo, Segovia, Miller
Noes: Walsh
Absent: None
Abstain: None

10.B. Adjourn the June 26, 2024 Regular Meeting

Upon motion by Vice-Chair Herrick, seconded by Chair Miller and carried, the Governing Board adjourned the June 26, 2024 regular meeting.

Ayes: Herrick, Russo, Segovia, Miller
Noes: Walsh
Absent: None
Abstain: None

11. COMMENTS AND ANNOUNCEMENTS

11.A. General Manager Comments

None

11.B. Governing Board Member Comments

The Governing Board commented on the Agency policy manual, amendments to the Joint Powers Agreement, the importance of reading the Final Program Environmental Impact Report, and letters submitted in response to the Final Program Environmental Impact Report.

12. ADJOURNMENT

With no further business to come before the Governing Board, Chair Miller adjourned the meeting at 7:21 p.m.

ATTEST: _____
Bridgette Burton, Secretary to the Governing Board
Big Bear Area Regional Wastewater Agency

Big Bear Area Regional
Wastewater Agency

Jim Miller – Chair
Rick Herrick – Vice-Chair
John Russo – Director
Kendi Segovia – Director
Larry Walsh – Director

AGENDA ITEM: 7.B.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

PREPARED BY: Christine Bennett, Finance Manager

SUBJECT: Monthly Disbursements Report

BACKGROUND:

Attached is the Agency's May through June check register which reflects accounts paid during that period.

FINANCIAL IMPACT:

There is no financial impact. The funds have previously been appropriated.

RECOMMENDATION:

Informational

Big Bear Area Regional Wastewater Agency
Check Register
For the Period From May 1, 2024 to Jun 30, 2024

Check #	Date	Payee	Amount
24054	5/8/24	VC3, INC.	2,787.50
24055	5/8/24	AMAZON CAPITAL SERVICES	698.37
24056	5/8/24	ARAMARK/VESTIS	2,663.09
24057	5/8/24	BEST BEST & KRIEGER LLP	40,861.70
24058	5/8/24	BIG BEAR CITY COMMUNITY SERVICES DIST.	3,269.13
24059	5/8/24	BDP INDUSTRIES, INC.	639.35
24060	5/8/24	BUTCHER'S BLOCK & BUILDING	117.16
24061	5/8/24	BEAR VALLEY ELECTRIC	18,340.92
24062	5/8/24	CALOLYMPIC SAFETY	1,197.21
24063	5/8/24	CAR QUEST OF BIG BEAR	476.26
24064	5/8/24	CWEA TCP/MEMBERSHIP	884.00
24065	5/8/24	DADDY'S PEST CONTROL	150.00
24066	5/8/24	DIY HOME CENTER-BIG BEAR	268.92
24067	5/8/24	DISTRIBUTED SOLAR DEVELOPMENT, LLC	23,088.62
24068	5/8/24	DIRECT TV	45.62
24069	5/8/24	DEPARTMENT OF WATER & POWER	55.70
24070	5/8/24	FAMCON PIPE & SUPPLY, INC.	161.41
24071	5/8/24	FLYERS ENERGY	1,531.58
24072	5/8/24	FRONTIER COMMUNICATIONS	1,242.05
24073	5/8/24	GEIGER SUPPLY, INC	256.88
24074	5/8/24	HUGHESNET	101.52
24075	5/8/24	KING'S FIRE PROTECTION, INC.	1,558.96
24076	5/8/24	LAKESIDE EQUIPMENT CORP	7,273.13
24077	5/8/24	NAPA AUTO PARTS	610.57
24078	5/8/24	NATIVESCAPES INC	571.00
24079	5/8/24	POLYDYNE INC	8,464.72
24080	5/8/24	S PORTER, INC.	750.00
24081	5/8/24	QUILL	188.53
24082	5/8/24	READY REFRESH	264.78
24083	5/8/24	SOUTH COAST AQMD	485.43
24084	5/8/24	RYAN R. ABELN	1,826.34
24085	5/8/24	SMARTCOVER SYSTEMS	1,128.00
24086	5/8/24	SPECTRUM BUSINESS	1,023.93
24087	5/8/24	STATE WATER RESOURCES CONTROL BOARD	1,950.00
24088	5/8/24	USA BLUEBOOK	3,695.25
24089	5/8/24	UNDERGROUND SERVICE ALERT	189.81
24090	5/8/24	VIKING MAINTENANCE SERVICES, LLC	1,445.00
24091	5/8/24	WATER SYSTEMS CONSULTING, INC.	46,272.07
24095	5/8/24	RICHARD T. HERRICK	150.00
24098	5/8/24	JOHN J. RUSSO	150.00
CASH 24135	5/10/24	KENDI J. SEGOVIA	300.00
CASH 24136	5/10/24	LAWRENCE C. WALSH	300.00
CASH 24143	5/15/24	CAPITAL ONE PUBLIC FUNDING, LLC	72,250.00
CASH 24144	5/15/24	PNC BANK, N.A.	75,004.83
CASH 24145	5/15/24	PNC BANK, N.A.	179,553.81
24100	5/22/24	VC3, INC.	2,787.50
24101	5/22/24	ALL PROTECTION ALARM	1,268.25
24102	5/22/24	AMAZON CAPITAL SERVICES	902.49
24104	5/22/24	BUSINESS CARD	763.48
24105	5/22/24	ROBIN A. BRADLEY	1,260.00
24106	5/22/24	BRAX COMPANY, INC.	3,215.85

Check #	Date	Payee	Amount
24107	5/22/24	CLINICAL LAB OF SAN BERNARDINO	455.00
24108	5/22/24	COUNTY OF SAN BERNARDINO SOLID WASTE MN	398.45
24109	5/22/24	TOM DODSON & ASSOCIATES	14,627.50
24110	5/22/24	DXP ENTERPRISES, INC.	5,864.87
24111	5/22/24	EVANTEC CORPORATION	471.39
24112	5/22/24	THE LITTLE GREEN HOUSE FLORIST	70.58
24113	5/22/24	MITEL	404.14
24114	5/22/24	ROI ENGINEERING LLC	1,895.00
24115	5/22/24	RYAN R. ABELN	5,574.94
24116	5/22/24	SOUTHWEST GAS	1,058.30
24117	5/22/24	SYNAGRO-WWT, INC.	18,205.68
24118	5/22/24	VERIZON WIRELESS	237.32
24119	5/22/24	WATER SYSTEMS CONSULTING, INC.	33,263.94
24120	6/7/24	ALLISON MECHANICAL, INC.	7,516.00
24121	6/7/24	AMAZON CAPITAL SERVICES	609.52
24122	6/7/24	ARAMARK/VESTIS	2,269.78
24123	6/7/24	RICK M. BOWERS	193.95
24124	6/7/24	BIG BEAR CITY COMMUNITY SERVICES DIST.	465.21
24125	6/7/24	BRAX COMPANY, INC.	3,210.75
24126	6/7/24	BRIAN ROMBERG	225.00
24127	6/7/24	BUTCHER'S BLOCK & BUILDING	34.72
24128	6/7/24	BEAR VALLEY ELECTRIC	11,227.21
24129	6/7/24	FIFTH ASSET, INC DBA DEBTBOOK	6,000.00
24130	6/7/24	DESALITECH, INC.	64,596.14
24131	6/7/24	DIY HOME CENTER-BIG BEAR	108.14
24132	6/7/24	DISTRIBUTED SOLAR DEVELOPMENT, LLC	23,895.38
24133	6/7/24	DIRECT TV	39.37
24134	6/7/24	DEPARTMENT OF WATER & POWER	50.70
24135	6/7/24	FLYERS ENERGY	2,039.12
24136	6/7/24	FRONTIER COMMUNICATIONS	1,242.05
24137	6/7/24	GOVERNMENT FINANCE OFFICERS ASSN	30.00
24138	6/7/24	GRAINGER	497.90
24139	6/7/24	HUGHESNET	101.52
24140	6/7/24	RANDY J. SPITZ	134.72
24141	6/7/24	NAPA AUTO PARTS	420.29
24142	6/7/24	NATIVESCAPES INC	460.00
24143	6/7/24	PHOENIX TOWER INTERNATIONAL	58.86
24144	6/7/24	PITNEY BOWES GLOBAL FINANCIAL SERVICES	127.67
24145	6/7/24	RDO EQUIPMENT CO.	287.66
24146	6/7/24	READY REFRESH	301.07
24147	6/7/24	AMERICAN RED CROSS - TRAINING SERVICES	1,131.80
24148	6/7/24	SPECTRUM BUSINESS	1,023.93
24149	6/7/24	NANCY R. BOHL, INC.	570.00
24150	6/7/24	TROJAN TECHNOLOGIES GROUP ULC	53,336.25
24151	6/7/24	UNDERGROUND SERVICE ALERT	275.56
24152	6/7/24	VIKING MAINTENANCE SERVICES, LLC	1,445.00
24153	6/7/24	JON E. WREESMAN	492.18
24154	6/7/24	XYLEM DEWATERING SOLUTIONS, INC.	2,188.60
24158	6/7/24	RICHARD T. HERRICK	150.00
24161	6/7/24	JAMES J. MILLER	150.00
24162	6/7/24	JOHN J. RUSSO	150.00
CASH 24171	6/11/24	KENDI J. SEGOVIA	150.00
CASH 24172	6/11/24	LAWRENCE C. WALSH	150.00
24164	6/24/24	ALLISON MECHANICAL, INC.	2,145.00
24165	6/24/24	AMAZON CAPITAL SERVICES	682.22
24166	6/24/24	BEST BEST & KRIEGER LLP	25,786.61

Check #	Date	Payee	Amount
24167	6/24/24	BUSINESS CARD	2,272.30
24168	6/24/24	CANON SOLUTIONS AMERICA, INC.	2,101.91
24169	6/24/24	CLINICAL LAB OF SAN BERNARDINO	85.00
24170	6/24/24	JOHN CONNELLY	625.00
24171	6/24/24	COUNTY OF SAN BERNARDINO SOLID WASTE MN	778.56
24172	6/24/24	ENVIRONMENTAL EXPRESS, INC	510.91
24173	6/24/24	NAVY MEN, LLC	450.66
24174	6/24/24	GLENN B. DORNING, INC.	100.86
24175	6/24/24	GRAINGER	228.08
24176	6/24/24	BEAR VALLEY BASIN GSA	145.10
24177	6/24/24	HAZ MAT TRANS, INC.	1,228.15
24178	6/24/24	MITEL	404.14
24179	6/24/24	MOUNTAIN TROPHY & AWARDS	51.72
24180	6/24/24	NEW PIG CORPORATION	584.92
24181	6/24/24	POLYDYNE INC	4,232.36
24182	6/24/24	QUILL	190.69
24183	6/24/24	ROI ENGINEERING LLC	1,895.00
24184	6/24/24	JACOB K. STANGL	750.00
24185	6/24/24	SOUTHWEST GAS	477.18
24186	6/24/24	SWRCB-WWOC	365.00
24187	6/24/24	SYNAGRO-WWT, INC.	18,185.40
24188	6/24/24	USA BLUEBOOK	59.94
24189	6/24/24	VERIZON WIRELESS	237.32
24190	6/24/24	WATER SYSTEMS CONSULTING, INC.	212,360.02
Total			**1,061,257.93**

Personnel Expenditures (e.g., benefits) are not included in this report.

Big Bear Area Regional Wastewater Agency
Check Register by Expenditure Account
For the Period From May 1, 2024 to Jun 30, 2024

Account #	Check #	Date	Trans Description	Account Description	Amount
Power					
6100-05	24067	5/8/24	DISTRIBUTED SOLAR DEVELOPMENT	Solar Purchases	23,088.62
6100-05	24132	6/7/24	DISTRIBUTED SOLAR DEVELOPMENT	Solar Purchases	23,895.38
6100-10	24116	5/22/24	SOUTHWEST GAS	Fuel for Power Production	35.91
6100-10	24185	6/24/24	SOUTHWEST GAS	Fuel for Power Production	25.00
6100-11	24116	5/22/24	SOUTHWEST GAS	Gas Admin Building	323.68
6100-11	24185	6/24/24	SOUTHWEST GAS	Gas Admin Building	211.49
6100-12	24116	5/22/24	SOUTHWEST GAS	Gas Treatment Plant	698.71
6100-12	24185	6/24/24	SOUTHWEST GAS	Gas Treatment Plant	240.69
6100-20	24061	5/8/24	BEAR VALLEY ELECTRIC	Electricity - Treatment Plant	11,959.63
6100-20	24128	6/7/24	BEAR VALLEY ELECTRIC	Electricity - Treatment Plant	7,296.20
6100-21	24061	5/8/24	BEAR VALLEY ELECTRIC	Electricity - Stations	6,381.29
6100-21	24128	6/7/24	BEAR VALLEY ELECTRIC	Electricity - Stations	3,931.01
				Total Power	**78,087.61**
Sludge Removal					
6200-00	24117	5/22/24	SYNAGRO-WWT, INC.	Sludge Removal	18,205.68
6200-00	24187	6/24/24	SYNAGRO-WWT, INC.	Sludge Removal	18,185.40
				Total Sludge Removal	**36,391.08**
Chemicals					
6300-10	24088	5/8/24	USA BLUEBOOK	Odor Control-Disinfectant	3,636.77
6300-20	24079	5/8/24	POLYDYNE INC	Polymer	8,464.72
6300-20	24181	6/24/24	POLYDYNE INC	Polymer	4,232.36
6300-30	24111	5/22/24	EVANTEC CORPORATION	Laboratory Reagents	471.39
6300-30	24188	6/24/24	USA BLUEBOOK	Laboratory Reagents	59.94
				Total Chemicals	**16,865.18**
Materials and Supplies					
6400-10	24081	5/8/24	QUILL	Office Supplies	113.12
6400-10	24055	5/8/24	AMAZON CAPITAL SERVICES	Office Supplies	522.76
6400-10	24112	5/22/24	THE LITTLE GREEN HOUSE FLORIST	Condolences	70.58
6400-10	24082	5/8/24	READY REFRESH	Bottled Water	264.78
6400-10	24104	5/22/24	BUSINESS CARD	Office Supplies	896.53
6400-10	24140	6/7/24	RANDY J. SPITZ	Office Supplies	134.72
6400-10	24102	5/22/24	AMAZON CAPITAL SERVICES	Office Supplies	326.18
6400-10	24137	6/7/24	GOVERNMENT FINANCE OFFICERS ASSOC.	Publication	30.00
6400-10	24121	6/7/24	AMAZON CAPITAL SERVICES	Janitorial Supplies	79.80
6400-10	24165	6/24/24	AMAZON CAPITAL SERVICES	Office Supplies, Refund	-33.58
6400-10	24144	6/7/24	PITNEY BOWES GLOBAL FINANCIAL	Office Equip - Postage Machine Lease	127.67
6400-10	24146	6/7/24	READY REFRESH	Bottled Water	301.07
6400-10	24168	6/24/24	CANON SOLUTIONS AMERICA, INC.	Copier Usage and Maintenance	2,101.91
6400-10	24182	6/24/24	QUILL	Office Supplies	190.69
6400-10	24167	6/24/24	BUSINESS CARD	Office Equip, Supplies, Meeting Provisions	993.37
6400-10	24179	6/24/24	MOUNTAIN TROPHY & AWARDS	Plaque Nameplates	51.72
6400-20	24062	5/8/24	CALOLYMPIC SAFETY	Safety Supplies	1,197.21

Account #	Check #	Date	Trans Description	Account Description	Amount
6400-20	24123	6/7/24	RICK M. BOWERS	Safety Supplies	193.95
6400-20	24165	6/24/24	AMAZON CAPITAL SERVICES	Safety Supplies	251.16
6400-25	24088	5/8/24	USA BLUEBOOK	Laboratory Supplies	58.48
6400-25	24102	5/22/24	AMAZON CAPITAL SERVICES	Laboratory Supplies	240.73
6400-25	24172	6/24/24	ENVIRONMENTAL EXPRESS, INC	Laboratory Supplies	510.91
6400-26	24071	5/8/24	FLYERS ENERGY	Fuel - Vehicles	1,531.58
6400-26	24135	6/7/24	FLYERS ENERGY	Fuel - Vehicles	2,039.12
6400-27	24063	5/8/24	CAR QUEST OF BIG BEAR	Vehicle Maintenance	290.22
6400-27	24104	5/22/24	BUSINESS CARD	Filters	65.95
6400-27	24121	6/7/24	AMAZON CAPITAL SERVICES	Filters	101.60
6400-27	24145	6/7/24	RDO EQUIPMENT CO.	Equipment Maintenance	287.66
6400-27	24167	6/24/24	BUSINESS CARD	Filters	82.98
6400-27	24180	6/24/24	NEW PIG CORPORATION	Absorbent Mat	584.92
6400-27	24177	6/24/24	HAZ MAT TRANS, INC.	Oil Absorbent Disposal	1,228.15
6400-30	24060	5/8/24	BUTCHER'S BLOCK & BUILDING	Degreasers and Solvents	16.79
6400-40	24066	5/8/24	DIY HOME CENTER-BIG BEAR	Miscellaneous Supplies	11.10
6400-40	24077	5/8/24	NAPA AUTO PARTS	Miscellaneous Supplies	45.23
6400-40	24102	5/22/24	AMAZON CAPITAL SERVICES	Miscellaneous Supplies	155.13
6400-40	24121	6/7/24	AMAZON CAPITAL SERVICES	Miscellaneous Supplies	69.86
6400-40	24131	6/7/24	DIY HOME CENTER-BIG BEAR	Miscellaneous Supplies	16.07
6400-40	24165	6/24/24	AMAZON CAPITAL SERVICES	Miscellaneous Supplies	398.20
6400-40	24175	6/24/24	GRAINGER	Miscellaneous Supplies	228.08
6400-50	24060	5/8/24	BUTCHER'S BLOCK & BUILDING	Ground Maint Supplies	48.33
6400-50	24066	5/8/24	DIY HOME CENTER-BIG BEAR	Ground Maint Supplies	73.66
6400-50	24121	6/7/24	AMAZON CAPITAL SERVICES	Ground Maint Supplies	206.84
6400-50	24127	6/7/24	BUTCHER'S BLOCK & BUILDING	Ground Maint Supplies	34.72
6400-50	24131	6/7/24	DIY HOME CENTER-BIG BEAR	Ground Maint Supplies	92.07
6400-50	24165	6/24/24	AMAZON CAPITAL SERVICES	Ground Maint and Supplies	66.44
6400-60	24066	5/8/24	DIY HOME CENTER-BIG BEAR	Electrical Supplies	87.25
6400-60	24085	5/8/24	SMARTCOVER SYSTEMS	System Management & Warranty	1,128.00
6400-75	24055	5/8/24	AMAZON CAPITAL SERVICES	Tools and Equipment	175.61
6400-75	24077	5/8/24	NAPA AUTO PARTS	Tools and Equipment	23.70
6400-75	24102	5/22/24	AMAZON CAPITAL SERVICES	Tools and Equipment	180.45
6400-75	24138	6/7/24	GRAINGER	Tools and Equipment	89.20
6400-80	24073	5/8/24	GEIGER SUPPLY, INC	Plumbing Supplies	256.88
6400-80	24060	5/8/24	BUTCHER'S BLOCK & BUILDING	Plumbing Supplies	52.04
6400-80	24066	5/8/24	DIY HOME CENTER-BIG BEAR	Plumbing Supplies	96.91
6400-80	24138	6/7/24	GRAINGER	Plumbing Supplies	141.91
6400-80	24138	6/7/24	GRAINGER	Plumbing Supplies	36.22
6400-99	24167	6/24/24	BUSINESS CARD	Purchase Discounts	-376.20
				Total Materials and Supplies	**18,190.43**
Repairs and Replacements					
6500-10	24070	5/8/24	FAMCON PIPE & SUPPLY, INC.	Mainline Repair Parts	161.41
6500-20	24076	5/8/24	LAKESIDE EQUIPMENT CORP	Bearing	5,161.23
6500-20	24080	5/8/24	S PORTER, INC.	Crane for Pump Replacement	750.00
6500-20	24106	5/22/24	BRAX COMPANY, INC.	Pump Replacement	3,215.85
6500-20	24110	5/22/24	DXP ENTERPRISES, INC.	Mechanical Seal & Gasket	5,864.87
6500-20	24125	6/7/24	BRAX COMPANY, INC.	Pump Replacement	3,210.75

Account #	Check #	Date	Trans Description	Account Description	Amount
6500-20	24138	6/7/24	GRAINGER	Miscellaneous Supplies	230.57
6500-20	24154	6/7/24	XYLEM DEWATERING SOLUTIONS, IN	Repair Parts	2,188.60
6500-30	24076	5/8/24	LAKESIDE EQUIPMENT CORP	Equipment Replacement Parts	2,111.90
6500-30	24063	5/8/24	CAR QUEST OF BIG BEAR	Repair Parts - Volvo	186.04
6500-30	24059	5/8/24	BDP INDUSTRIES, INC.	Repair Parts	639.35
6500-30	24121	6/7/24	AMAZON CAPITAL SERVICES	Repair Parts - Kubota	151.42
6500-30	24141	6/7/24	NAPA AUTO PARTS	Repair Parts	410.62
6500-30	24174	6/24/24	GLENN B. DORNING, INC.	Equipment Repair Parts	100.86
6500-30	24173	6/24/24	NAVY MEN, LLC	Trailer Tires	450.66
6500-35	24141	6/7/24	NAPA AUTO PARTS	Vehicle Repair Parts	9.67
6500-35	24167	6/24/24	BUSINESS CARD	Duty Truck Seat Covers	603.39
6500-36	24077	5/8/24	NAPA AUTO PARTS	Generator Service	541.64
6500-40	24075	5/8/24	KING'S FIRE PROTECTION, INC.	Backflow Repair	609.00
6500-40	24153	6/7/24	JON E. WREESMAN	Clear Drain	492.18
				Total Repairs and Replacements	**27,090.01**
Utilities					
6530-10	24069	5/8/24	DEPARTMENT OF WATER & POWER	Utilities - Water	55.70
6530-10	24058	5/8/24	BIG BEAR CITY COMMUNITY SERVIC	Utilities - Water	2,803.92
6530-10	24134	6/7/24	DEPARTMENT OF WATER & POWER	Utilities - Water	50.70
6530-20	24058	5/8/24	BIG BEAR CITY COMMUNITY SERVIC	Trash Service	465.21
6530-20	24124	6/7/24	BIG BEAR CITY COMMUNITY SERVIC	Trash Service	465.21
6530-30	24108	5/22/24	COUNTY OF SAN BERNARDINO SOLID	Solid Waste Disposal	398.45
6530-30	24170	6/24/24	JOHN CONNELLY - HRS PUMPING SCUM	Solid Waste Disposal	625.00
6530-30	24171	6/24/24	COUNTY OF SAN BERNARDINO SOLID	Solid Waste Disposal	778.56
				Total Utilities	**5,642.75**
Communication Expense					
6550-10	24074	5/8/24	HUGHESNET	Scada	101.52
6550-10	24072	5/8/24	FRONTIER COMMUNICATIONS	Scada	786.53
6550-10	24086	5/8/24	SPECTRUM BUSINESS	Scada	314.94
6550-10	24114	5/22/24	ROI ENGINEERING LLC - MAY	Scada	1,895.00
6550-10	24139	6/7/24	HUGHESNET	Scada	101.52
6550-10	24136	6/7/24	FRONTIER COMMUNICATIONS	Scada	786.53
6550-10	24148	6/7/24	SPECTRUM BUSINESS	Scada	314.94
6550-10	24183	6/24/24	ROI ENGINEERING LLC - JUNE	Scada	1,895.00
6550-30	24068	5/8/24	DIRECT TV	Television	39.37
6550-30	24133	6/7/24	DIRECT TV	Television	39.37
6550-40	24113	5/22/24	MITEL	Telephone Service and Repair	404.14
6550-40	24072	5/8/24	FRONTIER COMMUNICATIONS	Telephone Service	455.52
6550-40	24178	6/24/24	MITEL	Telephone Service and Repair	404.14
6550-40	24118	5/22/24	VERIZON WIRELESS	Telephone Service	203.24
6550-40	24136	6/7/24	FRONTIER COMMUNICATIONS	Telephone Service	455.52
6550-40	24189	6/24/24	VERIZON WIRELESS	Telephone Service	203.24
6550-50	24086	5/8/24	SPECTRUM BUSINESS	Internet, Wireless Service	708.99
6550-50	24118	5/22/24	VERIZON WIRELESS	Internet, Wireless Service	34.08
6550-50	24148	6/7/24	SPECTRUM BUSINESS	Internet, Wireless Service	708.99
6550-50	24189	6/24/24	VERIZON WIRELESS - IPADS	Internet, Wireless Service	34.08
				Total Communication Expense	**9,886.66**
Contractual Services Other					

Account #	Check #	Date	Trans Description	Account Description	Amount
6600-10	24075	5/8/24	KING'S FIRE PROTECTION, INC.	Backflow Testing	949.96
6600-10	24107	5/22/24	CLINICAL LAB OF SAN BERNARDINO	Testing	455.00
6600-10	24169	6/24/24	CLINICAL LAB OF SAN BERNARDINO	Testing	85.00
6600-20	24056	5/8/24	ARAMARK/VESTIS	Uniform Laundry Service	2,663.09
6600-20	24122	6/7/24	ARAMARK/VESTIS	Uniform Laundry Service	2,269.78
6600-30	24105	5/22/24	ROBIN A. BRADLEY	EAP Counseling	1,260.00
6600-30	24149	6/7/24	NANCY R. BOHL, INC. - EAP COUNSELING	EAP Counseling	570.00
6600-40	24101	5/22/24	ALL PROTECTION ALARM - PLANT	Security, Fire Alarm	1,268.25
6600-58	24065	5/8/24	DADDY'S PEST CONTROL	Pest Control Services	150.00
6600-58	24078	5/8/24	NATIVESCAPES INC - SPRING CLEAN-UP	Landscaping and Ground Maint	571.00
6600-58	24126	6/7/24	BRIAN ROMBERG	Pest Control Services	225.00
6600-58	24142	6/7/24	NATIVESCAPES INC	Landscaping and Ground Maint	460.00
6600-60	24084	5/8/24	RYAN R. ABELN	Electrical Maintenance & Repairs	1,826.34
6600-60	24115	5/22/24	RYAN R. ABELN	Electrical Maintenance & Repairs	5,574.94
6600-65	24120	6/7/24	ALLISON MECHANICAL, INC.	HVAC Repair - Replace Condenser & Chiller	7,516.00
6600-65	24164	6/24/24	ALLISON MECHANICAL, INC.	Quarterly HVAC Service	2,145.00
6600-80	24090	5/8/24	VIKING MAINTENANCE SERVICES, L	Janitorial Services	1,445.00
6600-80	24152	6/7/24	VIKING MAINTENANCE SERVICES, L	Janitorial Services	1,445.00
6600-80	24184	6/24/24	JACOB K. STANGL	Window Cleaning Service	750.00
				Total Contractual Services Other	**31,629.36**
Contractual Services Professional					
6700-20	24057	5/8/24	BEST BEST & KRIEGER LLP	Legal Services	12,913.74
6700-20	24166	6/24/24	BEST BEST & KRIEGER LLP	Legal Services	8,647.01
6700-30	24054	5/8/24	VC3, INC.	Information Technology Services	2,787.50
6700-30	24100	5/22/24	VC3, INC. - MAY	Information Technology Services	2,787.50
6700-30	24129	6/7/24	FIFTH ASSET, INC DBA DEBTBOOK	Annual Software Subscription	6,000.00
				Total Contractual Services Professional	**33,135.75**
Permits and Fees					
6810-00	24083	5/8/24	SOUTH COAST AQMD	LPS Hot Spots Permit	485.43
6810-00	24089	5/8/24	UNDERGROUND SERVICE ALERT	Dig Alert Ticket Charges	189.81
6810-00	24087	5/8/24	STATE WATER RESOURCES CONTROL	ELAP Amendment Application Fee	1,950.00
6810-00	24151	6/7/24	UNDERGROUND SERVICE ALERT	Dig Alert Ticket Charges	275.56
				Total Permits and Fees	**2,900.80**
Other Expense					
6950-10	24081	5/8/24	QUILL	Annual Membership	75.41
6950-10	24064	5/8/24	CWEA TCP/MEMBERSHIP	Memberships	884.00
6950-20	24095	5/8/24	RICHARD T. HERRICK	Meetings Attended - 4/24/24	150.00
6950-20	24098	5/8/24	JOHN J. RUSSO	Meetings Attended - 4/24/24	150.00
6950-20	CASH 24135	5/10/24	KENDI J. SEGOVIA	Meetings Attended - 4/4/24 and 4/24/24	300.00
6950-20	CASH 24136	5/10/24	LAWRENCE C. WALSH	Meetings Attended - 4/4/24 and 4/24/24	300.00
6950-20	24158	6/7/24	RICHARD T. HERRICK	Meetings Attended - 5/22/24	150.00
6950-20	24161	6/7/24	JAMES J. MILLER	Meetings Attended - 5/22/24	150.00
6950-20	24162	6/7/24	JOHN J. RUSSO	Meetings Attended - 5/22/24	150.00
6950-20	CASH 24171	5/23/24	KENDI J. SEGOVIA	Meetings Attended - 5/22/24	150.00
6950-20	CASH 24172	5/23/24	LAWRENCE C. WALSH	Meetings Attended - 5/22/24	150.00
6950-40	24167	6/24/24	BUSINESS CARD	Tri-State Seminar	968.76
6950-40	24147	6/7/24	AMERICAN RED CROSS	First Aid/CPR/AED Training	1,131.80
6950-40	24104	5/22/24	BUSINESS CARD	Online Course Refund	-199.00

Account #	Check #	Date	Trans Description	Account Description	Amount
6950-40	24186	6/24/24	SWRCB-WWOC	Grade V Exam	365.00
				Total Other Expense	**4,875.97**
Other Nonoperating Expense					
8000-00	24143	6/7/24	PHOENIX TOWER INTERNATIONAL	Refund of Overpayment	58.86
8000-11	24176	6/24/24	BEAR VALLEY BASIN GSA	GSA Admin Costs	145.10
8000-25	24068	5/8/24	DIRECT TV	Financing Costs	6.25
				Total Other Nonoperating Expense	**210.21**
Principal & Interest Expense					
8200-30	CASH 24145	5/15/24	PNC BANK, N.A.	Other Interest Expense	179,553.81
8200-30	CASH 24144	5/15/24	PNC BANK, N.A.	Other Interest Expense	75,004.83
8200-50	CASH 24143	5/15/24	CAPITAL ONE PUBLIC FUNDING, LL	Capital One Interest- RBB	72,250.00
				Total Principal & Interest	**326,808.64**
Capital Expenditures					
9500-00	24119	5/22/24	WATER SYSTEMS CONSULTING, INC.	Headworks Grit System Rehab Project - Engineering Services	2,845.00
9500-00	24190	6/24/24	WATER SYSTEMS CONSULTING, INC.	Headworks Grit System Rehab Project - Engineering Services	3,743.54
				Total Capital Expenditures	**6,588.54**
Replenish Big Bear Capital Expenditures					
9500-10	24119	5/22/24	WATER SYSTEMS CONSULTING, INC.	RBB Design Services	30,418.94
9500-10	24190	6/24/24	WATER SYSTEMS CONSULTING, INC.	RBB Design Services	208,616.48
9500-10	24091	5/8/24	WATER SYSTEMS CONSULTING, INC.	RBB Design Services	46,272.07
9500-11	24109	5/22/24	TOM DODSON & ASSOCIATES	RBB Environmental	14,627.50
9500-12	24057	5/8/24	BEST BEST & KRIEGER LLP	RBB Legal	27,947.96
9500-12	24166	6/24/24	BEST BEST & KRIEGER LLP - RBB	RBB Legal	17,139.60
9500-15	24130	6/7/24	DESALITECH, INC.	RBB Pilot Facility - CCRP Pilot Unit	64,596.14
9500-15	24150	6/7/24	TROJAN TECHNOLOGIES GROUP ULC	RBB Pilot Facility - Oxidation System Pilot Unit	53,336.25
				Total Replenish Big Bear Capital Expenditures	**462,954.94**
				Grand Total	**1,061,257.93**

Personnel Expenditures (e.g., benefits) are not included in this report.

AGENDA ITEM: 7.C.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

PREPARED BY: Christine Bennett, Finance Manager

SUBJECT: Investment Report Identifying Agency Investments and Reporting Interest Income

BACKGROUND:

Attached are the May and June Monthly Investment Report's pursuant to the Agency's Investment Policy.

FINANCIAL IMPACT:

There is no financial impact.

RECOMMENDATION:

Informational

BBARWA
Monthly Investment Report
May 2024

INVESTMENT TYPE	COST	FAIR MARKET VALUE (1)	YEAR TO DATE INTEREST(2)	INTEREST RATE	MATURITY DATE
LOCAL AGENCY INVESTMENT FUND	$ 12,252,111	$ 12,180,941	$ 381,441	4.332%	DAILY
TOTAL	$ 12,252,111	$ 12,180,941	$ 381,441		

The Investment Portfolio of the Big Bear Area Regional Wastewater Agency is in compliance with the investment policy approved in August 2023.
The Agency will be able to meet its expenditure requirements for the next six months.

(1) LOCAL AGENCY INVESTMENT FUND (LAIF) IS A STATE-RUN INVESTMENT POOL PROVIDED FOR PUBLIC AGENCIES. THE LAIF MARKET VALUE SHOWN ON THIS TREASURER'S REPORT REPRESENTS BBARWA'S SHARE OF THE **LIQUID VALUE** OF LAIF'S PORTFOLIO IF IT WAS LIQUIDATED AS OF THE END OF THE REPORTED MONTH. THIS NUMBER SERVES AS AN INDICATOR OF WHETHER OR NOT THE **MARKET VALUE** OF LAIF'S INVESTMENTS IS ABOVE OR BELOW THE **COST** OF THOSE INVESTMENTS.
(2) Interest paid quarterly on LAIF investment. Amount reflects interest income received at the reporting date during FY 2024 and excludes accrued interest.

Attachment (s): Monthly LAIF Statement

California State Treasurer
Fiona Ma, CPA

Local Agency Investment Fund
P.O. Box 942809
Sacramento, CA 94209-0001
(916) 653-3001

June 03, 2024

LAIF Home
PMIA Average Monthly Yields

BIG BEAR AREA REGIONAL WASTEWATER AGENCY

FINANCE MANAGER
P.O. BOX 517
BIG BEAR CITY, CA 92314

Tran Type Definitions

Account Number:

May 2024 Statement

Effective Date	Transaction Date	Tran Type	Confirm Number	Web Confirm Number	Authorized Caller	Amount
5/8/2024	5/7/2024	RW	1752983	1713413	CHRISTINE BENNETT	-750,000.00

Account Summary

Total Deposit:	0.00	Beginning Balance:	13,002,110.70
Total Withdrawal:	-750,000.00	Ending Balance:	12,252,110.70

BBARWA
Monthly Investment Report
June 2024

INVESTMENT TYPE	COST	FAIR MARKET VALUE (1)	YEAR TO DATE INTEREST(2)	INTEREST RATE	MATURITY DATE
LOCAL AGENCY INVESTMENT FUND	$ 11,752,111	$ 11,708,816	$ 381,441	4.480%	DAILY
TOTAL	$ 11,752,111	$ 11,708,816	$ 381,441		

The Investment Portfolio of the Big Bear Area Regional Wastewater Agency is in compliance with the investment policy approved in August 2023.
The Agency will be able to meet its expenditure requirements for the next six months.

(1) LOCAL AGENCY INVESTMENT FUND (LAIF) IS A STATE-RUN INVESTMENT POOL PROVIDED FOR PUBLIC AGENCIES. THE LAIF MARKET VALUE SHOWN ON THIS TREASURER'S REPORT REPRESENTS BBARWA'S SHARE OF THE **LIQUID VALUE** OF LAIF'S PORTFOLIO IF IT WAS LIQUIDATED AS OF THE END OF THE REPORTED MONTH. THIS NUMBER SERVES AS AN INDICATOR OF WHETHER OR NOT THE **MARKET VALUE** OF LAIF'S INVESTMENTS IS ABOVE OR BELOW THE **COST** OF THOSE INVESTMENTS.
(2) Interest paid quarterly on LAIF investment. Amount reflects interest income received at the reporting date during FY 2024 and excludes accrued interest.

Attachment (s): Monthly LAIF Statement

California State Treasurer
Fiona Ma, CPA

Local Agency Investment Fund
P.O. Box 942809
Sacramento, CA 94209-0001
(916) 653-3001

July 01, 2024

LAIF Home
PMIA Average Monthly Yields

BIG BEAR AREA REGIONAL WASTEWATER AGENCY

FINANCE MANAGER
P.O. BOX 517
BIG BEAR CITY, CA 92314

Tran Type Definitions

Account Number:

June 2024 Statement

Effective Date	Transaction Date	Tran Type	Confirm Number	Web Confirm Number	Authorized Caller	Amount
6/25/2024	6/24/2024	RW	1754384	1714820	CHRISTINE BENNETT	-500,000.00

Account Summary

Total Deposit:	0.00	Beginning Balance:	12,252,110.70
Total Withdrawal:	-500,000.00	Ending Balance:	11,752,110.70

Big Bear Area Regional
Wastewater Agency

Jim Miller –Chair
Rick Herrick – Vice-Chair
John Russo - Director
Kendi Segovia – Director
Larry Walsh – Director

AGENDA ITEM: 9.A.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

SUBJECT: Resolution No. R. 08-2024, A Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency Adopting Environmental Findings and Statement of Overriding Considerations Pursuant to the California Environmental Quality Act, Certifying the Replenish Big Bear Program Final Environmental Impact Report (SCH #2022110595), Adopting the Mitigation Monitoring and Reporting Program, and Approving the Program

BACKGROUND:

On May 22, 2024, the Big Bear Area Regional Wastewater Agency (BBARWA) Governing Board approved additional time for the public to review the Replenish Big Bear Final Program Environmental Impact Report (FPEIR), Statement of Overriding Considerations, and the Mitigation and Monitoring Report.

DISCUSSION:

Questions regarding long term compliance with water quality requirements, the reliability of the advanced treatment process and reverse osmosis (RO), and the California Environmental Quality Act (CEQA) requirements were raised during the May meeting.

Water Quality

The requirements for the quality of water discharged into Stanfield Marsh/Big Bear Lake will be set and enforced by the Santa Ana Regional Water Quality Control Board (Regional Board) through a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge into Stanfield Marsh. The process to issue an NPDES Permit requires extensive review of applicable water quality regulations, a public review and comment period for the proposed NPDES Permit, and approval by the Regional Board and the Unites States Environmental Protection Agency (EPA).

The NPDES Permit specifically addresses discharges into navigable waters and must be reviewed and renewed every five years. Each renewal involves regulators using the strictest water quality objectives in effect at the time during their analysis. BBARWA will develop the Adaptive Management and Mitigation Plan (AMMP), a sampling and monitoring plan, which will be updated whenever the requirements of the NPDES permit are modified. See Hydrogen and Water Quality Mitigation Measure HYD-1.

The purpose of the NPDES Permit is to protect water quality and ensure compliance with environmental regulations through a regulatory framework. It sets conditions and limitations on discharges to prevent pollution, maintain or improve the quality of water bodies, and safeguard aquatic ecosystems and public health. It will require BBARWA to perform routine monitoring and reporting for many water quality constituents to ensure compliance on an instantaneous, daily, weekly, monthly and annual basis, depending on the constituent. BBARWA will regularly submit data and reports on a monthly, quarterly and annual basis to demonstrate adherence to the permit requirements. Regional Board staff will also visit the BBARWA site annually to inspect conditions and records to further verify compliance. Additionally, the Regional Board can employ a range of enforcement actions if any violations of permit conditions occur. The public can access the water quality data submitted to the Regional Board and records of any violations on the California Integrated Water Quality System (CIWQS) Program website.

Advanced Treatment Process

The advanced treatment process includes ultrafiltration (UF), reverse osmosis (RO), ultraviolet disinfection and an advanced oxidation process (UV-AOP). This treatment train is a highly effective and proven system and is recognized in water recycling regulations as the standard process. A similar treatment train is or will be used by numerous California agencies including, but not limited to, the Metropolitan Water District and Los Angeles County Sanitation Districts (Pure Water Southern California), the City of San Diego (Pure Water San Diego), northern Monterey County (Monterey One Water), Soquel Creek Water District (Pure Water Soquel), and City of Oceanside (Pure Water Oceanside).

Concerns over the RO process were discussed during the May meeting. RO is a high-pressure-driven separation process that employs a semipermeable membrane. RO provides the finest level of filtration. It is therefore a highly effective process for removing key constituents including nitrogen, phosphorus, total dissolved solids (TDS), metals, pathogens, organics and constituents of emerging concern (CECs). 100% of the water discharged to Stanfield Marsh will receive RO treatment to meet water quality objectives. The success of RO in producing pure water makes it an essential component in efforts to sustainably manage and reuse water resources.

In addition to the routine monitoring described in the water quality section above, the treatment process is also (as an additional measure of protection) required by state regulations to include on-going monitoring to indicate if the integrity of the process has been compromised. This will include total organic carbon or conductivity analyzers which continuously measure concentrations of these constituents as "surrogate" compounds to indicate if the RO treatment process has been compromised. Because these analyzers are measuring continuously, a set point for alarm notifications and diversion of off-spec (e.g., non-compliant) water is required. BBARWA currently treats and discharges effluent to Lucerne Valley, which is where water that does not meet the more stringent requirements of the Stanfield Marsh discharge would be diverted to and would still exceed treatment requirements for the Lucerne Valley discharge. Other treatment processes such as the UF and UV-AOP will have similar on-going monitoring to indicate if the process has been

compromised, which would also trigger automated diversion of all off-spec water, preventing the discharge of water into Stanfield Marsh that does not meet water quality standards.

CEQA

Public Resources Code Section 21002 states that the procedures required by CEQA "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects."

Pursuant to section 21081 of the Public Resources Code, a public agency may only approve or carry out a project for which an EIR has been completed that identifies any significant environmental effects if the agency makes one or more of the following written finding(s) for each of those significant effects accompanied by a brief explanation of the rationale for each finding:

1. Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.
2. Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.
3. Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.

While the BBARWA Governing Board approves the Replenish Big Bear Program as a whole and projects within its responsibility, further CEQA analysis may be necessary for Replenish Big Bear projects analyzed at the general or program level. These impacts will be quantitatively addressed in project-specific second-tier environmental evaluations once specific aspects are proposed for implementation and designed. These evaluations will be conducted by the responsible agencies.

- The Sand Canyon Monitoring Wells have been analyzed at a more general level because the project sites for the monitoring wells have not yet been selected, though the general locations for the monitoring wells are known to be downstream of the Sand Canyon Recharge Area.
- The change in water source at Shay Pond has been analyzed at a more general level because of the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback.

Project	Responsible Agency	FPEIR Analysis Level
BBARWA WWTP Upgrades Project	BBARWA	Project Level
Solar Evaporation Ponds Project	BBARWA	Project Level
Stanfield Marsh/Big Bear Lake Discharge Project	BBARWA	Project Level
Sand Canyon Recharge Project	DWP and CSD	Program Level
Shay Pond Discharge Project (Future Option)	BBARWA and CSD	Program Level

FINANCIAL IMPACT:

There is no financial impact.

RECOMMENDATION:

1. Adopt Resolution No. R. 08-2024;
2. Direct staff to schedule a meeting with the Replenish Big Bear Committee to review the final design before full Governing Board consideration; and
3. Direct staff to add a Replenish Big Bear mitigation monitoring checklist to its annual inspection process, include the checklist in the first meeting agenda packet of each fiscal year and post it on the BBARWA website.

ATTACHMENT:

- Resolution No. R. 08-2024

RESOLUTION NO. R. 08-2024

A RESOLUTION OF THE GOVERNING BOARD OF THE BIG BEAR AREA REGIONAL WASTEWATER AGENCY ADOPTING ENVIRONMENTAL FINDINGS AND STATEMENT OF OVERRIDING CONSIDERATIONS PURSUANT TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT, CERTIFYING THE REPLENISH BIG BEAR PROGRAM FINAL ENVIRONMENTAL IMPACT REPORT (SCH #2022110595), ADOPTING THE MITIGATION MONITORING AND REPORTING PROGRAM, AND APPROVING THE PROGRAM

WHEREAS, Big Bear Area Regional Wastewater Agency ("BBARWA") proposes to implement the Replenish Big Bear Program ("Program"), a program that would retain recycled water in the Big Bear Valley for beneficial use to increase the sustainability of local water supplies; and

WHEREAS, the Program includes permitting, design, and construction of an Advanced Water Purification Facility at the existing BBARWA Wastewater Treatment Plant, about 6.59 miles of pipeline for treated water and reverse osmosis, brine minimization, three pump stations, groundwater recharge, and up to four monitoring wells; and

WHEREAS, the proposed elements of the Program are located within Big Bear City, Big Bear Lake, and Lucerne Valley; and

WHEREAS, pursuant to section 21067 of the Public Resources Code, and section 15367 of the State CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.), BBARWA is the lead agency for the proposed Program; and

WHEREAS, in accordance with State CEQA Guidelines section 15082, on November 30, 2022, BBARWA sent to the Office of Planning and Research and each responsible and trustee agency a Notice of Preparation ("NOP") stating that an Environmental Impact Report (State Clearinghouse Number #2022110595 would be prepared; and

WHEREAS, 14 comment letters were received in response to the NOP; and

WHEREAS, pursuant to Public Resources Code section 21083.9 and State CEQA Guidelines sections 15082(c) and 15083, BBARWA held two duly noticed Scoping Meetings on January 5, 2023 and January 10, 2023, to solicit comments on the scope of the environmental review of the proposed Program and 2 comments were received; and

WHEREAS, a Draft Program Environmental Impact Report ("Draft PEIR") was prepared, incorporating comments received in response to the NOP; and

WHEREAS, the Draft PEIR determined that mitigation measures were required to mitigate impacts to a less than significant level for the following resource areas: aesthetics, air quality, cultural resources, geology and soils, hazards and hazardous materials, land use and planning, noise, public services, transportation, and tribal cultural resources; and

WHEREAS, the Draft PEIR further concluded that despite the incorporation of all feasible mitigation measures, the proposed Program would nonetheless result in significant and unavoidable impacts relating to agriculture and forestry resources, biological resources, hydrology and water quality, and utilities and service systems; and

WHEREAS, in accordance with State CEQA Guidelines section 15085, a Notice of Completion was prepared and filed with the Office of Planning and Research on December 21, 2023; and

WHEREAS, as required by State CEQA Guidelines section 15087(a), BBARWA provided Notice of Availability of the Draft PEIR to the public at the same time that BBARWA sent Notice of Completion to the Office of Planning and Research, on December 21, 2023; and

WHEREAS, during the public comment period, copies of the Draft PEIR and technical appendices were available for review and inspection at BBARWA's office, on the BBARWA and the Replenish Big Bear websites, and at the San Bernardino County Library Big Bear Lake Branch public library; and

WHEREAS, pursuant to State CEQA Guidelines section 15087(e), the Draft PEIR was circulated for at least a 45-day public review and comment period, and extended to an addition 15 days for a total of 60-day public review and comment period from December 21, 2023 to February 20, 2024; and

WHEREAS, during the public review and comment period, BBARWA consulted with and requested comments from all responsible and trustee agencies, other regulatory agencies, and others pursuant to State CEQA Guidelines section 15086; and

WHEREAS, BBARWA received 24 written comment letters on the Draft PEIR; and

WHEREAS, pursuant to Public Resources Code section 21092.5, BBARWA provided copies of its responses to commenting public agencies at least ten (10) days prior to the BBARWA's consideration of the Final PEIR on May 9, 2024; and

WHEREAS, on May 17, 2024, BBARWA released the Final PEIR ("Final PEIR"), which consists of the Draft PEIR, all technical appendices prepared in support of the Draft PEIR, all written comment letters received on the Draft PEIR, written responses to all written comment letters received on the Draft PEIR, and errata to the Draft PEIR and technical appendices; and

WHEREAS, the "PEIR" consists of the Final PEIR and its attachments and appendices, as well as the Draft PEIR and its attachments and appendices (as modified by the Final PEIR); and

WHEREAS, all potentially significant adverse environmental impacts were sufficiently analyzed in the PEIR; and

WHEREAS, as contained herein, BBARWA has endeavored in good faith to set forth the basis for its decision on the Program; and

WHEREAS, all of the requirements of the Public Resources Code and the State CEQA Guidelines have been satisfied by BBARWA in connection with the preparation of the PEIR, which is

sufficiently detailed so that all of the potentially significant environmental effects of the Program have been adequately evaluated; and

WHEREAS, the PEIR prepared in connection with the Program sufficiently analyzes the Program's potentially significant environmental impacts and the PEIR analyzes a range of feasible alternatives capable of reducing these effects to an even lesser level of significance; and

WHEREAS, BBARWA has made certain findings of fact, as set forth in **Exhibit A** to this Resolution, attached hereto and incorporated herein, based upon the oral and written evidence presented to it as a whole and the entirety of the administrative record for the Program, which are incorporated herein by this reference; and

WHEREAS, BBARWA finds that environmental impacts that are identified in the PEIR as less than significant and do not require mitigation are described in **Section II** of **Exhibit A**; and

WHEREAS, BBARWA finds that environmental impacts that are identified in the PEIR that are less than significant with incorporation of mitigation measures are described in **Section III** of **Exhibit A**; and

WHEREAS, BBARWA finds that even with the incorporation of all feasible mitigation measures, the environmental impacts that are identified in the PEIR that are significant and unavoidable are described in **Section IV** of **Exhibit A**; and

WHEREAS, the cumulative impacts of the Program identified in the PEIR and set forth herein, are described in **Section V** of **Exhibit A**; and

WHEREAS, the potential significant irreversible environmental changes that would result from the proposed Program identified in the PEIR and set forth herein, are described in **Section VI** of **Exhibit A**; and

WHEREAS, the existence of any growth-inducing impacts resulting from the proposed Program identified in the PEIR and set forth herein, are described in **Section VII** of **Exhibit A**; and

WHEREAS, alternatives to the proposed Program that might further reduce the already less than significant environmental impacts are described in **Section VIII** of **Exhibit A**; and

WHEREAS, a statement of overriding considerations finding each of the social, economic, and environmental benefits of the Program individually outweigh all the potential significant unavoidable adverse impacts and render acceptable each and every one of the Program's unavoidable adverse environmental impacts are described in **Section IX** of **Exhibit A;** and

WHEREAS, all the mitigation measures identified in the PEIR necessary to reduce the potentially significant impacts of the proposed Program to a level of less than significant are set forth in the Mitigation Monitoring and Reporting Program (MMRP) in **Exhibit B** to this Resolution, attached hereto and incorporated herein; and

WHEREAS, prior to taking action, BBARWA has heard, been presented with, reviewed and considered all of the information and data in the administrative record, including but not limited to the PEIR, and all oral and written evidence presented to it during all meetings and hearings; and

WHEREAS, the PEIR reflects the independent judgment of BBARWA and is deemed adequate for purposes of making decisions on the merits of the Program; and

WHEREAS, on May 22, 2024, BBARWA conducted a duly noticed public meeting on this Resolution, at which time all persons wishing to testify were heard and the Program was fully considered; and

WHEREAS, no comments made in the public meeting conducted by BBARWA and no additional information submitted to BBARWA have produced substantial new information requiring recirculation of the PEIR or additional environmental review of the Program under Public Resources Code section 21092.1 and State CEQA Guidelines section 15088.5; and

WHEREAS, all other legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, BE IT RESOLVED BY THE BIG BEAR AREA REGIONAL WASTEWATER AGENCY:

SECTION 1. The above recitals are true and correct and incorporated herein by reference.

SECTION 2. The BBARWA Board of Directors ("Governing Board") hereby finds that it has been presented with the PEIR, which it has reviewed and considered, and further finds that the PEIR is an accurate and objective statement that has been completed in full compliance with CEQA and the State CEQA Guidelines. The Governing Board finds that the PEIR reflects the independent judgment and analysis of BBARWA. The Governing Board declares that no evidence of new significant impacts or any new information of "substantial importance" as defined by State CEQA Guidelines section 15088.5, has been received by BBARWA after circulation of the Draft PEIR that would require recirculation. Therefore, the Governing Board hereby certifies the PEIR based on the entirety of the record of proceedings.

SECTION 3. The Governing Board hereby adopts the "CEQA Findings of Fact" and Statement of Overriding Considerations which were prepared in accordance with State CEQA Guidelines sections 15091 and which are attached hereto as Exhibit A and incorporated herein by this reference.

SECTION 4. Pursuant to Public Resources Code section 21081.6, the Governing Board hereby adopts the Mitigation Monitoring and Reporting Program attached hereto as Exhibit B and incorporated herein by this reference. Implementation of the Mitigation Measures contained in the Mitigation Monitoring and Reporting Program is hereby made a condition of approval of the Program. In the event of any inconsistencies between the Mitigation Measures set forth in the PEIR or the Findings of Fact and the Mitigation Monitoring and Reporting Program, the Mitigation Monitoring and Reporting Program shall control.

SECTION 5. Based upon the entire record before it, including the PEIR, Findings of Fact, and all written and oral evidence presented, the Governing Board hereby approves the proposed Program.

SECTION 6. The documents and materials that constitute the record of proceedings on which this Resolution has been based are located at Big Bear Area Regional Wastewater Agency, 121 Palomino Drive, Big Bear City, CA 92314. The custodian for these records is Bridgette Burton. This information is provided pursuant to Public Resources Code section 21081.6.

SECTION 7. BBARWA shall cause a Notice of Determination to be filed and posted with the County Clerk and the State Clearinghouse within five working days of the adoption of this Resolution.

APPROVED AND ADOPTED this 24th day of July, 2024.

_____
Jim Miller, Chair of the Governing Board
Big Bear Area Regional Wastewater Agency

I, Bridgette Burton, Secretary to the Governing Board of the Big Bear Area Regional Wastewater Agency, DO HEREBY CERTIFY, that the foregoing Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency, being Resolution No. R. 08-2024, Adopting Environmental Findings and Statement of Overriding Considerations Pursuant to the California Environmental Quality Act, Certifying the Replenish Big Bear Program Final Environmental Impact Report (SCH #2022110595), Adopting the Mitigation Monitoring and Reporting Program, and Approving the Program, was duly adopted at a regular meeting of the Governing Board held on the 24th day of July 2024, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

_____
Bridgette Burton, Secretary to the Governing Board
Big Bear Area Regional Wastewater Agency

Exhibit A

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CEQA FINDINGS OF FACT

The California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) (CEQA) requires that public agencies shall not approve or carry out a project for which an environmental impact report (EIR) has been certified that identifies one or more significant adverse environmental effects of a project unless the public agency makes one or more written Findings for each of those significant effects, accompanied by a brief explanation of the rationale for each Finding (State CEQA Guidelines [Cal. Code Regs., tit. 14, § 15000 et seq.], § 15091). This document presents the CEQA Findings of Fact made by Big Bear Area Regional Wastewater Agency (Agency), in its capacity as the CEQA lead agency, regarding the Replenish Big Bear Program (Project), evaluated in the Draft Environmental Impact Report ("Draft EIR") and Final Environmental Impact Report (Final EIR) for the Project.

SECTION I.
INTRODUCTION

Public Resources Code section 21002 states that "public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects[.]" Section 21002 further states that the procedures required by CEQA "are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects."

Pursuant to section 21081 of the Public Resources Code, a public agency may only approve or carry out a project for which an EIR has been completed that identifies any significant environmental effects if the agency makes one or more of the following written finding(s) for each of those significant effects accompanied by a brief explanation of the rationale for each finding:

1. Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant effects on the environment.

2. Those changes or alterations are within the responsibility and jurisdiction of another public agency and have been, or can and should be, adopted by that other agency.

3. Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or alternatives identified in the environmental impact report.

As indicated above, section 21002 requires an agency to "avoid or substantially lessen" significant adverse environmental impacts. Thus, mitigation measures that "substantially lessen" significant environmental impacts, even if not completely avoided, satisfy section 21002's mandate. (*Laurel Hills Homeowners Assn. v. City Council* (1978) 83 Cal.App.3d 515, 521 ["CEQA does not mandate the choice of the environmentally best feasible project if through the imposition of feasible mitigation measures alone the appropriate public agency has reduced

environmental damage from a project to an acceptable level"]; *Las Virgenes Homeowners Fed., Inc. v. County of Los Angeles* (1986) 177 Cal. App. 3d 300, 309 ["[t]here is no requirement that adverse impacts of a project be avoided completely or reduced to a level of insignificance . . . if such would render the project unfeasible"].)

While CEQA requires that lead agencies adopt feasible mitigation measures or alternatives to substantially lessen or avoid significant environmental impacts, an agency need not adopt infeasible mitigation measures or alternatives. (Pub. Resources Code, § 21002.1(c) [if "economic, social, or other conditions make it infeasible to mitigate one or more significant effects on the environment of a project, the project may nonetheless be carried out or approved at the discretion of a public agency"]; see also State CEQA Guidelines, § 15126.6(a) [an "EIR is not required to consider alternatives which are infeasible"].) CEQA defines "feasible" to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." (Pub. Resources Code, § 21061.1.) The State CEQA Guidelines add "legal" considerations as another indicia of feasibility. (State CEQA Guidelines, § 15364.) Project objectives also inform the determination of "feasibility." (*Jones v. U.C. Regents* (2010) 183 Cal. App. 4th 818, 828-829.) "'[F]easibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, and technological factors." (*City of Del Mar v. City of San Diego* (1982) 133 Cal.App.3d 401, 417; see also *Sequoyah Hills Homeowners Assn. v. City of Oakland* (1993) 23 Cal.App.4th 704, 715.) "Broader considerations of policy thus come into play when the decision making body is considering actual feasibility[.]" (*Cal. Native Plant Soc'y v. City of Santa Cruz* (2009) 177 Cal.App.4th 957, 1000 ("*Native Plant*"); see also Pub. Resources Code, § 21081(a)(3) ["economic, legal, <u>social</u>, technological, <u>or other considerations</u>" may justify rejecting mitigation and alternatives as infeasible] (emphasis added).)

Environmental impacts that are less than significant do not require the imposition of mitigation measures. (*Leonoff v. Monterey County Board of Supervisors* (1990) 222 Cal.App.3d 1337, 1347.)

The California Supreme Court has stated, "[t]he wisdom of approving . . . any development project, a delicate task which requires a balancing of interests, is necessarily left to the sound discretion of the local officials and their constituents who are responsible for such decisions. The law as we interpret and apply it simply requires that those decisions be informed, and therefore balanced." (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 576.) In addition, perfection in a project or a project's environmental alternatives is not required; rather, the requirement is that sufficient information be produced "to permit a reasonable choice of alternatives so far as environmental aspects are concerned." Outside agencies (including courts) are not to "impose unreasonable extremes or to interject [themselves] within the area of discretion as to the choice of the action to be taken." (*Residents Ad Hoc Stadium Com. v. Board of Trustees* (1979) 89 Cal.App.3d 274, 287.)

SECTION II.
FINDINGS REGARDING ENVIRONMENTAL IMPACTS NOT REQUIRING MITIGATION

The Agency hereby finds that the following potential environmental impacts of the Program are less than significant and therefore do not require the imposition of Mitigation Measures. The following statutory finding applies to all of the impacts described in this Section (II): Changes or alterations have been required in, or incorporated into, the proposed Program which mitigate the significant effects on the environment (to less than significant levels). (See Pub. Resources Code § 21081(a)(1); State CEQA Guidelines § 15091(a)(1).)

A. AESTHETICS

1. Scenic Vistas

Threshold: Would the Project have a substantial adverse effect on a scenic vista?

Finding: Less than significant. (Draft EIR, pp. 4.18 – 4.24)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature (a maximum of 370 days of construction for Conveyance Facilities). As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban and suburban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

Operation: The proposed pipelines would be underground and would not be visible once constructed. Thus, regardless of the location within the Big Bear Valley, the conveyance pipelines would not impact any of the visual resources of significance in Big Bear Valley, which include the surrounding mountain ridges, Big Bear Lake, Stanfield Marsh, and other natural water courses, including Caribou, Metcalf, North, Rathbun, Shay, Sand, and Mill Creeks. No impact to scenic vistas would occur as a result of this Program Component.

Program Category 3: Solar Evaporation Ponds

Construction: The proposed Program would include construction of the Solar Evaporation Ponds. The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related

construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature. As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities (a maximum of 370 days of construction for Solar Evaporation Ponds). Furthermore, construction activities are routine within urban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

Operation: The Solar Evaporation Ponds that would be installed would also occur within the fence line of BBARWA's treatment plant within the undeveloped area to the north and east of today's active WWTP (refer to Figure 3-26). This area has been disturbed previously, but presently contains dirt and sparse vegetation as shown on Photos 4.2-2 through 4.2-4. The installation of Solar Evaporation Ponds within this area would alter the existing visual setting, but at present, the area is vacant and does not contain any scenic vistas internally within the site. Thus, the proposed Program would not result in a significant impact to scenic vistas that are internal to the BBARWA WWTP site from installation of the proposed Solar Evaporation Ponds, as none exist internally within the site. Note that an internal scenic vista would be a vista that occurs within a given project site. Furthermore, the Solar Evaporation Ponds, which may be netted to prevent birds from utilizing the ponds, would be installed at ground level and thereby would have no potential to obstruct any scenic vistas that could be viewed in the background when viewing the proposed Solar Evaporation Ponds in the foreground. Ultimately, the installation of the Solar Evaporation Ponds within the BBARWA WWTP would be consistent with that which exists at present within the site and scenic vistas would not be significantly altered as a result of the visual change that would result from installation of the proposed Solar Evaporation Ponds. Furthermore, the Solar Evaporation Ponds would be maintained as described in Chapter 3, Program Description of this DPEIR. Maintenance is expected to occur approximately 2-3 times a year, consisting of removal of the brine, maintenance of liners and grading, removal of vegetation, and vector management. Thus, as the Solar Evaporation Ponds would be located below grade, and as the change in visual setting would not be significant, this Program Component would have no potential to significantly alter a scenic vista. Impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: The proposed Program would include construction of upgrades to BBARWA's existing WWTP to an AWPF and a solar array. The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature (a maximum of 515 days of construction for BBARWA WWTP Upgrades). As construction would only occur for a short duration, it would not result in a permanent

change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

Operation: The upgrades to BBARWA's existing WWTP to an AWPF would occur entirely within BBARWA's existing WWTP footprint, and would therefore also be visually consistent with the visual setting that exists at the WWTP at present. Furthermore, the area in which the majority of the solar arrays would be installed would be on existing or new building roofs, east of BBARWA's WWTP plant operations, which is an area that is already highly disturbed by BBARWA's existing operations, and south of the BBARWA administration building. The parcel owned by BBCCSD south of the BBARWA administration building is not zoned nor designated by the County's general plan for open space and furthermore is adjacent to the highly disturbed BBARWA operational site, which does not offer pristine vistas. The question regarding guarantee of private views is one of the few qualitative environmental issues that the California Supreme Court has addressed and furthermore, the San Bernardino Countywide Plan and San Bernardino Development Code do not protect private views. Based on this lack of County policy on private views and the State court decisions regarding private views, BBARWA finds that although an adjacent neighbor claims that their views would be degraded by the development of the Solar Array—which in and of itself does not appear to be true given the disturbed nature of the area due to BBARWA's existing WWTP, administration, and solar array operations—the perception that private views from private residences would constitute a significant impact is not found to be correct as this impact does not rise to a level of a significant unavoidable adverse impact in accordance with CEQA as demonstrated in the preceding analysis. Thus, the upgrades to BBARWA's existing WWTP to an AWPF would not have a potential to impact a scenic vista—which in the vicinity of the BBARWA WWTP site include mountain ridges and parts of Baldwin Lake that have not been developed. Impacts would be less than significant. (Final EIR, p. 4.-23.)

Other Physical Changes to the Environment

While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing advanced treated water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have a potential to enhance the visual setting and thereby enhance scenic vistas of Big Bear Lake and Stanfield Marsh. This would result from Big Bear Lake being higher that without the proposed Program, thereby minimizing the dry habitat that occurs around Big Bear Lake's rim when Big Bear Lake levels are low. **Exhibits 4.2-1 and 4.2-2**, show an aerial view of the potential impacts on the Big Bear Lake area as a result of the Program. Additionally, in Stanfield Marsh, greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average at the present time. Impacts would be less than significant.

A second possible other physical change to the environment includes possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond. Scenic vistas in the area include water courses such as

Caribou Creek and Shay Creek, in addition to mountain ridges. The change in water source from potable water to Program Water would not result in any noticeable change at Shay Pond, as no greater volume of water would be sent to Shay Pond in support of the Stickleback. Therefore, no impacts to scenic vistas would occur as a result of this possible modification in water source at Shay Pond.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. Internally, the site does not contain any scenic vistas. The site is used for farming and for discharge (through the existing discharge basins shown on **Figure 4.2-1**), the reduction in discharge to this site is not anticipated to substantially degrade the visual setting within the LV Site. Under the proposed Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or,
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

BBARWA would continue to own the site and ensure it is maintained, and as there are no scenic vistas internal to the LV Site, impacts to internal scenic vistas as a result of the reduced discharge to the LV Site would be less than significant.

The LV Site is a flat 480-acre site removed by about four miles from the foothills of the San Bernardino Mountains to the south and about 10 miles from the Granite, Fry, and Newberry, Rodman and Ord Mountains, which are located to the north and east. The LV Site would not include any new structures, nor would farming operations be altered in a manner that would obstruct views to the surrounding mountains beyond that which occurs as a result of existing operations. Thus, the reduction in discharge to the LV Site as a result of Program implementation would have no potential to obstruct any scenic vistas that could be viewed in the background when viewing the LV Site in the foreground. Ultimately, scenic vistas would not be significantly altered as a result of the visual change that would result from the reduction in discharge to the LV Site from Program implementation. **Photos 4.2-5** and **4.2-6** depict the vistas to the north and to the south of the LV Site for reference to the existing visual setting. Impacts to surrounding scenic vistas as a result of the reduced discharge to the LV Site would be less than significant. (Draft EIR, pp. 4.18 – 4.24)

2. Scenic Resources

Threshold: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Finding: Less than significant. (Draft EIR, pp. 4-26, 4-29 – 4-30)

Explanation:

There are roadways classified as State scenic highways, in addition to roadways classified as eligible under the State scenic highway program within Big Bear Valley as discussed in **Subsection 4.2.2.1**, Scenic Resources, above; however, there are no officially designated scenic highways within the footprint of the Program. SR-38 is designated as both a State and County Scenic Highway south of State Lane (shown on **Figure 4.2-1**). Big Bear Boulevard is considered Eligible State Scenic Highway, while SR-330 and SR-18 are considered designated County Scenic Routes and Eligible State Scenic Highways. No other State or County Scenic Highways exist in the Program vicinity. Scenic resources are discussed under **Subsection 4.2.2.1**. The most significant visual resources are Big Bear Lake itself, in addition to the mountains and forested areas (part of the SBNF) on ridges surrounding Big Bear Lake and the Big Bear Valley. The activity with the highest potential to conflict with local agency design guidelines is construction-related disturbance of the landscape. Such disturbance can be reduced to an acceptable level by landscaping or revegetating disturbed areas (pipelines, evaporation basins, structural developments, pump stations, and other above ground development) either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area.

Program Category 3: Solar Evaporation Ponds

Construction: The proposed Solar Evaporation Ponds would be installed within the existing BBARWA WWTP site, in an undeveloped area. As discussed under issue (a), above, this area has been disturbed previously, but presently contains dirt and sparse vegetation as shown on **Photos 4.2-2 through 4.2-4**. Given that this Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, no scenic resources are anticipated to be impacted therein, as none occur within the site that would be impacted by the implementation of this Program Component. As shown in **Photos 4.2-2 through 4.2-4,** the installation of Solar Evaporation Ponds within this area would alter the existing visual setting temporarily during construction, and once installed and operational as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the Solar Evaporation Ponds installation, but given that the area is vacant and does not contain any scenic resources internally within the site, construction of the proposed Solar Evaporation Ponds would not significantly alter the scenic viewshed from SR-18. Furthermore, as previously stated, the Solar Evaporation Ponds would be maintained as described in the Program Description, which would ensure that the viewshed from SR-18, a County Designated Scenic Route, is not degraded as a result of the proposed Program. Impacts would, therefore, be less than significant.

Operation: This Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, and as such, there are no scenic resources that are anticipated to be impacted therein, as none occur within the site that would be impacted by the implementation of this Program Component. As shown in **Photos 4.2−2 through 4.2-4,** the Solar Evaporation Ponds would alter the existing visual setting once installed and operational as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the Solar Evaporation Ponds,

but given that the area is vacant and does not contain any scenic resources internally within the site, construction of the proposed Solar Evaporation Ponds would not significantly alter the scenic viewshed from SR-18. Furthermore, as previously stated, the Solar Evaporation Ponds would be maintained as described in the Program Description, which would ensure that the viewshed from SR-18, a County Designated Scenic Route, is not degraded as a result of the operation of the Solar Evaporation Ponds. Operational impacts would, therefore, be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: The proposed BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP site, within already disturbed areas containing the existing BBARWA WWTP facilities. Given that this Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, no scenic resources are anticipated to be impacted therein, as none occur within the site that would be impacted by the implementation of this Program Component. The installation of BBARWA WWTP Upgrades within this area would conform to the existing visual setting that could potentially be seen as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the BBARWA WWTP Upgrades installation, because this area is presently developed with WWTP facilities that are of a similar scope, size, and height to that which presently occurs within the site, and the BBARWA WWTP site does not contain any scenic resources internally within the site, installation of the proposed BBARWA WWTP Upgrades would not significantly alter the scenic viewshed from SR-18. As water facilities of similar size and scope exist within the BBARWA WWTP site, there are no trees, rock outcroppings, or historic structures that exist that would be impacted by construction of the proposed BBARWA WWTP Upgrades, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Therefore, construction of the facilities proposed under Program Category 4 or under any other Program Category, would not impact scenic resources within a State or County Scenic Highway or viewshed thereof. Impacts are less than significant.

Operation: The proposed upgrades to the BBARWA WWTP would occur within an existing developed facility that contains no scenic resources as a result of the development that occurs within the site. Development at this site is not anticipated to result in impacts to any scenic resources as no significant scenic resources are contained therein. Water facilities of similar size and scope exist within the BBARWA WWTP Site, as there are no trees, rock outcroppings, or historic structures that exist that would be impacted by operation of the proposed ancillary facilities, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Furthermore, the installation of BBARWA WWTP Upgrades within this area would conform to the existing visual setting that could potentially be seen as seen from the County Designated Scenic Highway (SR-18) to the north of the area proposed for the BBARWA WWTP Upgrades installation, because this area is presently developed with WWTP facilities that are of a similar scope, size, and height to that which presently occurs within the site, and the BBARWA WWTP site does not contain any scenic resources internally within the site, installation of the proposed BBARWA WWTP Upgrades would not significantly alter the scenic viewshed from SR-18. Operation of the BBARWA WWTP

Upgrades would have no potential to impact scenic resources beyond that which was described under the construction scenario above, and therefore impacts to scenic resources from implementation of upgrades and improvements to existing facilities would be less than significant.

Other Physical Changes to the Environment

As previously stated, the proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have a potential to enhance the visual setting of the lake, and thereby would not result in damage to scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway would not be anticipated to occur as a result of Program implementation. Thus, no impacts are anticipated.

A second possible other physical change to the environment includes possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond. The change in water source would not result in any noticeable change at Shay Pond, as no greater volume of water would be sent to Shay Pond in support of the Stickleback, and thereby would not result in damage to scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway would not be anticipated to occur as a result of Program implementation. Thus, no impacts are anticipated.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. The LV Site is not located within a County or State Scenic Highway, does not contain any rock outcroppings, does not contain any historic buildings, and does not contain any trees that would be altered as a result of the proposed Program. Thus, the reduction in discharge to the LV Site as a result of the proposed Program would not damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway would not be anticipated to occur as a result of Program implementation. No impacts beyond those previously discussed under this issue as a result of other physical changes to the environment are anticipated to occur. (Draft EIR, pp. 4-26, 4-29 – 4-30)

3. Visual Character

Threshold: In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public view of the site and its surroundings?

Finding: Less than significant. (Draft EIR, pp. 4-32, 4-35 – 4-36)

Explanation:

Based on a review of the California Office of Planning and Research's (OPR) Site Check,[19] the majority of the Program Area is considered urbanized under California Public Resources Code 21071 and California Public Resources Code 21094.5 or as an urbanized area or urban cluster under the Census (**Figure 4.2-4**). However, the BBARWA WWTP area, a small portion of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment,

and the entirety of the Shay Pond Discharge Project are located in rural areas. As such, following analysis addresses the Program Components based on their location in relation to urbanized or non-urbanized area boundaries delineated on **Figure 4.2-4**.

Program Category 1: Conveyance Pipelines

Construction: Construction activities associated with conveyance pipelines (new Shay Pond Conveyance Pipeline, Shay Pond Replacement Pipeline, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, Sand Canyon Recharge Conveyance Pipeline) would result in short-term impacts (about 15 months of construction) to visual resources. Construction activities would require the use of construction equipment and storage of materials along the conveyance pipeline alignments. Excavated areas, stockpiled soils and other materials generated during construction would present negative visual elements to the existing landscape. However, these effects would be nominal because the pipelines would be located within existing road ROW, compacted dirt throughways, as described under issue b, above, in locations with sufficient area to temporarily store construction equipment and materials, and the effects would be temporary for only the nominal duration of construction, and therefore not substantially affect the existing visual character of the surrounding area. Furthermore, there are no regulations governing scenic quality within the San Bernardino County Development Code or City of Big Bear Lake Zoning Code that would apply to the development of the proposed conveyance facilities, particularly in light of California Government Code Section 53091, which renders infrastructure projects such as that which is proposed under the Program land use and zoning independent. Construction impacts would be less than significant.

Operation: Conveyance pipelines (new Shay Pond Conveyance Pipeline, Shay Pond Replacement Pipeline, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, Sand Canyon Recharge Conveyance Pipeline) would be placed underground and would not be visible once construction is complete. As these facilities will all be located below ground, and the roadways and undisturbed ground surfaces within which the proposed pipeline alignments will be installed will be returned to their original or better condition once installed below ground, the proposed Program will have no potential to conflict with applicable zoning or other regulations governing scenic quality, or otherwise substantially degrade the existing visual character or quality of public views of the site and its surroundings. Impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Similar to that which is described under Program Category 1 and 2, above, construction activities associated with evaporation would result in short-term (about 15 months) impacts to the area within which the Solar Evaporation Ponds would be installed: the BBARWA WWTP site. Construction activities would require the use of construction equipment and storage of materials at the BBARWA WWTP site. Excavated areas, stockpiled soils and other materials generated during construction would present new visual elements to the existing landscape, but the Solar Evaporation Ponds would be installed within an already disturbed environment containing no quality public views internally or externally (refer to issue a, above). Thus, these effects would be nominal because the Solar Evaporation Ponds would be installed in locations with sufficient area to

temporarily store construction equipment and materials, and the effects would be temporary for only the nominal duration of construction, and therefore not substantially affect the existing visual character of the surrounding area. Impacts would be less than significant.

Operation: The proposed Solar Evaporation Ponds would be installed within the BBARWA WWTP property boundary, which is considered to be a non-urbanized area. As discussed under issue (a), above, this area has been disturbed previously, but presently contains exposed soil/dirt and sparse vegetation as shown on **Photos 4.2-2 through 4.2-4**. Given that this Program Component would occur within an area that would be confined to the existing boundaries of the BBARWA WWTP property boundaries, the Solar Evaporation Ponds are anticipated to conform to the existing visual setting and thereby would have a less than significant potential to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: The upgrades proposed at the BBARWA WWTP would occur within existing areas of development or areas that have been previously compacted or disturbed within the BBARWA WWTP site as shown on **Figure 3-23 through 3-25**. The solar panels, shown on **Figure 3-37** would be installed throughout the BBARWA WWTP site and the adjacent (to the south) BBCCSD site. Note that the BBARWA WWTP already contains solar panels both within and adjacent to its WWTP site. Furthermore, many of the BBARWA WWTP Upgrades would be installed within enclosed spaces that would shield the proposed treatment facilities from public view.

Construction within the BBARWA WWTP would be temporary (24 months) in nature, and therefore any changes in public views of the already disturbed site would be temporary, with the overall character of the BBARWA WWTP site upon the conclusion of construction remaining comparable to that which exists at the site at present. Impacts would be less than significant.

Operation: Thus, as the proposed upgrades to the BBARWA WWTP, including the solar array that would be installed as part of this project, as discussed under issue (a), above, would occur within an existing developed facility, development therein would be consistent with the existing visual setting. Further development within this existing treatment facility would have no potential to substantially degrade the existing visual character or quality of public views of the site and its surroundings because the visual character of the site at present is that of a wastewater treatment facility containing infrastructure necessary to operate the wastewater treatment facility and under the proposed Program, the overall setting of the site would remain a wastewater treatment facility containing similar and consistent wastewater infrastructure. Impacts would be less than significant. (Final EIR, p. 4-35.)

Other Physical Changes to the Environment

As previously stated, the proposed Program would also result in other physical changes to

the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would occur within a defined urban area per **Figure 4.2−4**, and given that the release of water into Big Bear Lake by way of Stanfield Marsh in and of itself does not include any physical components beyond those discussed under Program Categories 1-4, above, no potential to conflict with applicable zoning or other regulations governing scenic quality exists. Thus, no impacts are anticipated.

A second possible other physical change to the environment includes possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback fish at Shay Pond. The change in water source would not result in any noticeable change at Shay Pond, as no greater volume of water would be sent to Shay Pond in support of the Stickleback, and thereby would not result substantially degrade the existing visual character or quality of public views of the site and its surroundings. Thus, no impacts are anticipated.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. The LV Site is located in a non-urbanized area. Due to the use of the site for farming and for discharge (through the existing discharge basins shown on **Figure 4.2-1**), the reduction in discharge to this site is not anticipated to degrade the visual character of the site. In fact, as stated under issue (a), above, the use of the site for farming would be reduced from about 190 acres of farmland to a utilization of about 40 acres. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Under the proposed Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, as described under issue (a), above. Regardless, given that the LV Site would not undergo substantial change under the proposed Program because BBARWA would continue to own the site and ensure it is maintained, the proposed Program would have a less than significant potential to degrade the existing visual character or quality of public views of the LV Site and its surroundings.

4. Light and Glare

Threshold: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Finding: Less than significant. (Draft EIR, p. 4-39)

Explanation:

Other Physical Changes to the Environment

As previously stated, the proposed Program would also result in other physical changes to the environment, including releasing advanced treated water into Big Bear Lake by way of

Stanfield Marsh, possible utilization of Program Water in place of the existing water source—groundwater— in support of the Stickleback fish at Shay Pond and reduced discharge to the LV Site. The discharge to Shay Pond and Big Bear Lake would not result in any new sources of lighting, and the provision of additional water in Stanfield Marsh and Big Bear Lake would not be such that new sources of glare or reflection would occur beyond that which can occur at present. The reduction in discharge to the LV Site would not result in any lighting changes or cause any potential for glare that does not already exist under the current operations. These physical changes would not result in any change in lighting at Big Bear Lake, Stanfield Marsh, or at the LV Site. Furthermore, there would be no potential for increased glare as a result of these physical changes. Therefore, no potential to create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area exists. Thus, no impacts would occur.

B. AGRICULTURE AND FOREST RESOURCES

1. Farmland Conversion

Threshold: Would the Project convert Primate Farmland, Unique Farmland, or Farmland of Statewide significance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Finding: No impact. (Draft EIR, pp. 4-52 – 4-53)

Explanation:

Combined Program Categories

Construction and Operation: The Program Area contains no known agricultural resources or resource values, including prime or important farmland resources in the Big Bear Valley. A field review of the proposed Program locations (shown on **Figures 3-2 through 3-17, 3-19, 3-22, 3−26, 3-29, 3-30, 3-31, 3-33, and 3-34**) substantiates that the project specific facilities will not adversely impact any agricultural resources. Thus, no impact to any agricultural resources will occur in Big Bear Valley from implementation of the Program. No mitigation is required.

2. Agricultural Zoning

Threshold: Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Finding: No impact. (Draft EIR, p. 4-53)

Explanation:

Combined Program Categories

Construction & Operation: Neither the City of Big Bear Lake nor San Bernardino County have designated agricultural land designation or zoning within the Big Bear Valley.

Therefore, no potential conflicts will occur with existing zone classifications or Williamson Act contracts from implementation of the Program. No impacts are anticipated under this issue.

Other Physical Changes

The LV Site is also not zoned for agriculture. Limited agricultural or horticultural land uses could be developed under the Rural Residential and Open Space land use designations, but no such uses occur within the footprint of the facilities proposed for implementation under the proposed Program. Therefore, the Big Bear Valley contains no land under Williamson Act contract. Further, no changes in land use designations are required to support the proposed recycled water facilities shown on referenced maps under issue a) above. As shown on **Figure 4.3-3**, the LV Site is not considered a Williamson Act, thus the change in farmland production at the site will have no potential to conflict with a Williamson Act contract. Therefore, no potential conflicts will occur with existing zone classifications or Williamson Act contracts from implementation of the Program. No impacts are anticipated under this issue.

3. Forestland Zoning

Threshold: Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)?

Finding: No impacts. (Draft EIR, p. 4-54)

Explanation:

Combined Program Categories

A review of the land use designations within the Program Area of impact (reference maps identified in issue (a), above) indicates that there are no areas designated or classified as forest land or timberland in accordance with the referenced California Public Resources Code sections. At this time, it appears that none of the facilities will be located on land managed by SBNF, no Federal land managed for forest or timber land production will be affected by the proposed Program. Therefore, the proposed Program has no potential to conflict with existing zoning or to cause rezoning of forest or timber land. No impacts are anticipated under this issue.

4. Loss of Forest Land

Threshold: Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

Finding: No impacts. (Draft EIR, p. 4-56)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. None of these areas occurs within the known Ancillary Facility sites. Additionally, while the locations of the two Sand Canyon Monitoring Wells are presently unknown, BBARWA and the Program Team will avoid impacting trees/timberland through either site design or site selection as part of the development process for the monitoring wells may also impact trees/timberland. Thus, the proposed Program will be required to comply with CAL FIRE, which designates sites containing trees/timberland resources as being "timberland use," to avoid a potentially significant loss of forest land. As no trees would be forestry would be impacted by this Program Category, no impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. None of these areas occurs within the BBARWA WWTP, and therefore, as no trees would be forestry would be impacted by this Program Category, no impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. None of these areas occurs within the BBARWA WWTP, and therefore, as no trees would be forestry would be impacted by this Program Category, no impacts are anticipated.

5. Conversion of Farmland or Forestland

Threshold: Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Finding: No impacts. (Draft EIR, pp. 4-57 – 4-58)

Explanation:

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

As no trees would be forestry would be impacted by construction of this Program Category, no impacts are anticipated.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of this Program Category would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

As no trees would be forestry would be impacted by construction of this Program Category, no impacts are anticipated.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of this Program Category would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

As no trees would be forestry would be impacted by construction of this Program Category, no impacts are anticipated.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of this Program Category would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

C. AIR QUALITY

1. Other Adverse Emissions

Threshold: Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Finding: Less than significant. (Draft EIR, pp. 4-157 – 4-161)

Explanation:

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

Construction

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.[36]

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-9,** construction would not result in significant emissions of SOX. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors,

adversely affecting a substantial number of people, and impacts would be less than significant.

Operation

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. The BBARWA's WWTP, the proposed location of the AWPF, already treats and stores wastewater and recycled water, and BBARWA implements odor control measures to prevent odorous emissions. Source water from the existing wastewater treatment process at BBARWA would be secondary effluent suitable for reuse, and product water from the AWPF would be advance treated recycled water suitable for discharge to Big Bear Lake. Neither of these types of treated water has an associated odor. Furthermore, the AWPF system is enclosed, and therefore would not be a source of new odor at the BBARWA WWTP site. Thus, odor emissions impacts would be less than significant.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Construction

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-16,** construction would not result in significant emissions of SOX. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

Operation

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. Pipelines are located belowground, and are enclosed. Thus, no odor emissions would occur. Impacts would be

less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

Construction

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-22,** construction would not result in significant emissions of SOX. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

Operation

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. Pipelines are located belowground, and are enclosed. Thus, no odor emissions would occur. Impacts would be less than significant.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

Construction

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in **Table 4.4-33,** construction would not result in significant emissions of SOX. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

Operation

Operation of this Program Component would not result in odor impacts because none of these components include odor-generating components. Pipelines are located belowground, and are enclosed. Furthermore, the monitoring wells and booster pump station would not involve handling of odorous materials or generation of odor emissions. Thus, no odor emissions would occur. Impacts would be less than significant.

D. BIOLOGICAL RESOURCES

1. Riparian Habitat

Threshold: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Finding: Less than significant. (Draft EIR, pp. 4-259 – 4-262)

Explanation:

Critical habitat has been designated for several species adjacent to, directly overlapping, or in the general vicinity of the Program Area. As discussed under **Subsection 4.5.3.1.3,** several special status habitats have been documented in the Program vicinity (within approximately three miles) including pebble plains, southern California threespine stickleback stream, and USFWS designated Critical Habitat for several Federally listed threatened or endangered species. There is no pebble plain or pebble plain-like habitat within the entirety of the proposed Program Area footprint.

BBARWA WWTP Upgrades Project

The nearest USFWS designated Critical Habitat units to this Program Component are adjacent the east side of the BBARWA WWTP and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent

the east side of the BBARWA WWTP site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion. However, no portion of the proposed Program Component footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the BBARWA WWTP Upgrades Project will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

Solar Evaporation Ponds Project

The nearest USFWS designated Critical Habitat units to this Program Component are adjacent the east side of the Solar Evaporation Ponds site and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent the east side of the BBARWA WWTP and Solar Evaporation Ponds site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion. However, no portion of the proposed Program Component footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the Solar Evaporation Ponds Project will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

Sand Canyon Recharge Project

The nearest USFWS designated Critical Habitat units to this Program Component are adjacent the east side of the BBARWA site and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. No portion of the proposed Program Component footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the Solar Evaporation Ponds Project will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

Stanfield Marsh/Big Bear Lake Discharge Project

The nearest USFWS designated Critical Habitat units are adjacent the east side of the BBARWA WWTP and adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option, respectively. The Critical Habitat unit adjacent the east side of the BBARWA WWTP site consists of the North Shay Meadow USFWS designated Critical Habitat unit (Unit 6) for the Federally listed as endangered California dandelion. The Critical Habitat unit adjacent the north side of the proposed Baldwin Lake Pipeline Alignment Option consists of the Pan Hot Springs Meadow USFWS designated Critical Habitat unit (Unit 1) for the Federally listed as endangered San Bernardino blue grass and California dandelion. However, no portion of the proposed Program Area footprint is within these Critical Habitat units, or any other Critical Habitat. Therefore, the Program

will not result in the loss or adverse modification of USFWS designated Critical Habitat. Impacts would be less than significant.

Other Physical Changes to the Environment

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Program. As such, no biological resources, including critical habit, of which none exists at the LV Site, are expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

E. CULTURAL RESOURCES

1. Human Remains

Threshold: Would the Project disturb any human remains, including those interred outside of dedicated cemeteries?

Finding: Less than significant. (Draft EIR)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: A review of the Conveyance Pipelines APE indicates that, as much of the Program will be developed within the former Baldwin Lake lakebed or along natural drainages (roadways and the like), there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known Conveyance Pipelines APE to support human remains is low. Regardless, as human remains would be located belowground, there is a potential that the Conveyance Pipelines APE could be located in an area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result

in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations Construction: A review of the Ancillary Facilities APE indicates that, as many of the Ancillary Facilities will be developed within the former Baldwin Lake lakebed (at the BBARWA WWTP) or along natural drainages (roadways and the like), there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known Ancillary Facilities APE (except for the Sand Canyon Monitoring Wells) to support human remains is low. Regardless, even for the Sand Canyon Monitoring Wells and other facilities under this Program Category, as human remains would be located belowground, there is a potential that a given Program project site could be located in an area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

Program Category 3: Solar Evaporation Ponds

Construction: A review of the Solar Evaporation Ponds APE indicates that, as much of the Solar Evaporation Ponds APE will be developed within the former Baldwin Lake lakebed, there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known Solar Evaporation Ponds APE to support human remains is low. Regardless, as human remains would be located belowground, there is a potential that a given Program project site could be located in an area in which human remains are buried. In the event that human

remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

Program Category 4: BBARWA WWTP Upgrades

Construction: A review of the BBARWA WWTP Upgrades APE indicates that, as much of the Program will be developed within the former Baldwin Lake lakebed, there is very little potential for either of these settings to have been considered suitable for permanent villages in ancient times. This would suggest that the likelihood for the known BBARWA WWTP Upgrades APE to support human remains is low. Regardless, as human remains would be located belowground, there is a potential that a given Program project site could be located in an area in which human remains are buried. In the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of State law regarding discovery of human remains, including California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, and if human remains are accidentally exposed during site grading, Section 7050.5 requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner. The County Coroner must then determine whether the remains are human and if such remains are human, the County Coroner must determine whether the remains are or appear to be of a Native American origin. If deemed potential Native American remains, the County Coroner contacts the NAHC to identify the most likely affected tribe and/or MLD. Until the landowner has conferred with the MLD, the implementing agency shall ensure that the immediate vicinity where the discovery occurred is not disturbed by further activity, is adequately protected according to generally accepted cultural or archaeological standards or practices, and that further activities consider the possibility of multiple burials. Since this process is mandatory, no additional mitigation is required to ensure that the impacts to human remains

will be treated with dignity and result in a less than significant impact.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact human remains exists.

F. ENERGY

1. Wasteful Use of Energy

Threshold: Would the Project result in potentially significant impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Finding: Less than significant. (Draft EIR)

Explanation:

4.7.5.(a)1 Construction Energy Demand Analysis

The focus within this section is the energy implications of the construction process, specifically the power cost from on-site electricity consumption during construction of the proposed Program.

This analysis focuses on the 5 Program Components that are evaluated in Subchapter 4.4, Air Quality. These Components are repeated below for ease of reference.

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
    - 2 pump stations: 20 gpm and 1,520 gpm
    - 1,350 LF of brine pipeline
    - Total building area: 40,000 SF total on site
    - Installation of 2 MW of solar on existing BBARWA property
- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
    - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)
- Replenish Big Bear Component 3: Shay Pond Discharge Project
    - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond

- 57 acres of evaporation ponds
- 2 monitoring wells

- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells
  - 7,210 LF of conveyance pipeline
  - Erosion control/rip rap at pipeline discharge

Construction Power Cost: BBARWA WWTP Upgrades Project

The total BBARWA WWTP Upgrades Project construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Power Cost

The 2023 National Construction Estimator identifies a typical power cost per 1,000 sf of construction per month of $2.50, which was used to calculate the Program's total construction power cost.

As shown on Table 4.7-5, the total power cost of the on-site electricity usage during the construction of the BBARWA WWTP Upgrades Project is estimated to be approximately $10,428.28.

Construction Electricity Usage: BBARWA WWTP Upgrades Project

The total BBARWA WWTP Upgrades construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-5**) estimated by the utility provider cost per kWh of electricity.

Program Construction Electricity Usage

BVES's general service rate schedule was used to determine the BBARWA WWTP Upgrades Project's electrical usage. As of March 1, 2023, BVES's general service rate is $0.25 per kWhs of electricity for general services. As shown on **Table 4.7-6**, the total electricity usage from on-site project construction related activities is estimated to be approximately 41,491 kWhs.

Construction Equipment Fuel Estimates: BBARWA WWTP Upgrades Project

Fuel consumed by construction equipment would be the primary energy resource expended

over the course of BBARWA WWTP Upgrades Project construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Equipment Fuel Consumption

BBARWA WWTP Upgrades Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-7**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hour per gallon (hp-hr-gal.), obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region[5]. As presented on **Table 4.7-7**, BBARWA WWTP Upgrades Project construction activities would consume an estimated 134,836 gallons of diesel fuel. BBARWA WWTP Upgrades Project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

<u>Construction Trips and VMT: BBARWA WWTP Upgrades Project</u>

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the BBARWA WWTP Upgrades Project are presented below in **Table 4.7-8**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

<u>Construction Worker Fuel Estimates: BBARWA WWTP Upgrades Project</u>

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the BBARWA WWTP Upgrades Project, the construction worker trips would generate an estimated 2,580,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[6]), and 25% are from light-duty-trucks (LDT2[7]). Data regarding the BBARWA WWTP Upgrades Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from

on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Tables 4.7-9 through 4.7-11 provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-9 through 4.7-11**, it is estimated that 75,781 gallons of fuel will be consumed related to construction worker trips during full construction of the BBARWA WWTP Upgrades Project. It should be noted that construction worker trips would represent a "single- event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Vendor/Hauling Fuel Estimates: BBARWA WWTP Upgrades Project

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 1,599,340 VMT along area roadways for the BBARWA WWTP Upgrades Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from medium-heavy duty trucks (MHDT), 50% of vendor trips are from heavy-heavy duty trucks (HHDT), and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Tables 4.7-12 through 4.7-14**, it is estimated that 249,410 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the BBARWA WWTP Upgrades Project.

It should be noted that construction vendor and hauling trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Energy Impact Conclusion: BBARWA WWTP Upgrades Project

Construction Energy Efficiency/Conservation Measures

The equipment used for BBARWA WWTP Upgrades Project construction would conform to CARB regulations and California emissions standards. There are no unusual BBARWA WWTP Upgrades Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the BBARWA WWTP Upgrades Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The BBARWA WWTP Upgrades Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the BBARWA WWTP Upgrades Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

Construction Energy Demand Impact Summary

The estimated power cost of on-site electricity usage during the construction of the BBARWA WWTP Upgrades Project is assumed to be approximately $10,428.28. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Program build-out, is calculated to be approximately 41,491 kWhs.

Construction equipment used by the BBARWA WWTP Upgrades Project would result in single event consumption of approximately 134,836 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Program's proposed construction process that are unusual or energy-intensive, and Program construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the BBARWA WWTP Upgrades Project would result in the estimated fuel consumption of 75,781 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 249,410 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, BBARWA WWTP Upgrades Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

Construction Power Cost: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

The total Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Power Cost

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.50, which was used to calculate the Program's total construction power cost.

As shown on **Table 4.7-15,** the total power cost of the on-site electricity usage during the construction of the Stanfield Marsh/Big Bear Lake Discharge Project is estimated to be approximately $3,813.68.

Construction Electricity Usage: Stanfield Marsh/Big Bear Lake Discharge Pipeline

Alignment

The total Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-16**) estimated by the utility provider cost per kWh of electricity.

Program Construction Electricity Usage

BVES's general service rate schedule was used to determine the Stanfield Marsh/Big Bear Lake Discharge Project's electrical usage. As of March 1, 2023, BVES's general service rate is $0.25 per kWhs of electricity for general services. As shown on **Table 4.7-16**, the total electricity usage from on-site project construction related activities is estimated to be approximately 15,173 kWhs.

Construction Equipment Fuel Estimates: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Equipment Fuel Consumption

Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-17**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-17**, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction activities would consume an estimated 27,369 gallons of diesel fuel. Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Trips and VMT: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the Stanfield Marsh/Big Bear Lake Discharge Project are presented below in **Table**

4.7-18. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

Construction Worker Fuel Estimates: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Stanfield Marsh/Big Bear Lake Discharge Project, the construction worker trips would generate an estimated 653,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[8]), and 25% are from light-duty-trucks (LDT2[9]). Data regarding the Stanfield Marsh/Big Bear Lake Discharge Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Tables 4.7-19 through 4.7-21 provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-19 through 4.7-21**, it is estimated that 22,677 gallons of fuel will be consumed related to construction worker trips during full construction of the Stanfield Marsh/Big Bear Lake Discharge Project. It should be noted that construction worker trips would represent a “single-event” gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Vendor/Hauling Fuel Estimates: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 833,100 VMT along area roadways for the Stanfield Marsh/Big Bear Lake Discharge Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle

classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Table 4.7-22**, it is estimated that 135,752 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Stanfield Marsh/Big Bear Lake Discharge Project. It should be noted that construction vendor and hauling trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Energy Impact Conclusion: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

Construction Energy Efficiency/Conservation Measures

The equipment used for Stanfield Marsh/Big Bear Lake Discharge Project construction would conform to CARB regulations and California emissions standards. There are no unusual Stanfield Marsh/Big Bear Lake Discharge Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Stanfield Marsh/Big Bear Lake Discharge Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Stanfield Marsh/Big Bear Lake Discharge Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase,

transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Stanfield Marsh/Big Bear Lake Discharge Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

Construction Energy Demand Impact Summary

The estimated power cost of on-site electricity usage during the construction of the Stanfield Marsh/Big Bear Lake Discharge Project is assumed to be approximately $3,813.68. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Program build-out, is calculated to be approximately 15,173 kWhs.

Construction equipment used by the Stanfield Marsh/Big Bear Lake Discharge Project would result in single event consumption of approximately 27,369 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Stanfield Marsh/Big Bear Lake Discharge Project's proposed construction process that are unusual or energy-intensive, and Stanfield Marsh/Big Bear Lake Discharge Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Stanfield Marsh/Big Bear Lake Discharge Project would result in the estimated fuel consumption of 22,677 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 135,752 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government

requirements. As supported by the preceding discussions, Stanfield Marsh/Big Bear Lake Discharge Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

Construction Power Cost: Shay Pond Discharge Project

The total Shay Pond Discharge Project construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Power Cost

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.50, which was used to calculate the Program's total construction power cost.

As shown on **Table 4.7-23,** the total power cost of the on-site electricity usage during the construction of the Shay Pond Discharge Project is estimated to be approximately $1,203.35.

Construction Electricity Usage: Shay Pond Discharge Project

The total Shay Pond Discharge Project construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-24**) estimated by the utility provider cost per kWh of electricity.

Program Construction Electricity Usage

BVES's general service rate schedule was used to determine the Shay Pond Discharge Project's electrical usage. As of March 1, 2023, BVES's general service rate is $0.25 per kWhs of electricity for general services. As shown on **Table 4.7-24**, the total electricity usage from on-site project construction related activities is estimated to be approximately 4,788 kWhs.

Construction Equipment Fuel Estimates: Shay Pond Discharge Project

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Shay Pond Discharge Project construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Equipment Fuel Consumption

Shay Pond Discharge Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-25**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-25**, Shay Pond Discharge Project construction activities would consume an estimated 26,630 gallons of diesel fuel. Shay Pond Discharge Project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Trips and VMT: Shay Pond Discharge Project

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the Shay Pond Discharge Project are presented below in **Table 4.7-26**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

Construction Worker Fuel Estimates: Shay Pond Discharge Project

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Shay Pond Discharge Project, the construction worker trips would generate an estimated 29,250 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[10]), and 25% are from light-duty-trucks (LDT2[11]). Data regarding the Shay Pond Discharge Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Tables 4.7-27 through 4.7-29 provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-27 through 4.7-29**, it is estimated that 1,335 gallons of fuel will be consumed related to construction worker trips during full construction of the Shay Pond Discharge Project. It should be noted that construction worker trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Vendor/Hauling Fuel Estimates: Shay Pond Discharge Project

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 342,000 VMT along area roadways for the Shay Pond Discharge Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Tables 4.7-30 through 4.7-32**, it is estimated that 89,640 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Shay Pond Discharge Project.

It should be noted that construction vendor and hauling trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

<u>Construction Energy Impact Conclusion: Shay Pond Discharge Project</u>

Construction Energy Efficiency/Conservation Measures

The equipment used for Shay Pond Discharge Project construction would conform to CARB regulations and California emissions standards. There are no unusual Shay Pond Discharge Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Shay Pond Discharge Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Shay Pond Discharge Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding

unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Shay Pond Discharge Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

Construction Energy Demand Impact Summary

The estimated power cost of on-site electricity usage during the construction of the Shay Pond Discharge Project is assumed to be approximately $1,203.35. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Shay Pond Discharge Project build-out, is calculated to be approximately 4,788 kWhs.

Construction equipment used by the Shay Pond Discharge Project would result in single event consumption of approximately 26,630 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Shay Pond Discharge Project’s proposed construction process that are unusual or energy-intensive, and Shay Pond Discharge Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections

conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Shay Pond Discharge Project would result in the estimated fuel consumption of 1,335 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 89,640 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Program construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

Construction Power Cost: Solar Evaporation Ponds

The total Solar Evaporation Ponds construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Power Cost

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.50, which was used to calculate the Program's total construction power cost.

As shown on **Table 4.7-33,** the total power cost of the on-site electricity usage during the construction of the Solar Evaporation Ponds Project is estimated to be approximately $105,524.29.

Construction Electricity Usage: Solar Evaporation Ponds

The total Solar Evaporation Ponds Project construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-33**) estimated by the utility provider cost per kWh of electricity.

Program Construction Electricity Usage

BVES's general service rate schedule was used to determine the Solar Evaporation Ponds Project's electrical usage. As of March 1, 2023, BVES's general service rate is $0.25 per kWhs of electricity for general services. As shown on **Table 4.7-34**, the total electricity usage from on-site project construction related activities is estimated to be approximately 419,847 kWhs.

Construction Equipment Fuel Estimates: Solar Evaporation Ponds

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Solar Evaporation Ponds construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Equipment Fuel Consumption

Solar Evaporation Ponds construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-35**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards.

Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-35**, Solar Evaporation Ponds construction activities would consume an estimated 334,088 gallons of diesel fuel. Solar Evaporation Ponds construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

<u>Construction Trips and VMT: Solar Evaporation Ponds</u>

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips are presented below in **Table 4.7-36**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

<u>Construction Worker Fuel Estimates: Solar Evaporation Ponds</u>

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Solar Evaporation Ponds Project, the construction worker trips would generate an estimated 380,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[12]), and 25% are from light-duty-trucks (LDT2[13]). Data regarding the Solar Evaporation Ponds Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and

VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Tables 4.7-37 through 4.7-39 provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-37 through 4.7-39**, it is estimated that 13,198 gallons of fuel will be consumed related to construction worker trips during full construction of the Solar Evaporation Ponds Project. It should be noted that construction worker trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Vendor/Hauling Fuel Estimates: Solar Evaporation Ponds

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 418,000 VMT along area roadways for the Solar Evaporation Ponds Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Table 4.7-40**, it is estimated that 67,539 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Solar Evaporation Ponds Project.

It should be noted that construction vendor and hauling trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Energy Impact Conclusion: Solar Evaporation Ponds

Construction Energy Efficiency/Conservation Measures

The equipment used for Solar Evaporation Ponds Project construction would conform to CARB regulations and California emissions standards. There are no unusual Solar Evaporation Ponds Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Solar Evaporation Ponds Project would therefore not result in inefficient wasteful, or unnecessary consumption of

fuel.

The Solar Evaporation Ponds Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Solar Evaporation Ponds Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

Construction Energy Demand Impact Summary

The estimated power cost of on-site electricity usage during the construction of the Solar Evaporation Ponds Project is assumed to be approximately $105,524.29. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during

construction, after full Solar Evaporation Ponds Project build-out, is calculated to be approximately 419,847 kWhs.

Construction equipment used by the Solar Evaporation Ponds Project would result in single event consumption of approximately 13,198 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Solar Evaporation Ponds Project's proposed construction process that are unusual or energy-intensive, and Solar Evaporation Ponds Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Solar Evaporation Ponds Project would result in the estimated fuel consumption of 157,463 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 67,539 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Solar Evaporation Ponds Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

Construction Power Cost: Sand Canyon Recharge Project

The total Program construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Power Cost

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.50, which was used to calculate the Program's total construction power cost.

As shown on **Table 4.7-41,** the total power cost of the on-site electricity usage during the construction of the Program is estimated to be approximately $5,998.22.

Construction Electricity Usage: Sand Canyon Recharge Project

The total Sand Canyon Recharge Project construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-42**) estimated by the utility provider cost per kWh of electricity.

Program Construction Electricity Usage

BVES's general service rate schedule was used to determine the Sand Canyon Recharge Project's electrical usage. As of March 1, 2023, BVES's general service rate is $0.25 per kWhs of electricity for general services. As shown on **Table 4.7-42**, the total electricity usage from on-site project construction related activities is estimated to be approximately 23,865 kWhs.

Construction Equipment Fuel Estimates: Sand Canyon Recharge Project

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Sand Canyon Recharge Project construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Equipment Fuel Consumption

Sand Canyon Recharge Project construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7-43**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-43**, Sand Canyon Recharge Project construction activities would consume an estimated 42,628 gallons of diesel fuel. Sand Canyon Recharge Project construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Trips and VMT: Sand Canyon Recharge Project

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips for the Sand Canyon Recharge Project are presented below in **Table 4.7-44**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

Construction Worker Fuel Estimates: Sand Canyon Recharge Project

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is

comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Sand Canyon Recharge Project, the construction worker trips would generate an estimated 881,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[14]), and 25% are from light-duty-trucks (LDT2[15]). Data regarding the Sand Canyon Recharge Project related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Tables 4.7-45 through 4.7-47 provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-45 through 4.7-47**, it is estimated that 30,621 gallons of fuel will be consumed related to construction worker trips during full construction of the Sand Canyon Recharge Project. It should be noted that construction worker trips would represent a "single- event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

<u>Construction Vendor/Hauling Fuel Estimates: Sand Canyon Recharge Project</u>

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 3,706,415 VMT along area roadways for the Sand Canyon Recharge Project over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Table 4.7-48**, it is estimated that 62,132 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Sand Canyon Recharge Project.

It should be noted that construction vendor and hauling trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Energy Impact Conclusion: Sand Canyon Recharge Project

Construction Energy Efficiency/Conservation Measures

The equipment used for Sand Canyon Recharge Project construction would conform to CARB regulations and California emissions standards. There are no unusual Sand Canyon Recharge Project characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Sand Canyon Recharge Project would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Sand Canyon Recharge Project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, “grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling.” In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Project, which is typical for Projects and Programs that are in the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Sand Canyon Recharge Project because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in

bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

Construction Energy Demand Impact Summary

The estimated power cost of on-site electricity usage during the construction of the Sand Canyon Recharge Project is assumed to be approximately $5,998.22. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Sand Canyon Recharge Project build-out, is calculated to be approximately 23,865 kWhs.

Construction equipment used by the Sand Canyon Recharge Project would result in single event consumption of approximately 42,628 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Sand Canyon Recharge Project's proposed construction process that are unusual or energy-intensive, and Sand Canyon Recharge Project construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Sand Canyon Recharge Project would result in the estimated fuel consumption of 30,621 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 62,132 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Sand Canyon Recharge Project construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

<u>Construction Power Cost: Whole Program</u>

The total Program construction power costs are the summation of the products of the area (sf) by the construction duration and the typical power cost. Construction power cost is shown to reflect the whether the estimated power cost is comparable to the local cost for electricity attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Power Cost

The *2023 National Construction Estimator* identifies a typical power cost per 1,000 sf of construction per month of $2.50, which was used to calculate the Program's total construction power cost.

As shown on **Table 4.7-49,** the total power cost of the on-site electricity usage during the construction of the Program is estimated to be approximately $126,967.83.

Construction Electricity Usage: Whole Program

The total Program construction electricity usage is the summation of the cost of electricity per kWh when applied to the construction equipment electricity usage (estimated in **Table 4.7-50**) estimated by the utility provider cost per kWh of electricity.

Program Construction Electricity Usage

BVES's general service rate schedule was used to determine the Program's electrical usage. As of March 1, 2023, BVES's general service rate is $0.25 per kWhs of electricity for general services. As shown on **Table 4.7-50**, the total electricity usage from on-site project construction related activities is estimated to be approximately 505,164 kWhs.

Construction Equipment Fuel Estimates: Whole Program

Fuel consumed by construction equipment would be the primary energy resource expended over the course of Program construction. Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources.

Program Construction Equipment Fuel Consumption

Program construction activity timeline estimates, construction equipment schedules, equipment power ratings, load factors, and associated fuel consumption estimates are presented in **Table 4.7−51**.

The aggregate fuel consumption rate for all equipment is estimated at 18.5 hp-hr-gal., obtained from CARB 2018 Emissions Factors Tables and cited fuel consumption rate factors presented in Table D-24 of the Moyer guidelines. For the purposes of this analysis, the calculations are based on all construction equipment being diesel-powered which is consistent with industry standards. Diesel fuel would be supplied by existing commercial fuel providers serving the Program Area and region. As presented on **Table 4.7-51**, Program construction activities would consume an estimated 565,550 gallons of diesel fuel. Program construction would represent a "single-event" diesel fuel demand and would not require on-going or permanent commitment of diesel fuel resources for this purpose.

Construction Trips and VMT: Whole Program

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling,

and vendors commuting to and from the site. The number of workers, hauling, and vendor trips are presented below in **Table 4.7-52**. It should be noted that the trip length for workers, hauling, and vendor trips were adjusted to 100 miles based on BBARWA and the Program Team provided data.

Construction Worker Fuel Estimates: Whole Program

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT for the Program, the construction worker trips would generate an estimated 4,532,000 VMT during construction. Based on CalEEMod methodology, it is assumed that 50% of all worker trips are from light-duty-auto vehicles (LDA), 25% are from light-duty-trucks (LDT1[16]), and 25% are from light-duty-trucks (LDT2[17]). Data regarding Program related construction worker trips were based on CalEEMod defaults utilized within the AQIA (**Appendix 11, Volume 2**).

Vehicle fuel efficiencies for LDA, LDT1, and LDT2 were estimated using information generated within the 2021 version of the EMFAC developed by CARB. EMFAC2021 is a mathematical model that was developed to calculate emission rates, fuel consumption, and VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by the CARB to project changes in future emissions from on-road mobile sources. EMFAC2021 was run for the LDA, LDT1, and LDT2 vehicle class within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Tables 4.7-53 through 4.7-55 provide estimated annual fuel consumption resulting from Program construction worker trips. Based on **Tables 4.7-53 through 4.7-55**, it is estimated that 157,463 gallons of fuel will be consumed related to construction worker trips during full construction of the Program. It should be noted that construction worker trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Vendor/Hauling Fuel Estimates: Whole Program

Fuel consumption estimates are shown to reflect the whether the estimated fuel use is comparable to the fuel use attributable to the Project, which is an indicator of wasteful, inefficient, or unnecessary consumption of energy resources. With respect to estimated VMT, the construction vendor and hauling trips (vehicles that deliver/export materials to and from the site during construction) would generate an estimated 3,706,415 VMT along area roadways for the Program over the duration of construction activity. It is assumed that 50% of all vendor trips are from MHDT, 50% of vendor trips are from HHDT, and 100% of all hauling trips are from HHDTs. These assumptions are consistent with the CalEEMod defaults utilized within the within the AQIA. Vehicle fuel efficiencies for MHDTs and HHDTs were estimated using information generated within EMFAC2021. EMFAC2021 was run for the MHDT and HHDT vehicle classes within the San Bernardino South Coast sub-area for the 2025, 2026, 2027 calendar years. Data from EMFAC2021 is shown in Appendix 4.2 of the EA.

Based on **Tables 4.7-56 through 4.7-58**, it is estimated that 583,562 gallons of fuel will be consumed related to construction vendor and hauling trips during full construction of the Program.

It should be noted that construction vendor and hauling trips would represent a "single-event" gasoline fuel demand and would not require on-going or permanent commitment of fuel resources for this purpose.

Construction Energy Impact Conclusion: Whole Program

Construction Energy Efficiency/Conservation Measures

The equipment used for Program construction would conform to CARB regulations and California emissions standards. There are no unusual Program characteristics or construction processes that would require the use of equipment that would be more energy intensive than is used for comparable activities; or equipment that would not conform to current emissions standards (and related fuel efficiencies). Equipment employed in construction of the Program would therefore not result in inefficient wasteful, or unnecessary consumption of fuel.

The Program would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with anti-idling and emissions regulations would result in a more efficient use of construction-related energy and the minimization or elimination of wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption.

Additionally, certain incidental construction-source energy efficiencies would likely accrue through implementation of California regulations and BACMs. More specifically, California Code of Regulations Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. To this end, "grading plans shall reference the requirement that a sign shall be posted on-site stating that construction workers need to shut off engines at or before five minutes of idling." In this manner, construction equipment operators are informed that engines are to be turned off at or prior to five minutes of idling. Enforcement of idling limitations is realized through periodic site inspections conducted by County building officials, and/or in response to citizen complaints.

Indirectly, construction energy efficiencies and energy conservation would be achieved for the proposed development through energy efficiencies realized from bulk purchase, transport and use of construction materials.

There are no specific details regarding the specific construction materials that will be used in support of the proposed Program, which is typical for Projects and Programs that are in

the initial planning stages. As such, the analysis presented herein cannot include a full accounting of energy demanded in order to form construction materials that would be utilized in support of the Program because it would be extremely speculative and thus has not been prepared.

In general, the construction processes promote conservation and efficient use of energy by reducing raw materials demands, with related reduction in energy demands associated with raw materials extraction, transportation, processing and refinement. Use of materials in bulk reduces energy demands associated with preparation and transport of construction materials as well as the transport and disposal of construction waste and solid waste in general, with corollary reduced demands on area landfill capacities and energy consumed by waste transport and landfill operations.

Construction Energy Demand Impact Summary

The estimated power cost of on-site electricity usage during the construction of the Program is assumed to be approximately $126,967.83. Additionally, based on the assumed power cost, it is estimated that the total electricity usage during construction, after full Program build-out, is calculated to be approximately 505,164 kWhs.

Construction equipment used by the Program would result in single event consumption of approximately 565,550 gallons of diesel fuel. Construction equipment use of fuel would not be atypical for the type of construction proposed because there are no aspects of the Program's proposed construction process that are unusual or energy-intensive, and Program construction equipment would conform to the applicable CARB emissions standards, acting to promote equipment fuel efficiencies.

California Code of Regulations Title 13, Title 13, Motor Vehicles, section 2449(d)(3) Idling, limits idling times of construction vehicles to no more than five minutes, thereby precluding unnecessary and wasteful consumption of fuel due to unproductive idling of construction equipment. BACMs inform construction equipment operators of this requirement. Enforcement of idling limitations is realized through periodic site inspections conducted by city and/or county building officials, and/or in response to citizen complaints.

Construction worker trips for full construction of the Program would result in the estimated fuel consumption of 157,463 gallons of fuel. Additionally, fuel consumption from construction hauling and vendor trips (MHDTs and HHDTs) will total approximately 583,562 gallons. Diesel fuel would be supplied by local and regional commercial vendors. Indirectly, construction energy efficiencies and energy conservation would be achieved using bulk purchases, transport and use of construction materials. The 2022 IEPR released by the CEC has shown that fuel efficiencies are getting better within on and off-road vehicle engines due to more stringent government requirements. As supported by the preceding discussions, Program construction energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

4.7.5.(a)2 Operational Energy Demand Analysis

Energy consumption in support of or related to Program operations would include minimal

transportation fuel demands (fuel consumed by maintenance vehicles accessing the Program sites), fuel demands from operational equipment, and facilities energy demands (energy consumed by building operations and site maintenance activities).

Operational Energy Demands: BBARWA WWTP Upgrades Project

BBARWA WWTP Upgrades Project operational activities would result in the consumption of natural gas and electricity, which would be supplied to the Program by Southwest Gas and BVES. As summarized on **Table 4.7-59** the Program would result in 760,427 kBTU/year of natural gas and a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program's photovoltaic solar design feature.

Transportation Fuel Demands

In terms of operational energy demands, the proposed BBARWA WWTP Upgrades Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from BBARWA WWTP Upgrades Project operations. The BBARWA WWTP Upgrades Project does not propose a trip-generating land use and while it is anticipated that the BBARWA WWTP Upgrades Project would some new employee trips from the five new employment positions at BBARWA, but given the low number of new employees, such trips would be minimal requiring a negligible amount of traffic trips on an annual basis.

Operational Energy Demand Impact Summary

BBARWA WWTP Upgrades Project facility operational energy demands are estimated at: 760,427 kBTU/year of natural gas and 147,883 kWh/year of electricity. Natural gas would be supplied to the BBARWA WWTP Upgrades Project by Southwest Gas; electricity would be supplied by BVES. The Program does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other land uses of similar scale and configuration.

Lastly, the BBARWA WWTP Upgrades Project will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Program energy demands would not be inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

Operational Energy Demands: Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

The operational energy demands associated with conveying the Program Water to Stanfield Marsh/Big Bear Lake under the Stanfield Marsh/Big Bear Lake Discharge Project is accounted for as part of the BBARWA WWTP Upgrades Project, as the pump stations and facilities need to facilitate the Program Water conveyance would be installed therein. Thus, no electricity would be demanded by the Stanfield Marsh/Big Bear Lake Discharge Project.

Transportation Fuel Demands

In terms of operational energy demands, the proposed Stanfield Marsh/Big Bear Lake Discharge Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Stanfield Marsh/Big Bear Lake Discharge Project operations. The Stanfield Marsh/Big Bear Lake Discharge Project does not propose a trip-generating land use and while it is anticipated that the Stanfield Marsh/Big Bear Lake Discharge Project would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

Operational Energy Demand Impact Summary

As stated above, electricity would not be demanded by the Stanfield Marsh/Big Bear Lake Discharge Project. Thus, no impacts would be anticipated.

Operational Energy Demands: Shay Pond Discharge Project

The operational energy demands associated with conveying the Program Water to Shay Pond under the Shay Pond Discharge Project is accounted for as part of the BBARWA WWTP Upgrades Project, as the pump stations and facilities need to facilitate the Program Water conveyance would be installed therein. Thus, no electricity would be demanded by the Shay Pond Discharge Project.

Transportation Fuel Demands

In terms of operational energy demands, the proposed Shay Pond Discharge Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Shay Pond Discharge Project operations. The Shay Pond Discharge Project does not propose a trip-generating land use and while it is anticipated that the Shay Pond Discharge Project would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

Operational Energy Demand Impact Summary

As stated above, electricity would not be demanded by the Shay Pond Discharge Project. Thus, no impacts would be anticipated.

Operational Energy Demands: Solar Evaporation Ponds

The operational energy demands associated with conveying the brine to Solar Evaporation Ponds under the Solar Evaporation Ponds Project is accounted for as part of the BBARWA WWTP Upgrades Project, as the pump stations and facilities need to facilitate the brine conveyance would be installed therein. Thus, no electricity would be demanded by the Solar Evaporation Ponds Project.

Transportation Fuel Demands

In terms of operational energy demands, the proposed Solar Evaporation Ponds Project does not include any substantive new stationary or mobile sources of emissions, and

therefore, by its very nature, will not generate substantive amounts of energy demand from Solar Evaporation Ponds Project operations. The Solar Evaporation Ponds Project does not propose a trip-generating land use and while it is anticipated that the Solar Evaporation Ponds Project would include some new employee trips from the five new employment positions at BBARWA, but given the low number of new employees, such trips would be minimal requiring a negligible amount of traffic trips on an annual basis.

Operational Energy Demand Impact Summary

As stated above, electricity would not be demanded by the Solar Evaporation Ponds Project. Thus, no impacts would be anticipated.

<u>Operational Energy Demands: Sand Canyon Recharge Project</u>

The Sand Canyon Recharge Project would result in energy consumption of electricity in support of the Sand Canyon Booster Station, which would be supplied to the Program by BVES. As summarized on **Table 4.7-60** the Program would result in a net electricity demand of 19,079 kWhs/year of electricity.

Transportation Fuel Demands

In terms of operational energy demands, the proposed Sand Canyon Recharge Project does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Sand Canyon Recharge Project operations. The Sand Canyon Recharge Project does not propose a trip-generating land use and while it is anticipated that the Sand Canyon Recharge Project would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis.

Operational Energy Demand Impact Summary

Sand Canyon Recharge Project facility operational energy demands are estimated at: 19,079 kWh/year of electricity. Electricity would be supplied by BVES. The Sand Canyon Recharge Project does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other land uses of similar scale and configuration.

Lastly, the Sand Canyon Recharge Project will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Sand Canyon Recharge Project energy demands would not be inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

<u>Operational Energy Demands: Whole Program</u>

Program building operations activities would result in the consumption of natural gas and electricity, which would be supplied to the Program by Southwest Gas and BVES. As summarized on **Table 4.7-61** the Program would result in 760,427 kBTU/year of natural gas and a net electricity demand of 166,962 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program's photovoltaic solar design feature.

Operational Energy Demand Impact Summary: Whole Program

Program facility operational energy demands are estimated at: 760,427 kBTU/year of natural gas and 166,962 kWh/year of electricity. Natural gas would be supplied to the Program by Southwest Gas; electricity would be supplied by BVES. The Program does not propose uses that are inherently energy intensive and the energy demands in total would be comparable to other land uses of similar scale and configuration.

Lastly, the Program will comply with the applicable Title 24 standards. Compliance itself with applicable Title 24 standards will ensure that the Program energy demands would not be inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

4.7.5.(a)3 Energy Demand Impact Conclusion: Whole Program

A significant impact would occur if the proposed Program would result in the inefficient, wasteful, or unnecessary use of energy.

<u>Construction</u>

Based on CalEEMod estimations within the modeling output files used to estimate GHG emissions, construction-related vehicle trips would result in approximately 4,532,000 VMT during construction and consume an estimated 741,025 gallons of gasoline and diesel combined during future development projects construction phases. Additionally, on-site construction equipment would consume an estimated 565,550 gallons of diesel fuel. Limitations on idling of vehicles and equipment and requirements that equipment be properly maintained would result in fuel savings. California Code of Regulations, Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel- powered equipment and are enforced by the CARB. Additionally, given the cost of fuel, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Due to the temporary nature of construction and the financial incentives for developers and contractors to use energy-consuming resources in an efficient manner, the construction phase of the proposed Program would not result in wasteful, inefficient, and unnecessary consumption of energy. Therefore, the construction-related impacts related to electricity and fuel consumption would be less than significant.

<u>Operation</u>

Electricity and Natural Gas

Operation of the proposed Program would consume energy as part of building operations and transportation activities. Building operations would involve energy consumption for multiple purposes and based on CalEEMod energy use estimations, operations for the Program would result in approximately 166,962 kWh of electricity and 760,427 kBTU/year of natural gas annually.

The Program would be designed and constructed in accordance with the City of Big Bear Lake or the San Bernardino County's latest adopted energy efficiency standards, which are

based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. As supported by the preceding discussions, Program operational energy consumption would not be considered inefficient, wasteful, or otherwise unnecessary. Impacts would be less than significant.

Fuel

As mentioned previously, the proposed Program does not include any substantive new stationary or mobile sources of emissions, and therefore, by its very nature, will not generate substantive amounts of energy demand from Program operations. The Program does not propose trip-generating land use and while it is anticipated that the Program would require intermittent maintenance, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. For these reasons, operational-related transportation fuel consumption would not result in a significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, the operational impact related to vehicle fuel consumption would be less than significant.

2. Energy Efficiency Plans

Threshold: Would the Project conflict with or obstruct a state of local plan for renewable energy or energy efficiency?

Finding: Less than significant. (Draft EIR, pp. 4-423 – pp. 4-428)

Explanation:

BBARWA WWTP Upgrades

Construction: The proposed BBARWA WWTP Upgrades Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed BBARWA WWTP Upgrades Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed BBARWA WWTP Upgrades Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent

by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the BBARWA WWTP Upgrades Project would result in approximately 760,427 kBTU/year of natural gas and a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program's photovoltaic solar design feature. The electricity demand is substantially reduced to a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the project's photovoltaic solar design feature.

The BBARWA WWTP Upgrades Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment

Construction: The proposed Stanfield Marsh/Big Bear Lake Discharge Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Stanfield Marsh/Big Bear Lake Discharge Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Stanfield Marsh/Big Bear Lake Discharge Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Stanfield Marsh/Big Bear Lake Discharge Project would not result in any electricity and or natural gas use, as energy demands are accounted for as part of the facilities being installed as part of the BBARWA WWTP Upgrades.

The Stanfield Marsh/Big Bear Lake Discharge Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

Shay Pond Discharge Project

Construction: The proposed Shay Pond Discharge Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Shay Pond Discharge Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Shay Pond Discharge Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. The Shay Pond Discharge Project would not result in any electricity and or natural gas use, as energy demands are accounted for as part of the facilities being installed as part of the BBARWA WWTP Upgrades.

The Shay Pond Discharge Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

Solar Evaporation Ponds

Construction: The proposed Solar Evaporation Ponds Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Solar Evaporation Ponds Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Solar Evaporation Ponds Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. The Solar Evaporation Ponds Project would not result in any electricity and or natural gas use, as energy demands are accounted for as part of the facilities being installed as part of the BBARWA WWTP Upgrades.

The Solar Evaporation Ponds Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

Sand Canyon Recharge Project

Construction: The proposed Sand Canyon Recharge Project would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker

commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Sand Canyon Recharge Project would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Sand Canyon Recharge Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. The Sand Canyon Recharge Project would result in approximately 19,079 kWhs/year of electricity and no natural gas annually. The program's overall electricity demand is substantially reduced by the project's photovoltaic solar design feature.

The Sand Canyon Recharge Project would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

Whole Program

Construction: The proposed Program would result in energy consumption through the combustion of fossil fuels in construction vehicles, worker commute vehicles, and construction equipment, and the use of electricity for temporary buildings, lighting, and other sources. California Code of Regulations Title 13, Sections 2449 and 2485, limit idling from both on-road and off-road diesel-powered equipment and are enforced by CARB. The proposed Program would comply with these regulations. There are no policies at the local level applicable to energy conservation specific to the construction phase. Thus, it is anticipated that construction of the proposed Program would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, construction-related energy efficiency and renewable energy standards consistency impacts would be less than significant.

Operation: RPS establishes a goal of renewable energy for local providers to be 44 percent by 2040. Similarly, the State is promoting renewable energy targets to meet the 2022 Scoping Plan GHG emissions reductions. As discussed in above, the Program would result in approximately 147,883 kWhs of electricity and 760,427 kBTU/year of natural gas annually. The electricity demand is substantially reduced to a net electricity demand of 147,883 kWhs/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the project's photovoltaic solar design feature.

The Program would be designed and constructed in accordance with the City of Big Bear Lake and San Bernardino County's latest adopted energy efficiency standards, which are based on the Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation.

Compliance with the aforementioned mandatory measures would ensure that future development would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing energy use or increasing the use of renewable energy. Therefore, operational energy efficiency and renewable energy standards consistency impacts would be less than significant.

G. GEOLOGY AND SOILS

1. Fault Rupture

Threshold: Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; strong seismic ground shaking; seismic-related ground failure including liquefaction; or landslides?

Finding: Less than significant. (Draft EIR, pp. 4-448 – 4-461)

Explanation:

The Program includes four Program Categories that would result in the construction of new facilities. These are shown on **Figure 3-29**: pipelines, pump stations, monitoring wells, and upgrades to BBARWA's WWTP to an AWPF, recharge facilities, and Solar Evaporation Ponds. Additionally, there are other physical changes to the environment that may occur as a result of Program implementation, including the future release of Program Water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, the use of Program Water in place of groundwater at Shay Pond, and reduced

discharge from the BBARWA WWTP to the LV Site.

Program Category 1: Conveyance Pipelines

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to Conveyance Pipelines from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: Monitoring wells will be located in the Sand Canyon Recharge Area and but specific locations have not yet been selected. **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to any Ancillary Facilities from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Program Category 3: Solar Evaporation Ponds Project

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: Regardless, as **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to any Solar Evaporation Ponds from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or

Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to the BBATWA WWTP Upgrades facilities from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Combined Program Categories

Construction: **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage during construction from ground rupture is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Operation: **Figure 3-29** shows the locations of the facilities, except for the monitoring wells and the current LV Site. Monitoring wells will be located in the Sand Canyon Recharge Area and at the new AWPF at BBARWA's WWTP, but specific locations have not yet been selected. Regardless, as **Figures 4.8-3** and **4.8-4** illustrate, there are no known active faults or Alquist-Priolo zones within Big Bear Valley. Thus, the potential for rupture of a known earthquake fault or damage to any Program facilities from ground rupture during operation is considered a less than significant impact. No mitigation is required since this is not a known geologic hazard in Big Bear Valley.

Other Physical Changes to the Environment

In the future, undisinfected secondary treated effluent will likely continue being delivered to the LV Site during winter months, but the reduction in discharge of effluent to this site has no known potential to cause new or different fault rupture hazards. The additional discharge of Program Water to Big Bear Lake, and the potential change in water supply at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different fault rupture hazards. No mitigation is required at these sites due to implementing the Program.

Landslides

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. The Conveyance Pipelines would be installed in locations

that are generally flat or are within flat areas of roadways in residential areas and therefore the risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to high landslide or mudflow/mudslide hazards. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Furthermore, the Sand Canyon Monitoring Wells, while specific site locations are not yet known, would be located downstream of the Sand Canyon Recharge Area. This area is not located within an area exposed to landslide or mudflow. The Sand Canyon Booster Station is located in an area with low to moderate landslide susceptibility. However, this site has been entirely developed, and has not experienced landslide in recent history. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to high landslide or mudflow/mudslide hazards. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Furthermore, the Sand Canyon Monitoring Wells, while

specific site locations are not yet known, would be located downstream of the Sand Canyon Recharge Area. This area is not located within an area exposed to landslide or mudflow. The Sand Canyon Booster Station is located in an area with low to moderate landslide susceptibility. However, this site has been entirely developed, and has not experienced landslide in recent history. Thus, given that the Sand Canyon Booster Station site has been developed, it is not anticipated to be exposed to landslide or mudflow. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation.

Program Category 3: Solar Evaporation Ponds Project

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). The risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the Solar Evaporation Ponds would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide. Furthermore, construction

within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the BBARWA WWTP Upgrades Project would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

Combined Program Categories

Construction: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslide susceptibility at a high level. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslide susceptibility at a high level. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation.

Other Physical Changes to the Environment

In the future, treated effluent is likely to continue being delivered to the LV Site during

winter months, but the reduction in discharge of treated effluent to this site has no known potential to cause new or different landslide hazards. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different landslide hazards. No mitigation is required at these sites due to implementing the Program.

Seismic-Related Ground Failure

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. Underground pipelines are not typically susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. The primary and secondary effects of ground shaking could distort or break pipelines and other water conveyance structures, and cause structural failure. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements would reduce potential impacts associated with ground shaking to a level of less than significant. Thus, impacts would be less than significant.

2. Septic Tanks

Threshold: Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

Finding: No impact. (Draft EIR, pp. 4-475 – 4-476)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: There is no planned use of on-site septic systems in support of the

Conveyance Pipelines during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Conveyance Pipelines. Therefore, no impact would occur related to soil suitability for septic systems.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: There is no planned use of on-site septic systems in support of the Ancillary Facilities during construction. Therefore, no impact would occur related to soil suitability for septic systems

Operation: There is no planned use of on-site septic systems in support of the Ancillary Facilities. Therefore, no impact would occur related to soil suitability for septic systems.

Program Category 3: Solar Evaporation Ponds Project

Construction: There is no planned use of on-site septic systems in support of the Solar Evaporation Ponds Project during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Solar Evaporation Ponds Project facilities. Therefore, no impact would occur related to soil suitability for septic systems.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: There is no planned use of on-site septic systems in support of the BBARWA WWTP Upgrades Project during construction. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the BBARWA WWTP Upgrades Project facilities. Therefore, no impact would occur related to soil suitability for septic systems.

Combined Program Categories

Construction: There is no planned use of on-site septic systems in support of the construction of the Program facilities. Therefore, no impact would occur related to soil suitability for septic systems.

Operation: There is no planned use of on-site septic systems in support of the Program facilities. Therefore, no impact would occur related to soil suitability for septic systems.

H. GREENHOUSE GAS EMISSIONS

1. Emissions Generation

Threshold: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Finding: Less than significant. (Draft EIR, pp. 4-510-4-528)

Explanation:

EMISSIONS SUMMARY

Program construction activities would result in emissions of CO_2, N_2O, and CH_4. The Replenish Big Bear Program AQIA Report (AQIA) prepared by Urban Crossroads and provided as **Appendix 11, Volume 2** to this DPEIR, contains detailed information regarding construction activities, which is repeated below for ease of reference.

Because few details are known at this time regarding construction of specific projects, it is assumed that construction of any project facilities may occur simultaneously. As a conservative measure, and in order to identify the maximum daily emissions, the GHGIA assumes that the Program would construct the following features simultaneously:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
  - 2 pump stations: 20 gpm and 1,520 gpm
  - 1,350 LF of brine pipeline
  - Total building area: 40,000 SF total on site
  - Installation of 2 MW of solar on existing BBARWA property
- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
  - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)
- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells
- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station

- 2 monitoring wells
- 7,210 LF of conveyance pipeline
- Erosion control/rip rap at pipeline discharge

Below the construction and operational scenario for each Replenish Big Bear Program Component, as well as an impact analysis of the Program as a whole. The tables have been extracted from **Subsection 4.4**, **Air Quality**, as the construction scenarios remain the same across the GHGIA, AQIA, and EA.

The Program would be required to comply with regulations imposed by the State of California and SCAQMD aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Program and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (AB 32).
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (SB 375).
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new vehicles.
- CBC (Title 24 California Code of Regulations). Establishes energy efficiency requirements for new construction.
- Appliance Energy Efficiency Standards (Title 20 California Code of Regulations). Establishes energy efficiency requirements for appliances.
- Low Carbon Fuel Standard (LCFS). Requires carbon content of fuel sold in California to be 10 percent (%) less by 2020.
- California Water Conservation in Landscaping Act of 2006 (AB 1881). Requires local agencies to adopt MWELO or equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes.
- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions.
- Renewable Portfolio Standards (SB 1078 – also referred to as RPS). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20 % by 2010 and 33% by 2020.
- California Global Warming Solutions Act of 2006 (SB 32). Requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a

reduction target that was first introduced in Executive Order B-30-15.

- Promulgated regulations that will affect the Program's emissions are accounted for in the Program's GHG calculations provided in this report. In particular, AB 1493, LCFS, and RPS, and therefore are accounted for in the Program's emission calculations.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project, 3,000 tons of concrete would be demolished. Additionally, up to 1,350 CY of asphalt export would be needed.

Grading Activities

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project, it was estimated that up to 8,000 CY of soil would be exported during construction of the new building.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-5.**

<u>Operational Scenario Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project</u>

Operations would generate CO_2, CH_4, and N_2O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**: area sources include architectural coatings, including interior and exterior coatings, asphalt, concrete, and parking areas, and landscaping equipment.
- Energy Source: energy sources include natural gas and electricity consumption.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**: electricity and natural gas demands are included herein.
- Mobile Source: mobile sources include trips generated to and from the proposed facilities including employee trips, hauling trips for waste sources such as precipitated brine from the Solar Evaporation Ponds, and worker trips for maintenance purposes.
  - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**: mobile sources include employee trips and maintenance trips to the remaining Program facilities.

- Solid Waste: solid waste sources include waste generated by workers and operation of the Program facilities, and precipitated brine from the Solar Evaporation Ponds.
    - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**: solid waste sources include waste generated by workers and operation of the BBARWA WWTP facilities.
- Water Use: outdoor water use for landscaping and operational purposes falls under this category.
    - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**: water use includes outdoor water use associated with the BBARWA WWTP upgrade facilities.
- Stationary Sources: stationary sources include backup generators and fire pumps.
    - **Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project**: stationary sources include up to 3 fire pumps.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

Emissions Summary Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

For construction emissions, GHGs are quantified and amortized over the life of the BBARWA WWTP Upgrades Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the BBARWA WWTP Upgrades Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-6** in combination with operational emissions.

As shown in Table 4.9-6, the BBARWA WWTP Upgrades Project will result in approximately 1,056 $MTCO_2e$/yr from construction and operational activities of this component of the proposed Program.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 $MTCO_2e$/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 1,056 $MTCO_2e$/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project, it was estimated that up to 5,875 CY of asphalt/concrete export would be needed.

Grading Activities

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project, it was estimated that up to 19,940 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program

Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-8**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-14** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-14** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Operational Scenario Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project</u>

Operations would generate CO_2, CH_4, and N_2O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
    - **Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project**, area sources include architectural coatings, including asphalt and concrete.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or

at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

Emissions Summary Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

For construction emissions, GHGs are quantified and amortized over the life of the Stanfield Marsh/Big Bear Lake Discharge Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Stanfield Marsh/Big Bear Lake Discharge Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-9** in combination with operational emissions.

As shown in **Table 4.9-9**, the Stanfield Marsh/Big Bear Lake Discharge Project will result in approximately 61 $MTCO_2e$/yr from construction and operational activities of this component of the proposed Program.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 $MTCO_2e$/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 61 $MTCO_2e$/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Construction Scenario

Grading Activities

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 3: Shay Pond Discharge Project, it was estimated that up to 7,020 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-11**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-20** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-20** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Operational Scenario Replenish Big Bear Component 3: Shay Pond Discharge Project</u>

Operations would generate CO_2, CH_4, and N_2O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
    - **Replenish Big Bear Component 3: Shay Pond Discharge Project**, area sources include architectural coatings, including asphalt and concrete.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would

require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

Emissions Summary Replenish Big Bear Component 3: Shay Pond Discharge Project

For construction emissions, GHGs are quantified and amortized over the life of the Shay Pond Discharge Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Shay Pond Discharge Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-12** in combination with operational emissions.

As shown in **Table 4.9-12**, the Shay Pond Discharge Project will result in approximately 25 $MTCO_2e$/yr from construction and operational activities of this component of the proposed Program.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 $MTCO_2e$/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 25 $MTCO_2e$/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG

impacts would be less than significant.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to 2 monitoring wells.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 4: Shay Pond Conveyance Pipeline, it was estimated that up to 710 CY of asphalt/concrete export would be needed.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on Table 4.9-14.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-26** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-26** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

Operational Scenario Replenish Big Bear Component 4: Solar Evaporation Ponds Project

Operations would generate CO_2, CH_4, and N_2O emissions. Primary emissions sources

would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
    - **Replenish Big Bear Component 4: Solar Evaporation Ponds**, area sources include architectural coatings, including asphalt and concrete, and landscaping equipment.
- Mobile Source: mobile sources include trips generated to and from the proposed facilities including employee trips, hauling trips for waste sources such as precipitated brine from the Solar Evaporation Ponds, and worker trips for maintenance purposes.
    - **Replenish Big Bear Component 4: Solar Evaporation Ponds**, mobile sources include employee trips and maintenance trips to BBARWA facilities, as well as hauling trips for the precipitated brine.
- Solid Waste: solid waste sources include waste generated by workers and operation of the Program facilities, and precipitated brine from the Solar Evaporation Ponds.
    - **Replenish Big Bear Component 4: Solar Evaporation Ponds**, solid waste sources include precipitated brine from the Solar Evaporation Ponds

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

Emissions Summary Replenish Big Bear Component 4: Solar Evaporation Ponds Project

For construction emissions, GHGs are quantified and amortized over the life of the Solar Evaporation Ponds Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Solar

Evaporation Ponds Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-15** in combination with operational emissions.

As shown in **Table 4.9-15**, the Solar Evaporation Ponds Project will result in approximately 136 $MTCO_2e$/yr from construction and operational activities of this component of the proposed Program.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 5: Sand Canyon, it was estimated that up to 1,500 CY of concrete/asphalt export would be needed.

Grading Activities

The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip

lengths of 100 miles.

Replenish Big Bear Component 5: Sand Canyon, it was estimated that up to 7,210 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. A detailed summary of construction equipment is provided on **Table 4.9-17**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-32** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-32** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

Operational Scenario Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at

Sand Canyon.

Operations would generate CO_2, CH_4, and N_2O emissions. Primary emissions sources would include:

- Area Source: area sources include architectural coatings, including asphalt, concrete, and parking areas, and landscaping equipment.
    - **Replenish Big Bear Component 5: Sand Canyon Recharge Project**, area sources include architectural coatings, including interior and exterior coatings, asphalt and concrete, and landscaping equipment.
- Energy Source: energy sources include natural gas and electricity consumption.
    - **Replenish Big Bear Component 5: Sand Canyon Recharge Project**, electricity and natural gas demands are included herein.
- Stationary Sources: stationary sources include backup generators and fire pumps.
    - **Replenish Big Bear Component 5: Sand Canyon Recharge Project**, stationary sources include 1 fire pump.

Mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. While it is anticipated that the Program would require intermittent maintenance to be, such maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. As such, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. As this Program involves the construction of monitoring wells, Conveyance Facilities and Ancillary Facilities, evaporation ponds, advanced water purification facilities, and associated improvements, heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the proposed Program. Additionally, based on information provided by BBARWA and the Program Team, the Program will include the installation of solar at the BBARWA WWTP and Administration Building sites, and/or at the BBCCSD property adjacent to the BBARWA Administration Building site, which is expected to generate approximately 3,652,117 kWhs per year.

Emissions Summary Replenish Big Bear Component 5: Sand Canyon Recharge Project

For construction emissions, GHGs are quantified and amortized over the life of the Sand Canyon Recharge Project. SCAQMD recommends calculating the total GHG emissions for construction activities by amortizing the emissions over the life of the Sand Canyon Recharge Project by dividing it by a 30-year project life then adding that number to the annual operational phase GHG emissions. As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions.

The amortized construction emissions are presented in **Table 4.9-18** in combination with operational emissions.

As shown in **Table 4.9-18**, the Sand Canyon Recharge Project will result in approximately 221 $MTCO_2e$/yr from construction and operational activities of each component of the proposed Program.

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 $MTCO_2e$/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

As GHG emissions are inherently cumulative, the threshold here applied to the whole of the Program determines the level of significant. However, if evaluated on a singular project basis, this individual Program Component would result in 221 $MTCO_2e$/yr, which falls below the SCAQMD threshold for GHG emissions. Thus, on a singular project basis, GHG impacts would be less than significant.

<u>Emissions Summary Replenish Big Bear Program: Whole Program</u>

The amortized construction emissions are presented in **Table 4.9-19** in combination with operational emissions.

As shown in **Table 4.9-19**, the Program will result in approximately 1,499.63 $MTCO_2e$/yr from construction and operational activities of each component of the proposed Program (reference the construction equipment assumptions shown in **Table 4.9-191** and the discussion above of operational energy source emissions).

BBARWA has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions for both construction and operations. However, for the purposes of this GHG analysis, the SCAQMD methodology is proposed, wherein operational and amortized construction emissions are combined to determine the total GHG emissions generated by a project. A screening threshold of 3,000 $MTCO_2e$/yr to determine if additional analysis is required is an acceptable approach. This approach is a widely accepted screening threshold used by numerous cities and counties in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* (SCAQMD Interim GHG Threshold). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required.

The Program will result in approximately 1,499.63 $MTCO_2e$/yr from construction and operational activities. As such, the construction and operation of the proposed Program would not exceed the SCAQMD's recommended numeric threshold of 3,000 $MTCO_2e$. Thus, the Program would not result in a cumulatively considerable impact with respect to GHG emissions.

2. Emission Reduction Plans

Threshold: Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of greenhouse gases?

Finding: Less than significant. (Draft EIR, pp. 4-529 – 4-533)

Explanation:

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

CARB 2022 Climate Change Scoping Plan

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The BBARWA WWTP Upgrades Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination."[1] By augmenting local water supplies, the Replenish Big Bear Program, which includes the BBARWA WWTP Upgrades Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the BBARWA WWTP Upgrades Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

Conclusion

As discussed above, the BBARWA WWTP Upgrades Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-6**, the BBARWA WWTP Upgrades Project m's GHG emissions are below the 3,000 $MTCO_2e$/yr and 10,000 $MTCO_2e$/yr thresholds. As concluded in issue (a), above, the proposed project

[1] CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed 09/06/23).
[1] CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed 09/06/23).

would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed BBARWA WWTP Upgrades Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

CARB 2022 Climate Change Scoping Plan

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Stanfield Marsh/Big Bear Lake Discharge Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination."[2] By augmenting local water supplies, the Replenish Big Bear Program, which includes the Stanfield Marsh/Big Bear Lake Discharge Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Stanfield Marsh/Big Bear Lake Discharge Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

Conclusion

As discussed above, the Stanfield Marsh/Big Bear Lake Discharge Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-7**, the Stanfield Marsh/Big Bear Lake Discharge Project's GHG emissions are below the 3,000 $MTCO_2e$/yr and 10,000 $MTCO_2e$/yr thresholds. As concluded in issue (a), above, the proposed project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Stanfield Marsh/Big Bear Lake Discharge Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

CARB 2022 Climate Change Scoping Plan

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from

[2] CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed 09/06/23).
[2] CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed 09/06/23).

mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Shay Pond Discharge Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination."[3] By augmenting local water supplies, the Replenish Big Bear Program, which includes the Shay Pond Discharge Project would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Shay Pond Discharge Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

Conclusion

As discussed above, the Shay Pond Discharge Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-8**, the Shay Pond Discharge Project's GHG emissions are below the 3,000 $MTCO_2e$/yr and 10,000 $MTCO_2e$/yr thresholds. As concluded in issue (a), above, the proposed project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Shay Pond Discharge Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

<u>Replenish Big Bear Component 4: Solar Evaporation Ponds Project</u>

CARB 2022 Climate Change Scoping Plan

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Solar Evaporation Ponds Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation

[3] CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed 09/06/23).
[3] CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed 09/06/23).

and recharge, and potentially brackish and seawater desalination."[4] By augmenting local water supplies, the Replenish Big Bear Program, which includes the Solar Evaporation Ponds Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Solar Evaporation Ponds Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

Conclusion

As discussed above, the Solar Evaporation Ponds Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-9**, the Solar Evaporation Ponds Project's GHG emissions are below the 3,000 $MTCO_2e$/yr and 10,000 $MTCO_2e$/yr thresholds. As concluded in issue (a), above, the proposed Solar Evaporation Ponds Project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Solar Evaporation Ponds Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

<u>Replenish Big Bear Component 5: Sand Canyon Recharge Project</u>

CARB 2022 Climate Change Scoping Plan

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Sand Canyon Recharge Project would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination."[5] By augmenting local water supplies, the Replenish Big Bear Program, which includes the Sand Canyon Recharge Project, would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Sand Canyon Recharge Project would not conflict with the 2022 Scoping Plan, and no impact would occur.

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[4] CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed 09/06/23).
[4] CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed 09/06/23).
[5] CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed 09/06/23).
[5] CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed 09/06/23).

Conclusion

As discussed above, the Sand Canyon Recharge Project involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-10**, the Sand Canyon Recharge Project's GHG emissions are below the 3,000 $MTCO_2e$/yr and 10,000 $MTCO_2e$/yr thresholds. As concluded in issue (a), above, the proposed Sand Canyon Recharge Project would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Sand Canyon Recharge Project will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

Replenish Big Bear Program: Whole Program

CARB 2022 Climate Change Scoping Plan

The 2022 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The 2022 Scoping Plan builds on the 2017 Scoping Plan. The Program would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include substantial new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. As a result, the 2022 Scoping Plan and by extension the 2017 Scoping Plan calls for "increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination."[6] By augmenting local water supplies, the Replenish Big Bear Program would offset energy demands associated with obtaining other sources of water supply in furtherance of this goal of the 2022 Scoping Plan. Therefore, the Program would not conflict with the 2022 Scoping Plan, and no impact would occur.

Conclusion

As discussed above, the Program involves construction activity and does not propose a trip-generating land use or facilities that would generate any substantive amount of on-going GHG emissions. As presented in **Table 4.9-11**, the Program's GHG emissions are below the 3,000 $MTCO_2e$/yr and 10,000 $MTCO_2e$/yr thresholds. As concluded in issue (a), above, the proposed Program would not have the potential to generate a significant amount of GHGs emissions. As such, the proposed Program will not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Impacts are therefore considered less than significant.

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[6] CARB, 2021. California Greenhouse Gas Emissions for 2000 to 2019 Trends of Emissions and Other Indicators. ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed 09/06/23).
[6] CARB, 2017. California's 2017 Climate Change Scoping Plan. December 14, 2017. https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf (accessed 09/06/23).

I. HAZARDS AND HAZARDOUS MATERIALS

1. Hazards Near Schools

Threshold: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Finding: No impact. (Draft EIR, pp. 4-572 – 4-573)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Based on a review of the locations of schools in the vicinity of the proposed conveyance pipeline alignments (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed conveyance pipeline alignments (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Based on a review of the locations of schools in the vicinity of the proposed Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Ancillary Facilities. While the precise locations of the monitoring wells downstream of Sand Canyon are presently unknown, there are no schools located in the Sand Canyon area. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than

0.25 miles from the proposed Ancillary Facilities. While the precise locations of the monitoring wells downstream of Sand Canyon are presently unknown, there are no schools located in the Sand Canyon area. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Program Category 3: Solar Evaporation Ponds

Construction: Based on a review of the locations of schools in the vicinity of the proposed Solar Evaporation Ponds (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Solar Evaporation Ponds. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed Solar Evaporation Ponds (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed Solar Evaporation Ponds. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction or operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Program Category 4: BBARWA WWTP Upgrades

Construction: Based on a review of the locations of schools in the vicinity of the proposed BBARWA WWTP upgrades (i.e. AWPF), evaporation ponds, and Ancillary Facilities (**Figure 4.10−8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Operation: Based on a review of the locations of schools in the vicinity of the proposed BBARWA WWTP upgrades (i.e. AWPF), evaporation ponds, and Ancillary Facilities (**Figure 4.10-8**), the schools in the area are at a greater distance than 0.25 miles from the proposed alignments. Furthermore, no proposed schools are located within the vicinity of any Program component. Thus, it is not possible that construction or operation of the proposed Program facilities would occur within one-quarter mile of a school, and therefore, would have no potential to emit hazardous emissions or handle hazardous or acutely

hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school, and no impact would occur.

Other Physical Changes to the Environment

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh, utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY.

These other physical changes to the environment would not involve construction or operation of any new facilities. Thus, these other physical changes to the environment would have no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Combined Program Categories

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required.

Level of Significance After Mitigation: Less Than Significant

Cumulative Impact Analysis

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, emissions of hazardous emissions or handling of hazardous materials, substances, and/or waste within one-quarter mile of an existing or proposed school becomes a greater possibility with potential for cumulative impacts to occur. All cumulative development would be subject to Federal, State, and local regulations related to the routine transportation, use, storage, and disposal of hazardous materials, including the proposed Program. Though compliance with the regulatory framework for proposed Program facilities, cumulative impacts would not be significant and the proposed Program projects contributions would not be cumulatively considerable.

2. Public Airports

Threshold: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Finding: No impact. (Draft EIR, pp. 4-578 – 4-581)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: A review of the Ancillary Facility locations indicates that no potential exists for the Ancillary Facilities to be installed within one of the three airport safety review areas. As these facilities would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during construction. No impacts are anticipated.

Operation: A review of the Ancillary Facility locations indicates that no potential exists for the Ancillary Facilities to be installed within one of the three airport safety review areas. As these facilities would not be installed within the Big Bear Airport safety review area, and no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during operation. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Construction: A review of the Solar Evaporation Ponds location indicates that no potential exists for the Solar Evaporation Ponds to be installed within one of the three airport safety review areas. As the Solar Evaporation Ponds would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during construction. No impacts are anticipated.

Operation: A review of the Solar Evaporation Ponds location indicates that no potential exists for the Solar Evaporation Ponds to be installed within one of the three airport safety review areas. As the Solar Evaporation Ponds would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during operation. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

Construction: A review of the BBARWA WWTP Upgrades location indicates that no potential exists for the BBARWA WWTP to be installed within one of the three airport safety review areas. As the BBARWA WWTP Upgrades would not be installed within the Big Bear Airport safety review area, no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during construction. No impacts are anticipated.

Operation: A review of the BBARWA WWTP Upgrades location indicates that no potential exists for the BBARWA WWTP to be installed within one of the three airport safety review areas. This Program Category would install solar panels would be located adjacent to existing solar panels at BBARWA, which have not resulted in glare impacts to nearby sensitive receptors or to aircraft fly-overs. The addition of new solar panels is not anticipated to result in glare impacts or other hazards to aircraft fly-overs, particularly given that the BBARWA WWTP Site is located outside of the Big Bear Airport land use compatibility zone. Further, solar panels typically result in less glare than standard home

window glass,[7] and are designed to absorb light, rather than reflect it. Thus, airport compatibility impacts from the installation of the solar panels are not anticipated. As the BBARWA WWTP Upgrades would not be installed within the Big Bear Airport safety review area, and no potential to be exposed to safety hazard or excessive noise due to proximity to the Big Bear Airport exists during operation. No impacts are anticipated.

Other Physical Changes to the Environment

The additional Program Water discharged to Big Bear Lake, change in water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. No impacts are anticipated.

The LV Site is located within a designated Low-Altitude/High Speed Military Airspace overlay, as shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas Map shown on **Figure 4.10-13**. As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, maintaining the site, and discharge of effluent to the onsite recharge basins, no greater potential to result in a safety hazard or excessive noise for people residing or working in the vicinity of the LV Site than that which presently exists would occur as a result of implementation of the proposed Program. No impacts are anticipated.

3. Emergency Plans

Threshold: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Finding: Less than significant. (Draft EIR, p. 4-583 – 4-585)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The proposed facilities under Program Category 2 would not impair the implementation of or physically interfere with adopted emergency response plans or emergency evacuation plans. There would be no installation of pipelines or other facilities within ROW surrounding the individual facility sites under Program Category 2, making the possibility of interfering with evacuation routes highly unlikely. The truck trips associated with construction activities would not require closure of any roadways and would only temporarily slow traffic near project sites. All project facilities would be contained within the boundaries of the project sites, and project-related vehicles would not block existing street access to the sites. Therefore, no impact related to an emergency evacuation plan would occur during the construction of Program Category 2 facilities.

Operation: Operation of the proposed Program Category 2 facilities would not impair or

[7] https://www.nrel.gov/state-local-tribal/blog/posts/research-and-analysis-demonstrate-the-lack-of-impacts-of-glare-from-photovoltaic-modules.html

physically interfere with an adopted emergency response plan or emergency evacuation plan. The operation of the proposed facilities would not interfere with traffic flows, as BBARWA, BBCCSD, BBLDWP, and BBMWD do not anticipate any employees in support of the Ancillary Facilities. Additionally, it is possible that an increase in routine maintenance trips as a result of additional facilities managed by the agencies supporting the proposed Program could occur, but given the limited number of additional facilities that would be installed requiring routine maintenance outside of BBARWA's WWTP facility (3 conveyance pipeline alignments, 1 pump station, and 2 monitoring wells), it is not anticipated that additional routine maintenance trips in support of operational activities would conflict with the surrounding roadways such that a significant impact to emergency response and evacuation plants would occur. Impacts related to an adopted emergency or evacuation plan would be less than significant during operation.

Program Category 3: Solar Evaporation Ponds

Construction: The proposed facilities under Program Category 3 would not impair the implementation of or physically interfere with adopted emergency response plans or emergency evacuation plans. There would be no installation of pipelines or other facilities within ROW surrounding Program Category 3, making the possibility of interfering with evacuation routes highly unlikely. The truck trips associated with construction activities would not require closure of any roadways and would only temporarily slow traffic near project sites. All project facilities would be contained within the boundaries of the project sites, and project-related vehicles would not block existing street access to the sites. Therefore, no impact related to an emergency evacuation plan would occur during the construction of Program Category 3 facilities

Operation: Operation of the proposed Program Category 3 facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. The operation of the proposed facilities would not interfere with traffic flows, as BBARWA, BBCCSD, BBLDWP, and BBMWD do not anticipate a substantial increase in the number of employees working at these agencies as a result of implementation of the Program (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program). It is anticipated the operations at the BBARWA WWTP/AWPF would be the only site operation within the Program Area that would require on-site personnel, which could be attributed to the Solar Evaporation Ponds. Given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, no substantial increase in daily employee trips to BBARWA's WWTP site such that a significant impact to emergency response and evacuation plants would occur. Impacts related to an adopted emergency or evacuation plan would be less than significant during operation.

Program Category 4: BBARWA WWTP Upgrades

Construction: The proposed facilities under Program Category 4 would not impair the implementation of or physically interfere with adopted emergency response plans or emergency evacuation plans. There would be no installation of pipelines or other facilities within ROW surrounding Program Category 4, making the possibility of interfering with evacuation routes highly unlikely. The truck trips associated with construction activities

would not require closure of any roadways and would only temporarily slow traffic near project sites. All project facilities would be contained within the boundaries of the project sites, and project-related vehicles would not block existing street access to the sites. Therefore, no impact related to an emergency evacuation plan would occur during the construction of Program Category 4 facilities.

Operation: Operation of the proposed Program Category 4 facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. The operation of the proposed facilities would not interfere with traffic flows, as BBARWA, BBCCSD, BBLDWP, and BBMWD do not anticipate a substantial increase in the number of employees working at these agencies as a result of implementation of the Program (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program). It is anticipated the operations at the BBARWA WWTP/AWPF would be the only site operation within the Program Area that would require on-site personnel, which could be attributed to the BBARWA WWTP Upgrades. Given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, no substantial increase in daily employee trips to BBARWA's WWTP site such that a significant impact to emergency response and evacuation plants would occur. Impacts related to an adopted emergency or evacuation plan would be less than significant during operation

Other Physical Changes to the Environment

The additional Program Water discharged to Big Bear Lake, change in water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Thus, no impacts related to an adopted emergency or evacuation plan are anticipated to occur.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, no greater potential to conflict with an adopted emergency or evacuation plan than that which presently exists would occur as a result of implementation of the proposed Program.

J. HYDROLOGY AND WATER QUALITY

1. Groundwater Supplies

Threshold: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

Finding: Less than significant. (Draft EIR, pp. 4-667 – 4-765)

Explanation:

This section evaluates potential impacts to groundwater supply as a result of

implementation of Program. The information presented herein is abstracted from the following reports:

- Michael A. Anderson, 2021. Big Bear Lake Analysis: Replenish Big Bear Final Report. (**Appendix 2**)

- Michael A. Anderson, 2022. Replenish Big Bear: Modeling of Higher Flows and with Zero TP Loads. (**Appendix 10**)

- Thomas Harder & Company, 2022. Bear Valley Basin Groundwater Sustainability Plan. (**Appendix 8**)

- Thomas Harder & Company, 2017. Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location. Dated December 22, 2017. (**Appendix 6**)

- Thomas Harder & Company, 2017. Sand Canyon Recharge Evaluation Technical Memorandum. Dated November 29, 2017. (**Appendix 4**)

Standfield Marsh/Big Bear Lake Discharge – Impacts on Groundwater Sustainability

As part of the Program, BBARWA will discharge Program Water to the east end of Stanfield Marsh, then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under the Stanfield Cutoff. This Program Component does not impact groundwater supplies, so it was not evaluated.

Shay Pond Discharge – Impacts on Groundwater Sustainability

As part of the Program, up to 80 AFY of Program Water is proposed to be discharged to Shay Pond. Please note that this Program Component is not planned for the near future. When implemented, the Shay Pond Discharge will replace potable water currently discharged to the water body to maintain the water flow through Shay Pond, which is shown on **Figure 3-19**. Up to 80 AFY of Program Water will be sent to Shay Pond. Based on the average volumes of discharges between 2012 and 2022, BBCCSD discharges approximately 50 AFY of potable water into Shay Pond to maintain the Stickleback population. The Shay Pond Discharge will help the groundwater supply by adding a new source of water and allowing for more water to stay in the Bear Valley Basin. Therefore, the Shay Pond Discharge will also help with groundwater sustainability. The impacts to the groundwater quality are discussed in the Shay Pond Discharge – Impacts on Surface Water Quality section. Because Shay Pond would help keep approximately 50 AFY of groundwater in the Bear Valley Basin by changing the water source used to support the Stickleback at Shay Pond to Program Water, the Shay Pond Discharge would have a less than significant potential to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management, as it will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in the Bear Valley Basin. Impacts would be less than significant.

LV Site – Impacts on Lucerne Valley Basin Groundwater Sustainability

BBARWA plans to maintain the existing Lucerne Valley discharge location (**Figure 3-35**). All WWTP process water in excess of the new treatment train's 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing LV Site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP. This section evaluates whether the reduced flows to the LV Site has the potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management.

Error! Reference source not found.**9** shows the historical data of disinfected secondary effluent discharge to the LV Site from 2005-2022, which shows the decrease in flows. Error! Reference source not found.**10** shows the average monthly BBARWA flows sent to LV Site from 2012-2022. Based on this data, between 2012-2022, BBARWA sent about 2,190 AFY of water to the LV Site, of which 1,330 AFY were used for crop irrigation and 860 AFY were discharged into the unlined basin. It is estimated that of the 1,330 AFY used for irrigation, about 560 AFY are used by alfalfa or grain, and the remaining 770 AFY is applied in excess. Thus, in total, about 1,610 AFY are assumed to percolate the Lucerne Valley Basin under the current operational conditions of the LV Site (see Error! Reference source not found.). Note that the MBA Watermaster assumes that the BBARWA discharge of undisinfected secondary effluent to the LV Site contributes 2,000 AFY to the Este Subbasin (which encompasses the Lucerne Valley Basin) water supply. Based on the Water Balance conducted by WSC utilizing data from actual BBARWA discharge operations to the LV Site, it is assumed that the actual amount of water recharged to the Lucerne Valley Basin is less than the amount assumed by the MBA Watermaster, at 1,610 AFY.

As discussed under **Subsection 4.11.6.2**, the total water supply for the Este Subbasin was 4,706 AF, while the outflow and consumptive use was 4,706 AF. To maintain proper water balances within each Subarea of the MBA, the 1996 Judgment establishes a decreasing FPA in each Subarea. According to the MBA Watermaster Annual Report for Water Year 2021-2022, the PSY for Este Subbasin will be reevaluated within the next year and a recommendation provided to MBA Watermaster and the Riverside County Superior Court during the 2023-24 Water Year. The 2022-2023 FPA is 12,523 AFY, which is greater than the PSY of 4,728. As the FPA remains higher than PSY in Este Subbasin, the MBA Watermaster determined that additional rampdown is warranted. It is recommended that Este Subbasin FPA be reduced by 5% to 55% for Water Year 2023-24. This is relevant because the proposed reduction in discharge to the Lucerene Valley Basin would have the potential to further decrease the PSY of the Este Subbasin.

With the implementation of the Program, the flows BBARWA will send to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year a significant volume could be sent to the LV Site, such as in a year like in 2011, up to 1,050 AFY could have been sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future monthly and annual flows to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site. This volume was estimated by evaluating and averaging daily flows between 2005-2023 that exceeded the 2.2 MGD capacity. The projected monthly volumes are shown in **Exhibit 4.11-14**.

The reduction in discharge would limit the ability to continue the use of the site (currently using 190 acres of the 480-acre site to grow crops). Based on discussions with the farmer, it may be possible to grow grain on approximately 40 acres of the LV Site during the winter month. To estimate the amount of water that would recharge the Lucerne Valley Basin as a result of Program implementation, it was assumed that the average 340 AFY that would be discharged to the LV Site would continue to be utilized by the farmer from December through May of each year to grow grain. Flows between June and November would be sent to the unlined discharge ponds.

For the water used for irrigation, it was assumed that average monthly flows applied in excess of crop (i.e., grain) needs percolate into the Lucerne Valley Basin. Excess water was estimated by calculating the total water depth applied to the farmed acreage (irrigation plus precipitation), subtracting the water demand for the crops irrigated. The crop irrigation requirements were estimated using average evapotranspiration and rainfall data from 2005-2023 gathered from the CIMIS Station 117 in Victorville, CA, which is based on grass as the reference crop. Crop specific demand was estimated using Equation 1, where Kc is a seasonal crop coefficient specific to each crop. This Kc value was determined using the FAO Grass-Based Crop Coefficients method outlined in *ASCE Manual No. 70: Evaporation, Evapotranspiration, and Irrigation Water Requirements*.[8]

It is estimated that between December and May about 330 AFY would be available to irrigate 40 acres of grain. Since the grains have a very low crop coefficient demand in winter months, most of the 330 AFY will percolate.

Between June and November, about 10 AFY will be sent to the unlined discharge basins for disposal. Due to the small volumes and rapid percolation rates of the unlined discharge basins it is assumed that most of the water will percolate with minimal evaporation. In total, about 340 AFY are assumed to percolate the Lucerne Valley Basin under the future operational conditions of the LV Site (see **Exhibit 4.11-17**). Given this, the Program has a potential to result in a decrease in recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to 340 AFY under future BBARWA operations.

The LV Site would continue to be owned by BBARWA, and BBARWA would ensure that the LV Site is maintained. However, if the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to the cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the excess flows of undisinfected secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Additionally, under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the LV Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and

[8] $ETc = Kc * ETo$
Equation 1: Crop-Specific Evapotranspiration Rate

eco-conscious weed killing applications;

- Planting cover crops, such as sorghum to prevent dust migration; and/or
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

Based on the above discussion, the implementation of the Program has a potential to interfere with groundwater recharge of the Lucerne Valley Basin due to the reduction in discharge to the LV Site. The Program intends to retain the water supply generated in the Big Bear Valley rather than continuing to send this supply generated in the Big Bear Valley to the LV Site. The Program would create a new and sustainable water supply that can be utilized in the Big Bear Valley through the full advanced treatment facility upgrades at the existing BBARWA WWTP that would result in a Program Water supply. The effect of retaining this water supply in the Big Bear Valley is that the water that the MBA Watermaster and Stakeholders of the Este Subbasin/Lucerne Valley Basin would no longer be able to rely on the recharge of the average of 1,610 AFY from BBARWA operations. Instead, only an average of about 340 AFY may be recharged to the Este Subbasin/Lucerne Valley Basin under the Program, which has a potential to impact the MBA Watermaster's calculation of Physical Safe Yield of the Lucerne Valley Basin based on the reduction in recharge from BBARWA reaching the Lucerne Valley Basin. Additionally, the Program may result in a further reduction in FPA, which impacts stakeholders of the Este Subbasin/Lucerne Valley Basin's pumpage allowance, thereby further reducing the available water supply to stakeholders of the Lucerne Valley Basin. It is outside of the purview of this DPEIR to determine the actions of the MBA Watermaster in response to the anticipated reduction in supply of the Este Subbasin/Lucerne Valley Basin, as the Program Team have no authority to make such a determination. Regardless, this decrease in recharge to the Este Subbasin/Lucerne Valley Basin would be significant and unavoidable. Therefore, the Program would have a significant and unavoidable potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the Lucerne Valley Basin. No mitigation is available to reduce the potential for this significant and unavoidable impact to occur; however, BBARWA and the Program Team are working with the MBA Watermaster and MWA to find an alternative use for the excess secondary effluent discharged to the LV Site, should there be a desire to do so.

2. Erosion or Siltation

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Finding: Less than significant. (Draft EIR, pp. 4-676 – 4-677 – 4-678)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The proposed Conveyance Pipelines could alter the existing drainage patterns of the pipeline alignments. Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition and no operational impact would occur. However, the pipeline alignments may traverse through compacted dirt easements and ROW, which may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential for substantial erosion or siltation onsite or offsite. Operational impacts would be less than significant.

Other Physical Changes to the Environment

The Program would also result in other physical changes to the environment, including future release of Program Water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease of up to 2,200 AFY less discharge to the LV Site, for a total estimated annual discharge to Lucerne Valley averaging about 340 AFY.

These other physical changes to the environment would not involve construction or operation of any new facilities beyond those facilities associated with the Program designed to support this expansion as discussed herein. Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. However, the existing drainage patterns within Big Bear Lake would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, based on Big Bear Lake discharge points, no erosion or siltation would be anticipated to occur outside of the ordinary high-water mark of Big Bear Lake and Stanfield Marsh.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in

substantial erosion or siltation onsite or offsite is anticipated to occur.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation onsite or offsite is anticipated to occur.

3. Flooding

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Finding: Less than significant. (Draft EIR, pp. 4-681, 4-684)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The proposed Conveyance Pipelines could alter the existing drainage patterns of the pipeline alignments. However, the pipeline alignments may traverse through compacted dirt easements and ROW, which may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP), where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential on- or off-site flooding would be minimized to a less than significant level.

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential for flooding on- or off-site. Operational impacts would be less than significant.

Other Physical Changes to the Environment

Other physical changes to the environment would not involve construction or operation of any new facilities beyond those facilities associated with the Program designed to support this expansion as discussed herein. Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise

be present. However, the existing drainage patterns within Big Bear Lake would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, based on Big Bear Lake discharge points, no flooding on- or off-site would be anticipated to occur outside of the ordinary high-water mark of Big Bear Lake and Stanfield Marsh. This is particularly the case because the Program would operate in such a manner that unplanned spills at the dam would be controlled.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial flooding on- or off-site is anticipated to occur.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite.

4. Runoff

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantially additional sources of polluted runoff or impede or redirect flood flows?

Finding: Less than significant. (Draft EIR, pp. 4-687, 4-690)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The proposed Conveyance Pipelines could alter the existing drainage patterns of the pipeline alignments. However, the pipeline alignments may traverse through compacted dirt easements and ROW, which may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff

from construction sites, potential increase in the rate or amount of surface runoff in a manner which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Operational impacts would be less than significant.

Other Physical Changes to the Environment

Other physical changes to the environment would not involve construction or operation of any new facilities beyond those facilities associated with the Program designed to support this expansion as discussed herein. Based on Big Bear Lake discharge water quality, no polluted discharge would be anticipated to occur outside.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and based on the Program Water quality, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

5. Flood Flows

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which impede or redirect flood flows?

Finding: Less than significant. (Draft EIR, pp. 4-692, 4-696)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The construction activities associated with subsurface facilities, such as pipelines, could temporarily impact flows and would require coordination with SBCFCD and other applicable regulatory agencies before implementation if proposed facilities cross or are within jurisdictional waters or adjacent to flood control channels and easements. However, all other impacts would be the same as those discussed under questions c(i), c(ii), and c(iii). The construction of proposed conveyance pipeline alignments would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, the potential for exceeding the capacity of local stormwater drainage systems and thereby impeding or redirecting flows would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: Development of Conveyance Facilities within roadways would result in minimal changes in the roadway drainage pattern once installed as the roadways will be returned to their original or better condition, which would minimize the potential to impede or redirect flood flows. Operational impacts would be less than significant.

Other Physical Changes to the Environment

Impacts would be less than significant.

Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. Big Bear Lake is within a 1% annual chance flood area. However, the existing drainage patterns within Big Bear Lake would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, based on Big Bear Lake discharge points and that no new physical Program Components would be installed within Big Bear Lake itself, no potential to impede or redirect flood flows would be anticipated to occur.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows is anticipated to occur.

While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water. Thus, no significant potential to substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces,

in a manner which would substantially increase the rate or amount of surface runoff in a manner which would impede or redirect flood flows.

6. Flood Hazard

Threshold: In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to project inundation?

Finding: Less than significant. (Draft EIR, pp. 4-698 – 4-701-702)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Big Bear Lake and Stanfield Marsh are bodies of that could cause localized flooding next to their shores due to a seiche. According to the San Bernardino Countywide Plan EIR, the largest seiche ever recorded in San Francisco Bay—a much larger water body than either Big Bear Lake and Stanfield Marsh—was four inches high, after the 1906 San Francisco Earthquake (Corps 2000). Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing the risk of release of pollutants to due flooding. Thus, impacts would be less than significant.

Operation: The Conveyance Pipelines will be located underground; underground pipelines within floodplains are common and are often constructed further underground to avoid future negative impacts in the event of flood or inundation events. No housing or structures are proposed as part of this pipeline replacement project. Therefore, given that pipelines are generally not susceptible to significant adverse effects associated with flooding, and though damage to pipelines can occur, a pipeline can be repaired and placed back into operation with no loss of human life. Additionally, once constructed, the roadways, easements, and access roads within which the pipeline will be installed will be returned to their original condition, and therefore the project would not risk release of pollutants due to project inundation from flooding or seiche during operation. Thus, impacts would be less than significant.

Other Physical Changes to the Environment

Impacts would be less than significant.

Big Bear Lake discharge as a result of Program implementation would provide additional water to Big Bear Lake that would not otherwise be present. Big Bear Lake is located

within the delineated 1% annual chance flood area. However, Big Bear Lake levels would not be altered beyond that which could naturally occur from runoff and rainfall. Furthermore, the Program would operate in such a manner that unplanned spills at the dam would be controlled. As such, the Program operations would not cause a naturally occurring seiche to be exacerbated by higher Lake levels than that which could occur naturally given the existing circumstances regarding Lake management.

The change in water source at Shay Pond would not result in a change in flow to Shay Pond, and therefore, no significant potential to risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones is anticipated to occur.

As discussed under Subsection 4.11.7, Environmental Setting: Lucerne Valley Flood Hazards, LV Site been mapped within the DWR 100-year flood awareness zone, but is not located within any other delineated flood hazard zone by FEMA or San Bernardino County. While the discharge to the LV Site would be reduced as a result of Program implementation, the discharge locations are two unlined discharge basins within the LV Site that would not be altered by receipt of less water, nor would the water quality of the discharge change. Thus, no significant potential to risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones is anticipated to occur.

K. LAND USE AND PLANNING

1. Established Communities

Threshold: Would the Project physically divide an established community?

Finding: Less than significant. (Draft EIR, pp. 4-716 – 4-718)

Explanation:

The Program does not propose any action that could physically divide an established community. The physical division of an established community generally refers to the construction of features such as an interstate highway, railroad tracks, or permanent removal of a means of access, such as a local road or bridge, that would impact mobility within an existing community or between a community and outlying area.

Program Category 1: Conveyance Pipelines

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed Program would not physically divide an established community. No impacts are anticipated.

Operation: The proposed Conveyance Pipelines would be installed mostly within ROW, within compacted dirt pathways (Stanfield Marsh/Big Bear Lake Discharge Pipeline

Alignment Option traversing from the BBARWA WWTP west through Baldwin Lake and Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline alignments), or within a forested easement through two residential parcels (Sand Canyon pipeline) (refer to **Figure 3-28**). Once linear pipelines are constructed, the pipelines would be located belowground, and therefore would have no potential to physically divide an established community, as the roadways and dirt pathways would be returned to their original conditions for use. While the Sand Canyon pipeline easement between two parcels would require the easement to remain accessible, and therefore would not be fully revegetated and returned to its original condition, this would have no potential to divide the community within which the easement would be installed. This is because the two parcels would continue to serve as residences in spite of the easement, which would be located belowground. Thus, there are no features of the Conveyance Pipelines that would create a barrier or physically divide an established community. No impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed Ancillary Facilities would not physically divide an established community. No impacts are anticipated.

Operation: The proposed pump stations and wells at the BBARWA WWTP would be installed within an existing wastewater treatment facility that contains similar features to that which is proposed by this Program. Thus, the installation of these Ancillary Facilities within the BBARWA WWTP would have no potential to create a barrier or physically divide an established community. The Sand Canyon Booster Station would be located internally within the Resort Storage Pond site, which similar to the proposed facilities within the BBARWA WWTP site, would be consistent with that which presently exists within the Resort Storage Pond site, and, since installation would occur at existing facilities, there would be no potential to create a barrier or physically divide an established community.

The precise locations of the wells downstream of the Sand Canyon Recharge Area have not yet been determined; however, there are no features of these Ancillary Facilities that would create a barrier or physically divide an established community. This is because the Sand Canyon wells would be enclosed within small sites encompassing less than a 10’ x 10’ area. Such small facilities are anticipated to fit within existing sites containing water or wastewater infrastructure, or within small sites within to the monitoring wells would otherwise conform, particularly given that in many communities, Ancillary Facilities such as wells and channels are integrated into the landscape unobtrusively. As such, no impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed Solar Evaporation Ponds would not physically divide an established community. No impacts are anticipated.

Operation: As with the proposed pump stations and wells at the BBARWA WWTP discussed above, the Solar Evaporation Ponds would be installed within an existing wastewater treatment facility that contains similar features to that which is proposed by this Program. Thus, the installation of these evaporation ponds within the BBARWA WWTP would have no potential to create a barrier or physically divide an established community.

Program Category 4: BBARWA WWTP Upgrades

Construction: As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban areas, and the presence of construction would not physically divide an established community, particularly that access to any community within a proposed facility is installed would be maintained for the duration of construction. Thus, construction activities associated with implementation of the proposed BBARWA WWTP Upgrades would not physically divide an established community. No impacts are anticipated.

Operation: Impacts would be the same as those identified under Program Category 2 and 3, above. As with the proposed pump stations and wells at the BBARWA WWTP, and the Solar Evaporation Ponds at the BBARWA WWTP discussed above, the AWPF upgrades and solar arrays would be installed within an existing wastewater treatment facility that contains similar features to that which is proposed by this Program. Thus, the installation of these AWPF and solar arrays within the BBARWA WWTP would have no potential to create a barrier or physically divide an established community.

Other Physical Changes to the Environment

These other physical changes would have no potential to physically divide an established community. The change in water source distributed to Shay Pond in support of the Stickleback at Shay Pond would not result in a substantial change to the environment or existing operations intended to support this species. Furthermore, the increased Lake levels that would result from future release of Program Water into Big Bear Lake by way of Stanfield Marsh would not increase Lake levels beyond those that would naturally occur through rain, snowmelt, and runoff. The decrease in discharge to the LV Site would reduce the acreage that could be farmed within the site without additional sources of water, but the LV Site would continue to be maintained, as described in Chapter 3, Program Description, and thereby as it will remain operable, even with operations modified slightly, there would be potential to create a barrier or physically divide an established community.

No impacts are anticipated.

2. Conflicts With Plans

Threshold: Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Finding: Less than significant. (Draft EIR, pp. 4-719 – 4-724)

Explanation:

Project Consistency Analysis

The City of Big Bear Lake General Plan Program PS 3.1.5 encourages BBARWA to change its point of discharge from the LV Site to the Big Bear Valley, which the proposed Program would, in part, accomplish by way of reducing the discharge to the LV Site to enable the Program Water to be discharged within the Big Bear Valley. Furthermore, Program PS 3.1.4 encourages the City of Big Bear Lake to support upgrades to the secondary treatment system, which the Program proposes to accomplish through upgrading the WWTP treatment processes to full advanced treatment and upgrades to their existing treatment system. Additionally, while the Program will enable the LV Site to remain as back up when the inflow of wastewater exceeds AWPF treatment capacity, the proposed Program would enable discharge up to 2,200 AFY to the by way of Stanfield Marsh.

The City of Big Bear Lake General Plan Goal PS 3, Policy PS 3.1, Program PS 3.1.2, Program PS 3.1.3, and Program PS 3.1.6 intend that the City of Big Bear Lake supports adequate sewer systems, and contribute to long-range planning through supporting BBARWA sewer system upgrades, capital improvement projects, and expansion of BBARWA's existing facilities. The proposed Program would contribute to the implementation of a long-range plan, as the Program would provide for additional water resources to be utilized within Big Bear Valley, and would expand BBARWA's operations through cooperation with BBCCSD, BBLDWP, and BBMWD.

The City of Big Bear Lake General Plan Goal ER 3, Policy ER 3.3, Program 3.3.1, Program 3.3.2, Program 3.3.3, Goal PS 1, Policy PS 1.1, Goal PS 2, Policy PS 1.4, Program PS 2.1.2, and Program PS 2.1.3, and San Bernardino Countywide Plan Goal IU-1, Policy IU-1.3, Policy IU-1.8, Policy IU-1.10, and Policy IU-1.11 pertain to ensuring adequate water supply and adequate public services (including utilities) in the City of Big Bear Lake. The Program would provide for an additional recharge of 380 AFY to the Bear Valley Basin, amongst other Program benefits, thus, furthering resiliency of water supply for the City of Big Bear Lake and Big Bear Valley into the future. The Program benefits would also fit the parameters of RTP/SCS/Connect SoCal Goal 7, which is to adapt to a changing climate, as the Program would leverage wastewater to create an expanded water supply to further water supply resiliency into the future, as stated above. Furthermore, the provision of water is key to supporting a healthy and equitable community—to which **RTP/SCS/Connect SoCal Goal 6 pertains—**and to which the Program would further.

The City of Big Bear Lake General Plan Goal ER 5 and Policy ER 5.1 pertain to watershed management and protecting the water quality of Big Bear Lake. The Program would promote watershed management through the provision of an additional water source that can be utilized to enhance Big Bear Lake levels. The water quality of the Program Water that would be discharged into Big Bear Lake by way of Stanfield Marsh would be equal to or better than the existing Lake water quality in all cases except in the case of boron. Regardless, the treated effluent would meet the WQOs set by the Santa Ana Basin Plan, and therefore would meet the provisions of these goals and policies.

The City of Big Bear Lake General Plan Program OPR 3.1.1 pertains to supporting BBMWD in developing and operating its Stanfield Marsh Waterfowl/Wildlife Habitat Improvement Project. While the Program would not directly facilitate operations or maintenance of this project—which was implemented following filing the NOD for the Stanfield Marsh Waterfowl/Wildlife Habitat Improvement Project in 2003—the provision of additional water flow through Stanfield Marsh would enhance recreational opportunities and aquatic habitat, and support water quality improvements. Furthermore, the Program would provide continuous water supply to the Stanfield Marsh Wildlife and Waterfowl Preserve, and therefore would meet the provisions of this program.

San Bernardino Countywide Plan Goal NR-7 and Policy NR-7.1 pertains to promoting the ability of farmers to conduct sustainable and economically viable agricultural operations and to the protection of agricultural lands, particularly those that are economically viable. Additionally, RTP/SCS/Connect SoCal Goal 10 pertains to conservation of agricultural resources. The farming operations that presently occur at the LV Site would be decreased or would cease altogether due to the reduced discharge to the LV Site as a result of Program operations. According to the farmer who leases the LV Site from BBARWA, the LV Site was not planted in 2022, and may not be planted in 2023. The farmer has expressed that farming the site has not been particularly economically beneficial, particularly given that the resulting product can only be used by certain livestock due to the fact that secondary recycled water is used to grow the fodder crops.

Subchapter 4.3, Agricultural and Forestry Resources, determined that the proposed Program could result in up to 190 acres of Prime Farmland and Farmland of Statewide Importance under agricultural production at the LV Site to be allowed to lie fallow in the future. Removal of the source of water to support agricultural production at the LV site is an unavoidable consequence of the proposed Program. BBARWA's removal of the undisinfected secondary treated effluent would effectively remove the available water supply enabling the LV Site to remain Prime Farmland and Farmland of Statewide Importance, as an irrigated water source is needed to retain this designation based on the soils underlying the site. BBARWA does not hold any water rights in the MBA, or more specifically in the Lucerne Valley Basin, and therefore, the use of groundwater to continue agricultural production within this site, which is owned by BBARWA, is infeasible. Thus, the proposed Program would have a significant and unavoidable impact to the LV Site agricultural operations.

However, the San Bernardino Countywide Plan is clear in that, the Plan promotes conducting sustainable and economically viable agricultural operations. The existing farming operations would be considered sustainable as the farmer utilizes BBARWA's

undisinfected secondary effluent to grow fodder crops, instead of potable groundwater or imported water provided by MWA. The decrease in available undisinfected secondary effluent to sustain this operation would prevent the existing acreage of agricultural land from being utilized, but this is not an unusual circumstance, as in 2012, the conservation efforts resulting from the drought reduced the discharge from the BBARWA WWTP to the LV Site, and thereby reduced the acreage that could be farmed from 330 acres to the present available acreage at 190 acres. The SCAG Connect SoCal Goal 10 pertains to conservation of agricultural resources; while the underlying soils at the LV Site require irrigation to maintain Prime Farmland status, the Program would not remove this land as part of the creation of urban sprawl, to which the Connect SoCal Plan and Goals therein pertain. BBARWA will maintain the LV Site, enabling the continued reduced farming operations within a 40-acre portion of the LV Site, or if the LV site cannot continue to be farmed due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, or, if BBARWA ultimately pursues alternative uses for the treated effluent, an estimated total of 190-acres of farmland, about 40% of the site, would be removed from production, but again, the LV Site would remain under BBARWA's control.

As stated above, the use of groundwater to continue agricultural production within this site is currently infeasible, and furthermore, given the limited available water groundwater supply from the Lucerne Valley Basin (discussed in detail under **Subchapter 4.11**, Hydrology and Water Quality), and due to the reductions in pumping allowances assessed by MWA, it would not be sustainable to maintain the LV Site in agriculture utilizing potable water. Furthermore, Policy IU−1.5 pertains to agricultural water use by encouraging water efficient irrigation, and the use of non-potable and recycled water for agricultural uses. Additionally, the Connect SoCal promotes a "Green Region" suggesting that agricultural lands should reduce consumption of resources. The existing and past LV Site farming activities have supported this policy, and the Program would have a potential to enable the continuation of farming on a smaller (about 40 acre) area within the LV Site utilizing recycled water. This Policy furthers the concept that it would not be sustainable to pursue continued utilization of potable water in service of continuing agricultural farming operations within the existing 190-acre area. While the potential loss of agricultural operations and agricultural lands that is projected to occur as a result of Program implementation would be significant and unavoidable, given that the continued agricultural operation of the whole of the site (190 acres) would not be sustainable or feasible once the Program is implemented, the proposed Program does not conflict with this goal and policy.

San Bernardino Countywide Plan Goal NO-4, and Policies NR-4.1 and NR-5.3 pertain to the protection and preservation of scenic resources. The Program is anticipated to result in a less than significant impact to scenic resources, and furthermore, would preserve and enhance Big Bear Lake and Stanfield Marsh through the provision of additional water, which would result in higher lake levels, enhance recreational opportunities and aquatic habitat, and support water quality improvements. Therefore, the Program would meet the provisions of this is goal and these policies. Impacts would be less than significant.

Program Category 1: Conveyance Pipelines

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category.

The underground pipeline facilities at the Sand Canyon Recharge Area may require permanent easements. However, in general, a majority of proposed Conveyance Pipelines would be aligned through the existing public ROW, and existing easements owned or to be acquired by BBARWA or another implementing agency to reduce the number of easements required for construction and maintenance.

As stated above, the City of Big Bear Lake and San Bernardino County each have adopted General Plans that support the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case purified water (Program Water), in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the pipelines would be located belowground, it is not anticipated that any land use conflicts would occur. Impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: San Bernardino Countywide Plan that pertains to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed by the Solar Evaporation Ponds Project.

The Solar Evaporation Ponds would be located at a below ground level. The entirety of these improvements would be installed within BBARWA's WWTP site, and thus no property would need to be acquired to facilitate the implementation of this project. Thus, no potential to conflict with local General Plan land use designations or land use plans exists.

As stated above, the San Bernardino County has adopted the Countywide Plan that supports the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. Mitigation is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the Solar Evaporation Ponds would be developed within BBARWA's existing WWTP site, which is designated for the proposed use, it is not anticipated that any land use conflicts would occur. Impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed by this Program Category.

Proposed facilities include aboveground structures such as an upgrade to BBARWA's WWTP, monitoring wells, and pump stations at the BBARWA WWTP site. The entirety of these improvements would be installed within BBARWA's WWTP site, and thus no property would need to be acquired to facilitate the implementation of this project. Thus, no potential to conflict with local General Plan land use designations or land use plans

exists.

As stated above, the San Bernardino County has adopted the Countywide Plan that supports the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans. Mitigation is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As the BBARWA WWTP Upgrades would be developed within BBARWA's existing WWTP site, which is designated for the proposed use, it is not anticipated that any land use conflicts would occur. Impacts would be less than significant.

L. MINERAL RESOURCES

1. Regional and Statewide Mineral Resources

Threshold: Would the Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Finding: No impacts. (Draft EIR, 4-732 – 4-735)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 1 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Recharge Conveyance Pipeline. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but the Conveyance Facilities may be located on the Baldwin Lakebed where no mineral resources are known to occur. As construction would not conflict with existing mining, or preclude the use of the area for future mineral resource extraction, the installation of the Program Category 1 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, construction of Program Category 1 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 1, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 1 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Recharge Conveyance Pipeline. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date, and the installation of the pipeline would occur almost entirely within road ROW, or within an easement that contains forestry on residential property, and as such, these are not uses the would preclude future mining activities or be anticipated to be within a site that would be suitable for future mining activities as a result of existing uses of the pipeline alignment footprint. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but the Conveyance Facilities may be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the operation of the Program Category 1 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 1 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 2 facilities in relation to delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Booster Station. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date; the pump station would be located within the existing developed Resort Storage Pond site, and as such, these are not uses that would preclude future mining activities or be anticipated to be within a site that would be suitable for future mining activities as a result of existing uses. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. As construction would not conflict with existing mining, or preclude the use of the are for future mineral resource extraction, the installation of the Program Category 2 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, construction of Program Category 2 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 2, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for the Program Category 2 facilities in relation to

delineated MRZs (**Figure 4.13-2**) indicates that the only facilities that could be installed within an MRZ, specifically MRZ-3, is the Sand Canyon Booster Station. In Sand Canyon, a potential for hydrothermal mineral deposits may exist, but no mining development has been proposed to date; the pump station would be located within the existing developed Resort Storage Pond site, and as such, these are not uses that would preclude future mining activities or be anticipated to be within a site that would be suitable for future mining activities as a result of existing uses. The whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the operation of the Program Category 2 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 2 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 3 facilities in relation to delineated MRZs (**Figure 4.13−2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. As such, construction of Program Category 3 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 3, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 3 facilities in relation to delineated MRZs (**Figure 4.13−2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the operation of the Program Category 3 facilities has minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 3 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of the Program, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 4 facilities in relation to delineated MRZs (**Figure 4.13−2**) indicates that the whole of the footprint of BBARWA's WWTP

and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. As such, construction of Program Category 4 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Operation: Operation of Program Category 4, and the facilities proposed therein, will not cause the loss of a known mineral resource of value to the region or residents of the state or the loss of access to locally important mineral resource recovery sites. This is because a review of the potential locations for Program Category 4 facilities in relation to delineated MRZs (**Figure 4.13−2**) indicates that the whole of the footprint of BBARWA's WWTP and Administration Building is near areas that are delineated as MRZ-3, but these facilities will be located on the Baldwin Lakebed where no mineral resources are known to occur. Therefore, the installation and operation of the Program Category 4 facilities have minimal potential to have a direct adverse impact on mineral resources. As such, implementation of Program Category 4 facilities will not have a significant adverse potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. No impacts are anticipated.

Other Physical Changes

While the proposed Program would result in a reduction in discharge to BBARWA's LV Site, this site is not presently, nor has it in the past, been used for mining purposes. Thus, the altered discharge operations of the Program would have no potential to cause the loss of a known mineral resource of value to the region or residents of the state.

2. Locally-Important Mineral Resource

Threshold: Would the Project result in the loss of availability of a localy-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Finding: No impacts. (Draft EIR, pp. 4-735 – 4-737)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the Program Category 1 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program

footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 1 footprint are designated for mineral extraction, the construction of the proposed Conveyance Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Operation: Operation of the Program Category 1 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 1 footprint are designated for mineral extraction, the proposed Conveyance Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the Program Category 2 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 2 footprint are designated for mineral extraction, the construction of the proposed Ancillary Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Operation: Operation of the Program Category 2 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the

implementation of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 2 footprint are designated for mineral extraction, the proposed Ancillary Facilities would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the Program Category 3 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 3 footprint are designated for mineral extraction, the construction of the proposed Solar Evaporation Ponds would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated

Operation: Operation of the Program Category 3 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program Category would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 3 footprint are designated for mineral extraction, the proposed Solar Evaporation Ponds would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of the proposed Program Category 4 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates

that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the construction of the facilities proposed under this Program would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 4 footprint are designated for mineral extraction, the construction of the proposed BBARWA WWTP Upgrades would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Operation: Operation of the proposed Program Category 4 facilities has almost no potential to interfere with existing mining of mineral resources. As indicated in the **4.3.2, Environmental Setting**, a review of mining operations shown on **Figure 4.13-1,** indicates that there are no existing mining operations within the Program Area (refer to the **Figure 3-29** for a visual depiction of the facilities proposed as part of the Program), and furthermore, there are no existing mines shown on San Bernardino County's list of known mining operations in the Big Bear Valley. Furthermore, as discussed above, the implementation of the facilities proposed under this Program would not preclude future mining operations from occurring within areas designated as MRZ-3 in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan within the Program footprint. As such, as no mining operations exist within the Big Bear Valley, and no areas within the Program Category 4 footprint are designated for mineral extraction, the proposed BBARWA WWTP Upgrades would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

Other Physical Changes

While the proposed Program would result in a reduction in discharge to BBARWA's LV Site, this site is not presently, nor has it in the past, been used for mining purposes. Thus, the altered discharge operations of the Program would have no potential to cause the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impacts are anticipated.

M. NOISE

1. Noise Standards

Threshold: Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Finding: Less than significant. (Draft EIR, pp. 4-757 – 4-769)

Explanation:

OPERATIONAL NOISE IMPACTS

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

Operational Noise

The Program will include several improvements at the BBARWA WWTP; however, all new noise sources would be housed inside the new building and the two pumps at the BBARWA WWTP would be housed in CMU buildings. The proposed structures would achieve between 40 and 50 dBA in noise reduction from pump noise to exterior locations. The proposed pumps are anticipated to generate up to 60 dBA at 32 feet. Based on the anticipated reduction, pump noise would be 30 dBA L_{eq} less outside the building, which is a less than significant noise impact. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

Off-Site Traffic Noise

Once infrastructure is installed, an anticipated five new employees would be required to support Program facilities. These additional traffic volumes would be dispersed throughout the Big Bear Valley on local and regional roadways in proximity to the BBARWA WWTP site. The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Operational Noise

The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options will not generate any operational noise, except in the instance of repairs which would result in the same level of noise as constructing the pipelines (discussed under Construction Noise Impacts, below), which was determined to be less than significant. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

Off-Site Traffic Noise

Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. Thus, it is unlikely that individual projects implemented under this Program

Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

Replenish Big Bear Component 3: Shay Pond Discharge Project

Operational Noise

The Shay Pond Conveyance Pipelines will not generate any operational noise, except in the instance of repairs which would result in the same level of noise as constructing the pipelines (discussed under Construction Noise Impacts, below), which was determined to be less than significant. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

Off-Site Traffic Noise

Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

Replenish Big Bear Component 4: Solar Evaporation Ponds

Operational Noise

The Solar Evaporation Ponds will not generate any operational noise, except in the instance of repairs which would result in the same level of noise as constructing the solar evaporation ponds (discussed under Construction Noise Impacts, below), which was determined to be less than significant. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

Off-Site Traffic Noise

Once infrastructure is installed, an anticipated five new employees would be required to support Program facilities. These additional traffic volumes would be dispersed throughout the Big Bear Valley on local and regional roadways in proximity to the BBARWA WWTP/Solar Evaporation Ponds site. The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

Operational Noise

The following paragraph analyzes operational impacts for each of the facilities proposed under the Program. The proposed Sand Canyon Booster Station would be housed in a CMU building. The proposed structures would achieve between 40 and 50 dBA in noise reduction from pump noise to exterior locations. The proposed pumps are anticipated to generate up to 60 dBA at 32 feet. Based on the anticipated reduction, pump noise would be 30 dBA L_{eq} less outside the building, which is a less than significant noise impact. The Sand Canyon Recharge Conveyance Pipeline and Sand Canyon Conveyance Pipeline Discharge Outlet will not generate any operational noise, except in the instance of repairs which will be the same as constructing these facilities. Therefore, operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases, i.e., operational noise levels will not rise to a level of a significant impact and impacts would therefore be less than significant.

Off-Site Traffic Noise

Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. Thus, it is unlikely that individual projects implemented under this Program Component would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

CONSTRUCTION NOISE IMPACTS

Construction Noise Sources

Noise generated by the Program construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The Program construction noise sources are expected to include a combination of loaders, cranes, welders, drill rigs, diesel generators, concrete pumps and mixture of other construction equipment.

As discussed under the Description, Program construction activities are expected to occur in the following phases:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project
    - 2 pump stations: 20 gpm and 1,520 gpm
    - 1,350 LF of brine pipeline
    - Total building area: 40,000 SF total on site
    - Installation of 2 MW of solar on existing BBARWA property

Construction of the BBARWA WWTP Upgrades would include typical demolition, site

preparation, grading, building construction, and architectural coatings activities. It is anticipated that BBARWA WWTP Upgrades could be constructed while the Solar Evaporation Ponds are being constructed and have been modeled as simultaneous construction. **Figure 4.14-7** shows the construction noise source locations and receiver locations used to assess the construction noise levels from the BBARWA WWTP Upgrades.

- Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project
    - 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)

Construction of Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignments would include roadway demolition, pipeline installation, roadbed backfilling, grading, and paving activities. It is anticipated that Lake Discharge Pipelines would be constructed with multiple teams, however, pipeline construction would not physically overlap, rather improvements would occur in multiple locations along the alignment and represent individual events at multiple locations. For locations within existing paved ROW, pipeline construction is anticipated to extend 200-300 LF per day, while construction along unpaved areas would extend 400-500 LF per day. Pipeline construction is modeled as a single 200-foot-long moving point source along the alignment.

Receiver locations used to assess the construction noise levels from the Stanfield Marsh/Big Bear Lake Discharge Project would occur at various locations all along the pipeline alignment, with receivers as close as 30 feet from potential construction locations. The potential pipeline alignments are Shown in **Figure 4.14-8**. Receivers are assumed to occur approximately 30 feet from the center of all alignments in public ROW.

- Replenish Big Bear Component 3: Shay Pond Discharge Project
    - 6,310 LF of pipeline on unpaved area

Construction of the Shay Pond Discharge Project would include roadway demolition, pipeline installation, backfilling, and grading, activities along Shay Road. It is anticipated that Shay Pond Discharge Project would be constructed with multiple teams. Construction along unpaved areas pipeline construction activities would extend 400-500 LF per day. **Figure 4.14-9** shows the construction noise source locations and receiver locations used to assess the construction noise levels from the Shay Pond Discharge Project.

- Replenish Big Bear Component 4: Solar Evaporation Pond
    - 57 acres of evaporation ponds
    - 2 monitoring wells

The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then

removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction of the evaporation pond improvements would include typical site preparation, grading, and well drilling activities. It is anticipated that evaporation pond improvements could be constructed while the BBARWA WWTP Upgrades are being constructed and both these activities have been modeled as simultaneous construction. **Figure 4.14-7** shows the construction noise source locations and receiver locations used to assess the construction noise levels from the evaporation pond improvements.

- Replenish Big Bear Component 5: Sand Canyon Recharge Project
    - 1 pump station
    - 2 monitoring wells
    - 7,210 LF of conveyance pipeline
    - Erosion control/rip rap at pipeline discharge

Construction of the Sand Canyon Recharge Area component would include roadway demolition, pipeline installation, roadbed backfilling, grading, paving activities, and well drilling activities. It is anticipated that Sand Canyon Recharge Area improvements would be constructed with multiple teams. For locations within existing paved ROW, pipeline construction is anticipated to extend 200-300 LF per day, while construction along unpaved areas would extend 400-500 LF per day. **Figure 4.14-10** shows the pipeline locations and receiver locations used to assess the construction noise levels from the Sand Canyon Recharge Area improvements.

Reference Construction Noise Levels

This construction noise analysis was prepared using reference construction equipment noise levels from the FHWA published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels.[9] The RCNM equipment database, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The usage factor is a key input variable of the RCNM noise prediction model that is used to calculate the average L_{eq} noise levels using the reference L_{max} noise levels measured at 50 feet. **Table 4.14-5** provides a summary of the reference average L_{eq} noise levels used to describe each stage of construction.

Because few details are known at this time regarding construction of specific components of the Program, it is assumed that construction of any Program component may occur simultaneously. As a conservative measure, and in order to identify a reasonable worst-

[9] U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, January, 2006**.** *FHWA Roadway Construction Noise Model.*

case scenario, this analysis assumes that the Program would construct the certain features simultaneously.

Noise levels generated by heavy construction equipment can range from approximately 68 dBA to more than 80 dBA when measured at 50 ft. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 80 dBA measured at 50 ft from the noise source to the receiver would be reduced to 74 dBA at 100 ft from the source to the receiver and would be further reduced to 68 dBA at 200 ft from the source to the receiver. A default ground attenuation factor of 0.0 was used in the Computer Aided Noise Abatement (CadnaA) noise prediction model to account for hard site conditions

Construction Noise Levels

Construction Activities at the BBARWA WWTP Site: AWPF, Monitoring Wells, Solar Evaporation Ponds, and Pump Stations

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Program construction noise level impacts at the nearby sensitive receiver locations were completed for the construction of facilities that would be installed at the BBARWA WWTP site, which includes the BBARWA WWTP Upgrades Project and Solar Evaporation Ponds Project. Refer to **Figure 4.14-7,** which shows all sensitive receiver locations, and shows that the nearest sensitive receiver to the BBARWA WWTP site is 433' to the southeast. To assess a reasonable worst-case construction scenario and account for the dynamic nature of construction activities, the construction noise analysis models the equipment combination with the highest reference level as a moving point source within the construction area (site boundary). As shown on **Table 4.14-6**, the highest construction noise levels during the BBARWA WWTP, evaporation pond and monitoring wells construction activities noise levels are expected to range from 60.5 to 63.5 dBA L_{eq} at the nearest receiver locations shown on **Figure 4.14-7**. Appendix 8.1 of the NIA includes the detailed CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L_{eq}. Therefore, no mitigation is required for daytime construction activities at the BBARWA WWTP site as the noise levels experienced as the nearest sensitive received locations will below the daytime noise significance threshold, and therefore less than significant.

Construction Activities at the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options

Refer to **Figures 4.14-3** through **4.14-5,** which show all sensitive receiver locations. All other pipeline activities were modeled based on 200-foot and 400-foot lengths of pipeline installation activities, but due to the distances associated with the pipelines and the number of receiver locations, noise levels are predicted at a common distance of 30 ft from these activities for the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options.

As indicated Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option construction would occur within 30 ft of noise sensitive residential receivers along the majority of the Lake Discharge Pipeline and Sand Canyon alignments, at 30 feet pipeline

construction activity is estimated to generate noise levels up to 79.1 dBA L_{eq} for segments with paving and 75.6 dBA L_{eq} for the segments without paving. Appendix 8.4 of the NIA includes the CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L_{eq}. Therefore, construction noise impacts would be less than significant.

Construction Activities at the Shay Pond Discharge Project

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Program construction noise level impacts at the nearby sensitive receiver locations were completed for the Shay Pond Conveyance Pipeline construction. Refer to **Figure 4.14-3,** which shows all sensitive receiver locations.

As shown on **Table 4.14-7**, the highest construction noise levels during the Shay Pond Discharge Project construction activities noise levels are expected to range from 62.6 to 68.3 dBA L_{eq} at the nearest receiver locations, estimated at 20-feet from the pipeline centerline. Appendix 8.2 of the NIA includes the detailed CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L_{eq}. Therefore, no mitigation is required for daytime construction activities along the Shay Pond Discharge Project as the noise levels experienced as the nearest sensitive receiver locations will below the daytime noise significance threshold, and therefore less than significant.

2. Vibration

Threshold: Would the Project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Finding: Less than significant. (Draft EIR, pp. 4-770 – 4-775)

Explanation:

Construction Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on **Table 4.14-9**. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the Caltrans. To describe the vibration impacts Caltrans provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$.

Construction Vibration Levels

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration from typical Program construction activities would

cause only intermittent or transient, localized intrusion. The proposed Program's construction activities most likely to cause vibration impacts are:

Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to building, the vibration is usually short-term (transient) and is not of enough magnitude to cause building damage.

Trucks: Trucks hauling building materials to construction sites can be sources of transient vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

To assess the Program construction vibration levels, this analysis describes both the transient vibration levels associated with typical construction equipment activities and the continuous vibration levels associated with the well drilling activities.

Program Construction Activity Vibration Levels

Construction Vibration at the BBARWA WWTP Site: AWPF, Monitoring Wells, Solar Evaporation Ponds, and Pump Stations

Table 4.14-10 presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 433' to 871' from construction activities at the BBARWA WWTP Site: AWPF, Monitoring Wells, Solar Evaporation Ponds, and Pump Stations activities, including well drilling, the continuous construction vibration velocity levels are estimated to be less than 0.00 PPV (in/sec), as shown on **Table 4.14-10** for each of the individual Program components at the BBARWA WWTP Site**.** Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

Construction Vibration at the Shay Pond Discharge Project

Table 4.14-11 presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 48' to 375' from construction activities at the Shay Pond Discharge Project activities, the continuous construction vibration velocity levels are estimated to be less than 0.00 to 0.03 PPV (in/sec), as shown on **Table 4.14-11** for each of the Shay Pond Discharge Project. Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

Construction Vibration at the Sand Canyon Recharge Project

Table 4.14-12 presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances ranging from 28' to 141' from the

Sand Canyon Recharge Project construction activities, including well drilling, the continuous construction vibration velocity levels are estimated to range from less than 0.00 to 0.12 PPV (in/sec), as shown on **Table 4.14-12** for each of the individual Sand Canyon Recharge Project components**.** Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

Construction Vibration at the Pipelines

Table 4.14-13 presents the expected Program related typical construction activity vibration levels at each of the receiver locations. At distances beginning at 20' from the pipeline construction activities, including well drilling, the continuous construction vibration velocity levels are estimated to range from less than 0.00 to 0.12 PPV (in/sec), as shown on **Table 4.14-13** for each of the individual pipeline alignments**.** Based on the vibration standards outlined in **Table 4.14-4**, the typical Program construction vibration levels will satisfy the transient human annoyance and building damage thresholds. Therefore, the vibration impacts due to Program typical construction activities are considered *less than significant*.

<u>Operational Vibration</u>

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as monitoring wells, pump stations, the AWPF, and solar arrays, do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as pipelines do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

Replenish Big Bear Component 3: Shay Pond Discharge Project

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as pipelines do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

Replenish Big Bear Component 4: Solar Evaporation Ponds

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as solar evaporation ponds do not generate substantial vibration. Therefore, no

operational vibration impact would occur, and no mitigation is required.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

Operational activities associated with individual projects implemented under this Program Component would not include sources of vibration, such as heavy machinery. Components such as monitoring wells, pump stations, and pipelines, do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

3. Airport Noise

Threshold: For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Finding: Less than significant. (Draft EIR, pp. 4-775 – 4-776)

Explanation:

There is only one airport located within Big Bear Valley: Big Bear Airport. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Alternatives (shown on **Figure 3-2**) traverse either side of the Big Bear Airport boundaries. No other physical components of the Program would be located within either the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**).

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

There is only one airport located within Big Bear Valley: Big Bear Airport. The BBARWA WWTP Site is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Construction of Conveyance Pipelines has a potential to be located adjacent to the Big Bear Airport and could be installed within the Big Bear Airport's noise contours. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options have been overlaid on the Big Bear Airport Layout Map (**Figure 4.10-14**) and the Big Bear Airport Safety Review Area Map (**Figure 4.10-15**). These Maps indicate that, regardless of the alignment selected by BBARWA for the Stanfield Marsh/Big Bear Lake Discharge Project, a portion of the alignment will be constructed within one of the three airport safety review areas. During

construction of facilities in close proximity to the Big Bear Airport, there is a potential for workers at the site to be exposed to substantial noise from the Big Bear Airport. Construction contractors would be required to comply with Cal/OSHA regulations related to worker exposure to noise. Section 5096 of these regulations sets duration-based noise exposure limits for construction workers that require provision of personal protective equipment should exposure exceed the specified limits. The requisite adherence to these regulations would reduce construction worker exposure to high noise levels such that proposed Program construction activities would not expose employees to excessive noise levels. Therefore, construction workers would not be exposed to excessive noise levels from aircraft noise. Furthermore, construction noise, when combined with existing aircraft noise levels, would fall within the scope of the analysis provided under issue "a" as impacts were modeled against the existing noise environment, which includes aircraft noise. Construction impacts related to aircraft noise and related to construction noise when combined with the ambient aircraft noise, would be less than significant, and no mitigation is required.

During operation, the Conveyance Facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Furthermore, as previously stated, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations would reduce employee exposure to high noise levels such that operational activities would not expose employees to excessive noise levels. Therefore, operational impacts related to aircraft noise would be less than significant, and no mitigation is required.

Replenish Big Bear Component 3: Shay Pond Discharge Project

There is only one airport located within Big Bear Valley: Big Bear Airport. The Shay Pond Discharge Project footprint is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. During operation, the Shay Pond Conveyance Facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

Replenish Big Bear Component 4: Solar Evaporation Ponds

There is only one airport located within Big Bear Valley: Big Bear Airport. The BBARWA WWTP Site is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than

significant, and no mitigation is required.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

There is only one airport located within Big Bear Valley: Big Bear Airport. The Sand Canyon Recharge Project footprint is not located within the Airport Noise Contours or Airport Safety Review Areas shown on the San Bernardino Countywide Plan Airport Safety & Planning Areas (**Figure 4.10-7**). Thus, it is not anticipated that persons working or residing in the project area would be exposed to excessive airport noise levels. During operation, the Sand Canyon Recharge Project facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Furthermore, BBARWA and the Program Team would be required to comply with Cal/OSHA regulations related to worker exposure to noise. These regulations ensure that employees would not be exposed to excessive noise levels. Therefore, impacts related to aircraft noise would be less than significant, and no mitigation is required.

Level of Significance Before Mitigation: Less than Significant

N. POPULATION AND HOUSING

1. Population Growth

Threshold: Would the Project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of road or other infrastructure?

Finding: Less than significant. (Draft EIR, pp. 4-785 – 4-790)

Explanation:

Program Category 1: Conveyance Pipelines

This Program Category includes permitting, design, and construction of more than seven miles of pipeline for Program Water and RO brine minimization. This Program Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 40 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis (40/16,000 = 0.25%). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; none would be specifically dedicated to pipeline maintenance. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

The final population question at issue is the potential for the successful implementation of the Program to cause substantial unplanned growth within the Big Bear Valley. Based on past experience, this analysis concludes that such unplanned growth, beyond that already forecast, is not likely for the following reasons:

- For the past two years, the Big Bear Valley has had some constraints in the use of water, but an adequate water supply has clearly been identified (the two 2020 UWMPs) to meet future population growth forecasts.

- Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley; however, it is not forecast to change land uses or otherwise create activities that could increase population or employment beyond that which is anticipated in the local jurisdictions' General Plans (City of Big Bear Lake and San Bernardino County).

Thus, based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

This Program Category includes permitting, design, and construction of three pump station and up to four monitoring wells, and the pipe outlet and erosion control in Sand Canyon. This Program Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 40 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis 40/16,000 = 0.025%). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; none would be specifically dedicated to maintenance of Ancillary Facilities. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

Program Category 3: Solar Evaporation Ponds

This Program Category includes permitting, design, and construction of Solar Evaporation Ponds. This Program Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 10 construction employees would be required during this period of time for this Program Category.

Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis (10/16,000 = 0.0625%). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; it is anticipated that these employees would primarily support BBARWA's operations, and as the Solar Evaporation Ponds would be located at BBARWA, these employees may be dedicated to operating the Solar Evaporation Ponds, amongst other facility operations. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

Program Category 4: BBARWA WWTP Upgrades

This Program Category includes permitting, design, and construction of an AWPF at the existing BBARWA WWTP. This Program Category and the Program as a whole would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for about 50 construction employees would be required during this period of time for this Program Category. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis (50/16,000 = 0.3125%). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the Program Team; it is anticipated that these employees would primarily support BBARWA's operations, and as the AWPF would be located at BBARWA, these employees may be dedicated to operating the AWPF, amongst other facility operations. The number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of this Program Category is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of this Program Category would result in less than significant impacts related to the inducement of substantial population growth.

Combined Program Categories

The Program includes permitting, design, and construction of an AWPF at the existing BBARWA WWTP, more than seven miles of pipeline for Program Water and RO brine minimization, three pump stations, a groundwater recharge facility, and up to four monitoring wells. The Program would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley.

Construction: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within Southern California. They would become part of the Big Bear Valley's temporary population over a period of one to two years of construction. Locally available temporary housing for up to 140 construction employees would be required during this period of time. Adequate temporary housing resources are available within the Big Bear Valley that can accommodate a temporary housing population of over 16,000 on an average daily basis (140/16,000 = 0.875%). Therefore, the potential temporary increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing Program Team personnel, with perhaps a maximum of five new permanent employees that will be spread across the agencies that make up the

Program Team. However, the number of new employees required would be minimal relative to the existing resident population in the Big Bear Valley of about 23,000 persons. Therefore, the potential increase in new residents within the Big Bear Valley would be nominal, i.e., a less than significant impact.

Based on the historic growth pattern in the Big Bear Valley communities and future forecast of growth in the 2020 UWMPs, implementation of the Program is not forecast to cause the less than 1% growth forecast for the Big Bear Valley to change in the future. Where the present availability of water does not serve as a constraint to growth, the Program's contribution to planning and expanding water system infrastructure to meet this future demand or changes in climate is considered growth accommodating, not growth inducing. As such, and as stated above, the Program is growth accommodating, and it does not in and of itself create opportunities for additional people to move to the region, nor to construct additional housing beyond those previously under consideration to accommodate the population envisioned within the City of Big Bear Lake General Plan and San Bernardino Countywide Plan. Therefore, the implementation of the Program would result in less than significant impacts related to the inducement of substantial population growth.

2. Displacement of Housing

Threshold: Would the Project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; and displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Finding: No impact. (Draft EI, pp. 4-790 – 4-4-791)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: This Program Category includes permitting, design, and construction of more than seven miles of pipeline for Program Water and RO brine minimization. A review of all of these locations indicates that based on current designs, only the Sand Canyon pipeline could impact any existing residential property. However, only a minimal number of residential properties (two) might be impacted by installing this pipeline, as almost all such alignments will follow existing dedicated public ROW; refer to **Figure 3-31**, which depicts the area in which an easement will be required to install the Sand Canyon pipeline. It is anticipated that, while the proposed Sand Canyon Recharge Conveyance Pipeline will be required to traverse through a residential property, it will not impact the residential structure. The effort to install the proposed pipeline alignments would not displace any persons or housing. Thus, the potential for adverse impacts on housing and potential relocation of people during construction is considered a less than significant impact. No mitigation is required.

Operation: Operation of this Program Category would not result in impacts to any persons or housing, as once the facilities are installed belowground, they would operate belowground. Thus, the operation of the proposed pipeline alignments would not displace

any persons or housing. Thus, the potential for adverse impacts on housing and potential relocation of people is considered a less than significant impact. No mitigation is required.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: This Program Category includes permitting, design, and construction of three pump stations, a pipe outlet and discharge, and up to four monitoring wells. A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Ancillary Facilities. While the locations of the Sand Canyon Monitoring Wells are not presently known, the Program Team intends to avoid impacting any housing as a matter if site selection. Thus, there is no potential for adverse impacts on housing and potential relocation of people during construction and no impacts would occur. No mitigation is required

Operation: A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Ancillary Facilities. While the locations of the Sand Canyon Monitoring Wells are not presently known, the Program Team intends to avoid impacting any housing as a matter if site selection. As such, operation of the Ancillary Facilities is not anticipated to impact persons or housing, as each will operate within its own facility intended for water and/or wastewater infrastructure. Thus, there is no potential for adverse impacts on housing and potential relocation of people during construction and no impacts would occur. No mitigation is required.

Program Category 3: Solar Evaporation Ponds

Construction: This Program Category includes permitting, design, and construction of Solar Evaporation Ponds. A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Solar Evaporation Ponds at the BBARWA WWTP Site. Thus, there is no potential for adverse impacts on housing and potential relocation of people and no impacts would occur. No mitigation is required.

Operation: A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of Solar Evaporation Ponds at the BBARWA WWTP Site. As such, operation of the Solar Evaporation Ponds is not anticipated to impact persons or housing, as each will operate within its own facility intended for water and/or wastewater infrastructure. Thus, there is no potential for adverse impacts on housing and potential relocation of people and no impacts would occur. No mitigation is required.

Program Category 4: BBARWA WWTP Upgrades

Construction: This Program Category includes permitting, design, and construction of an AWPF at the existing BBARWA WWTP. A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of AWPF at the BBARWA WWTP Site. Thus, there is no potential for adverse impacts on housing and potential relocation of people during construction and no

impacts would occur. No mitigation is required.

Operation: A review of all of these locations indicates that based on current designs, no residential property is anticipated to be impacted by implementation of AWPF at the BBARWA WWTP Site. As such, operation of the BBARWA WWTP Upgrades is not anticipated to impact persons or housing, as each will operate within its own facility intended for water and/or wastewater infrastructure. Thus, there is no potential for adverse impacts on housing and potential relocation of people and no impacts would occur. No mitigation is required.

O. PUBLIC SERVICES

1. Schools

Threshold: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools?

Finding: Less than significant. (Draft EIR, pp. 4-813 – 4-816)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the Conveyance Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Conveyance Pipelines is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Conveyance Facilities would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Conveyance Pipelines would not cause a substantial increase in demand for schools. Implementation of the Conveyance Pipelines is not forecast to change existing land uses or increase either the number of residential units located within

the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Conveyance Facilities are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the Ancillary Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Ancillary Facilities is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Ancillary Facilities would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Ancillary Facilities would not cause a substantial increase in demand for schools. Implementation of the Ancillary Facilities is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Ancillary Facilities are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase

demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the Solar Evaporation Ponds would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Solar Evaporation Ponds is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Solar Evaporation Ponds would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Solar Evaporation Ponds would not cause a substantial increase in demand for schools. Implementation of the Solar Evaporation Ponds is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Solar Evaporation Ponds are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of the BBARWA WWTP Upgrades would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15,**

Population and Housing, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the BBARWA WWTP Upgrades is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the BBARWA WWTP Upgrades would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the BBARWA WWTP Upgrades would not cause a substantial increase in demand for schools. Implementation of the BBARWA WWTP Upgrades is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program as a whole is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the BBARWA WWTP Upgrades are not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

Combined Program Categories

Construction: Construction of the Program would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Construction of the Program is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the construction of the Program would only create a temporary workforce, and would not increase housing, or create activities that can increase demand for additional school capacity beyond that

anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, construction impacts related to demand for school services would be less than significant.

Operation: Similar to the discussions under Fire and Police Protection (issues [a] and [b]), above, the development of the Program would not cause a substantial increase in demand for schools. Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley area. However, implementation of the Program is not forecast to change existing land uses or increase either the number of residential units located within the Big Bear Valley area or the number of students generated from the Big Bear Valley area beyond those which are anticipated by the local jurisdictions' General Plans. Operation of the Program is not forecast to require more than five additional permanent employees, which could result in a nominal increase in demand for school services. The Bear Valley Unified School District has adopted classroom loading standards (number of students per classroom) and collects development fees per square foot of residential, commercial, and industrial development. Because the Program is not forecast to consist of any of these types of land use, as it would not change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

2. Parks

Threshold: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks?

Finding: No impacts. (Draft EIR, pp. 4-816 – 4-820)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of Conveyance Pipelines would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed Conveyance Pipelines would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated

to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees supporting the operation of BBARWA's AWPF. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

Based on the location of the proposed Conveyance facilities, and the type of facilities proposed, no increased use of parks or disruption in the availability of area parks would occur. Thus, no impacts to parks are anticipated to occur.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of Ancillary Facilities would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

While the location for the Sand Canyon Monitoring Wells are the only facilities without site specific locations selected as part of the Program, and therefore such facilities could conceivably be installed within area parkland, the general location of these two monitoring wells would be located downstream of Sand Canyon (refer to **Exhibit 3-29**). Per San Bernardino Countywide Plan Parks and Open Space Resources Map (**Figure 4.16-2**), there are no local or regional park facilities at which the monitoring wells could be installed that would disrupt any area parks. Thus, no increased use of parks or disruption in the availability of area parks would occur as a result of installation of Program facilities within parkland area. Impacts would, therefore, be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of Solar Evaporation Ponds would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15,**

Population and Housing, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

Based on the location of the proposed Solar Evaporation Ponds within BBARWA's WWTP site, and the type of facilities proposed, no increased use of parks or disruption in the availability of area parks would occur. Thus, no impacts to parks are anticipated to occur.

Program Category 4: BBARWA WWTP Upgrades

Construction: The Program would not include construction of new homes or businesses. Therefore, the implementation of BBARWA WWTP Upgrades would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps

a maximum of five new permanent employees. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing parks.

Based on the location of the proposed BBARWA WWTP Upgrades within BBARWA's WWTP site, and the type of facilities proposed, no increased use of parks or disruption in the availability of area parks would occur. Thus, no impacts to parks are anticipated to occur.

Other Physical Changes

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. Stanfield Marsh is now a scenic 145-acre nature park that includes a gazebo, walking paths, and two boardwalks that extend out into Stanfield Marsh so that visitors can observe the wildlife in, under and around the water. Stanfield Marsh is home to rare and diverse species of birds, fish, amphibians, and mammals. Greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average at the present time, and thereby the nature park may be enhanced by the proposed Program. An objective of the proposed Program is to provide "a consistent water source to sustain habitat and increase education opportunities for the community and visitors." Thus, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Therefore, the proposed enhancements at Stanfield Marsh resulting from implementation of the Program would have no potential to result in significant environmental impacts in order to maintain acceptable service ratios or other performance objectives related to the provision of parks. Impacts would, therefore, be less than significant.

Combined Program Categories

Construction: The Program would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in temporary new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. No impacts are anticipated.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Big Bear Valley, even though one or two personnel may be drawn from outside of the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks. Nonetheless, because the Program would not substantially increase the population within the Big Bear Valley area, the Program would not substantially increase use of existing parks.

While the location for the Sand Canyon Monitoring Wells are the only facilities without site specific locations selected as part of the Program, and therefore such facilities could conceivably be installed within area parkland, the general location of these two monitoring wells would be located downstream of Sand Canyon (refer to **Exhibit 3-29**). Per San Bernardino Countywide Plan Parks and Open Space Resources Map (**Figure 4.16-2**), there are no local or regional park facilities at which the monitoring wells could be installed that would disrupt any area parks. Thus, no increased use of parks or disruption in the availability of area parks would occur as a result of installation of Program facilities within parkland area. Thus, impacts would be less than significant.

3. Other Public Facilities

Threshold: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities?

Finding: Less than significant. (Draft EIR, pp. 4-821 – 4-823)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Conveyance Pipelines would not cause a significant increase in demand for library or other public services. The Program as a whole would not include construction of housing that would result in any direct increase in demand for library or other public services. Therefore, the Conveyance Pipelines would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Conveyance Pipelines is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which

is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Conveyance Pipelines would not cause a significant increase in demand for library or other public services. The Conveyance Pipelines would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Conveyance Pipelines is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the Program would result in only a nominal increase in demand for libraries and other public services. Implementation of the Conveyance Pipelines is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the Conveyance Pipelines would not substantially increase demand for library or other public services and impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The Ancillary Facilities would not include construction of new homes or businesses. Therefore, the Ancillary Facilities would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Ancillary Facilities is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Ancillary Facilities would not cause a significant increase in demand for library or other public services. The Ancillary Facilities would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Ancillary Facilities is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF. However, new employees are anticipated to come primarily from within the Big Bear Valley area;

therefore, the Ancillary Facilities would result in only a nominal increase in demand for libraries and other public services. Implementation of the Ancillary Facilities is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the Ancillary Facilities would not substantially increase demand for library or other public services and impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: The Solar Evaporation Ponds would not include construction of new homes or businesses. Therefore, the Solar Evaporation Ponds would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Solar Evaporation Ponds is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed Solar Evaporation Ponds would not cause a significant increase in demand for library or other public services. The Solar Evaporation Ponds would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Solar Evaporation Ponds is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the Solar Evaporation Ponds would result in only a nominal increase in demand for libraries and other public services. Implementation of the Solar Evaporation Ponds is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the Solar Evaporation Ponds would not substantially increase demand for library or other public services and impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: The BBARWA WWTP Upgrades would not include construction of new

homes or businesses. Therefore, the BBARWA WWTP Upgrades would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the BBARWA WWTP Upgrades is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School Services (issues [a], [b], and [c]), above, the development of the proposed BBARWA WWTP Upgrades would not cause a significant increase in demand for library or other public services. The BBARWA WWTP Upgrades would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the BBARWA WWTP Upgrades is not forecast to require more than five additional permanent employees, generally in support of operating the BBARWA AWPF. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the BBARWA WWTP Upgrades would result in only a nominal increase in demand for libraries and other public services. Implementation of the BBARWA WWTP Upgrades is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The implementation of the BBARWA WWTP Upgrades would not substantially increase demand for library or other public services and impacts would be less than significant.

Combined Program Categories

Construction: The Program would not include construction of new homes or businesses. Therefore, the Program would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. Construction of the Program is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The nominal potential increase in temporary new residents within the Big Bear Valley as a result of construction would not contribute to a substantial increased demand for library and other services. No impacts are anticipated.

Operation: Similar to the discussion under Fire Protection, Police Protection, and School

Services (issues [a], [b], and [c]), above, the development of the Program would not cause a significant increase in demand for library or other public services. The Program would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the Program is not forecast to require more than five additional permanent employees. However, new employees are anticipated to come primarily from within the Big Bear Valley area; therefore, the Program would result in only a nominal increase in demand for libraries and other public services. Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley area. However, the Program is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. Library services are currently provided by the San Bernardino County Library system. San Bernardino County would increase overall levels of library service based upon the future population within its jurisdiction. The Program would not substantially increase demand for library or other public services and impacts would be less than significant.

P. RECREATION

1. Increased Use

Threshold: Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Finding: Less than significant. (Draft EIR, pp. 4-831 – 4-836)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent

employees, primarily in support of operating the new BBARWA AWPF. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the facilities proposed as part of the Program. Thus, no impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the new BBARWA AWPF. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing

neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the proposed facilities. While the location for the Sand Canyon Monitoring Wells are the only facilities without site specific locations selected as part of the Program, and therefore such facilities could conceivably be installed within area recreational facilities, the general location of these 2 monitoring wells would be located downstream of Sand Canyon (refer to **Exhibit 3-29**). Per San Bernardino Countywide Plan Parks and Open Space Resources Map (**Figure 4.16-2**), there are no local or regional recreational facilities at which the monitoring wells could be installed that would disrupt any area recreational activities. Thus, no direct increased use of recreational facilities or disruption in the availability of area recreational facilities would occur as a result of installation of Program facilities. Impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the new BBARWA AWPF. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the facilities proposed as part of the Program. Thus, no impacts are

anticipated.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of the proposed infrastructure would require temporary employment. As discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume the majority of the construction employment opportunities would be filled by workers living within the Big Bear Valley area or in close proximity. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially temporarily increase the population within the Big Bear Valley area, construction of this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities. Thus, no impacts are anticipated.

Operation: This Program Category would not include construction of new homes or businesses. Therefore, this Program Category would not result in a direct increase in population or create a substantial number of new permanent jobs that would result in a substantial number of new residents within the Big Bear Valley area. Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water agency personnel, with perhaps a maximum of five new permanent employees, primarily in support of operating the new BBARWA AWPF. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in new residents within the Big Bear Valley may contribute to a minimal increased demand for parks and other recreational facilities. Nonetheless, because this Program Category would not substantially increase the population within the Big Bear Valley area, this Program Category would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

Furthermore, analysis contained in **Subchapter 4.16, Public Services**, under issue (d) determined whether this Program Category would increase the use of existing neighborhood and regional parks or other recreational facilities and physical deterioration thereof. As stated under issue (d) of **Subchapter 4.16**, the development of this Program Category is not anticipated to result in utilization of any park or recreation facility lands to install any of the facilities proposed as part of the Program. Thus, no impacts are anticipated.

Other Physical Changes

While the proposed Program would result in the installation of several facilities, it would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would have a potential to result in Big Bear Lake levels being higher than without the proposed project, thereby minimizing the dry habitat that occurs around Big Bear Lake's rim when Big Bear Lake levels are low, and potentially making the use of Big Bear Lake, which could be considered a recreational facility, more desirable to visitors and residents of the area. **Exhibits 4.2-1 and 4.2-2**, show an aerial view of the potential impacts

on Lake area as a result of the Program. Additionally, in Stanfield Marsh, greater provision of water in this area has a potential to support wetland/marsh habitat in a larger area than is supported on average at the present time.

As an objective of the Program itself is to "provide new inflow to Big Bear Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat," the enhanced recreation at Big Bear Lake as a result of the provision of higher Lake levels is an intended result of the proposed Program. However, enhanced recreation does not directly translate to increased recreation at Big Bear Lake, as described below. Because Big Bear Lake is formed by a dam operated by BBMWD under the terms of the 1977 Judgment, Big Bear Lake levels can never be greater than the dam height without a resulting spill, and therefore, regardless of whether the Program results in higher water levels or naturally through rainfall and snowpack during a wet year, Big Bear Lake levels can only reach the height of the Big Bear Lake dam. Furthermore, while the Program may provide some noticeable Lake level increase during dry years, Big Bear Lake level increase as a result of Program operations during wet years would be minimal, and therefore less perceptible to residents and visitors utilizing Big Bear Lake for recreational purposes. As BBMWD operates the dam under the terms stipulated in the 1977 Judgment, the same management terms would apply at Big Bear Lake with increased water at Big Bear Lake as a result of the proposed Program. Thus, even though the proposed Program may enhance Lake levels, the existing management conditions implemented by BBMWD would not be significantly altered, and as the BBMWD manages both the dam, and Big Bear Lake itself—including launch points and permits for registered and nonregistered vessels enabling access to Big Bear Lake— it is not anticipated that the proposed Program would significantly increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. In addition, at present, use of Big Bear Lake requires payment of permit fees for registered and nonregistered vessels to BBMWD, the funds for which can be directed towards addressing any deterioration of existing recreational facilities, such as marinas and docks on Big Bear Lake. In the case of increased use due to higher Lake levels drawing a greater number of visitors, the addition of new users of Big Bear Lake would require to contribution of permit fees for registered and nonregistered vessels to BBMWD, which can be further directed toward addressing any potential deterioration of existing recreational facilities on Big Bear Lake.

In regards to the enhanced setting at Stanfield Marsh that may result from the additional provisions of water at Stanfield Marsh, an objective of the proposed Program is to provide "a consistent water source to sustain habitat and increase education opportunities for the community and visitors." Thus, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Therefore, while the proposed Program would result in the increased use of existing recreational facilities, substantial physical deterioration and the facilities would not result or be accelerated. Impacts would, therefore, be less than significant.

2. Construction and Expansion

Threshold: Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an aderse physical effect on the environment?

Finding: Less than significant. (Draft EIR, pp. 4-836 – 4-838)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The development of Conveyance Pipelines will not involve the direct construction or expansion of recreational facilities. The Conveyance Pipelines would not be located within recreational facilities or sites designated for such use. Therefore, the Conveyance Pipelines would not adversely impact existing parks or recreational facilities. Because the proposed improvements would not adversely impact existing parks or recreational facilities, no new or expanded park or recreational facility would be required with the implementation of the proposed facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the Conveyance Pipelines. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations Construction: The development of Ancillary Facilities will not involve the direct construction or expansion of recreational facilities. The Ancillary Facilities would not be located within recreational facilities or sites designated for such use. Therefore, the Ancillary Facilities would not adversely impact existing parks or recreational facilities. Because the proposed improvements would not adversely impact existing parks or recreational facilities, no new or expanded park or recreational facility would be required with the implementation of the proposed facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the Ancillary Facilities. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Construction: The development of Solar Evaporation Ponds will not involve the direct

construction or expansion of recreational facilities. The Solar Evaporation Ponds would not be located within recreational facilities or sites designated for such use. Therefore, the Solar Evaporation Ponds would not adversely impact existing parks or recreational facilities. Because the proposed improvements would not adversely impact existing parks or recreational facilities, no new or expanded park or recreational facility would be required with the implementation of the proposed facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the Solar Evaporation Ponds. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

Construction: The development of BBARWA WWTP Upgrades will not involve the direct construction or expansion of recreational facilities. The BBARWA WWTP Upgrades would not be located within recreational facilities or sites designated for such use. Therefore, the BBARWA WWTP Upgrades would not adversely impact existing parks or recreational facilities. Therefore, no adverse physical effect on the environment would occur related to new or expanded park or recreational facilities because the proposed improvements would not require new or expanded park or recreational facilities. Therefore, no impacts are anticipated.

Operation: No new or expanded park or recreational facilities are proposed as part of the operation of the BBARWA WWTP Upgrades. Therefore, no adverse physical effect on the environment would occur related to the inclusion of recreational facilities as part of project operations which might have an adverse physical effect on the environment. Therefore, no impacts are anticipated.

Other Physical Changes

As discussed under **Subsection 4.17.2.6, Big Bear Municipal Water District**, under Replenish Big Bear, Program Water will be discharged to Stanfield Marsh, providing a consistent water source to sustain habitat and increase education opportunities for the community and visitors. The Stanfield Marsh Wildlife and Waterfowl Preserve could be considered a recreational facility, and therefore, the Program is anticipated to enhance its recreational features through the provision of a new water source flowing from Stanfield Marsh to Big Bear Lake. The discharge to Stanfield Marsh would not result in any adverse physical effects on the environment. In fact, the discharge of Program Water to Stanfield Marsh would be considered a benefit to the environment when compounded with historic efforts to restore Stanfield Marsh and create the Wildlife and Waterfowl Preserve. Similarly, as discussed under issue (a), above, Big Bear Lake itself could be considered a recreational facility, and therefore, the Program is anticipated to enhance its recreational features through the provision of additional Program Water. As with the discussion above

related to Stanfield Marsh, the discharge to Big Bear Lake would not result in any adverse physical effects on the environment. Thus, impacts would be less than significant.

Q. TRANSPORTATION / TRAFFIC

1. VMT

Threshold: Would the Project conflict or be inconsistent with CEQA Guidelines sections 15064.3, subdivision (b)?

Finding: Less than significant. (Draft EIR, pp. 4-866 – 4-870)

Explanation:

State CEQA Guidelines Section 15064.3(b) identifies criteria for evaluating transportation impacts states that VMT exceeding an applicable threshold of significance may indicate a significant transportation impact. According to State CEQA Guidelines Section 15064.3(b)(3), a lead agency may include a qualitative analysis of operational and construction transportation. However, as discussed below, the Program is not expected to permanently affect VMT in the study area based on guidance provided by the Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018).

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during BBARWA WWTP Upgrades Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the BBARWA WWTP Upgrades Project (515 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The BBARWA WWTP Upgrades Project would not cause substantial long-term/ongoing transportation effects, because proposed BBARWA WWTP Upgrades Project facilities, once constructed, would only increase the number of employees by an estimated five new permanent employees. During BBARWA WWTP Upgrades Project operation, Program-related roadway vehicle trips would include daily employee trips to and from the AWPF. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As such, the BBARWA WWTP Upgrades Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the BBARWA WWTP Upgrades Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by

increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Stanfield Marsh/Big Bear Lake Discharge Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Stanfield Marsh/Big Bear Lake Discharge Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The Stanfield Marsh/Big Bear Lake Discharge Project would not cause substantial long-term/ongoing transportation effects, because proposed Stanfield Marsh/Big Bear Lake Discharge Project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions for the respective Program Team and the increase in employees due to the implementation of the Program is forecast to result in less than an estimated five new permanent employees. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As discussed under Response (a), scheduled maintenance visits would also occur in the future with one trip per maintenance event, with occasional trips also occurring when unforeseen circumstances arise that would require maintenance or repair of certain facilities. As such, the Stanfield Marsh/Big Bear Lake Discharge Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Stanfield Marsh/Big Bear Lake Discharge Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Replenish Big Bear Component 3: Shay Pond Discharge Project

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Shay Pond Discharge Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Shay Pond Discharge Project (370 construction days). As such, VMT standards, which are intended to monitor and address longterm transportation impacts

resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The Shay Pond Discharge Project would not cause substantial long-term/ongoing transportation effects, because proposed Shay Pond Discharge Project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions for the respective Program Team and the increase in employees due to the implementation of the Program is forecast to result in less than an estimated five new permanent employees. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As discussed under Response (a), scheduled maintenance visits would also occur in the future with one trip per maintenance event, with occasional trips also occurring when unforeseen circumstances arise that would require maintenance or repair of certain facilities. As such, the Shay Pond Discharge Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Shay Pond Discharge Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Solar Evaporation Ponds Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Solar Evaporation Ponds Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The Solar Evaporation Ponds Project would not cause substantial long-term/ongoing transportation effects, because proposed Solar Evaporation Ponds Project facilities, once constructed, would only increase the number of employees by an estimated five new permanent employees. During Solar Evaporation Ponds Project operation, Program-related roadway vehicle trips would include daily employee trips to and from the AWPF, which includes operating the Solar Evaporation Ponds Project. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As such, the Solar Evaporation Ponds Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Solar Evaporation Ponds Project would

not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

Construction: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under Response (a) above, construction vehicles on local roadways would be temporarily increased during Sand Canyon Recharge Project construction due to the presence of construction activities and employee trips. Increases in VMT from construction would be short-term, minimal, and temporary. The duration of the potential significant impacts would be limited to the period of time needed to construct the Sand Canyon Recharge Project (370 construction days). As such, VMT standards, which are intended to monitor and address long-term transportation impacts resulting from future development, do not apply to the temporary impacts associated with construction activities. Therefore, no construction impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur.

Operation: The Sand Canyon Recharge Project would not cause substantial long-term/ongoing transportation effects, because proposed Sand Canyon Recharge Project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions for the respective Program Team and the increase in employees due to the implementation of the Program is forecast to result in less than an estimated five new permanent employees. The Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." As discussed under Response (a), scheduled maintenance visits would also occur in the future with one trip per maintenance event, with occasional trips also occurring when unforeseen circumstances arise that would require maintenance or repair of certain facilities. As such, the Sand Canyon Recharge Project would generate substantially less than 110 trips per day during operations, which is the recommended screening threshold. Therefore, the Sand Canyon Recharge Project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no operational impact associated with VMT per State CEQA Guidelines Section 15064.3 would occur

R. UTILITIES AND SERVICE SYSTEMS

1. Wastewater Treatment Requirements

Threshold: Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Finding: Less than significant. (Draft EIR, pp. 4-931 – 4-935)

Explanation:

Electricity

The proposed Program includes the development of various types of water infrastructure facilities, outlined above under **Water**. Additionally, the proposed Program would include the development of a 2 MW solar system, which will be installed at several locations—BBARWA's WWTP site, Administration Building site, and/or BBCCSD owned site just south of the BBARWA WWTP (refer to **Figure 3-37**)—in addition to the existing 1.67 MW system that serves BBARWA's existing WWTP operations.

Program Category 1: Conveyance Pipelines

As stated under **Subchapter 4.7**, **Energy**, electricity would not be demanded by the Conveyance Facilities. As such, this Program Category would not result in the construction of new or expansion of existing alternative electricity infrastructure to serve the new Program facilities. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

As stated under **Subchapter 4.7, Energy**, electricity would not be demanded by the Solar Evaporation Ponds Project. As such, this Program Category would not result in the construction of new or expansion of existing alternative electricity infrastructure to serve the new Program facilities. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

The BBARWA WWTP Upgrades Project facility operational energy demands are estimated at: 147,883 kWh/year of electricity after netting out the 3,652,117 kWhs/year of electricity generated by the Program's photovoltaic solar design feature. Electricity would be supplied by BVES. As such, this Program Category would result in the construction of new/expansion of existing alternative electricity infrastructure to serve the new Program facilities; however, as discussed above under **Subchapter 4.7, Energy**, the proposed Program would not cause or result in the need for additional electricity producing facilities or electricity delivery systems beyond the proposed solar system described above because the operation of the proposed Program would involve energy consumption, as described above.

The Program would be designed and constructed in accordance with the City of Big Bear Lake or the San Bernardino County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Given that connection to electricity is a minor component of the

overall construction of Program facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall Program would not cause a significant environmental effect. Impacts would be less than significant.

Natural Gas

The proposed Program includes the development of various types of water infrastructure facilities, outlined above under **Water**. The development of the above facilities would not result in the construction of new and expansion of existing natural gas infrastructure to serve the new Program facilities.

Program Category 1: Conveyance Pipelines

As stated under **Subchapter 4.7**, **Energy**, natural gas would not be demanded by the Conveyance Facilities. As such, this Program Category would not result in the construction of new or expansion of existing natural gas infrastructure to serve the new Program facilities. No impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

The Ancillary Facilities that would be located within the BBARWA WWTP Site have been accounted for under Program Category 4, as part of the overall BBARWA WWTP Upgrades Project, as described under **Subchapter 4.7**.

The Ancillary Facilities at Sand Canyon, as part of the Sand Canyon Recharge Project, would not result in operational natural gas demands. As such, this Program Category would not result in the construction of new or expansion of existing natural gas infrastructure to serve the new Program facilities. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

As stated under **Subchapter 4.7, Energy**, natural gas would not be demanded by the Solar Evaporation Ponds Project. As such, this Program Category would not result in the construction of new or expansion of existing natural gas infrastructure to serve the new Program facilities. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

The BBARWA WWTP Upgrades Project facility operational energy demands are estimated at: 760,427 kBTU/year of natural gas. Natural gas would be supplied to the BBARWA WWTP Upgrades Project by Southwest Gas. **Subchapter 4.7, Energy,** concluded that the Program's minor demand for natural gas (760,427 kBTU/year) would fall within the context of the existing available natural gas resources in the Big Bear Valley. Given that a connection to natural gas, where a connection to natural gas is required at future facilities, are minor components of the overall construction of Program facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall Program would not cause a significant

environmental effect. Impacts would be less than significant.

Telecommunications

Program Category 1: Conveyance Pipelines

Telecommunication facilities would not be demanded by the Conveyance Facilities. As such, this Program Category would not result in the construction of new or expansion of existing telecommunication facilities to serve the new Program facilities. No impacts are anticipated.

Program Category 3: Solar Evaporation Ponds

Telecommunication facilities would not be demanded by the Solar Evaporation Ponds. As such, this Program Category would not result in the construction of new or expansion of existing telecommunication facilities to serve the new Program facilities. No impacts are anticipated.

Program Category 4: BBARWA WWTP Upgrades

Existing telecommunication facility infrastructure is available to support the BBARWA WWTP Upgrades, if needed. Given that telecommunication facility connections, where a connection is required at future facilities, are minor components of the overall construction of the BBARWA WWTP Upgrades, the provision of these facilities as part of the BBARWA WWTP Upgrades would not cause a significant environmental effect. Impacts would be less than significant.

2. Wastewater Capacity

Threshold: Would the Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Finding: Less than significant. (Draft EIR, pp. 4-942 – 4-944)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The proposed Program includes construction of Conveyance Facilities. As stated under the response to issue 4.20(a) above, construction workers would temporarily require use of portable sanitary units during construction of the proposed Conveyance Facilities. Wastewater generated during construction of the proposed Program facilities would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. All conveyance systems—excepting brine conveyance— wells, and Ancillary Facilities would not generate wastewater during their operation. Impacts would be less than significant.

Operation: The disposal of brine through the proposed brine Conveyance Facilities are addressed under Program Category 4, below, and would therefore be the same as those identified under Program Category 4, below. No other operational impacts related to Conveyance Facilities would be anticipated as Conveyance Facilities do not generate any wastewater. Impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Impacts related to implementation of all of the facilities under this Program Category are the same as those identified under Program Category 1, above. As stated under the response to issue 4.20(a) above, construction workers would temporarily require use of portable sanitary units during construction of the proposed Ancillary Facilities. Wastewater generated during construction of the proposed facilities under this Program Category would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. Impacts would be less than significant.

Operation: Operationally, Ancillary Facilities would not generate any wastewater, as no staff restroom facilities would be installed at these facilities, and these facilities themselves would not generate wastewater. Thus, impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: As stated under the response to issue 4.20(a) above, construction workers would temporarily require use of portable sanitary units during construction of the proposed Solar Evaporation Ponds. Wastewater generated during construction of the proposed facilities under this Program Category would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. Impacts would be less than significant.

Operation: Operationally, the Solar Evaporation Ponds themselves would not generate any wastewater, as no staff restroom facilities would be installed directly in relation to the Solar Evaporation Ponds, and these facilities themselves would not generate wastewater. The disposal of brine through the evaporation process facilitated by the proposed Solar Evaporation Ponds is addressed under Program Category 4, below, and would therefore be the same as those identified under Program Category 4, below. Thus, impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: The proposed BBARWA WWTP Upgrades would constitute another form of treatment to the wastewater received by BBARWA from its service area. The BBARWA WWTP Upgrades would also create a new sources of brine waste generated by full advanced treatment that would require disposal via the Solar Evaporation Ponds. As the brine discharged to the Solar Evaporation Ponds evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site. The precipitated crystal will be hauled off to an appropriate disposal site.

As with the impacts outlined above under Program Category 1, the construction of these upgrades and improvements at the BBARWA WWTP is not anticipated to generate additional demand for capacity from BBARWA due to the limited wastewater the construction activities would generate. Impacts would be less than significant.

Operation: While the Program in and of itself is a project that would add a new full advanced treatment train to the existing BBARWA WWTP, this action would not result in an additional demand for wastewater disposal within the Big Bear Valley. Furthermore, this action would not expand the capacity of the BBARWA WWTP, it would instead treat the wastewater received at the BBARWA WWTP to full advanced treatment, which is beyond the secondary treatment that wastewater undergoes at the BBARWA WWTP at present. Thus, the only source of demand for additional wastewater capacity that would result from proposed Program would occur during construction, and as a result of the additional five permanent employees that would support the operation of the Program. Given that the proposed Program is not anticipated to generate substantial additional demand for these existing facilities, the projects proposed to be implemented as part of the Program are not anticipated to require substantial additional capacity from the area wastewater treatment provider (BBARWA) beyond the BBARWA's existing commitments. Impacts would be less than significant.

Other Physical Changes to the Environment

The other physical changes to the environment would not generate wastewater, and therefore would have no potential to result in a demand for wastewater service beyond the area wastewater provider's existing commitments. No impacts are anticipated.

3. Solid Waste

Threshold: Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Finding: Less than significant. (Draft EIR, pp. 4-944 – 4-946)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of pipelines may result in generation of solid waste in excess of the capacities of local infrastructure. Pipelines would require demolition of sections of roadway and/or compacted dirt in order to install Conveyance Facilities below ground and within ROW, but would not require a large area of construction. Each of the Program facilities would include the preparation of a construction and demolition solid waste management plan as required by San Bernardino County for all new construction projects. Information provided in this waste management plan would include how the waste would be managed, hauler identification, and anticipated material wastes. Each plan would demonstrate a minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code.

Compliance with this requirement is mandatory. Regardless, approximately 6,585 tons of asphalt may be disposed of as a result of pipeline installation, which is proposed to be disposed of over the approximately 16-month (370 day) duration of construction. As such, given the large amount of material that could be required to be hauled off site in support of the installation of the Conveyance Pipelines, generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or impairment of the attainment of solid waste reduction goals could occur. As such, mitigation to ensure that the asphalt and other construction and demolition materials disposed of as part of the conveyance pipeline installation is recycled beyond the minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code, is necessary to reduce potential impacts to a level of less than significant.

Operation: Operation of the proposed pipelines would not generate waste, and therefore would have no potential to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Thus, no impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of each ancillary facility may require demolition of existing facilities, grading, soil import/export, etc. at a specific site. Given that the proposed Ancillary Facilities would be located within sites no more than one half acre in size, it is not anticipated that construction thereof would generate substantial solid waste. Therefore, it is not anticipated that the generation of solid waste from each ancillary facility, even if developed concurrently, would have a potential to exceed the daily capacity of the local landfills or transfer stations. As stated under Program Category 1, above, each of the Program facilities would include the preparation of a construction and demolition solid waste management plan as required by San Bernardino County, which would demonstrate a minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code. Compliance with this requirement is mandatory, and therefore, development of Ancillary Facilities is not anticipated to generate solid waste in excess of the capacity of local infrastructure. Construction impacts would be less than significant.

Operation: Operation of the proposed Ancillary Facilities is not anticipated to generate waste, as the facilities proposed would not be manned, with the exception of the facilities proposed to be developed within the BBARWA WWTP site, which is already manned by existing employees. It is not anticipated that any of these facilities would be manned 24/7, with visits to the facilities occurring on a planned maintenance, or emergency maintenance basis. Thus, implementation of the Ancillary Facilities would have a less than significant impact on the generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

Program Category 4: BBARWA WWTP Upgrades

Construction: While the installation of the proposed upgrades to the BBARWA WWTP would occur over a large area within the existing BBARWA WWTP site (refer to **Figures 3-23 through 3-25**), solid waste generation is anticipated to be minimized as a result of utilizing existing structures to install the proposed treatment upgrades. However, the proposed BBARWA WWTP Upgrades do require to demolition of the existing concrete basins, which is anticipated to generate concrete waste. As a result, while the compliance with the 2022 CalGreen Code required, in order to fully ensure that generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or impairment of the attainment of solid waste reduction goals does not occur as a result of project implementation, mitigation to ensure that all construction waste that can feasibly be recycled, is recycled, thereby ensuring that construction and demolition waste is recycled above and beyond 2022 CalGreen Code, is necessary to reduce potential impacts to a level of less than significant.

Operation: Operation of the proposed WWTP would generate brine, which would evaporate and be hauled offsite once dried as discussed under Program Category 3, above. Additional waste sources include: the amount of waste generated by operation of the upgraded BBARWA WWTP is not anticipated to be greater than a few tons per year. The operational waste would comply with mandatory source reduction laws thereby reducing the amount of waste generated by operational activities, and therefore, implementation of the BBARWA WWTP Upgrades would have a less than significant impact to the generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

SECTION III.
IMPACTS THAT ARE LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

The Agency hereby finds that Mitigation Measures have been identified in the EIR and these Findings that will avoid or substantially lessen the following potentially significant environmental impacts to a less than significant level. The following statutory finding applies to all of the impacts described in this Section (III): Changes or alterations have been required in, or incorporated into, the proposed Program which mitigate the significant effects on the environment (to less than significant levels). (See Pub. Resources Code § 21081(a)(1); State CEQA Guidelines § 15091(a)(1).) The potentially significant impacts, and the Mitigation Measures that will reduce them to a less than significant level, are as follows:

A. AESTHETICS

1. Scenic Vistas

Threshold: Would the Project have a substantial adverse effect on a scenic vista?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4.18 – 4.19, 4-25 – 4-26)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The proposed Program would include construction of pump stations at BBARWA's WWTP site and downstream of the Sand Canyon Recharge Area, monitoring wells near the Solar Evaporation Ponds at BBARWA's WWTP site, and a pipe outlet and erosion control at the Sand Canyon Recharge Area pipe outlet and erosion control. The construction of the proposed facilities would require temporary ground-disturbance within the project sites. The presence of construction equipment and related construction materials would be visible from public vantage points such as open space areas public ROWs such as roadways and sidewalks. Construction of the proposed facilities could be visible from areas with sensitive viewers; however, construction impacts related to aesthetics would be temporary and short-term in nature (15 months). As construction would only occur for a short duration, it would not result in a permanent change to the environment beyond that which is discussed below as a result of operation of the proposed facilities. Furthermore, construction activities are routine within urban and suburban areas, and therefore do not typically constitute a significant aesthetic or scenic vista impact. Thus, construction activities associated with implementation of the proposed Program would result in a less than significant impact to scenic vistas in the area.

Operation: Once constructed, the proposed monitoring wells would each occupy a footprint anticipated to approximately less than one half acre. It is possible that the monitoring wells would be enclosed in a small structure, which is designed to minimize noise from the pumps, should pumps be required to operate the wells. It is anticipated that the proposed monitoring wells would have small footprints (i.e. with a final footprint of about 10 ft by 10 ft in width) and be low profile (about eight ft in height). The monitoring wells downstream of the Sand Canyon Recharge Area would be installed in an urban/suburban environment surrounded by structures that would be residential or commercial in nature, or would be installed at existing water facility sites. As such, the addition of a low-profile enclosed structure within this area would be anticipated to conform to the surrounding environment. MMs AES-1 and AES-2 are necessary to minimize impacts to scenic vistas from the development of the monitoring wells downstream of Sand Canyon, due to the fact that the site-specific locations for these facilities are presently unknown. MM AES-1 would ensure that the monitoring wells and landscaping therein would comply with local design standards and are integrated with local surroundings. The implementation of MM AES-2 will ensure that impacts to scenic vistas from the implementation of the monitoring wells by the Program will be avoided or assessed further in future CEQA documentation. Thus, impacts would be reduced to a less than significant level.

It is also anticipated that the pump stations would have small footprints and be low profile, as a pump station would occupy less space and be no taller than a one-story residential home. The pump station at the Resort Storage Pond would be consistent with the existing facilities at the Resort Storage Pond site, and as the area has been developed, an additional facility consistent with the surroundings would not impact the mountain ridge vistas visible in the area surrounding this site. Thus, scenic vista impacts from the pump station at the Resort Storage Pond would be less than significant. Furthermore, the pump stations and monitoring wells that would be installed at the BBARWA WWTP would be visually consistent with that which exists within the WWTP at present (refer to Figures 3-27 and 3-

28, which depict aerial views of the treatment plant facility). Thus, the pump stations and monitoring wells at the BBARWA WWTP would not have a potential to impact a scenic vista—which in the vicinity of the BBARWA WWTP site include mountain ridges and parts of Baldwin Lake that have not been developed. Impacts would be less than significant.

The Sand Canyon Recharge Area will include the installation of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom (shown on Exhibit 3-1). This feature will be installed within Sand Canyon (shown on Exhibit 3-2), which is a channel at a lower elevation than the residences located on either side of the channel. The channel itself contains some riparian vegetation and is surrounded by forestry. It does not serve as a scenic vista, nor are there any scenic vistas that are visible from this location that would be impacted by the pipe outlet and erosion control, particularly given that it is located below grade, would be designed to blend in with the natural environment and is surrounded by residential uses on either side. Therefore, implementation of the pipe outlet and erosion control at the Sand Cayon Recharge Area would not permanently alter a scenic vista, and impacts would therefore be less than significant. (Draft EIR, pp. 4-18 – 4-19)

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

AES-1: Proposed facilities shall be designed in accordance with local design standards and integrated with local surroundings. Landscaping shall be installed in conformance with local landscaping design guidelines as appropriate to screen views of new facilities and to integrate facilities with surrounding areas.

AES-2: Future Replenish Big Bear Program facilities at unknown locations shall either (1) be located outside of scenic viewsheds identified in the General Plan or Municipal Code corresponding to a proposed location for a future facility; (2) be unobtrusive to scenic vistas due to height or blending the facility into the natural environment confirmed by a visual simulation that demonstrates this; or (3) where (1) or (2) are not possible, undergo subsequent CEQA documentation to assess potential aesthetic impacts a future Replenish Big Bear Program facility may have upon contain scenic resources.

Level of Significance After Mitigation: Less Than Significant

MM AES-1 would ensure that Program facilities and landscaping comply with local design standards and are integrated with local surroundings. The implementation of **MM AES-2** will ensure that impacts to scenic resources from the implementation of future Program facilities and other physical changes to the environment facilitated by the Program will be avoided or assessed further in future CEQA documentation. Thus, impacts would be reduced to a less than significant level. (Draft EIR, pp. 4-25 – 4-26)

2. Scenic Resources

Threshold: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-26 – 4-29, 4-31 – 4-32)

Explanation:

There are roadways classified as State scenic highways, in addition to roadways classified as eligible under the State scenic highway program within Big Bear Valley as discussed in **Subsection 4.2.2.1**, Scenic Resources, above; however, there are no officially designated scenic highways within the footprint of the Program. SR-38 is designated as both a State and County Scenic Highway south of State Lane (shown on **Figure 4.2-1**). Big Bear Boulevard is considered Eligible State Scenic Highway, while SR-330 and SR-18 are considered designated County Scenic Routes and Eligible State Scenic Highways. No other State or County Scenic Highways exist in the Program vicinity. Scenic resources are discussed under **Subsection 4.2.2.1**. The most significant visual resources are Big Bear Lake itself, in addition to the mountains and forested areas (part of the SBNF) on ridges surrounding Big Bear Lake and the Big Bear Valley. The activity with the highest potential to conflict with local agency design guidelines is construction-related disturbance of the landscape. Such disturbance can be reduced to an acceptable level by landscaping or revegetating disturbed areas (pipelines, evaporation basins, structural developments, pump stations, and other above ground development) either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area.

Program Category 1: Conveyance Pipelines

Construction: Conveyance pipeline installation would occur within existing ROW; however, the pipelines could potentially be placed within an eligible scenic highway, or a locally-defined scenic corridor identified in a local General Plan. Pipeline construction activities would progress along the alignment; however, construction would be temporary (about 15 months). Therefore, construction impacts would be less than significant.

All conveyance pipelines would be placed underground and would not be visible once construction is complete. The proposed pipeline alignments are illustrated on the Figures provided as part of Chapter 3, Program Description. The pipeline alignments will occur almost entirely within roadways, though the Sand Canyon Recharge Conveyance Pipeline would traverse through two private properties between Ridgecrest Drive and Sand Canyon Road (**Figure 3-31**). Additionally, the Baldwin Lake Pipeline Alignment Option to Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment, if selected, would traverse through undisturbed ground within Baldwin Lake (**Figure 3-2**), as would the pipeline that traverses through the undeveloped area between Shay Road and the Shay Pond Discharge Project (**Figure 3-33**). The remaining Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options would be installed within road ROW. None of the pipeline alignments

or pipeline alignment options would be installed within or proximate to State or County designated scenic highways. Therefore, the construction of conveyance facilities would have no potential to impact scenic resources within a State scenic highway corridor.

The Sand Canyon Recharge Conveyance Pipeline has a potential to require the removal of several trees because the alignment will traverse through the two private properties as shown on **Figure 3-31**. Thus, the proposed Program will impact scenic resources including trees as part of the proposed Program. The installation of this section of pipeline that would impact trees would occur within the City of Big Bear Lake. The City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height. Though the general location for the Sand Canyon Recharge Conveyance Pipeline has been established, the precise location for this short pipeline alignment is presently unknown. Thus, it is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed Program will be required to comply with the City of Big Bear Lake Municipal Code for this and any other Program Component that will impact trees of 12" in diameter at breast height; mitigation is provided below to ensure compliance with this requirement.

While none of the pipeline alignments or pipeline alignment options would be installed within or proximate to State or County designated scenic highways, the Program is anticipated to result in the removal of trees, the precise alignments for pipelines and other facilities have not been fine tuned. Thus, in the event that the proposed Program would result in tree removal outside of the City of Big Bear Lake, in areas under the San Bernardino County jurisdiction, the Program must comply with the San Bernardino County Development Code[16] Plant Protection and Management (88.01) in order to avoid a potentially significant impact from tree removal. The San Bernardino Development Code requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to the County's Development Code would be required. The Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under the proposed Program: 88.01.050(f)(1[a]), *The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.* As such, in order to ensure compliance with San Bernardino County's Development Code, mitigation (**MM AES-3**) shall be required to minimize impacts to trees. **MM AES-3** would ensure that, in the event that trees must be removed, the tree removal is carried out in compliance with the applicable local jurisdiction's municipal code or development code, which would minimize impacts to trees to a level of less than significant.

In addition to the required compliance with San Bernardino County and City of Big Bear Lake regulations pertaining to tree removal, tree removal is also regulated by CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being "timberland use." CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public

Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"[17] and the "Less Than 3 Acre Conversion Exemption."[18] Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from tree removal. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (**MM AGF-1**) described below. If an exemption is not available, the project will be required to comply with the above State regulations, and therefore prepare a full THP to obtain a TCP.

Based on the discussions above, the removal of trees as a result of Program implementation would have a less than significant impact to result in damage to scenic resources through compliance with CAL FIRE, San Bernardino County, and City of Big Bear Lake regulations, as enforced through **MMs AES-3** and **AGF-1**, below.

Operation: None of the pipeline alignments or pipeline alignment options would be installed within or proximate to State or County designated scenic highways. Therefore, the operation of conveyance facilities would have no potential to impact scenic resources within a State scenic highway corridor. Furthermore, as the pipelines would be located belowground, once installed, the above ground scenic resources would not be impacted by pipeline operation. As described above, the Program pipeline alignments would generally traverse through existing road ROW, through an easement through the two private properties, and possibly through undeveloped portions of Baldwin Lake and the undeveloped area between Shay Road and the Shay Pond Discharge Project (**Figure 3-33**). The undeveloped areas that would be impacted by the construction and operation of the Program pipeline alignments, based on a survey of these areas, do not contain any other scenic resources, such as rock outcroppings or historic buildings. Furthermore, the installation of pipeline within roadways would not impact adjacent structures. Thus, no potential to impact such resources as a result of this Program Component exists during either operation of construction. Therefore, as stated above, with the implementation of mitigation identified below, impacts to scenic resources would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: It is anticipated that the majority of the proposed ancillary facilities and monitoring wells would individually have small footprints. For instance, the proposed pump stations would occur either within the existing BBARWA WWTP or within the Resort Storage Pond site shown on **Figure 3-30.** As water facilities of similar size and scope exist within the properties at which the pump stations would be installed, there are no trees, rock outcroppings, or historic structures that exist that would be impacted by construction of the proposed ancillary facilities, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Furthermore, as discussed under Program Category 1, the proposed Program would not

install any facilities within or adjacent to a designated State or County Scenic Highway. Therefore, construction of the facilities proposed under Program Category 2 or under any other Program Category, would not impact scenic resources within a State or County Scenic Highway or viewshed thereof. Impacts are less than significant.

Given that the locations of 2 of the monitoring wells needed for the Sand Canyon are presently unknown, it is possible that the development of the monitoring wells may impact other scenic resources such as historic buildings, rock outcroppings, or trees, and therefore a significant and unavoidable scenic resources impact may occur. As such, mitigation (**MM AES-4**) is provided to ensure that: (1) should the removal of trees be required for a specific project, the implementing agency shall comply with the local jurisdiction's tree ordinance, (2) where clusters of trees subject to CAL FIRE regulations are required to be removed for a specific project, the implementing agency shall comply with and submit an application for the applicable exemption to remove clusters of trees, which shall be enforced through mitigation described below, and (3) the specific location selected for ancillary facilities shall avoid rock outcroppings and other scenic resources or shall require a subsequent CEQA determination. With the implementation of mitigation identified below, impacts to scenic resources would be less than significant.

Operation: Water facilities of similar size and scope exist within the properties at which the pump stations would be installed, there are no trees, rock outcroppings, or historic structures that exist that would be impacted by operation of the proposed ancillary facilities, the proposed Program would have no potential to impact trees, historic structures, or rock outcroppings at these sites. Furthermore, as discussed under Program Category 1, the proposed Program would not install any facilities within or adjacent to a designated State or County Scenic Highway. Therefore, none of the facilities proposed under Program Category 2 or under any other Program Category, would impact scenic resources within a State or County Scenic Highway or viewshed thereof. Operation of the ancillary facilities would have no potential to impact scenic resources beyond that which was described under the construction scenario above, and therefore operational impacts to scenic resources would be less than significant.

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures:

AES-3: Should the removal of trees be required for a specific Program Component, the implementing agency shall comply with the applicable local jurisdiction's municipal code or development code pertaining to the removal of trees. For Program Components within the City of Big Bear Lake, the implementing agency shall comply with the City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces, where applicable. For Program Components within San Bernardino County, the implementing agency shall comply with the San Bernardino County Development Code Plant Protection and Management (88.01), where applicable.

AES-4: Future proposed facilities defined within the Replenish Big Bear Program

at unknown locations shall either (1) be located within sites that avoid rock outcroppings and other scenic resources as defined in State CEQA Guidelines Appendix G, or (2) undergo subsequent CEQA documentation to assess potential impacts from locating a future facility in an area that may contain scenic resources.

AGF-1: Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.

Level of Significance After Mitigation: Less Than Significant.

The implementation of **MM AES-3** and **AGF-1** would ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a level of less than significant. Furthermore, **MM AES-4** would ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof.

3. Visual Character

Threshold: In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public view of the site and its surroundings?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-34, 4-36)

Explanation:

Based on a review of the California Office of Planning and Research's (OPR) Site Check,[19] the majority of the Program Area is considered urbanized under California Public Resources Code 21071 and California Public Resources Code 21094.5 or as an urbanized area or urban cluster under the Census (**Figure 4.2-4**). However, the BBARWA WWTP area, a small portion of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment, and the entirety of the Shay Pond Discharge Project are located in rural areas. As such, following analysis addresses the Program Components based on their location in relation to urbanized or non-urbanized area boundaries delineated on **Figure 4.2-4**.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Similar to that which is described under Program Category 1, above, construction activities associated with ancillary facilities would result in short-term (15 months) impacts to visual resources. Construction activities would require the use of construction equipment and storage of materials at the ancillary facility project sites. Excavated areas, stockpiled soils and other materials generated during construction would present negative visual elements to the existing landscape. However, these effects would be nominal because the ancillary facilities would be installed in developed areas with sufficient area to temporarily store construction equipment and materials, and the effects would be temporary for only the nominal duration of construction, and therefore not substantially affect the existing visual character of the surrounding area. Furthermore, there are no regulations governing scenic quality within the San Bernardino County Development Code or City of Big Bear Lake Zoning Code that would apply to the development of the proposed ancillary facilities, particularly in light of California Government Code Section 53091, which renders infrastructure projects such as that which is proposed under the Program land use and zoning independent. Impacts would be less than significant.

Operation: Once constructed, the proposed monitoring wells would occupy a footprint anticipated to be less than 20 feet by 20 feet, within a site that is less than one half acre; therefore, it is anticipated that the proposed monitoring wells would individually have small footprints and be low profile. While the precise location for two of the future monitoring wells is presently unknown, the monitoring wells will be generally downstream of the Sand Canyon Recharge Area. As stated above, there are no regulations governing scenic quality within the San Bernardino County Development Code or City of Big Bear Lake Zoning Code that would apply to the development of the proposed ancillary facilities, particularly in light of California Government Code Section 53091. As compliance with the zoning is not required for water facilities, in order to ensure that the Sand Canyon Monitoring Wells conform with design requirements established in the local jurisdiction planning documents, mitigation (**MM AES-5**) is necessary to avoid a potentially significant impact under this issue. The implementation of **MM AES-5** requires future facilities to conform with design requirements established by local jurisdictions, thereby preventing a conflict with the regulations governing scenic quality. Impacts would be less than significant with mitigation.

The remaining two wells would be installed within the BBARWA WWTP property boundary near the Solar Evaporation Ponds, and two pump stations would be installed within the BBARWA WWTP facility as well, which is considered a rural area. Given that these wells and pump stations would be installed within a facility containing similar water infrastructure development, and the monitoring wells and pump stations that would be installed within the BBARWA WWTP are anticipated to conform to the existing visual setting and thereby would have a less than significant potential to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Thus, impacts would be less than significant.

It is anticipated that the pump stations would, similar to the monitoring wells, individually

have small footprints. The pump station at the Resort Storage Pond would be located within the City of Big Bear Lake, which is considered an urbanized area. As compliance with the zoning is not required for water facilities, in order to ensure that the Sand Canyon Booster Station conforms with design requirements established in the local jurisdiction planning documents, mitigation (**MM AES-5**) is necessary to avoid a potentially significant impact under this issue because it requires future facilities to conform with design requirements established by local jurisdictions, thereby preventing a conflict with the regulations governing scenic quality. Thus, impacts would be less than significant with mitigation.

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures:

AES-5: When Replenish Big Bear Program above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility and except where such compliance is not required by California law.

The implementation of **MM AES-5** would ensure that future facilities will conform with design requirements established by local jurisdictions.

4. Light and Glare

Threshold: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-36 – 4-40)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed conveyance facilities (new Shay Pond Conveyance Pipeline, Shay Pond Replacement Pipeline, Lake Discharge Pipeline Alignment Options, Sand Canyon Recharge Conveyance Pipeline) is not anticipated to require nighttime lighting. However, if nighttime construction is required for any of the conveyance pipeline alignments, nighttime lighting at construction sites would contribute to ambient light and could adversely affect views in the area at night, which could result in a significant light and/or glare impact. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation.

Operation: The proposed conveyance systems would not require operational nighttime lighting because they would be installed belowground. As a result, there would be no new sources of lighting as a result of conveyance facilities. No impacts related to light and glare from facilities proposed under this Program Category would occur.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the proposed ancillary facilities is not anticipated to require nighttime lighting. However, if nighttime construction is required, nighttime lighting at construction sites would contribute to ambient light and could adversely affect views in the area at night. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation.

Operation: Once constructed, the proposed monitoring wells would occupy a footprint anticipated to be less than 20 feet by 20 feet, within a site that would be less than one half acre in size; therefore, it is anticipated that the majority of the proposed wells would individually have small footprints and be low profile. Though the precise location for future monitoring wells downstream of Sand Canyon is presently unknown, the facilities under this Program Category will be required to comply with the local jurisdiction zoning codes and any other regulations governing scenic quality. However, **MM AES-6** would ensure compliance with the applicable zoning code lighting and glare standards. **MM AES-7** is required to ensure a facility lighting plan for each individual facility that applies to both construction and operation is prepared that verifies that the lighting doesn't exceed 1.0 lumen at the nearest sensitive received, thereby preventing a significant light and glare impact. Impacts would be less than significant with mitigation.

The proposed monitoring wells and pump stations located within the BBARWA WWTP would occur within an existing developed facility already containing similar water infrastructure development that contains lighting. Implementation of the proposed improvements could result in new exterior nighttime lighting for operational and security purposes within the existing treatment facilities, and therefore result in a significant light and/or glare impact. The increase in lighting within existing treatment facilities could result in spill over lighting onto adjacent uses. Therefore, mitigation (**MMs AES-6** and **AES-7**) that would prevent significant spill over lighting onto adjacent uses is required. The applicable zoning codes govern acceptable lighting requirements, and thus, **MM AES-6** would ensure compliance with the applicable zoning code lighting and glare standards. **MM AES-7** is required to ensure a facility lighting plan for each individual facility that applies to both construction and operation is prepared that verifies that the lighting doesn't exceed 1.0 lumen at the nearest sensitive received, thereby preventing a significant light and glare impact. Impacts would be less than significant with mitigation.

The pump station at the Resort Storage Pond site may include nighttime security lighting mounted to the buildings and/or structures. These new sources of lighting could result in significant light intrusion impacts onto adjacent land uses. The proposed ancillary facilities would not include aboveground structures that would include uninterrupted expanses of glass or other highly-reflective construction material. Therefore, **MM AES-6** would ensure compliance with the applicable zoning code lighting and glare standards. **MM AES-7** is required to ensure a facility lighting plan for each individual facility that applies to both construction and operation is prepared that verifies that the lighting doesn't exceed 1.0 lumen at the nearest sensitive received, thereby preventing a significant light and glare impact. Impacts would be less than significant with mitigation.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the proposed Solar Evaporation Ponds is not anticipated to require nighttime lighting. If nighttime construction is required there are no nearby sensitive receptors at the BBARWA WWTP site that would be impacted by glare or nighttime lighting (the nearest sensitive receptor to the evaporation ponds is greater than 1,000 feet from the project footprint). However, due to its remote location, nighttime lighting at the Solar Evaporation Ponds could result in ambient lighting that may impact the overall nighttime lighting setting in the Baldwin Lake area, which could result in a potentially significant light and/or glare impact. Thus, mitigation (**MM AES−6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation. Impacts would be less than significant with mitigation.

> Operation: The proposed Solar Evaporation Ponds are not anticipated to require nighttime or security lighting; however, should the installation of any additional lighting be necessary, because these facilities will be located on relatively flat terrain, potential lighting impacts would be less than significant. The potential for glare from proposed the Solar Evaporation Ponds affecting specific residences and/or viewsheds for short periods of time is low and would not introduce substantial new sources of glare, and is therefore, less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Similar to construction of the proposed Solar Evaporation Ponds, construction of the proposed BBARWA WWTP Upgrades is not anticipated to require nighttime lighting. If nighttime construction is required there are no nearby sensitive receptors at the BBARWA WWTP site that would be impacted by glare or nighttime lighting. However, due to its remote location, nighttime lighting at the BBARWA WWTP site could result in ambient lighting that may impact the overall nighttime lighting setting in the Baldwin Lake area, and therefore result in a potentially significant light and/or glare impact. Thus, mitigation (**MM AES-6**) is required to ensure that no lighting intrudes into sensitive areas and to ensure directing light and shielding is used to minimize off-site illumination. Impacts would be less than significant with mitigation.

Operation: The proposed upgrades to the BBARWA WWTP would occur within an existing developed facility already containing water treatment facilities that contain lighting, in addition to solar panels that could cause glare. This facility is also located within a non-urbanized area, but is surrounded by rural development to the south and Baldwin Lake to the north, east, and west of the property boundaries. Thus, no development would be contemplated in future surrounding the BBARWA WWTP property boundary to the east, north, or west. The solar panels would be located adjacent to existing solar panels at BBARWA, which have not resulted in glare impacts to nearby

sensitive receptors or to aircraft fly-overs. The addition of new solar panels is not anticipated to result in glare impacts to aircraft fly-overs or nearby sensitive receptors, particularly given the lack of nearby sensitive receptors, and that the BBARWA WWTP Site is located outside of the Big Bear Airport land use compatibility zone. Further, solar

panels typically result in less glare than standard home window glass,[20] and are designed to absorb light, rather than reflect it. Thus, glare impacts from the installation of the solar panels are anticipated to be less than significant.

Regardless, implementation of the proposed improvements could result in new exterior nighttime lighting for operational and security purposes within the existing treatment facilities. The increase in lighting within existing treatment facilities could result in spill over lighting onto adjacent uses. Furthermore, glare from the proposed solar panels could adversely affect daytime views of the area, and result in a potentially significant light and/or glare impact. Therefore, mitigation (**MMs AES-6** and **AES-7**) that would minimize glare and lighting impacts at the nearest sensitive receptors would be required to minimize impacts to a level of less than significant.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

AES-6: Future Replenish Big Bear Program projects shall implement at least the following measures, unless they conflict with the local jurisdiction's light requirements, in which case the local jurisdiction's requirements shall be enforced:

- Use of low-pressure sodium lights where security needs require such lighting to minimize impacts of glare.

- The height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.

- Directing light and shielding shall be used to minimize off-site illumination during both construction or operation of any Program facility.

- No light shall be allowed to intrude into sensitive light receptor areas during both construction or operation of any Program facility.

- Non-reflective materials and/or coatings shall be used on the exterior of all facilities if constructed in a publicly visible location (such as from a roadway or public facility).

AES-7: A Facility lighting plans that shall apply to construction and operation shall be prepared for each Replenish Big Bear Program component and shall demonstrate that glare from construction, operation and safety night lights that may create light and glare affecting adjacent occupied property are sufficiently shielded to prevent light and glare from spilling into occupied structures. This plan shall specifically verity that the lighting doesn't exceed 1.0 lumen at the nearest residence to any lighting site within the project footprint. This plan shall be implemented by the implementing agency to minimize light or glare intrusion onto adjacent properties.

During Program construction and operation, the Implementing Agency shall

eliminate all nonessential lighting throughout each individual Program area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. BBARWA shall ensure that lighting for Program activities is shielded, cast downward, and does not spill over onto other properties or upward into the night sky, except where essential to perform Program operations (see the International Dark-Sky Association standards at http://darksky.org/). BBARWA shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less. (Final EIR, p. 4-40.)

Level of Significance After Mitigation: Less Than Significant

The implementation of MM AES-6 and AES-7 would ensure that light and glare impacts from future structures associated with the Program are minimized to a level of less than significant.

B. AGRICULTURE AND FORESTRY RESOURCES

1. Loss of Forest Land

Threshold: Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-55 - 4-56)

Explanation:

Program Category 1: Conveyance Pipelines

As described in the **Subchapter 4.2**, Aesthetics, under issue (b), the majority of the proposed Program's area of impact does not contain woodland areas that could be described as forest land. According to the San Bernardino Countywide Plan EIR an estimated 37,473 acres of forest and woodland are under San Bernardino County jurisdiction and a total of 270,704 acres of forest/woodland occur within San Bernardino County. There is only one area of the proposed Program, Sand Canyon (refer to **Figures 3-12 through 3-15**), where trees may be removed. The Sand Canyon Recharge Conveyance Pipeline has a potential to require the removal of several trees because the alignment will traverse through the two private properties as shown on **Figure 3-31**. Though the general location for the Sand Canyon Recharge Conveyance Pipeline has been established, the precise location for this short pipeline alignment is presently unknown. Thus, it is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed Program will be required to comply with CAL FIRE, which designates sites containing trees/timberland resources as being "timberland use," to avoid a potentially significant loss of forest land.

CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered

commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. CAL FIRE offers a number of exemptions that would apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. However, in a phone conversation with CAL FIRE staff member on March 1, 2023, staff indicated that an agency or entity can only apply for one exemption in a 5-year period. Thus, it is anticipated that, should BBARWA or any other partner agency itself need to apply for more than one exemption for this project, a full THP and TCP would be required to be prepared for each individual Program facility requiring removal of trees/timberland following the first exemption application. Preparation of a full THP would ensure full compliance with CAL FIRE regulations, and would ensure that the TCP would be awarded, in the event that an exemption cannot be obtained. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"[25] and the "Less Than 3 Acre Conversion Exemption."[26] If the proposed Program does not comply with CAL FIRE regulations, a potentially significant impact to forest land and timberland could occur. Thus, proposed Program will be required to comply with **MM AGF-1** by submitting an application for one of the above exemptions or preparing a THP and TCP to remove clusters of trees subject to CAL FIRE regulations**,** which would avoid a potentially significant impact on forest land. With implementation of **MM AGF-1** potential impacts to forest land or timberland can be reduced to a less than significant impact level.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

AGF-1: Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.

Level of Significance After Mitigation: Less Than Significant

2. Conversion of Farmland or Forestland

Threshold: Would the Project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-57 – 4-59)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Based on the lack of farmland in the Big Bear Valley, there is no potential for the construction of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

There is a limited area (currently not defined, but estimated to be less than one acre) within the Sand Canyon Recharge Area that may experience the loss of existing trees (forest land) causing a conversion to non-forest use (i.e., pipeline alignment, monitoring well). If the proposed Program does not comply with CAL FIRE regulations, a potentially significant impact related to conversion of forest land to non-forest use could occur as a result of construction. Thus, the proposed Program will be required to comply with **MM AGF-1** by submitting an application for one of the above exemptions or preparing a THP and TCP to remove clusters of trees subject to CAL FIRE regulations**,** which would avoid a potentially significant impact related to conversion of forest land to non-forest use. The implementing agency will confer with CAL FIRE to implement **MM AGF-1**, which would avoid a significant impact related to conversion of forest land to non-forest use. With implementation of this measure the impact to forest land from construction will result in a less than significant impact to forest land. The loss of a less than one acre of forest land in the Sand Canyon Recharge Area will be less than significant through the implementation of **MM AGF-1**.

Operation: Based on the lack of farmland in the Big Bear Valley, there is no potential for the operation of the proposed Program to cause conversion of farmland to non-agricultural use in this area that would be modified as a result of implementation of this Program Category.

The proposed Program would not result in conversion of forest land to non-forest use as part of operations. As the operation of the conveyance pipelines would not include any that of a timberland operation, and no forest land would be altered as a result of operations, there is no potential for the operation of the proposed Program to cause conversion of forest land to non-forest use in this area that would be modified as a result of implementation of this Program Category. No impacts are anticipated.

Other Physical Changes

As noted under issue (a), above, the reduction of treated effluent discharges at the LV Site will result in the removal from production of an estimated total of 190-acres of Prime Farmland and Farmland of Statewide Importance, equal to about 40% of the LV Site.

Where the farmer maintains farming operations utilizing the treated effluent discharge from the LV Site, the proposed Program would result in the removal from production of an estimated total of 150-acres of Prime Farmland and Farmland of Statewide Importance. This impact is considered significant and unavoidable.

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: No feasible **MMs** exist to avoid a significant impact from the conversion of agricultural lands. **MM AGF-1** is required to reduce the significant impact to forest land.*

AGF-1: Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.

Level of Significance After Mitigation: Significant and Unavoidable

C. AIR QUALITY

1. Air Quality Plans and Air Quality Standards

Threshold: Would the Project conflict with or obstruct implementation of the applicable air quality plan; violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-78 – 4-115)

Explanation:

The Program Area is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as State and Federal agencies to reduce emissions

from stationary, mobile, and indirect sources to meet State and Federal ambient air quality standards.

Currently, these State and Federal air quality standards are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the State and Federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In December 2022, the SCAQMD released the Final 2022 AQMP.[30] The 2022 AQMP continues to evaluate current integrated strategies and control measures to meet the CAAQS, as well as explore new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the Federal, State, and local levels. Similar to the 2016 AQMP, the 2022 AQMP incorporates scientific and technological information and planning assumptions, including the 2020-2045 RTP/SCS, a planning document that supports the integration of land use and transportation to help the region meet the CAA requirements. The Program's consistency with the AQMP will be determined using the 2022 AQMP as discussed below.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993). These indicators are discussed below:

Consistency Criterion No. 1

The Program would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

Construction Impacts – Consistency Criterion 1

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if localized or regional significance thresholds were exceeded. The Program would not exceed the applicable localized significance thresholds (LSTs) or regional significance thresholds for construction activity after implementation of applicable **MMs**. A review of the consistency for each of the Program Components is provided below. Note that for air quality modeling purposes, as a conservative measure, and in order to identify the maximum daily emissions, the AQIA assumes that the Program would construct the following features simultaneously:

- Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

- 2 pump stations: 20 gpm and 1,520 gpm
- 1,350 LF of brine pipeline
- Total building area: 40,000 SF total on site
- Installation of 2 MW of solar on existing BBARWA property

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)

- Replenish Big Bear Component 3: Shay Pond Discharge Project
  - 6,310 LF of pipeline on unpaved area
- Replenish Big Bear Component 4: Solar Evaporation Pond
  - 57 acres of evaporation ponds
  - 2 monitoring wells
- Replenish Big Bear Component 5: Sand Canyon Recharge Project
  - 1 pump station
  - 2 monitoring wells
  - 7,210 LF of conveyance pipeline
  - Erosion control/rip rap at pipeline discharge

<u>Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project</u>

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP

- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project, 3,000 tons of concrete would be demolished. Additionally, up to 1,350 CY of asphalt export would be needed.

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project, it was estimated that up to 8,000 CY of soil would be exported during construction of the new building.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-7**.

Construction Emissions Summary

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-8** and **4.4-9**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 miles per hour (mph) per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-9**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-10,** below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10** were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−11** and **4.4-12**.

Impacts Without Mitigation

Table 4.4-11 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 1. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs during Program Component 1, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-12 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project, it was estimated that up to 5,875 CY of asphalt/concrete export would be needed.

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project, it was estimated that up to 19,940 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-14**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-14** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-14** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

Construction Emissions Summary

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-15** and **4.4-16**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-16**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres,

linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−17**.

Impacts Without Mitigation

Table 4.4-17 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 2. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 2, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-18 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Construction Scenario

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 3: Shay Pond Discharge Project, it was estimated that

up to 7,020 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-20**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-20** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-20** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Construction Emissions Summary</u>

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-21** and **4.4-22**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-22**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ−1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10,** above, were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables**

4.4−23 and **4.4-24**.

Impacts Without Mitigation

Table 4.4-23 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 3. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 3, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-24 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 4: Shay Pond Conveyance Pipeline, it was estimated

that up to 710 CY of asphalt/concrete export would be needed.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-26**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-26** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-26** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Construction Emissions Summary</u>

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-27** and **4.4-28**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust

emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-28**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ−1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent

with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10,** above, were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−29** and **4.4-30**.

Impacts Without Mitigation

Table 4.4-29 identifies the localized impacts at the nearest receptor location in the vicinity of the Program. Without mitigation, localized construction emissions would exceed the applicable SCAQMD LSTs for emissions of PM10 during Program Component 4. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA.

Impacts with Mitigation

Table 4.4-30 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 4 site. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. After implementation of **MM AQ-1**, construction-source emissions would not exceed the applicable SCAQMD LSTs thresholds and would be less-than-significant. Outputs from the model runs for mitigated localized construction-source emissions are provided in Appendix 3.6 through 3.10 of the AQIA. As shown in **Table 4.4-30**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would ensure that LST significance thresholds for construction are not exceeded. Impacts would be less than significant with the implementation of mitigation.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP

Sand Canyon Well site, to convey water to Sand Canyon.

- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 5: Sand Canyon, it was estimated that up to 1,500 CY of concrete/asphalt export would be needed.

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 5: Sand Canyon, it was estimated that up to 7,210 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario

should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-32**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-32** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-32** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Construction Emissions Summary</u>

Regional construction emissions for this Replenish Big Bear Component are demonstrated in Tables 4.4-33 and 4.4-34.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below

SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-34**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10,** above, were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−35** and **4.4-36**.

Impacts Without Mitigation

Table 4.4-35 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 5. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 5, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-36 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Program (Combined Impacts)

Construction Impacts

Regional construction emissions for the whole of the Program are demonstrated in **Tables 4.4-37** and **4.4-38**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done

for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

The estimated maximum daily construction emissions without mitigation are summarized on **Table 4.4-37**. Under the assumed scenarios, emissions resulting from the Program construction would exceed criteria pollutant thresholds established by the SCAQMD for emissions of NOX.

Impacts with Mitigation

The estimated maximum daily construction emissions with mitigation are summarized on **Table 4.4-38**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Therefore, the construction of the Program, and each individual project included therein, would not conflict with the AQMP according to this criterion. Impacts would be less than significant with the implementation of mitigation.

Operational Impacts – Consistency Criterion 1

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. At this time, no new stationary or portable equipment, such as emergency generators, fire water pumps, or boilers, are anticipated to be required. However, as the design progresses, if a need for additional permits is identified, BBARWA will coordinate with SCAQMD to secure the required permits. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-39**, Replenish Big Bear Program Category 1 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 1 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant. (Final EIR, p. 4-106.)

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Big Bear Lake via Stanfield Marsh, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Big Bear Lake via Stanfield Marsh falls under Program Category 1 operations as the booster station would be located at BBARWA's WWTP site. As shown on **Table 4.4-40**, Replenish Big Bear Program Category 2 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 2 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Shay Pond, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Shay Pond falls under Program Category 1 operations as the booster station would be located at BBARWA's WWTP site. As shown on **Table 4.4-41**, Replenish Big Bear Program Category 3 operations would not exceed SCAQMD thresholds, the Program would not

violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 3 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the operation of the brine evaporation ponds, it is not anticipated that significant emissions would be generated, as the brine is generated by the AWPF operations that fall under Program Category 1. As shown on **Table 4.4-42**, Replenish Big Bear Program Category 4 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 4 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.

- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.

- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.

- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-43**, Replenish Big Bear Program Category 5 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 5 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Program (Combined Impacts)

Operational Impacts

Operational emissions for the whole of the Program are demonstrated in **Tables 4.4-44**.

Operational Emissions

As previously stated, Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not

result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-44**, overall Program operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, the whole of the Program operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Operational LST Emissions

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, the Program may include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. If backup generator would be installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Therefore, the Program would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

As evaluated, the Program's localized and regional operation-source emissions would not exceed applicable regional significance threshold and LSTs. As such, a less than significant impact is expected.

On the basis of the preceding discussion, the Program would not conflict with the AQMP according to this criterion.

<u>Consistency Criterion No. 2</u>

The Program will not exceed the assumptions in the AQMP based on the years of Program build-out phase.

The 2022 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under Federal law. Growth projections from local general plans adopted by counties in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections of BBARWA, and partner agencies BBCCSD, BBLDWP, and BBMWD, is considered to be consistent with the AQMP, and therefore, would be consistent with the Consistency Criteria No. 2.

Construction Impacts – Consistency Criterion 2

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

Construction

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The BBARWA WWTP Upgrades Project would be installed within

BBARWA's existing WWTP, and there is land available to construct and upgrade the facility with comparable facilities to that which exists at present. Irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

Operation

The proposed Program is unusual because its implementation will not directly contribute to growth within the Big Bear Valley. The proposed Program was identified in the Bear Valley Basin Groundwater Sustainability Plan (GSP) to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. If Sustainable Yield of the Bear Valley Basin declines over time, growth in the Big Bear Valley continues and water users have limited ability for further conservation, additional supply will likely be needed in the future to maintain supply reliability. The new supply provided by the Program will become more critical to maintain water reliability in times of extended drought and create more resilience against future uncertainty. The Program will not induce growth directly since the additional number of employees is estimated to be five persons within an area currently populated with about 23,000 residents. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. (Final EIR, p. 4-112.)

Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as the Program's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

Construction

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Stanfield Marsh/Big Bear Lake Discharge Project Options would be installed belowground, and therefore, the installation of this pipeline would not impact the function of the aboveground uses (roadways and dirt pathways). As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

Operation

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Construction

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Shay Pond Discharge Project would include installation of pipeline belowground, and therefore, the installation of this pipeline would not impact the function of the aboveground uses (roadways and dirt pathways). As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

Operation

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be

consistent with the second criterion. Thus, impacts would be less than significant.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Solar Evaporation Ponds Project would be installed within BBARWA's existing WWTP site, and there is land available to construct the Solar Evaporation Ponds therein, which would be comparable facilities to that which exists at present in support of the existing WWTP. Irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

Operation

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

Construction

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. The Sand Canyon Recharge Project would install a booster pump station within the Resort Storage Pond Site, two monitoring wells at unknown locations downstream of the Sand Canyon Recharge Area, and would install pipeline belowground, and a pipe outlet at the Sand Canyon Recharge Area channel. Regarding the Sand Canyon Booster Station, there is land available to construct the booster pump station therein, which would be comparable facilities to that which exists at present in support of the existing water infrastructure at the Resort Storage Pond Site. Irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. The Sand Canyon Recharge Conveyance Pipeline would be installed belowground, and therefore, the installation of this pipeline would not impact the function of the aboveground uses (roadways and dirt pathways). The Sand Canyon Monitoring Wells would be installed within unknown locations, but in light of California Government Code Section 53091, infrastructure projects such as that which is proposed under the Program are land use and zoning independent, and therefore, irrespective of the site's land use designation, which would not change as a result of the proposed Program, development of the site to its maximum potential would likely occur, with disturbance of the entire site for each Program Component occurring during construction activities. As such, when considering that no emissions thresholds will be exceeded (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), a less than significant impact would result.

Operation

As discussed above, the overall Program was identified in the Bear Valley Basin GSP to accommodate anticipated growth in the Big Bear Valley based on projections in the area General Plans, and also projections in the Urban Water Management Plans for BBCCSD and BBMWD. This Program Component will not induce growth directly since the no new employees would be necessary to operate this Program Component. Further, no indirect growth will be created because Program infrastructure will be used to meet the existing Big Bear Valley population demands for water. Thus, since the Program's proposed land uses are consistent with BBARWA and partner agencies BBCCSD, BBLDWP, and BBMWD growth projections, and as this Program Component's construction and operational-source air pollutant emissions would not exceed the regional or LST emissions thresholds (refer to the emissions summaries provided under the discussion for **Consistency Criterion No. 1** above), this Program component is determined to be consistent with the second criterion. Thus, impacts would be less than significant.

On the basis of the preceding discussion, the Program is determined to be consistent with the second criterion.

Conclusion

The Program would not result in or cause NAAQS or CAAQS violations. The Program would be consistent with SCAQMD Consistency Criteria Nos. 1 and 2 for both construction and operation for each of the proposed Program components. Based on the preceding analysis, the Program is therefore considered to be consistent with the AQMP.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures: ***MM AQ-1*** *(see discussion below under question [b]) is required to minimize impacts under this issue.*

AQ-1: When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.

Level of Significance After Mitigation: Less Than Significant.

Impacts would be less than significant with mitigation incorporated.

2. Cumulatively Considerable Pollutant Emissions

Threshold: Would the Project result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-115 – 4-141)

Explanation:

CONSTRUCTION EMISSIONS

In other sections, the facilities proposed under the Program are described as Program Categories. In order to simplify the air quality modeling by area and facility component, the various Program facilities have been consolidated into components that are general to a specific location within the Program footprint. Note that for air quality modeling purposes, as a conservative measure, and in order to identify the maximum daily emissions, the AQIA assumes that the Program would construct the following features simultaneously:

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

- 2 pump stations: 20 gpm and 1,520 gpm
- 1,350 LF of brine pipeline
- Total building area: 40,000 SF total on site

- Installation of 2 MW of solar on existing BBARWA property

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

- 19,940 LF of pipeline (this is the maximum amount of pipeline that would be installed for any of the pipeline options, and as such, for modeling purposes, the maximum pipeline length that could be installed is utilized)

Replenish Big Bear Component 3: Shay Pond Discharge Project

- 6,310 LF of pipeline on unpaved area

- Replenish Big Bear Component 4: Solar Evaporation Pond

- 57 acres of evaporation ponds

- 2 monitoring wells

- Replenish Big Bear Component 5: Sand Canyon Recharge Project

- 1 pump station

- 2 monitoring wells

- 7,210 LF of conveyance pipeline

- Erosion control/rip rap at pipeline discharge

Below is an analysis of each Replenish Big Bear Program Component, as well as an impact analysis of the Program as a whole.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches

- New Denitrification Filter

- New UF and RO filtration membranes

- New UV Disinfection

- New AOP

- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project, 3,000 tons of concrete would be demolished. Additionally, up to 1,350 CY of asphalt export would be needed.

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project, it was estimated that up to 8,000 CY of soil would be exported during construction of the new building.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-7**.

Construction Emissions Summary

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-8** and **4.4-9**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-9**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38,** below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12” in diameter.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project, it was estimated that up to 5,875 CY of asphalt/concrete export would be needed.

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA

and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project, it was estimated that up to 19,940 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-14**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-14** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-14** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Construction Emissions Summary</u>

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-15** and **4.4-16**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-16**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4” pipeline to reach Shay Pond from either an existing pipeline or a new 6” pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Construction Scenario

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 3: Shay Pond Discharge Project, it was estimated that up to 7,020 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-20**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-20** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-20** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Construction Emissions Summary</u>

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-21** and **4.4-22**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-22**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD

thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 4: Shay Pond Conveyance Pipeline, it was estimated that up to 710 CY of asphalt/concrete export would be needed.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a “worst-case” analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-26**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-26** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-26** represents a “worst-case” (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

Construction Emissions Summary

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-27** and **4.4-28**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-28**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, below, implementation of this scenario to achieve the performance standard of **MM**

AQ-1 would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ−1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Construction Scenario

Demolition

Per BBARWA and the Program Team, it is anticipated that the following tons of demolished

material would be hauled off-site. The cubic yards (CY) of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 5: Sand Canyon, it was estimated that up to 1,500 CY of concrete/asphalt export would be needed.

Grading Activities

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod model was utilized to calculate fugitive dust emissions resulting from this phase of activity. The Program is anticipated to include soil import and export within the Program Area boundaries as a part of Program construction. Per

BBARWA and Program Team provided data, it is anticipated that the following cubic yards of export would occur. The cubic yards of export will be analyzed using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Replenish Big Bear Component 5: Sand Canyon, it was estimated that up to 7,210 CY of soil would be exported.

Construction Worker Trips

Construction emissions for construction worker vehicles traveling to and from the Program Area, as well as vendor trips (construction materials delivered to each individual project site) were estimated based on information from CalEEMod model defaults, BBARWA and the Program Team. Additionally, it should be noted that the trip lengths were adjusted using BBARWA and Program Team provided hauling trip lengths of 100 miles.

Construction Duration

Construction duration utilized in the analysis represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as the analysis year increases.

Construction Equipment

Associated equipment was based on information provided by the Program Description. Please refer to specific detailed modeling inputs/outputs contained in Appendices 3.1 through 3.5 of the AQIA. A detailed summary of construction equipment is provided on **Table 4.4-32**.

It is assumed that the construction of analyzed features would use the equipment listed in **Table 4.4-32** simultaneously. Furthermore, the construction equipment provided in **Table 4.4-32** represents a "worst-case" (i.e. overestimation) of actual construction equipment that may likely be used during construction activities.

<u>Construction Emissions Summary</u>

Regional construction emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4-33** and **4.4-34**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to mandatory applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

Adherence to the above measures is mandatory per the established SCAQMD Rules and would contribute to further minimization of air quality emissions to be even further below SCAQMD significances thresholds on an individual project basis than would the Project without mitigation.

Impacts with Mitigation

The estimated maximum daily construction emissions for this Replenish Big Bear Component would be below significance thresholds without mitigation. However, when combined with the emissions that would be generated by the other Program Components, emissions would exceed the SCAQMD significance thresholds, and therefore could contribute to a significant air quality emissions impact. Thus, impacts with mitigation are summarized on **Table 4.4-34**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts from implementation of the Program as a whole as a result of the combined NOX emissions threshold exceedance. In order to avoid this exceedance, the implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Replenish Big Bear Program (Combined Impacts)

Construction Impacts

Regional construction emissions for the whole of the Program are demonstrated in **Tables 4.4-37** and **4.4-38**.

Impacts without Mitigation

Measures listed below (or equivalent language) shall appear on all Program grading plans, construction specifications and bid documents, and the implementing agencies shall ensure such language is incorporated prior to issuance of any development permits. The SCAQMD Rules that are currently applicable during construction activity for this Program include but are not limited to Rule 403 (Fugitive Dust) and Rule 1113 (Architectural Coatings). It should be noted that these Best Available Control Measures (BACMs) are not mitigation as they are standard regulatory requirements. As such, credit for Rule 403 and Rule 1113 have been taken.

The contractor must therefore adhere to applicable measures contained in Table 1 of Rule 403 including, but not limited to:

- All clearing, grading, earth-moving, or excavation activities shall cease when winds exceed 25 mph per SCAQMD guidelines in order to limit fugitive dust emissions.

- The contractor shall ensure that all disturbed unpaved roads and disturbed areas within the Program are watered at least three (3) times daily during dry weather. Watering, with complete coverage of disturbed areas, shall occur at least three times a day, preferably in the mid-morning, afternoon, and after work is done for the day.

- The contractor shall ensure that traffic speeds on unpaved roads and project site areas are limited to 15 mph or less.

The estimated maximum daily construction emissions without mitigation are summarized on **Table 4.4-37**. Detailed unmitigated construction model outputs are presented in Appendices 3.1 through 3.5 of the AQIA. Under the assumed scenarios, emissions resulting from the Program construction would exceed criteria pollutant thresholds established by the SCAQMD for emissions of NOX.

Impacts with Mitigation

The estimated maximum daily construction emissions with mitigation are summarized on **Table 4.4-38**. Detailed mitigated construction model outputs are presented in Appendices 3.6 through 3.10 of the AQIA. **MM AQ-1** is recommended to reduce the severity of the impacts. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-38**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. After implementation of **MM AQ-1**, Program construction-source emissions of NOX would not exceed the applicable SCAQMD thresholds for any criteria pollutant. Thus, a less than significant impact would occur for Program-related construction-source emissions.

OPERATIONAL EMISSIONS

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing

permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on Table 4.4-39, Replenish Big Bear Program Category 1 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 1 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Big Bear Lake via Stanfield Marsh, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Big Bear Lake via Stanfield Marsh falls under Program Category 1 operations as the booster station would be located at BBARWA's WWTP site. As shown on **Table 4.4-40**, Replenish Big Bear Program Category 2 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 2 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the conveyance of Program Water to Shay Pond, it is not anticipated that significant emissions would be generated, as the operation of the booster station that would convey the Program Water to Shay Pond falls under Program Category 1 operations as the booster station would be located at BBARWA's WWTP site. As shown on **Table 4.4-41**, Replenish Big Bear Program Category 3 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 3 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. As this Program Category would include the operation of the brine evaporation ponds, it is not anticipated that significant emissions would be generated, as the brine is generated by the AWPF operations that fall under Program Category 1. As shown on **Table 4.4-42**, Replenish Big Bear Program Category 4 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 4 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.

- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.

- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.

- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Operational Emissions

Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-43**, Replenish Big Bear Program Category 5 operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, Replenish Big Bear Program Category 5 operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

Replenish Big Bear Program (Combined Impacts)

Operational Impacts

Operational emissions for the whole of the Program are demonstrated in **Tables 4.4-44**.

Operational Emissions

As previously stated, Long-term air quality impacts occur from mobile source emission generated from Program-related traffic and from stationary source emissions generated from natural gas. The Program primarily involves construction activity. For on-going operations, mobile emissions would be generated by the motor vehicles traveling to and from the project sites during on-going maintenance. However, the Program would generate a nominal number of traffic trips for periodic maintenance and inspections and would not result in any substantive new long-term emissions sources. Stationary area source emissions are typically generated by the consumption of natural gas for space and water heating devices and the use of consumer products. Heating and consumer products would not be used. Stationary energy emissions would result from energy consumption associated with the Program. However, the Program may include the use of an emergency diesel generator, allowing the pump station to run on backup power in case of emergency. If a backup generator is installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. The Program would not result in a cumulatively considerable net increase of any criteria pollutant for which the Program region is non-attainment. Backup generators would be used only in emergency situations and for routine testing and maintenance purposes and would not contribute a substantial amount of emissions capable of exceeding SCAQMD thresholds. As shown on **Table 4.4-44**, overall Program operations would not exceed SCAQMD thresholds, the Program would not violate an air quality standard or contribute to an existing violation. Therefore, the whole of the Program operations would not result in a cumulatively considerable net increase of any criteria pollutant and impacts would be less than significant.

LV Site Discharge

BBARWA received a comment from the LVEDA during the NOP comment period noting that fugitive dust may become an issue at the LV Site during high wind events as a result in the modification of discharge operations resulting from the Program. A portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. At present, BBARWA and the farmer who leases the LV Site are responsible for maintaining the site, which includes handling migration of fugitive dust. Under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;

- Planting cover crops, such as sorghum to prevent dust migration; and/or,

- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

Both continued maintenance and enhanced site maintenance would ensure that dust migrating from the LV Site is minimized as all or a portion of the LV Site becomes fallow as a result of Program operations. However, given the concern raised by the LVEDA, in the event that continued maintenance and enhanced site maintenance do not fully address the potential for fugitive dust migration to occur at the site as a result of the change in discharge operations to the LV Site from implementation of the Program, a violation of Mojave Desert Air Quality Management District (MDAQMD) Rule 403 Rule 403.2, Fugitive Dust Control for the Mojave Desert Planning Area, could occur thereby resulting in a potentially significant air quality impact. Thus, a fugitive dust response program shall be implemented by BBARWA. **MM AQ-2** would ensure that implementation of this program occurs. This would ensure compliance with MDAQMD Rule 403.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures:

AQ-1: When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.

AQ-2: BBARWA shall implement a fugitive dust response plan at the LV Site. This plan shall begin with signage at the LV Site (one along Camp Rock Road and one along Old Woman Springs Road [Highway 247]) notifying the public of a phone number and email address that can be reached if fugitive dust is observed migrating from the site. This same notification and information shall retain a place on BBARWA's website.

In response to any notifications from the public that fugitive dust is observed migrating from the LV Site, BBARWA shall implement a plan of response to minimize fugitive dust. This plan can range from short-term in nature (i.e. utilization of chemical stabilization or water to spray on the surfaces from which dust originates at the LV Site) to long-term in nature (i.e. utilization of gravel or like natural materials to stabilized the LV Site surface over the long-term or planting native plants or cover crop to stabilize the soils). The end result of implementation of the fugitive dust response plan shall be to diminish visible dust at the LV Site.

Level of Significance After Mitigation: Less Than Significant.

The implementing agencies must meet the performance standard of MM AQ-1 by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in Table 4.4-9, implementation of this scenario to achieve the performance standard of MM AQ-1 would reduce maximum daily construction emissions of NOX to below the SCAQMD regional significance threshold. Furthermore, operational emissions would be below significance thresholds as shown on Table 4.4-10, but in the event that continued maintenance and enhanced site maintenance do not fully address the potential for fugitive dust migration to occur at the LV Site as a result of the change in discharge operations to the LV Site from implementation of the Program, a fugitive dust response program shall be implemented by BBARWA through MM AQ-2, which would ensure that implementation of this program occurs and that operational fugitive dust is minimized. This would ensure compliance with MDAQMD's Rule 403. Therefore, with implementation of MM AQ-1, construction of Program facilities would not result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment, and impacts would be less than significant.

3. Sensitive Receptors

Threshold: Would the Project expose sensitive receptors to substantial pollutant concentrations?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-141 – 4-157)

Explanation:

Applicability of LSTs for the Program

For this Program, the appropriate Source Receptor Area for the LST analysis is the SCAQMD East San Bernardino Mountains (Source Receptor Area 38). LSTs apply to CO, NO2, PM10, and PM2.5. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size. In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Program-related construction, the following process is undertaken:

- Identify the maximum daily on-site emissions that would occur during construction activity:

  - The maximum daily on-site emissions could be based on information provided by BBARWA and Program Team; or

  - The SCAQMD's Fact Sheet for Applying CalEEMod to Localized Significance Thresholds and CalEEMod User's Guide Appendix A: Calculation Details for CalEEMod can be used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod.

If the total acreage disturbed is less than or equal to 5 acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in lbs/day that can be compared to CalEEMod outputs.

If the total acreage disturbed is greater than 5 acres per day, then LST impacts may still be conservatively evaluated using the LST look-up tables for a 5-acre disturbance area. Use of the 5-acre disturbance area thresholds can be used to show that even if the daily emissions from all construction activity were emitted within a 5-acre area, and therefore concentrated over a smaller area which would result in greater site adjacent concentrations, the impacts would still be less than significant if the applicable 5-acre thresholds are utilized.

The LST Methodology presents mass emission rates for each Source Receptor Area, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds.

Each Program Category has been broken out to analyze the impacts of each individual Program Component under the Program, which is appropriate in consideration of LSTs, as any impacts would be localized based on the nearby sensitive receptors.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's Administration Building.

Localized Significance Thresholds for Construction

Emissions Considered

Based on SCAQMD's LST Methodology, emissions for concern during construction activities are on-site NOX, CO, PM2.5, and PM10. The LST Methodology clearly states that "off-site mobile emissions from the Program should not be included in the emissions compared to LSTs." As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

Maximum Daily Disturbed-Acreage

Based on information provided, it was assumed that two acres would be disturbed per day for all Program Categories. This is conservative as the construction impacts are assessed against a smaller acreage threshold which would represent a more conservative assessment.

Receptors

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Program activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to a given project site has been used to determine construction and operational air quality impacts for emissions of PM10 and PM2.5, since PM10 and PM2.5 thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with LST Methodology and SCAQMD guidance. Per the LST Methodology, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. However, LST Methodology explicitly states that "LSTs based on shorter averaging periods, such as the NO2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours." Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to a project site than the receptor used for PM10 and PM2.5 analysis, must be considered to determine

construction and operational LST air impacts for emissions of NO2 and CO since these pollutants have an averaging time of 1 and 8-hours.

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10** were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−11** and **4.4-12**.

Impacts Without Mitigation

Table 4.4-11 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 1. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs during Program Component 1, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-12 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 1 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Operation-Source Emissions

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of

a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, this Program Component may include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. If backup generator would be installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

CO "Hot Spot" Analysis

An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SCAB is now designated as attainment.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods[31]. This "hot spot" analysis did not predict any exceedance e of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45**.

Based on the SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, for example, of the 8.4 ppm 8-hr CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (i.e., the highest CO generating intersection within the "hot spot" analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 7.7 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared. In contrast, an adverse CO concentration, known as a "hot spot", would occur if an exceedance of the State one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO "hot spot" at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO "hot spot" analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or "hot spots."

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to

Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

Localized Significance Thresholds for Construction

Emissions Considered

Based on SCAQMD's LST Methodology, emissions for concern during construction activities are on-site NOX, CO, PM2.5, and PM10. The LST Methodology clearly states that "off-site mobile emissions from the Program should not be included in the emissions compared to LSTs." As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

Maximum Daily Disturbed-Acreage

Based on information provided, it was assumed that two acres would be disturbed per day for all Program Categories. This is conservative as the construction impacts are assessed against a smaller acreage threshold which would represent a more conservative assessment.

Receptors

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Program activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive

receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to a given project site has been used to determine construction and operational air quality impacts for emissions of PM10 and PM2.5, since PM10 and PM2.5 thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with LST Methodology and SCAQMD guidance. Per the LST Methodology, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. However, LST Methodology explicitly states that "LSTs based on shorter averaging periods, such as the NO2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours." Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to a project site than the receptor used for PM10 and PM2.5 analysis, must be considered to determine construction and operational LST air impacts for emissions of NO2 and CO since these pollutants have an averaging time of 1 and 8-hours.

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10**, above were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−17.**

Impacts Without Mitigation

Table 4.4-17 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 2. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 2, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-18 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 2 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Operation-Source Emissions

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. This Program Component would not include the use of an emergency diesel generator. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

CO "Hot Spot" Analysis

An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods[32]. This "hot spot" analysis did not predict any exceedance e of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO "hot spot" at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways

within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO "hot spot" analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or "hot spots."

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Localized Significance Thresholds for Construction

Emissions Considered

Based on SCAQMD's LST Methodology, emissions for concern during construction activities are on-site NOX, CO, PM2.5, and PM10. The LST Methodology clearly states that "off-site mobile emissions from the Program should not be included in the emissions compared to LSTs." As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

Maximum Daily Disturbed-Acreage

Based on information provided, it was assumed that two acres would be disturbed per day for all Program Categories. This is conservative as the construction impacts are assessed against a smaller acreage threshold which would represent a more conservative assessment.

Receptors

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Program activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly, and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the LST Methodology, the nearest land use where an individual could remain for 24 hours to a given project site has been used to determine construction and operational air quality impacts for emissions of PM10 and PM2.5, since PM10 and PM2.5 thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with LST Methodology and SCAQMD guidance. Per the LST Methodology, commercial and industrial facilities are

not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for eight hours or less. However, LST Methodology explicitly states that "LSTs based on shorter averaging periods, such as the NO2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours." Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to a project site than the receptor used for PM10 and PM2.5 analysis, must be considered to determine construction and operational LST air impacts for emissions of NO2 and CO since these pollutants have an averaging time of 1 and 8-hours.

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10,** above, were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−23** and **4.4-24**.

Impacts Without Mitigation

Table 4.4-23 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 3. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 3, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-24 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 3 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Operation-Source Emissions

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. This Program Component would not include the use of an emergency diesel generator. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

CO "Hot Spot" Analysis

An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods[33]. This "hot spot" analysis did not predict any exceedance e of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO "hot spot" at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO "hot spot" analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or "hot spots." CO Impacts would be less than significant.

<u>Replenish Big Bear Component 4: Solar Evaporation Ponds Project</u>

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the

BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10,** above, were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−29** and **4.4-30**.

Impacts Without Mitigation

Table 4.4-29 identifies the localized impacts at the nearest receptor location in the vicinity of the Program. Without mitigation, localized construction emissions would exceed the applicable SCAQMD LSTs for emissions of PM10 during Program Component 4. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA.

Impacts with Mitigation

Table 4.4-30 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 4 site. The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. After implementation of **MM AQ-1**, construction-source emissions would not exceed the applicable SCAQMD LSTs thresholds and would be less-than-

significant. Outputs from the model runs for mitigated localized construction-source emissions are provided in Appendix 3.6 through 3.10 of the AQIA. As shown in **Table 4.4-30**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would ensure that LST significance thresholds for construction are not exceeded. Thus, impacts would be less than significant with the implementation of mitigation.

Localized Operation-Source Emissions

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, this Program Component would not include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

CO "Hot Spot" Analysis

An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods[34]. This "hot spot" analysis did not predict any exceedance e of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO "hot spot" at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO "hot spot" analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or "hot spots." CO Impacts would be less than significant.

<u>Replenish Big Bear Component 5: Sand Canyon Recharge Project</u>

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.
- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.
- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.
- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Localized Significance Thresholds for Construction

Program-related Receptors

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Program's potential to cause an individual and cumulatively significant impact. As a conservative measure it is assumed that the nearest sensitive receptor could potentially be located immediately adjacent to construction activities. It should be noted that the LST Methodology also explicitly states that "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Consistent with the SCAQMD's LST Methodology, a 25-meter receptor distance is utilized in this analysis and provide for a conservative i.e. "health protective" standard of care.

Localized Thresholds for Construction Activity

Since the total acreage disturbed is less than five acres per day for construction activities, the SCAQMD's screening look-up tables are utilized in determining impacts. It should be noted that since the look-up tables identifies thresholds at only 1 acre, 2 acres, and 5 acres, linear regression has been utilized to determine localized significance thresholds. Consistent with SCAQMD guidance, the thresholds presented in **Table 4.4-10,** above, were calculated by interpolating the threshold values for the Program's disturbed acreage.

LST Construction Emissions Summary

Localized emissions for this Replenish Big Bear Component are demonstrated in **Tables 4.4−35** and **4.4-36**.

Impacts Without Mitigation

Table 4.4-35 identifies the localized impacts at the nearest receptor location in the vicinity of the Replenish Big Bear Component 5. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions during Program Component 5, and as a result would not result in a potentially significant air quality impact. Outputs from the model runs for construction LSTs are provided in Appendix 3.1 through 3.5 of the AQIA. Impacts would be less than significant.

Impacts with Mitigation

Table 4.4-36 identifies mitigated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site. The estimated localized impacts at the receptors nearest the Replenish Big Bear Component 5 site would be below significance thresholds without mitigation. Thus, a less than significant impact would occur for Program-related construction-source emissions.

Localized Operation-Source Emissions

According to SCAQMD LST Methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). As previously discussed, the Program would generate a nominal number of traffic trips in the context of on-going maintenance resulting in a negligible amount of new mobile source emissions. Additionally, all pumps associated with the Program are assumed to be electrically powered and would not directly generate air emissions. However, this Program Component may include the use of an emergency diesel generators, allowing pump stations to run on backup power in case of emergency. If backup generator would be installed, the Lead Agency would be required to obtain the applicable permits from SCAQMD for operation of such equipment. The SCAQMD is responsible for issuing permits for the operation of stationary sources in order to reduce air pollution, and to attain and maintain NAAQS and CAAQS in the SCAB. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Therefore, this Program Component would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

CO "Hot Spot" Analysis

An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the State one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods[35]. This "hot spot" analysis did not predict any exceedance e of the 1-hour (20.0 ppm) or 8-hour (9.0 ppm) CO standards, as shown on **Table 4.4-45, above**.

The ambient 1-hr and 8-hr CO concentration within the Program study area is estimated to be 2.0 ppm and 1.6 ppm, respectively (data from East San Bernardino Mountains

monitoring station for 2021). Therefore, even if the traffic volumes for the Program were ten times the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, due to the on-going improvements in ambient air quality and vehicular emissions controls, this Program Component would not be capable of resulting in a CO "hot spot" at any study area intersections.

At buildout of the Program, the highest daily traffic volumes generated at the roadways within the vicinity of the Program are expected to generate less than the highest daily traffic volumes generated at the busiest intersection in the CO "hot spot" analysis. As such, this Program Component would not likely exceed the most stringent 1-hour CO standard; and therefore, the Program would not result in potentially adverse CO concentrations or "hot spots." CO Impacts would be less than significant.

Potential Impacts to Sensitive Receptors from the Whole of the Program

The potential impact of Program-generated air pollutant emissions at sensitive receptors has been considered. Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, childcare centers,and athletic facilities can also be considered as sensitive receptors. Results of the LST analysis indicate that, the Program would not exceed the SCAQMD LSTs during construction, but for one Program Component (Program Component 4, Solar Evaporation Ponds), which requires implementation of **MM AQ-1**, which would require the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. Therefore, through the implementation of mitigation, sensitive receptors would not be exposed to substantial pollutant concentrations during Program construction. Upon compliance with SCAQMD permitting procedures, localized emissions from any potential diesel generator would not result in substantial pollutant concentrations capable of exceeding operational LST thresholds. Further Program traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Program construction or operations. Impacts would be less than significant through the implementation of **MM AQ-1.**

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant.

*Mitigation Measures: Implementation of **MM AQ-1** is required to minimize impacts under this issue.*

AQ-1: When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.

Level of Significance After Mitigation: Less Than Significant.

The implementing agencies must meet the performance standard of **MM AQ-1** by requiring the contractor(s) to utilize Tier 4 emissions standards construction equipment for equipment greater than 150 horsepower (>150 hp), with the exception of drill rigs. As shown in **Table 4.4-11**, implementation of this scenario to achieve the performance standard of **MM AQ-1** would ensure that LSTs for construction are not exceeded. Therefore, with implementation of **MM AQ-1**, construction of Program facilities would not expose sensitive receptors to substantial pollutant concentrations, and impacts for both construction and operation of the Program would be less than significant.

4. Other Adverse Emissions

Threshold: Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Finding: Less than significant. (Draft EIR, pp. 4-159 – 4-161)

Explanation:

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

Construction

SCAQMD Rule 402 Nuisance, prohibits discharge from any source whatsoever of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. This rule covers generation of odors. Typical sources of odor complaints include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. Under the right meteorological conditions, some odors may still be offensive several miles from the source.

Implementation of this Program Component would have the potential to generate odorous emissions during construction activities. Construction activities are not typically sources of nuisance odors, although construction could result in minor amounts of odorous emissions associated with diesel exhaust or evaporation of VOCs from architectural coatings. These smells are largely due to the presence of sulfur and the creation of hydrocarbons during combustion. As shown in Table 4.4-28, above under question (b), construction would not result in significant emissions of SOX. Furthermore, construction would be temporary, and equipment would not be located in a single location throughout the duration of construction. Odorous hydrocarbons tend to dissipate quickly and would only affect receptors in the immediate vicinity, rather than a substantial number of people at any given time. Therefore, construction activities would not result in other emissions, such as odors, adversely affecting a substantial number of people, and impacts would be less than significant.

Operation

As discussed at the beginning of this Subchapter in response to Comment Letter #10

Michael Meyer, between 23 and 57 acres will be used to construct evaporation ponds at the BBARWA WWTP site. The general location of the ponds is shown in Figure 3-26. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. Typically, Solar Evaporation Ponds are lined shallow basins in which concentrate evaporates naturally as a result of solar radiation. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site. The precipitated crystal will be hauled off to an appropriate disposal facility.

Based on a review of similar solar evaporations pond operations handling brine, odor does not appear to be an issue with operations of this type. BBARWA will maintain the Solar Evaporation Ponds by periodically removing the salt crystals and hauling the precipitated crystal to the local landfill. This is anticipated to prevent odors from accumulating at the Solar Evaporation Ponds and migrating to nearby sensitive receptors. Furthermore, given the location proposed for installation of the Solar Evaporation Ponds at a 0.25 mile distance from the nearest sensitive receptor (residents, hospitals, senior living, churches, schools, etc.) any odors generated by the Solar Evaporation Ponds are anticipated to dissipate at the nearest sensitive receptor. Also, the operations of the existing BBARWA WWTP involve a greater potential for odors to travel, and odor nuisance has not been a significant issue in the community as a result of BBARWA operations. Thus, there has been no indication that odor traveling to sensitive receptors will result from operation of the brine ponds. However, in order to ensure that potential odor from the brine evaporation operations, and avoid potentially significant odor emissions, mitigation (MM AQ-3) has been identified that would require odor observation for the first year of the Program, with an odor response component in the event that odors are observed by nearby sensitive receptors. Thus, impacts would be less than significant with the implementation of mitigation.

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures:

AQ-3: BBARWA will establish an odor complaint/response program and will respond to any odor complaints received for this Program by odor levels at the affected receptor following the methodology specified in the ASTM Recommended Practice E679-04. If the odor levels exceed the odor intensity value of 3.0 or greater on the 8-point n-butanol intensity scale, and odor response plan will be developed and initiated to minimize the potential for odor complaints as a result of the solar brine evaporation pond operations. Odor response shall include, but not be limited to, more frequent precipitated crystal removal from the solar brine evaporation pond shall, and application of odor neutralizing materials.

This odor response/complaint program shall begin once the Solar Evaporation Ponds are operational for at least one year thereafter. If no complaints are received within the first year of operations, the program shall conclude. If one or more complaints are received within the first year of operations, the program shall continue on for the duration of Program operations.

Level of Significance After Mitigation: Less Than Significant.

Implementation of **MM AQ-3** would ensure that the only potential source of new odor generated by the Program—the solar brine evacuation ponds at BBARWA's WWTP—would be minimized through an odor complaint and response program. Therefore, through the implementation of **MM AQ-3,** Program operations would not result in other emissions, such as odors, adversely affecting a substantial number of people, and no impact would occur.

D. BIOLOGICAL RESOURCES

1. Sensitive Species

Threshold: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Finding: Less than significant with mitigation. (Draft EIR, 4-204 – 4-258)

Explanation:

The construction and operation of the infrastructure across all Program Categories required to support the Program may result in direct and indirect impacts on special-status wildlife species. The extent and nature of impacts on special-status wildlife species varies depending on the species under consideration, their range, and the type and quality of suitable habitats present.

In general, permanent and temporary direct impacts on special-status wildlife species during construction of the future infrastructure improvements across all Program Categories include mortality or injury, and disturbances to suitable habitats for special-status wildlife species, including disruption of wetland and streambeds; water pollution; and reptile, bird, and mammal burrow or nest disturbance. These habitat disturbances could lead to the permanent or temporary abandonment of these habitats by special-status species, a disruption in the life cycle of these species, or direct mortality or injury of individuals of these species.

Permanent and temporary indirect impacts on special-status wildlife species would occur through construction or maintenance activities associated with future Program facilities in a number of ways depending on the species and type of disturbance. Potential indirect impacts include erosion, soil compaction, increased siltation and sedimentation, fractures in the hardpan soils or rock outcroppings, alteration of jurisdictional water hydrology, dust aerosolization, host plant stress, destruction of native vegetation, habitat fragmentation, and noise and light pollution. These indirect impacts could lead to the disturbance of special-status wildlife species such as a temporary shift in foraging patterns or territories, refugia abandonment, increased predation, decreased reproductive success, and reduced population viability.

Construction of any Program facility should only result in mostly minimal impacts on special-status wildlife species, because only a limited amount of marginal habitat for special-status wildlife species could be impacted by construction activities. The location where most of the proposed Program facilities will be installed or constructed occurs within built-up land, or otherwise disturbed locations (such as BBARWA's WWTP, etc.), and thus construction would potentially impact special-status wildlife species that use mostly urban/developed areas. This does not negate the fact that special-status species, critical habitat, and habitat supporting special status species exists within the Big Bear Valley, and may be impacted by a minimal number and type of facilities proposed as part of the Program, particularly the facilities that would be installed within Baldwin Lake or in more rural, native land areas such as Shay Pond.

Ongoing operations or maintenance activities requiring ground disturbance, clearing, or grubbing could cause erosion and sedimentation, or could indirectly affect the hydrology of nearby jurisdictional waters and the species that depend on these resources. Chemical runoff from trucks or equipment within the future Program facility ROW could indirectly degrade suitable habitat used by these species that are present adjacent to or within the management zone boundaries. If operational maintenance requires weed abatement activities, such as the use of herbicides, these activities could also contribute to chemical runoff and pollution of adjacent suitable habitats. However, maintenance activities that would have potential impacts on special-status wildlife species are limited to the Program ROW areas that are currently in service or that will be added to normal program operations and maintenance at existing facilities.

Ash-gray Paintbrush – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the BBARWA WWTP Site, in addition to potential hostplant species (Artemisia spp.) that are present in this area as well. However, ash-gray paintbrush was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site, it is possible that the implementation of the facilities at the BBARWA WWTP site could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the MM BIO-2, which requires preconstruction clearance surveys is necessary to avoid a potentially significant impact on this species.

MM BIO-13 would ensure that the protective MMs provided herein are successfully implemented for the duration of construction and operation of future Program facilities

through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following MMs BIO-14 through BIO-25 will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent

impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

San Bernardino Blue Grass – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. No potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

Bird-foot Checkerbloom – Endangered (Federal/State)

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program, but not within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

California Dandelion – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow

habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the proposed Solar Evaporation Ponds, immediately adjacent the Shay Pond Conveyance Pipeline alignment, and adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program, but not within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

Slender-petaled Thelypodium – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as adjacent the Shay Pond Conveyance Pipeline components of the proposed Program, but not within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

Unarmored Threespine Stickleback – Endangered (Federal/State)

Findings: Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek, but are not located within the BBARWA WWTP Upgrade footprint, as this portion of the site has been developed with the facilities that support BBARWA's operations and does not contain any water features that would support this species. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

Bald Eagle – Delisted (Federal) / Endangered (State)

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally

December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

Southern Rubber Boa – Threatened (State)

Findings: According to the CNDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat throughout the Program Area, however, given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, Southern Rubber Boa are not likely to be affected by the implementation of this Program Component. Thus, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

San Bernardino Flying Squirrel – SSC

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. However, there is no suitable habitat at the BBARWA WWTP that could support this species, and therefore, no potential impacts to this species from implementation of the BBARWA WWTP Upgrades Project are anticipated.

Cushenbury Milk-vetch – Endangered (Federal)

Findings: According to the CNDDB, the nearest documented Cushenbury milk-vetch occurrence (2021) is approximately 2.4 miles northeast of the BBARWA WWTP site. This occurrence is located along a ridge between Nelson ridge and Arrastre Creek, on soils derived from carbonate and quartz monzonite in open pinyon woodland habitat (CNDDB 2023). There are no documented Cushenbury milk-vetch occurrences in the Big Bear Valley.

The USFWS lists the primary constituent elements (PCEs) for Cushenbury milk-vetch designated Critical Habitat as:

1. Soils derived primarily from the upper and middle members of the Bird Spring Formation and Undivided Cambrian parent materials that occur on dry flats and slopes or along rocky washes with limestone outwash/deposits at elevations between 1,171 and 2,013 meters (3,864 and 6,604 feet).

2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).

3. Associated plant communities that have areas with an open canopy cover and little accumulation of organic material (e.g., leaf litter) on the surface of the soil.

The associated plant communities (PCE 3) and carbonate or limestone substrates (PCE 1) Cushenbury milk-vetch requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Additionally, the Program Area is outside the known elevation range for this species, which has not been documented in the Big Bear Valley. Therefore, Cushenbury milk-vetch is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

Big Bear Valley Sandwort – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented Big Bear Valley sandwort occurrences are approximately 0.3 mile west (2021) and 0.5 mile north (1981) of the proposed Shay Pond Conveyance Pipeline alignment, within the Sawmill Pebble Plain Complex. However, there is no pebble plain or pebble plain-like habitat suitable for Big Bear Valley sandwort within the proposed Program Area footprint and this species was not detected during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, Big Bear Valley sandwort is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. No potential impacts to this species are anticipated.

Parish's Daisy – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented Parish's daisy occurrence (1988) is approximately 1.8 miles northeast of the BBARWA WWTP site. This occurrence is located within a drainage along Nelson ridge, on soils derived from dolomite on

carbonaceous rock in open pinyon and Joshua tree dominated woodland habitat (CNDDB 2023). There are no documented Parish's daisy occurrences in the Big Bear Valley.

The USFWS lists the primary constituent elements (PCEs) for Parish's daisy designated Critical Habitat as:

1. Soils derived primarily from upstream or upslope limestone, dolomite, or quartz monzonite parent materials that occur on dry, rocky hillsides, shallow drainages, or outwash plains at elevations between 1,171 and 1,950 meters (3,842 and 6,400 feet).

2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).

3. Associated plant communities that have areas with an open canopy cover.

The associated plant communities (PCE 3) and limestone, dolomite, or quartz monzonite substrates (PCE 1) Parish's daisy requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Additionally, this species has not been documented in the Big Bear Valley. Therefore, Parish's daisy is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

Southern Mountain Buckwheat – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented southern mountain buckwheat occurrences are approximately 0.3 mile west (2021) and 0.5 mile north (1981) of the proposed Shay Pond Conveyance Pipeline alignment, within the Sawmill Pebble Plain Complex. However, there is no pebble plain or pebble plain-like habitat suitable for southern mountain buckwheat within the proposed Program Area footprint and this species was not detected during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, southern mountain buckwheat is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. No potential impacts to this species are anticipated.

Cushenbury Buckwheat – Endangered (Federal)

Findings: According to the CNDDB, the nearest documented Cushenbury buckwheat occurrence (2021) is approximately 0.5 miles northwest of the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 1) site, north of Stanfield Marsh, on limestone marble and dolomitic limestone soils (CNDDB 2023).

The USFWS lists the primary constituent elements (PCEs) for Cushenbury buckwheat designated Critical Habitat as:

1. Soils derived primarily from the upper and middle members of the Bird Spring Formation and Bonanza King Formation parent materials that occur on hillsides

at elevations between 4,600 to 7,900 feet (1,400 to 2,400 meters).

2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).

3. Associated plant communities that have areas with an open canopy cover (generally less than 15 % cover) and little accumulation of organic material (e.g., leaf litter) on the surface of the soil (USFWS 1994).

The associated plant communities (PCE 3) and carbonate or limestone substrates (PCE 1) Cushenbury buckwheat requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Therefore, Cushenbury buckwheat is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

San Bernardino Mountains bladderpod – Endangered (Federal)

Findings: According to the CNDDB, the nearest documented San Bernardino Mountains bladderpod occurrence (2019) is approximately 1,000 feet north of the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 1) site. This occurrence is located in mixed single leaf pinyon, mountain juniper, and white fir forest habitat, on several carbonate hills situated just north of Big Bear Lake and Stanfield Marsh (CNDDB 2023).

The USFWS lists the primary constituent elements (PCEs) for San Bernardino Mountains bladderpod designated Critical Habitat as:

1. Soils derived primarily from Bonanza King Formation and Undivided Cambrian parent materials that occur on hillsides or on large rock outcrops at elevations between 6,883 and 8,800 feet (2,098 and 2,700 meters).

2. Soils with intact, natural surfaces that have not been substantially altered by land use activities (e.g., graded, excavated, re-contoured, or otherwise altered by ground-disturbing equipment).

3. Associated plant communities that have areas with an open canopy cover and little accumulation of organic material (e.g., leaf litter) on the surface of the soil (USFWS 1994).

The associated plant communities (PCE 3) and limestone or dolomite soils (PCE 1) San Bernardino Mountains bladderpod requires do not occur within the proposed Program Area footprint. Furthermore, most of the proposed Program Area footprint has been previously disturbed and the soils on site are no longer intact, natural surfaces (PCE 2). Therefore, San Bernardino Mountains bladderpod is presumed absent from the proposed Program Area footprint and the Program will not affect this species. No potential impacts to this species are anticipated.

Quino Checkerspot Butterfly – Endangered (Federal)

Findings: Although there is a single quino checkerspot butterfly historic collection (1969) from approximately 2.7 miles south/southeast of the Shay Pond Conveyance Pipeline, the identity of this specimen is questionable (CNDDB 2023). Furthermore, there are no other occurrences of this species documented in the Big Bear Valley and this species is considered extirpated in San Bernardino County. Therefore, quino checkerspot butterfly is not likely to occur in the Program Area and the Program will not affect this species. No potential impacts to this species are anticipated.

California Spotted Owl – SSC

Findings: According to the CNDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12,** which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12.**

Solar Evaporation Ponds Project

Ash-gray Paintbrush – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the Baldwin Lake Pipeline Alignment Option and potential hostplant species (*Artemisia* spp.) are present in this area as well. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar Evaporation Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys is necessary to avoid a potentially significant impact on this species.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully

implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

San Bernardino Blue Grass – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. There is also suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the Solar Evaporation Ponds components of the proposed Program. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar Evaporation Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys, is necessary to avoid a potentially significant impact on this species.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

Bird-foot Checkerbloom – Endangered (Federal/State)

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (Figure 4.5-11). According to the CNDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program. Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the proposed Solar Evaporation Ponds, as currently described, is likely to adversely affect this species. Thus, in order to avoid an adverse effect on this species, mitigation is necessary that would fully reduce impacts to a level of less than significant.

MM BIO-1 would minimize the potential for the Solar Evaporation Ponds to impact bird-foot checkerbloom as a result of Program implementation.

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, MM BIO-2, which requires preconstruction clearance surveys, shall be implemented.

MM BIO-3 and BIO-4 require orange construction fencing to be installed where special status plant species are found adjacent to a given project footprint. These measures will ensure that the bird-foot checkerbloom will be protected from construction impacts at the evaporation pond site within BBARWA's WWTP site (shown on Figure 4.5-10).

MM BIO-13 would ensure that the protective MMs provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following MMs BIO-14 through BIO-25 will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the

resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Thus, with the implementation of MMs BIO-1 through BIO-4, and MMs BIO 13 through BIO-25, impacts would be less than significant.

California Dandelion – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site

(2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species within the proposed Solar Evaporation Ponds. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar EvaporationPonds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys, is necessary to avoid a potentially significant impact on this species.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

Slender-petaled Thelypodium – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species within the Solar Evaporation Ponds area. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, given that there is suitable habitat located in the vicinity of the BBARWA WWTP site within which the Solar Evaporation Ponds would be installed, it is possible that the implementation of the Solar Evaporation Ponds could impact this species. Therefore, mitigation is required to ensure that impacts to this species are avoided.

In order to identify the extent of special status species plants within a given Program component, the **MM BIO-2**, which requires preconstruction clearance surveys, is necessary to avoid a potentially significant impact on this species.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on habitat values within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and

wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

Impacts would be less than significant through the implementation of mitigation.

Unarmored Threespine Stickleback – Endangered (Federal/State)

Findings: Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek, but are not located within the BBARWA WWTP Upgrade footprint, as this portion of the site is an extension of BBARWA's WWTP site and does not contain any water features that would support this species. Thus, no potential impacts to this species from implementation of the Solar Evaporation Ponds Project are anticipated.

Bald Eagle – Delisted (Federal) / Endangered (State)

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and

maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. However, the Solar Evaporation Ponds and Baldwin Lake Pipeline Alignment Option should be constructed when those portions of Baldwin Lake are dry, as BAEA prey (i.e., fish, waterfowl.), BAEA would be expected to be absent from the Program Area. Bald eagle may utilize lakeshore perches when Baldwin Lake is dry, but since the Program will not be removing any Baldwin lakeshore trees, the only real potential for adverse impacts to overwintering BAEA is if the construction disturbance affects their utilization of these perches for foraging on fish and waterfowl. Foraging on fish and waterfowl only occurs when Baldwin Lake is wet. Thus, if construction occurs when Baldwin Lake is dry, the use of the perches would not be affected. Thus, **MM BIO-9** is required to ensure that construction occurs under these conditions, and impacts to Bald Eagle are fully mitigated. With the implementation of **MM BIO-9**, impacts would be less than significant.

Southern Rubber Boa – Threatened (State)

Findings: According to the CNDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat throughout the Program Area, however, given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, Southern Rubber Boa are not likely to be affected by the implementation of this Program Component. Thus, no potential impacts to this species from implementation of the Solar Evaporation Ponds Project are anticipated.

San Bernardino Flying Squirrel – SSC

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. However, there is no suitable habitat at within the Solar Evaporation Ponds footprint that could support this species, and therefore, no potential impacts to this species are anticipated.

California Spotted Owl – SSC

Findings: According to the CNDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the

Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12,** which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12.**

Species Considered Absent for this Program Component Area

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Solar Evaporation Ponds.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)
- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

Sand Canyon Recharge Project

Ash-gray Paintbrush – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the Baldwin Lake Pipeline Alignment Option and potential hostplant species (*Artemisia* spp.) are present in this area as well. However, ash-gray paintbrush was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. No potential impacts to this species from implementation of the Sand Canyon

Recharge Project are anticipated.

San Bernardino Blue Grass – Endangered (Federal)

Findings: San Bernardino blue grass has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. There is also suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the Solar Evaporation Ponds components of the proposed Program. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

Bird-foot Checkerbloom – Endangered (Federal/State)

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program. Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the Baldwin Lake Pipeline Alignment Option and proposed Solar Evaporation Ponds, as currently described, is likely to adversely affect this species. However, as no suitable habitat exists within the Sand Canyon Recharge Project footprint, it is not anticipated that this Program Component would impact this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

California Dandelion – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is no suitable habitat for this species within the Sand Canyon Recharge Project footprint. California dandelion was

not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, as no suitable habitat exists within the Sand Canyon Recharge Project footprint, it is not anticipated that this Program Component would impact this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

Slender-petaled Thelypodium – Endangered (Federal)

Findings: According to the CNDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is no suitable habitat for this species within the Sand Canyon Recharge Project footprint. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. However, as no suitable habitat exists within the Sand Canyon Recharge Project footprint, it is not anticipated that this Program Component would impact this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

Unarmored Threespine Stickleback – Endangered (Federal/State)

Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek, but are not located within the Sand Canyon Recharge Project. Thus, no potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

Bald Eagle – Delisted (Federal) / Endangered (State)

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA, but this does not occur in the vicinity of the Sand Canyon Recharge Project footprint. This species is not known to nest in the Sand Canyon Recharge Project footprint, and therefore implementation of this Program Component would not result in any potential impacts to this species. No potential impacts to this species from implementation of the Sand Canyon Recharge Project are anticipated.

Southern Rubber Boa – Threatened (State)

Findings: According to the CNDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). Additionally, although the Sand Canyon Recharge Pipe Outlet and portions of the Sand Canyon Recharge Conveyance Pipeline are adjacent undeveloped areas of potentially suitable rubber boa habitat consisting of mixed Jeffrey pine forest and woodland and mountain juniper woodland habitats, there is no suitable rubber boa habitat within the proposed footprint of these Program components.

Due to the environmental conditions and existing disturbances within and adjacent the proposed Program Area footprint, as currently described, rubber boa is very unlikely to occur within the proposed Program Area footprint. Therefore, the proposed Program may affect, but is not likely to adversely affect this species. However, as described above, as there is some marginally suitable rubber boa habitat in the vicinity of the Sand Canyon Recharge Project. As such, **MM BIO-10** is required to avoid a potentially significant impact on this species, and ensure that pre-construction southern rubber boa surveys are conducted to ensure avoidance of impacts to this species. Impacts to this species would be less than significant with the implementation of **MM BIO-10.**

San Bernardino Flying Squirrel – SSC

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended, as required by **MM BIO-11,** for the Sand Canyon Recharge Conveyance Pipeline implementation. Impacts on this species from implementation of the Sand Canyon Recharge Conveyance Pipeline would be less than significant with the implementation of mitigation.

California Spotted Owl – SSC

Findings: According to the CNDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12,** which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12.**

Species Considered Absent for this Program Component Area

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Sand Canyon Recharge Project.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
    - Parish's Daisy – Threatened (Federal)
    - Southern Mountain Buckwheat – Threatened (Federal)
    - Cushenbury Buckwheat – Endangered (Federal)
    - San Bernardino Mountains bladderpod – Endangered (Federal)
    - Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

Shay Pond Discharge Project

Ash-gray Paintbrush – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). Ash-gray paintbrush habitat is not anticipated to exist within the Shay Pond Discharge Project footprint. However, as the Shay Pond Replacement Pipeline alignment was not surveyed in detail, as a result of the fact that BBARWA anticipates that the existing pipeline between the BBARWA WWTP site and Shay Pond

can be utilized, additional surveys must be conducted prior to implementation of Program activities within either both the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8), to assess potential Program related impacts to special status species and habitats that may occur in these areas, otherwise a potentially significant impact on a special status species may occur. This is necessary, in particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status plant species that may occur in this area. Thus, MMs BIO-7 and BIO-8 are necessary to minimize impacts from the Shay Pond Discharge Project on this species. MM BIO-7 would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

MM BIO-8 would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

San Bernardino Blue Grass – Endangered (Federal)

Findings: San Bernardino blue grass has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to San Bernardino blue grass and other special status species that may occur in this area. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. This is necessary, in particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status plant species that may occur in this area. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

MM BIO-8 would ensure that no sediment or pollutants enter Shay Pond/Shay Creek

during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

Bird-foot Checkerbloom – Endangered (Federal/State)

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). There is also suitable montane meadow habitat for this species within the possible Shay Pond Replacement Pipeline, as well as immediately adjacent the Shay Pond Conveyance Pipeline alignment and Stanfield Marsh Conveyance Pipeline Discharge Outlet components of the proposed Program. Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species. Thus, prior to implementation of the Shay Pond Discharge Project, additional surveys would be necessary to assess potential Program related impacts to this species. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

MM BIO-8 would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

California Dandelion – Endangered (Federal)

Findings: California dandelion has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species immediately adjacent the Shay Pond Conveyance Pipeline alignment. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area

footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to California dandelion and other special status species that may occur in this area. Thus, prior to implementation of the Shay Pond Discharge Project, additional surveys would be necessary to assess potential Program related impacts to this species. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. Thus, **MMs BIO-7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

MM BIO-8 would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

Slender-petaled Thelypodium – Endangered (Federal)

Findings: Slender-petaled thelypodium has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for thisspecies adjacent the Shay Pond Discharge Project components of the proposed Program. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to slender-petaled thelypodium and other special status species that may occur in this area. Thus, prior to implementation of the Shay Pond Discharge Project, additional surveys would be necessary to assess potential Program related impacts to this species. The potential for this species to occur within these areas must be surveyed, otherwise a potentially significant impact on a special status species may occur. Thus, **MMs BIO−7 and BIO-8** are necessary to minimize impacts from the Shay Pond Discharge Project on this species. **MM BIO-7** would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified

and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

MM BIO-8 would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat. Impacts would be less than significant with the implementation of mitigation.

Unarmored Threespine Stickleback – Endangered (Federal/State)

Findings: Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek. The possible Shay Pond Replacement Pipeline extends through Shay Meadow, in the immediate vicinity of Shay Creek. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, the Program could potentially result in adverse effects to the Stickleback that intermittently inhabit this portion of Shay Creek. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline.

The goal of the Shay Pond Conveyance Pipeline and associated discharge outlet component of the proposed Program is to provide a more sustainable water source needed to maintain and enhance suitable Stickleback habitat conditions in Shay Pond. The Program could increase the amount of water supplied to Shay Pond from the current 50 AFY to a maximum of 80 AFY. The proposed Shay Pond Conveyance Pipeline would be constructed in an existing unpaved roadway and the discharge outlet would be constructed in an upland area immediately adjacent Shay Pond. Therefore, construction activities associated with the installation of the proposed conveyance pipeline and discharge outlet will not affect this species.

The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. The purified water generated by the AWPF at BBARWA, proposed under this Program, could potentially significantly impact the species, if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species were analyzed on a more programmatic level, so that, should the individual project go forward in the future, mitigation would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. This **MM** details the additional studies that will be necessary to ensure that the product water is suitable to support this species. Impacts to this species would be less than significant with the implementation of **MM BIO-6.**

Bald Eagle – Delisted (Federal) / Endangered (State)

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA, but this does not occur in the vicinity of the Shay Pond Discharge Project footprint. This species is not known to nest in the Shay Pond Discharge Project footprint, and therefore implementation of this Program Component would not result in any potential impacts to this species. No potential impacts to this species are anticipated.

Southern Rubber Boa – Threatened (State)

Findings: According to the CNDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat in the vicinity of the Baldwin Lake Pipeline Alignment Option consisting of mixed wet montane meadow and big sagebrush habitat, with scattered trees, large shrubs, and woody debris. Additionally, the Baldwin Lake Pipeline Alignment Option crosses an ephemeral stream (Caribou Creek) near the western end of the alignment. However, the mixed conifer-oak forest or woodland habitats that rubber boa typically occur in are absent from this area and there are no nearby rock outcrops, downed logs, or tree stumps that could provide potential rubber boa hibernacula.

There is suitable rubber boa habitat in the vicinity of the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline.

Due to the environmental conditions and existing disturbances within and adjacent the proposed Program Area footprint, as currently described, rubber boa is very unlikely to occur within the proposed Program Area footprint. Therefore, the proposed Program may affect, but is not likely to adversely affect this species. However, as described above, as there is some marginally suitable rubber boa habitat in the vicinity of the Shay Pond Discharge Project. As such, **MM BIO−10** is required to avoid a potentially significant impact on this species, and ensure that pre-construction southern rubber boa surveys are conducted to ensure avoidance of impacts to this species. Impacts to this species would be less than significant with the implementation of **MM BIO-10.**

San Bernardino Flying Squirrel – SSC

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, this species has been documented in residential areas in the Big Bear Valley and elsewhere. Thus, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended. However, as there is no suitable habitat located within the Shay Pond Discharge Project, no impacts to this species are anticipated.

California Spotted Owl – SSC

Findings: According to the CNDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12,** which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12.**

Species Considered Absent for this Program Component Area:

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Shay Pond Discharge Project.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)

- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

Stanfield Marsh/Big Bear Lake Discharge Project

Ash-gray Paintbrush – Threatened (Federal)

Findings: According to the CNDDB, the nearest documented ash-gray paintbrush occurrences are adjacent the southeast corner of the BBARWA WWTP (1999) and approximately 400 feet north of the Baldwin Lake Pipeline Alignment Option (2016), within big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable habitat for this species within the proposed Program Area footprint near the western end of the Baldwin Lake Pipeline Alignment Option and potential hostplant species (*Artemisia* spp.) are present in this area as well. However, ash-gray paintbrush was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, ash-gray paintbrush is considered absent from the proposed Program Area footprint at the time of survey and the Program will not affect this species. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant.

San Bernardino Blue Grass – Endangered (Federal)

Findings: San Bernardino blue grass has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented San Bernardino blue grass occurrences (1981) are immediately adjacent the Shay Pond Conveyance Pipeline alignment and immediately adjacent the Stanfield Marsh Conveyance Pipeline Discharge Outlet (Option 2) site, respectively. There is also suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option, as well as the Solar Evaporation Ponds

components of the proposed Program. However, San Bernardino blue grass was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, San Bernardino blue grass is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant. Overall, through the implementation of mitigation, impacts to this species would be less than significant.

Bird-foot Checkerbloom – Endangered (Federal/State)

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the Baldwin Lake Pipeline Alignment Option, as currently described, is likely to adversely affect this species. If the species cannot be avoided due to the design or other engineering constraints, impacts to this species from implementation of the Baldwin Lake Pipeline Alignment Option would be significant and unavoidable. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required, as this species does not occur within these Alignment Options.

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, **MM BIO-2**, which requires preconstruction clearance surveys, shall be implemented.

The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it

would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, **MM BIO-5** would be necessary to minimize impacts to the bird-foot checkerbloom species to the greatest extent feasible without avoiding this Alignment Option completely, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, even with the implementation of the above mitigation measures, impacts to this species cannot be fully avoided due to its presence within the Baldwin Lake Pipeline Alignment Option.

While impacts to this species cannot be fully avoided, additional mitigation shall be implemented to further minimize impacts to this species to the greatest extent feasible. Thus, **MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to the greatest extent feasible. However, as stated above, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. No impacts would occur to this species from implementation of the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option.

California Dandelion – Endangered (Federal)

Findings: California dandelion has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented California dandelion occurrences are immediately adjacent the southeast corner of the BBARWA WWTP site (2000) and approximately 1,000 feet north of the Baldwin Lake Pipeline Alignment Option (2008), near the west end of the alignment, respectively. There is suitable montane meadow habitat for this species within the Baldwin Lake Pipeline Alignment Option. However, California dandelion was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, California dandelion is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant. Overall, through the implementation of mitigation, impacts to this species would be less than significant.

Slender-petaled Thelypodium – Endangered (Federal)

Findings: Slender-petaled thelypodium has been documented within the possible Shay Pond Replacement Pipeline. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. According to the CNDDB, the next nearest documented slender-petaled thelypodium occurrence is immediately adjacent (to the north) the Baldwin Lake Pipeline Alignment Option (2019), within montane meadow and big sagebrush habitat near the western end of this proposed alignment alternative (West Baldwin Lake Trail). There is suitable montane meadow and big sagebrush habitat for this species within the Baldwin Lake Pipeline Alignment Option. However, slender-petaled thelypodium was not observed within the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Therefore, slender-petaled thelypodium is considered absent from the proposed Program Area footprint at the time of survey and the Program, as currently described, will not affect this species. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related impacts to slender-petaled thelypodium and other special status species that may occur in this area. Given that there is suitable habitat located in the vicinity of the Baldwin Lake Pipeline Alignment Option, it is possible that, if the Baldwin Lake Pipeline Alignment Option is selected, potentially significant impacts to this species could occur. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required. However, for the Baldwin Lake Pipeline Alignment Option mitigation, is required to ensure that impacts to this species are avoided.

MM BIO-13 would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to a level of less than significant. Overall, through the implementation of mitigation, impacts to this species would be less than significant.

Unarmored Threespine Stickleback – Endangered (Federal/State)

Stickleback have been documented within the Shay Creek system from Baldwin Lake at the downstream terminus of Shay Creek, to Shay Pond and Motorcycle Pond at the upstream extent of Shay Creek, but are not located within any of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option footprints. Thus, no potential impacts to this species are anticipated.

Bald Eagle – Delisted (Federal) / Endangered (State)

Findings: The Forest Service conducts annual surveys for BAEA in the San Bernardino Mountains. Migrating BAEA have long been documented to overwinter at Big Bear Lake and Baldwin Lake. During a two-year study of the wintering BAEA population in the Big Bear Valley, it was estimated that about 30 individuals wintered in the Big Bear Valley. The wintering period for migrating BAEA in the Big Bear Valley area is generally December through March, with the first eagles arriving in mid-November and the last eagles leaving in early April (Walter and Garrett 1981). The highest numbers of wintering eagles in the area are in January and early February (Walter and Garrett 1981).

Since 2012, at least one resident pair (known as Jackie and Shadow) has been documented in the Big Bear Valley, which first nested successfully in 2012 and 2015. These eagles typically nest to the west of Grout Bay in the Fawnskin area, approximately five miles west of the Stanfield Marsh Conveyance Pipeline Discharge Outlet locations.

Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. However, the Baldwin Lake Pipeline Alignment Option should be constructed when those portions of Baldwin Lake are dry, as BAEA prey (i.e., fish, waterfowl.), BAEA would be expected to be absent from the Program Area. Bald eagle may utilize lakeshore perches when Baldwin Lake is dry, but since the Program will not be removing any Baldwin lakeshore trees, the only real potential for adverse impacts to overwintering BAEA is if the construction disturbance affects their utilization of these perches for foraging on fish and waterfowl. Foraging on fish and waterfowl only occurs when Baldwin Lake is wet. Thus, if construction occurs when Baldwin Lake is dry, the use of the perches would not be affected. Thus, **MM BIO-9** is required to ensure that construction occurs under these conditions, and impacts to Bald Eagle are fully mitigated. With the implementation of **MM BIO-9**, impacts would be less than significant.

Southern Rubber Boa – Threatened (State)

Findings: According to the CNDDB, the nearest documented rubber boa occurrence (2013) is approximately 0.5 mile north of the west end of the western end of the Baldwin Lake Pipeline Alignment Option, on the north side of East North Shore Drive (State Route 18 [SR 18]) (CDFW pers. comm.). There is some marginally suitable rubber boa habitat in the vicinity of the Baldwin Lake Pipeline Alignment Option consisting of mixed wet montane meadow and big sagebrush habitat, with scattered trees, large shrubs, and woody

debris. Additionally, the Baldwin Lake Pipeline Alignment Option crosses an ephemeral stream (Caribou Creek) near the western end of the alignment. However, the mixed conifer-oak forest or woodland habitats that rubber boa typically occur in are absent from this area and there are no nearby rock outcrops, downed logs, or tree stumps that could provide potential rubber boa hibernacula. Given the existing human disturbance adjacent the Program Area, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, Southern Rubber Boa are not likely to be affected by the implementation of this Program Component. Thus, no potential impacts to this species from implementation of the Stanfield Marsh/Big Bear Lake Discharge Project are anticipated.

San Bernardino Flying Squirrel – SSC

Findings: The Flying Squirrels of Southern California is a project of the SDNHM, in collaboration with the USFS and the USFWS, to try to determine the distribution and habitat use of the flying squirrel in southern California. According to the SDNHM database, flying squirrel have been documented in the vicinity of the Sand Canyon Recharge Conveyance Pipeline, as well as north of West North Shore Drive (State Route 38 [SR 38]), approximately 0.4 mile north of the Meadow Lane Pipeline Alignment Option. Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended, as required by **MM BIO-11,** for the Meadow Lane Pipeline Alignment Option, East Neighborhoods Pipeline Alignment Option, and West Neighborhoods Pipeline Alignment Option, implementation. Implementation of the Baldwin Lake Pipeline Alignment Option does not require implementation of mitigation to avoid impacts to this species, as no suitable habitat exists within this Alignment Option. Impacts on this species from implementation of the Meadow Lane Pipeline Alignment Option, East Neighborhoods Pipeline Alignment Option, and West Neighborhoods Pipeline Alignment Option would be less than significant with the implementation of mitigation.

California Spotted Owl – SSC

Findings: According to the CNDDB Spotted Owl Observations Database (2023), the nearest documented SPOW observation is a SPOW activity center (e.g., a roosting or nesting site) located approximately one mile southeast of the Sand Canyon Recharge Conveyance Pipeline. However, the Program Area is within an existing urban and rural residential setting that is subject to a high level of human disturbance. Additionally, the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region. Therefore, SPOW are not likely to occur in the Program Area. However, While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW as a result of light pollution. Therefore, to minimize impacts to this species from light pollution, **MM BIO-12,** which would protect nocturnal species from direct night lighting, must be implemented to avoid a potentially significant impact on this species. Impacts would be less than significant with the implementation of **MM BIO-12.**

Species Considered Absent for this Program Component Area

Findings: Please refer to the discussion under BBARWA WWTP, which describes the findings as to why the following species are considered absent from the entirety of the Program Area, including the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options.

- Cushenbury Milk-vetch – Endangered (Federal)
- Big Bear Valley Sandwort – Threatened (Federal)
- Parish's Daisy – Threatened (Federal)
- Southern Mountain Buckwheat – Threatened (Federal)
- Cushenbury Buckwheat – Endangered (Federal)
- San Bernardino Mountains bladderpod – Endangered (Federal)
- Quino Checkerspot Butterfly – Endangered (Federal)

No potential impacts to the above species are anticipated.

Conclusion

Table 4.5-3 (below) provides a list of all state and/or federally listed or proposed threatened and endangered species identified by the CNDDB and IPaC queries, where they are found (locally, adjacent to the proposed Program Area footprint, or within the proposed Program Area footprint), if suitable habitat for that species exists within the Program Area and whether the Program may affect that species.

Ultimately, several special status plant species have been documented in the vicinity of the possible Shay Pond Replacement Pipeline including the federally listed as endangered San Bernardino blue grass and California dandelion, and the state and federally listed as endangered slender-petaled thelypodium. However, the Program Team does not anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline and this alignment was not included in the floristic botanical field surveys. Should replacement of the existing pipeline to the new Shay Pond Conveyance Pipeline be required, additional surveys would be necessary prior to implementation of Program activities, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status species that may occur in this area. Additionally, precautionary measures are recommended to avoid Program related effects on the state and federally listed as endangered bird-foot checkerbloom for all Program Components except for implementation of the Baldwin Lake Pipeline Alignment Option, if selected as the preferred Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option.

The Program would have a potentially significant impact the state and federally listed as endangered Stickleback, the state listed (federally delisted) as endangered BAEA, and the

state listed as threatened southern rubber boa. Additionally, there is a moderate potential for the California SSC San Bernardino flying squirrel to occur in the Program Area. Therefore, precautionary measures are recommended to avoid or minimize any potential Program related effects on Stickleback, BAEA, rubber boa, and flying squirrel to a level of less than significant. Each of these measures are necessary to reduce impacts to these species, and their purpose in reducing impacts to each these species are discussed in detail under **MMs**, below.

Other Physical Changes to the Environment

No physical changes to the present conditions at the LV Site would be expected to occur at the LV Site from the change in discharge volume that would occur under the proposed Program. As such, no biological resources are expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

The impacts to the Shay Pond from the introduction of the new purified water source resulting from the implementation of the Program, have been identified above, and mitigative actions are proposed below under *Mitigation Measures.* The Program would provide a more sustainable water source needed to maintain and enhance suitable Stickleback habitat conditions in Shay Pond. The utilization of the Program Water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. However, the necessary steps required to ensure protection of the Stickleback should the Shay Pond Discharge Project go forward in the future has been documented herein and the change in water source at Shay Pond in support of the Stickleback has been analyzed herein at a programmatic level. The purified water generated by the AWPF at BBARWA, proposed under this Program, could potentially significantly impact the species if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species were analyzed on a more programmatic level, so that, should the individual project go forward in the future, mitigation would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. This **MM** details the additional studies that will be necessary to ensure that the product water is suitable to support this species. Impacts to this species would be less than significant with the implementation of **MM BIO-6.**

Impacts to special status species may occur if the beneficial uses listed in **Table 3-2** are obstructed as a result of the proposed Program from the discharge of purified water to Big Bear Lake via Stanfield Marsh. Beneficial uses of Big Bear Lake and Stanfield Marsh include Wildlife Habitat (WILD)—i.e. uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources—and Rare, Threatened, or Endangered Species (RARE)—uses of water that support habitats necessary, at least in part, for the survival and successful

maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered. Thus, maintaining the beneficial uses of these water bodies is paramount to protecting the rare, threatened, and/or endangered species, and wildlife habitats found therein.

In order to determine whether the Program would impact beneficial uses of Stanfield Marsh or Big Bear Lake, water quality objectives must be analyzed, as these objectives inform the beneficial use determination analyzed below. If the water quality objectives are met by the purified water discharge to Stanfield Marsh and Big Bear Lake, then the beneficial uses can demonstrably be preserved by the Program, and thereby protect special status habitats and species that are protected by the beneficial uses of these waters.

A technical memorandum (Memo) was prepared by GEI titled *"Analysis of Aquatic Life Effects of Replenish Big Bear Program's Discharge to Stanfield Marsh,"* and dated October 2023 (**Appendix 19**) to determine whether the Program Water would contain any constituents of interest (COI) that could impact rare, threatened, and endangered species, or any other beneficial use of either Big Bear Lake or Stanfield Marsh. This Memo evaluated modeled outputs from Dr. Anderson's Big Bear Lake model, partial data from the BBARWA AWPF pilot study collected from June through September 2023, and the antidegradation analysis to evaluate potential impacts on beneficial uses related to aquatic life. The Memo also described the data gaps that limit GEI's understanding of how the Stanfield Marsh/Big Bear Lake discharge will affect beneficial uses related to aquatic life and how these beneficial uses of Stanfield Marsh and Big Bear Lake will be protected through the implementation of the Program. Data gaps and sources of uncertainty were addressed by recommending an adaptive management and monitoring plan.

The discharge to Shay Pond was not evaluated by GEI in this Memo because this Program Component will not be implemented in the near future. This is because the utilization of the Program Water in support of Shay Pond resulting from the implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. Should the Program Team decide to modify the water supply at Shay Pond, the water quality impacts on the Stickleback and Shay Pond shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**.

The GEI Memo reviewed and identified the beneficial uses of Stanfield Marsh and Big Bear Lake that protect aquatic life, wildlife, and habitats to assess the water quality conditions that could impact these beneficial uses. The beneficial uses of both Stanfield Marsh and Big Bear Lake are listed in **Table 4.11-1**. The beneficial uses defined in the Santa Ana Basin Plan for Big Bear Lake and Stanfield Marsh that protect aquatic life, wildlife, and habitats and are described below:

- **Commercial and Sport Fishing (COMM)** Uses of water for commercial or recreational collection of fish and shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes. This beneficial use protects commercial fishing, which can be an indicator of the health of the wildlife and special status species utilizing Big Bear Lake for foraging and food, such as Bald Eagle. Thus, the preservation of this

beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.

- **Warm Freshwater Habitat (WARM)** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. This beneficial use protects warm water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.

- **Cold Freshwater Habitat (COLD)** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. This beneficial use protects cold water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.

- **Wildlife Habitat (WILD**) Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources. This beneficial use protects ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species.

- **Rare, Threatened, or Endangered Species (RARE)** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered. This beneficial use protects habitats that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not significantly impact wildlife, special status habitats, and special status species. The parameters that were identified by the GEI Memo that could potentially impact these beneficial uses are algae, temperature, nutrients, dissolved oxygen, pH, boron, and reinvasion by undesirable species. The general observations, analyses, and conclusions of are summarized in Section 4.11. A brief overview of these indicators is provided below, which discusses how the COMM, WARM, COLD, WILD, and RARE beneficial uses can be maintained as part of the Program, thereby protecting the special status species and habitats by which the beneficial uses support.

Algae

It is possible that the rewetting of Stanfield Marsh will result in an increase in biologically available phosphorus,[73] which would increase algal growth in Stanfield Marsh, and in Big Bear Lake, if Stanfield Marsh spilled to the lake during rewetting. The increase in phosphorus depends on interstitial pore size, total organic carbon in soils,[74] presence of aquatic vegetation, and the extent of the varial zone.[75] A small varial zone may help reduce the amount of phosphorus that is re-released into the aquatic environment. Other factors can include the seasonal timing of rewetting and the amount of uptake and storage by rooted and floating macrophytes – management strategies such as planting of rooted macrophytes can be employed during rewetting, to reduce the amount of phosphorus that remains in Stanfield Marsh and moved into the Big Bear Lake.[76] Limiting the available nutrients in the water column would reduce the probability of nuisance algae blooms. Physical conditions in the rewetted Stanfield Marsh and projected levels of phosphorus in the Program Water should not contribute to increased levels of cyanobacteria. The rewetted Stanfield Marsh will be shallow and well-mixed.[77] Cyanobacteria benefit from stratified conditions because of their natural buoyancy but do not thrive in well-mixed water columns. Thus, it is not anticipated that excessive algal growth in inland surface receiving waters would occur, and therefore, the narrative criterion for algae is predicted to be met by the proposed Program. As a result, the beneficial uses would be maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. No impacts related to beneficial uses from algae are anticipated to occur.

Temperature

The COLD beneficial use is more stringent than the WARM beneficial use. Because Stanfield Marsh was mostly dry from 2015 through 2022, temperature modeling was required to estimate Program effects.[78] Dr. Anderson used his Big Bear Lake model to simulate a run for a five-year period, with minimum effluent temperatures of 12 degrees Celsius (°C), a maximum temperature of 22°C, and a scenario of approximately 2,200 AFY of discharge.

Under the modeling scenario, water temperature excursions over 5°F/2.8°C in Stanfield Marsh only occurred during discrete periods when water levels were exceptionally low (≤ 1 meter). However, because of the frequency at which low water levels would occur, the number of excursions would be substantial. Results from the Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake prepared by Dr. Anderson highlighted some important general findings. Stanfield Marsh and Big Bear Lake are hydrologically connected through a set of culverts. For water flows to move from Stanfield Marsh into Big Bear Lake, Stanfield Marsh must first be filled before it starts flowing into the Big Bear Lake. Warm Program Water discharged to the easternmost section of Stanfield Marsh will quickly lose heat through exchange with the atmosphere and will be diluted with existing water. Higher lake levels afford greater opportunity for heat loss and dilution such that temperature effects are more likely at low lake levels. As a result of the modeling, the addition of warm Program Water to Stanfield Marsh does not alter the heat budget for Big Bear Lake and is not predicted to alter lake temperature, duration, or intensity of thermal stratification.

Program-specific information about inflow temperatures is needed to conduct a more complete analysis. Temperature represents beneficial uses for both Stanfield Marsh and

Big Bear Lake that could potentially impact special status species if obstructed by the Program. As such, mitigation is necessary to minimize the potential for inflow temperature to Stanfield Marsh and Big Bear Lake falls within the confines of the narrative temperature WQO. **MM HYD-1** would monitor the temperature of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from temperature would be less than significant through the implementation of mitigation.

Nutrients

Nutrient constituents are typically TIN, TN, TP, and chlorophyll-a. As discussed in the Antidegradation Analysis (**Appendix 3**), the proposed discharge is estimated to improve water quality in Big Bear Lake for TN, TP, and chlorophyll-a, maintain similar water quality for TIN. The predicted long-term average concentrations of TIN, TN, TP, and chlorophyll-a were lower with the proposed Program Water at various rates as compared to the predicted baseline condition, except for TIN under the 2,210 AFY + TP Offset. It is unclear why the model predicted increased TIN under this scenario while all other scenarios showed significantly reduced TIN values relative to the modeled baseline; however, the modeled difference in TIN between the Baseline and 2,210 AFY + TP Offset scenarios is approximately 4 percent, which is within the range of model variance and is considered statistically insignificant.

Although modeling shows the projected long-term average concentration of TIN is similar to the modeled baseline condition, the pilot study results (**Appendix 19** Table 3 of GEI's TM) indicated that the average TIN exceeded the Santa Ana Basin Plan WQO. Treatment process optimization is being explored to attain a higher removal efficiency to meet the most stringent TIN WQO of 0.15 ppm. As TIN has a WQO under the Basin Plan, if this objective is not met, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. For the purposes of this analysis, it is assumed that treatment optimization will result in attainment of 0.15 ppm TIN. As a result, the beneficial uses would be maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. However, if additional treatment equipment is needed to meet this objective or if regulatory compliance mechanisms are pursued to allow discharge above the objectives, consistency with the Program CEQA documentation will be verified, and, if determined necessary to comply with CEQA, subsequent CEQA documentation will be conducted. Impacts under this issue would therefore be less than significant.

Data Gaps and Limitations

Although modeling and a pilot study has been conducted for this Program, there are still some data gaps to better understand the potential impacts to the designated beneficial uses for Stanfield Marsh and Big Bear Lake with respect to aquatic wildlife and plants. These data gaps would be best resolved when Program Water is discharged to Stanfield Marsh, and and further, would be monitored with mitigative adaptation to any impacts through **MM HYD-1**. Constituents of interest with data gaps are boron, dissolved oxygen, pH, and

temperature. These constituents are further explained below. However, the specific data gaps for each COI are outlined as follows:

- **Boron:** There is uncertainty as to how boron would be assimilated into Stanfield Marsh. It appears that uptake by plants can be a significant source of sequestration of boron, suggesting that management of rooted macrophytes may provide a method of removing excess boron from Stanfield Marsh. To determine potential impacts on aquatic wildlife and plants in Stanfield Marsh and Big Bear Lake, it is recommended to conduct boron monitoring once Program Water is discharged to Stanfield Marsh. Quarterly monitoring is recommended of the Program Water to observe the boron concentration prior to introduction into Stanfield Marsh and at the existing TMDL Sampling Station MWDL9. This location is already an established sampling station through the Big Bear Lake Nutrient TMDL and is representative of Stanfield

- **Dissolved Oxygen**: Dissolved Oxygen has a narrative WQO that must be met pursuant to the WARM and COLD beneficial uses, and is therefore integral to protecting the special status species and habitats that are supported by the beneficial uses of Stanfield Marsh and Big Bear Lake. Data is not currently available to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or purified water. However, low dissolved oxygen levels could be ameliorated through aeration of effluent. Stanfield Marsh is shallow enough that stratification is unlikely to occur (Dr. Anderson, personal communication). In other words, the water column in Stanfield Marsh would be mixed through water movement and via wind mixing, which would facilitate roughly equal concentrations of dissolved oxygen throughout the water column. Also, it is possible to speculate on dissolved oxygen levels in the Program Water, but there is considerable uncertainty surrounding what will happen when this Program Water enters Stanfield Marsh. Low-nutrient water entering Stanfield Marsh may also suppress dissolved oxygen levels by reducing algae and macrophyte production of dissolved oxygen (Dr. Anderson, personal communication). To determine potential impacts to aquatic wildlife, once Program Water is discharged into Stanfield Marsh, dissolved oxygen should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed dissolved oxygen levels do not meet the Basin Plan WQO designated beneficial uses for COLD and WARM, mitigative actions may include but not be limited to the introduction of a chemical or mechanical intervention to stabilize dissolved oxygen levels. MM HYD-1 would monitor the dissolved oxygen levels of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs, and thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from dissolved oxygen would be less than significant through the implementation of mitigation.

- **pH**: The buffering capacity of Stanfield Marsh itself is currently unknown because it has been mostly dry since 2015, but soil chemistry has a large effect on the pH of small bodies of water. As such, it is not presently known precisely how

the Program will impact the pH of Stanfield Marsh, and therefore observation of how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation, is necessary to bridge this data gap. To determine potential impacts to aquatic wildlife, once Program Water is discharged into Stanfield Marsh, pH should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed pH levels do not meet the Basin Plan WQO for inland surface waters, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to introduction of a chemical intervention to stabilize pH levels. **MM HYD-1** would monitor the pH levels of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs, and thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from pH would be less than significant through the implementation of mitigation.

- **Temperature**: There is uncertainty about predicted temperatures arise because no temperature data are available for the Program's Water - theoretical temperature ranges were developed using data from a pilot project near sea level and corrected for elevation, but still, there is a gap in data that can only be filled once the Program is operational. As indicated in earlier discussions on the temperature modeling data, additional monitoring is recommended once the Program's Water is discharged into Stanfield Marsh. Temperature modeling is recommended to be conducted using an online analyzer to obtain continuous readings of the Program Water effluent and in Stanfield Marsh. Similar to previous discussions on location of monitoring, the existing TMDL Sampling Station MWDL9 can be utilized. If observed temperature levels do not meet the Basin Plan WQO designated beneficial uses for COLD and WARM, mitigative actions may include but not be limited to introduction of a temperature cooling mechanism to lower the temperature of the Program Water introduced into Stanfield Marsh. **MM HYD-1** would monitor the temperature of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from temperature would be less than significant through the implementation of mitigation.

- **Reinvasion of Invasive Species**: Invasive plants and aquatic animals (vertebrate or otherwise) will be able to access Stanfield Marsh when it is rewetted. Because it is upstream of Big Bear Lake, it may be desirable to prevent contamination of Stanfield Marsh by species such as Eurasian Watermilfoil (*Myriophyllum spicatum*) and Common Carp (*Cyprinus carpio*), which are known invasive species that appear in Big Bear Lake. Proliferation of Eurasian Watermilfoil can cause periodic depression in dissolved oxygen levels, and this

species adversely affects all beneficial uses relating to the protection of aquatic life. As the reinvasion by undesirable species can only occur once Stanfield Marsh is rewetted, monitoring is the only means by which to observe whether such species become invasive in Stanfield Marsh from Program implementation. Thus, it is recommended for monitoring to be conducted at least on a bi-yearly basis to observe the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake, which shall be a requirement of Program implementation through **MM HYD-1**. Furthermore, mitigative actions under **MM HYD-1** if invasive species are observed would include invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions to remove the invasive species present as a result of introduction of the Program Water. Additionally, MM HYD-1 requires an account of invasive species within Stanfield Marsh and Big Bear Lake to be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program. This would protect the beneficial uses of Stanfield Marsh and Big Bear Lake by preventing invasive species proliferation in Stanfield Marsh and Big Bear Lake, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from invasive species would be less than significant through the implementation of mitigation.

Overall, the general findings of this Memo are that the Program water discharge to Big Bear Lake via Stanfield Marsh is not anticipated to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFS. In fact, the provision of additional high-quality water to Big Bear Lake via Stanfield Marsh is more likely to benefit the habitat and thereby the species supported by the habitat at Big Bear Lake and Stanfield Marsh because the provision of additional water would promote growth of the existing habitat and creation of new habitat that would facilitate a commensurate increase in habitat availability for species supported by the habitat within the Stanfield Marsh. However, there are data gaps that must be addressed to support GEI's understanding of the impacts. Data gaps and sources of uncertainty are addressed as part of an AMMP that will be enforced through MM HYD-1.

The Program's Water would help support the RARE and WILD beneficial uses simply by re-wetting the area. Exhibit 4.5-1 shows Big Bear Lake area was at a record low in 2018 and Stanfield Marsh was dry. Extensive modeling by Dr. Anderson showed that the release of water into Big Bear Lake through Stanfield Marsh would result in large increases in lake water surface elevation and lake water surface area. Exhibit 4.5-2 shows this increase in inundated area would extend into Stanfield Marsh. Even under a scenario of protracted drought, defined as the fifth percentile of flows entering Stanfield Marsh and Big Bear Lake, at least some water would remain in Stanfield Marsh. This is in stark contrast to existing conditions, wherein the Stanfield Marsh has been mostly dry for several years. Some potential benefits are outlined below.

- Availability of water will allow the establishment of riparian plants, macrophytes, and algae, as well as the invertebrate and vertebrate fauna that rely upon them.

- Some organisms have the ability to adapt to extremely variable environments. For example, highly mobile animals (e.g., waterfowl) will avoid or emigrate from dry areas, and drought-tolerant plants can survive in a wide variety of moisture regimes or can remain dormant for long periods of time. However, less mobile/more specialized species are excluded from highly unpredictable environments. Reducing the degree of disturbance (i.e., episodic drying) will allow more species to utilize the area.

- Maintaining water levels in Stanfield Marsh may also increase lakeshore fringe habitat, which is currently limited due to water level fluctuations. This habitat type is utilized by rare birds (American Bald Eagle *Haliaeetus leucocephalus*, Southwestern Willow Flycatcher *Empidonax trailii extimus*), rare mammals (San Bernardino Flying Squirrel *Glaucomys sarinus*), and rare plants (Slender-petaled Thelypodium *Thelypodium stenopetalum*). Other more common species would benefit from the presence of lakeshore fringe and open water habitat as well. These include amphibians, ducks/wading birds, and bats that forage over open water.

Returning a reliable source of water to Stanfield Marsh would unequivocally benefit wildlife, particularly aquatic or semi-aquatic species.

Beneficial Use Conclusion

As previously stated, impacts to special status species may occur if the beneficial uses listed in Table 3-2 are obstructed as a result of the proposed Program from the discharge of purified water to Big Bear Lake via Stanfield Marsh. Beneficial uses of Big Bear Lake and Stanfield Marsh include Wildlife Habitat (WILD)—i.e. uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources—and Rare, Threatened, or Endangered Species (RARE)—uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered. Thus, maintaining the beneficial uses of these water bodies is paramount to protecting the rare, threatened, and/or endangered species, and wildlife habitats found therein. Based on the above discussion, the Program's Water to Stanfield Marsh/Big Bear Lake would have a less than significant potential to obstruct the beneficial use of either Stanfield Marsh or Big Bear Lake with the implementation of **MM HYD-1**. Impacts would be less than significant through the implementation of mitigation. In addition, the Program's Water would help support the RARE and WILD beneficial uses simply by re-wetting the area.

Level of Significance Before Mitigation: Potentially Significant
Mitigation Measures:

To reduce or prevent activities that may adversely affect sensitive species identified in **Table 4.5−3,** above, the following **MMs** will be incorporated into any specific projects and/or contractor specifications for future project-specific impacts to protect sensitive resources and habitat.

MM BIO-1 would minimize the potential for the Solar Evaporation Ponds to impact bird-foot checkerbloom as a result of Program implementation.

BIO-1 The Solar Evaporation Ponds shall be designed to avoid areas where bird-foot checkerbloom is known to occur (specifically, the areas that are delineated on Figure 4.5-10). The area where bird-foot checkerbloom is known to occur shall be verified by a qualified biologist prior to the commencement of construction. Orange construction fencing, or similarly visible material should be installed around the area where bird-foot checkerbloom is located, as determined by the qualified biologist, and this area shall be completely avoided as a feature of the solar evaporation pond design.

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, the following measure requiring preconstruction clearance surveys shall be required.

BIO-2 Preconstruction clearance surveys shall be conducted by a qualified biologist who is familiar with the local flora, to determine if any special status plant species are present within the proposed disturbance area prior to construction of any individual Program component. Botanical surveys shall be conducted during the appropriate time of year, when target species are both evident and identifiable.

Should any special status plants be located within the area of potential effect (APE) during the preconstruction survey (excluding the Baldwin Lake Pipeline Option), the Implementing Agency shall fully avoid the plant(s) in accordance with the provisions of MM BIO-3 or due to the federal involvement in the Project, Section 7 Consultation with the USFWS shall be conducted, if the species is federally listed, or an Incidental Take Permit (ITP) from CDFW shall be obtained. Subject to CDFW and/or USFWS concurrence, the Implementing Agency shall mitigate the loss of the plant(s) through the purchase of mitigation credits from a CDFW-approved bank, or the acquisition and conservation of land approved by CDFW at a minimum 1:1 (replacement-to-impact) ratio. (Final EIR, p. 4-250.)

MM BIO-3 and **BIO-4** requires orange construction fencing to be installed where special status plant species are found adjacent to a given project footprint. This measure will ensure that the bird-foot checkerbloom will be protected from construction impacts at the evaporation pond site within BBARWA's WWTP site (shown on **Figure 4.5-10**).

BIO-3 If any listed bird-foot checkerbloom is found by the onsite biological monitor, or by construction personnel who are educated in species avoidance pursuant to MM BIO-16, within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure applies to the Solar Evaporation Ponds Project as shown on Figure 4.5-10. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected Alignment Option. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to MM BIO-5.

BIO-4 If any other listed special status species are found within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected alternative. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to MM BIO-5.

The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, MM BIO-5 would be necessary to minimize impacts to the bird-foot checkerbloom species, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option.

BIO-5 Where feasible, the Baldwin Lake Pipeline Alignment Option shall be designed to avoid the areas within BBARWA's property where bird-foot checkerbloom is known to occur (shown on Figure 4.5-10). Otherwise, should BBARWA choose to install the Baldwin Lake Pipeline Alignment Option as it is currently proposed, BBARWA shall proceed as follows:

- Due to the federal involvement in the Project, Section 7 Consultation with the USFWS shall be conducted, and an Incidental Take Permit (ITP) from CDFW shall be obtained. .

- Subject to CDFW and USFWS concurrence, with the ultimate mitigation strategy to be approved by CDFW and USFWS prior to implementation, BBARWA shall proceed with the following approach to mitigate impacts to this species:

  - BBARWA shall transplant the plants implement a translocation program in which the plants shall be moved out of the way during construction, and shall be watered and maintained in a holding area and then either:

    (a) replanted over the to a location where the plants can be conserved and protected outside of the Baldwin Lake Pipeline Alignment Option APE. BBARWA shall establish at a minimum, an informal, but in preference, a formal conservation easement over the Baldwin Lake Pipeline Alignment Option APE to ensure protection of the species in perpetuity; or,

    (b) replanted in BBARWA's established conservation area to protect the species in perpetuity. (Final EIR, p. 4-251.)

The proposed Program may result in a change in water source to the Stickleback, which has a potential to significantly impact the species, if the water source lacks the nutrients necessary to support the species, or contains any constituents that, when introduced into the Stickleback habitat, would adversely impact the species. The impacts to this species have been analyzed on a more programmatic level, so that, should the individual project go forward in the future, the mitigation described below would stipulate the steps necessary to minimize impacts from changing the water source at Shay Pond. Therefore, should the Program Team ultimately decide to modify the water supply at Shay Pond, the implementation of an AMMP would ensure that the change in water source is supportive of the Stickleback and does not result in any adverse impacts to the species, as required by MM BIO-6, below. Furthermore, should the impacts to the Stickleback fall outside the scope of that which has been analyzed in this DPEIR, preparation of a project-specific subsequent CEQA documentation would be required. MM BIO-6 would be required to ensure the preparation of the additional studies that will be necessary to ensure that the product water is suitable to support the Stickleback at Shay Pond. Therefore, should the Program Team ultimately modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by MM BIO-6, below.

BIO-6 In order to change the water source at Shay Pond, an AMMP shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a MOU (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to the lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species.

The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible.

As part of the MOU and AMMP implementation process, BBARWA, in association with BBCCSD shall obtain the following data to be provided to CDFW and/or USFWS:

- Data on the chemical characteristics of the Program Water to be used for the Project;

- Data on the physical characteristics of the Program Water that are likely to impact fish species, such as water temperature, dissolved oxygen, and pH;

- A comparison of water quality for the Program Water versus the groundwater currently being used to discharge to Shay Pond to ascertain if the

change in water source would introduce contaminants that may impact the reproduction and survival of the stickleback. (Final EIR, p. 4-252)

The possible Shay Pond Replacement Pipeline (**Figures 4.5-7 through 4.5-8**) was not surveyed because the Program Team does not currently anticipate utilizing this alignment to convey water to the new Shay Pond Conveyance Pipeline. This is because BBARWA expects that the existing pipeline that extends to Shay Pond will be sufficient in the event that this project (utilization of Program Water to replace the potable water utilized to support the Stickleback at Shay Pond) ultimately was to go forward. Additional surveys should be conducted prior to implementation of Program activities within either both the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline (**Figures 4.5-7 through 4.5-8**), to assess potential Program related impacts to special status species and habitats that may occur in these areas. In particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled thelypodium, and other special status species that may occur in this area.

MM BIO-7 would ensure that the Shay Pond Discharge Project is subject to a site-specific biological resources assessment, wherein, if sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken to avoid significant impacts to these species.

BIO-7 Prior to implementation of the Sand Canyon Monitoring Wells (once the final locations have been selected), and prior to the replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline and the new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8), a site-specific biological resources assessment shall be conducted by a qualified biologist familiar with Big Bear Valley flora and fauna. This survey shall be conducted in accordance with appropriate standards by a qualified biologist/ ecologist. If sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken:

a. The Implementing Agency shall provide compensation for sensitive habitat acreage lost by acquiring and protecting in perpetuity (through property or mitigation bank credit acquisition) habitat for the sensitive species at a ratio of not less than 1:1 for habitat lost with the ultimate compensatory mitigation ratio being determined through negotiation with USFWS and/or CDFW, and never less than 1:1. The property acquisition shall include the presence of at least one animal or plant per animal or plant lost at the development site to compensate for the loss of individual sensitive species.

b. The final mitigation may differ from the above values based on negotiations between the implementing agency and USFWS and CDFW for any incidental take permits for listed species. BBARWA and/or the implementing agency shall retain a copy of the incidental take permit as verification that the mitigation of significant biological resource impacts at a project site with sensitive biological resources has been accomplished.

c. Preconstruction botanical surveys for special-status plant communities and special-status plant species will be conducted in areas that were not previously surveyed because of access or timing issues or project design changes; pre-construction surveys for special-status plant communities and special-status plant species will be conducted before the start of ground-disturbing activities during the appropriate blooming period(s) for the species. If special-status plants or plant communities are identified, the following hierarchy of actions shall be taken: a) find an alternative site; b) avoid the plants and maintain them onsite after completing the project; or c) provide compensatory mitigation offsite. (Final EIR, p. 4-253)

MM BIO-8 would ensure that no sediment or pollutants enter Shay Pond/Shay Creek during construction to avoid impacts to Stickleback and its habitat, thereby protecting this species and its habitat.

BIO-8 Appropriate BMPs (e.g., silt fence) should be implemented during construction of the Shay Pond Conveyance Pipeline to ensure that no sediment or pollutants enter Shay Pond/Shay Creek, such that construction does not impact the Stickleback and/or its habitat.

Bald Eagle perches in the immediate vicinity of lakeshores form an essential habitat requirement for BAEA in the Big Bear Valley. Big Bear Lake and Baldwin Lake support overwintering migratory BAEA and the BBARWA WWTP site is within suitable BAEA foraging habitat and adjacent BAEA for perching habitat along the Baldwin Lake shoreline. However, this species is not known to nest in the Program Area and given the existing human disturbance adjacent the Program site, consisting mostly of residential development, BBARWA WWTP operations and maintenance, and Big Bear Airport operations and maintenance, BAEA are not likely to nest within the Program Area. However, the proposed Solar Evaporation Ponds and Baldwin Lake Pipeline Alignment Option should be constructed when those portions of Baldwin Lake are dry, as BAEA prey (i.e., fish, waterfowl.), BAEA would be expected to be absent from the Program Area. Bald eagle may utilize lakeshore perches when Baldwin Lake is dry, but since the Program will not be removing any Baldwin lakeshore trees, the only real potential for adverse impacts to overwintering BAEA is if the construction disturbance affects their utilization of these perches for foraging on fish and waterfowl. Foraging on fish and waterfowl only occurs when Baldwin Lake is wet. Thus, if construction occurs when Baldwin Lake is dry, the use of the perches would not be affected. Thus, MM BIO-9 is required to ensure that construction occurs under these conditions, and impacts to Bald Eagle are fully mitigated.

BIO-9 All construction activities associated with the proposed Solar Evaporation Ponds shall be conducted when the portion of Baldwin Lake where this Program component will occur is dry.

There is some marginally suitable rubber boa habitat in the vicinity of the Baldwin Lake Pipeline Alignment Option and there is suitable rubber boa habitat in the vicinity of the possible replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline. Also, the Sand Canyon Recharge Pipe Outlet and portions of the Sand Canyon Recharge Conveyance Pipeline are adjacent undeveloped areas of potentially suitable rubber boa habitat consisting of mixed Jeffrey pine forest and woodland and mountain juniper woodland habitats. As such, MM BIO-10 is required to ensure that pre-construction

southern rubber boa surveys are conducted to ensure avoidance of impacts to this species.

BIO-10 1. Preconstruction rubber boa surveys shall be conducted for each Program component that would provide 100% visual coverage of any undeveloped areas within the proposed Program Area footprint and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for rubber boa.

2. Rubber boa exclusion fence (e.g., silt fence) shall be installed around the perimeter of the Sand Canyon Recharge Pipe Outlet construction site prior to commencement of any Program related ground disturbing activities in this area. All construction activities shall be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in nearby habitat.

3. A qualified biologist who is familiar with southern rubber boa and its habits shall be present on site during initial ground disturbing activities within or adjacent any potential rubber boa habitat to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (e.g., rotting logs/stumps, duff layer). The biological monitor shall visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed.

4. All open trenches shall be backfilled or covered at the end of the day and ramped to allow rubber boa and other wildlife to escape.

5. If a rubber boa is found during preconstruction presence/absence surveys or during construction activities, all site-specific project activities shall be halted, CDFW shall be contacted, and a CESA Incidental Take Permit shall be obtained from CDFW prior to reinitiating project activities.

Although the Program Area is situated in an urban and rural residential setting that is subject to a high level of existing human disturbance, there is a moderate potential for flying squirrel to occur in the Program Area and species-specific impacts avoidance and minimization measures are recommended, as required by MM BIO-11, below.

BIO-11 1. To ensure the Program does not impact flying squirrel, preconstruction surveys for each Program Component (except those occurring at the BBARWA WWTP) shall be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris.

2. If suitable flying squirrel cavity nesting sites are detected within the proposed Program Area footprint, then coordination with the CDFW would be necessary to determine appropriate minimization and MMs to offset Program related impacts to this species prior to the commencement of construction within the area within which the suitable flying squirrel cavity nesting sites are

located.

While the Program Area does not support the old growth montane hardwood and montane hardwood-conifer forests that SPOW typically occupy in the region, there is a minor potential for the Program to impact SPOW or flying squirrel as a result of light pollution. Therefore, to minimize impacts to these species from light pollution, the following MM shall be implemented.

BIO-12 To avoid potential impacts to nocturnal species such as the California Spotted Owl (SPOW) and flying squirrel, due to light pollution, project related night lighting (both temporary and permanent) shall be directed away from adjacent areas to protect nocturnal species from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in adjacent areas is not increased.

MM BIO-13 would ensure that the protective MMs provided herein are successfully implemented for the duration of construction and operation of future Program facilities, which would ensure direct and indirect impacts to the species identified under Table 4.5-3 with a potential for the Program to affect, are minimized to the extent feasible.

BIO-13 During final design and prior to issuance of construction permits each specific infrastructure improvement project, a BRMP shall be prepared to:

- Assemble the biological resources MMs to be applied for each specific infrastructure improvement in the future;
- Specify the terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility;
- Discuss habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts.
- The parameters of the BRMP will be formed with the MMs from subsequent CEQA documentation (if required), including terms and conditions as applicable from the USFWS, USACE, SWRCB/RWQCB, and CDFW.

Implementation of the following MMs BIO-14 through BIO-25 will ensure that Program-related construction impacts, both direct, and indirect, to sensitive biological resources and the species identified under Table 4.5-2, including the potential effects of invasive species, are reduced to a level of less than significant, except where otherwise noted herein.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project’s temporary impacts on habitat values within the area.

BIO-14 Prior to the commencement of construction within or adjacent to any natural

area, and during the appropriate periods (e.g., seasons, weather conditions, times of day), a biologist/botanist shall survey the APE to identify native species (alliances, variety, and/or subspecies) within the natural areas that would be appropriate for revegetation. As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site as identified by the site biologist/botanist pre-construction survey, which shall be implemented in cooperation with regulatory agencies and with oversight from a biologist. The seeds mix shall be verified to contain the minimum amount of no invasive plant species seeds. If seed mix without potential invasive species does not exist for the native species to the APE, the seed mix shall contain the absolute minimum amount of invasive species reasonably available for the Program Area. (Final EIR, p. 4-255.)

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species.

BIO-15 During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for special status species to be impacted during construction as a result of construction worker awareness.

BIO-16 Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.

The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety (“tailgate”) meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor

Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, thereby minimizing any impacts thereof.

BIO-17 A biological monitor shall be present during construction Activities in areas where impacts to riparian, riverine, wetland, endangered species or endangered species Critical Habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.

A biological monitor (biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and LSA Agreements. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby habitats, thereby minimizing any impacts thereof.

BIO-18 All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species, thereby minimizing any impacts thereof.

BIO-19 Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion

of the prey populations of special–status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, thereby minimizing any impacts thereof.

BIO-20 Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

BIO-21 Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wildlife, thereby minimize impacts thereof.

BIO-22 Plastic mono-filament netting (erosion-control matting) or similar material will <u>not</u> be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats that may be present outside of these established routes. This would minimize impacts to sensitive habitats and species.

BIO-23 During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction

areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, and thereby minimize impacts thereof.

BIO-24 All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, thereby minimizing impacts thereof.

BIO-25 Prior to the commencement of construction, a Weed Control Plan will be developed for

the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:

- A Schedule for noxious weed surveys shall be addressed.
- Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist).
- The timing of the weed control treatment for each plant species shall be addressed.
- Fire prevention measures shall be addressed.

The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.

MM HYD-1 is required to ensure that monitoring and adaptive mitigation is implemented

to protect to beneficial uses of Stanfield Marsh and Big Bear Lake, minimizing impacts to the RARE and WILD designations thereof. This would ensure that the protection of special status habitats and species extended as part of the beneficial use of these water bodies, would be maintained, thereby minimizing potential impacts thereof.

HYD-1 BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;

- Conduct a monitoring plan to:

  - Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);

  - Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;

  - Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and

  - Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.

  - Collect nutrient (I.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.

- Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;

- Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.

If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit

requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:

- Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.

- Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).

- Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).

If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.

The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.

Level of Significance After Mitigation: Significant and Unavoidable

Impacts to all species identified under Table 4.5-3—specifically, to BAEA, southern rubber boa, and San Bernardino flying squirrel—can be avoided through implementation of MMs BIO-9 through BIO-25 and HYD-1, with the exception of impacts to the bird-foot checkerbloom. As discussed above, impacts to the bird-foot checkerbloom, which is a Federally and State designated endangered plant species, would be potentially significant and unavoidable. While MMs BIO-1 through BIO-4 would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, MM BIO-5 would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option.

Impacts to the Stickleback have not been fully analyzed herein, as the implementation of the Shay Pond Discharge Project has been tabled by the Program Team for the foreseeable future. As such, if the Program Team envisions utilizing the purified water generated by the AWPF proposed by this Program, a follow-on environmental determination shall fully assess these impacts. Furthermore, the provisions of MM BIO-6 shall be followed to ensure that the proper procedure is followed to determine how the use of purified water generated by the AWPF would impact these species, in cooperation with the regulatory agencies (CDFW and USFWS) governing the protection of this species.

Additional surveys must be conducted prior to implementation of Program activities within both the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8) to assess potential Program related impacts to special status species and habitats that may occur in these areas. In particular, to assess potential Program related effects on San Bernardino blue grass, California dandelion, slender-petaled

thelypodium, and other special status species that may occur in this area, because as with the impacts to the Stickleback, the habitat within the Shay Pond Replacement Pipeline has not been fully analyzed as the implementation of the Shay Pond Discharge Project has been tabled by the Program Team for the foreseeable future. Implementation of MM BIO-7 and BIO-8 would ensure that impacts from installation of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline would be minimized to a level of less than significant.

2. Wetlands

Threshold: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-258 – 4-307)

Explanation:

Direct impacts on natural and man-made features include the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. In the case of man-made features, these impacts would remove or disrupt the limited biological functions that these features provide. In natural areas, these activities would remove or disrupt the hydrology, vegetation, wildlife use, water quality conditions, and other biological functions provided by the resources.

Temporary impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. Temporary fill could be placed during the construction of access roads and staging/equipment storage areas. The temporary fill would result in a temporary loss of jurisdictional waters and could potentially increase erosion and sediment transport into adjacent areas.

Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts: erosion and transport of fine sediments or fill downstream of construction to unintentional release of contaminants into jurisdictional waters that are outside of the project footprint. These discharges would indirectly impact adjacent or downstream jurisdictional waters.

USACE 404 Permit

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a nation-wide permit (NWP) or an individual permit (IP). NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1⁄2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur.

Based on the type of site modifications proposed as part of the BBARWA WWTP Upgrades Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

Regional Water Quality Control Board 401 Certification

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the BBARWA WWTP Upgrades Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

FGC Section 1602 Lake or Streambed Alteration Agreement

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (Figure 4.5-11). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. In the case of the BBARWA WWTP Upgrades Project, the BBARWA WWTP site area that would be impacted has been completely developed, and therefore, it is not anticipated that an FGC Section 1602 LSA Agreement would be required. Therefore, no impacts related to compliance with the FGC Section 1602 would be anticipated.

Solar Evaporation Ponds Project

USACE 404 Permit

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1⁄2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the BBARWA WWTP Upgrades Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

Regional Water Quality Control Board 401 Certification

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the Solar Evaporation Ponds Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Solar Evaporation Ponds Project is anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Solar Evaporation Ponds Project would be less than significant.

FGC Section 1602 Lake or Streambed Alteration Agreement

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (Figure

4.5-11). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. Baldwin Lake is a water of the State of California, and as the Solar Evaporation Ponds would be installed within Baldwin Lake, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, MMs BIO-14 through BIO-25 address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

<u>Sand Canyon Recharge Project</u>

USACE 404 Permit

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or an IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1⁄2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the Sand Canyon Recharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would

be anticipated.

Regional Water Quality Control Board 401 Certification

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the Sand Canyon Recharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Sand Canyon Conveyance Pipeline Discharge Outlet is anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Sand Canyon Conveyance Pipeline Discharge Outlet would be less than significant.

FGC Section 1602 Lake or Streambed Alteration Agreement

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (Figure 4.5-11). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. The Sand Canyon Channel is a water of the State of California, and as the Sand Canyon Conveyance Pipeline Discharge Outlet would outlet to the Sand Canyon Channel, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA.

MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, MMs BIO-14 through BIO-25 address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

<u>Shay Pond Discharge Project</u>

USACE 404 Permit

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1⁄2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the type of site modifications proposed as part of the Shay Pond Discharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. Therefore, no impacts related to compliance with a USACE 404 Permit would be anticipated.

Regional Water Quality Control Board 401 Certification

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA

documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur. However, based on the type of site modifications proposed as part of the Shay Pond Discharge Project, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring CWA Section 401 Water Quality Certification would be required. Therefore, no impacts related to compliance with the CWA Section 401 Water Quality Certification would be anticipated.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Shay Pond Conveyance Pipeline Discharge Outlet and Shay Pond Replacement Pipeline are anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related to compliance with RWQCB WDR requirements from implementation of the Shay Pond Conveyance Pipeline Discharge Outlet and Shay Pond Replacement Pipeline would be less than significant.

FGC Section 1602 Lake or Streambed Alteration Agreement

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application. In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (Figure 4.5-11). Any potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. Shay Pond is a water of the State of California, and as the Shay Pond Conveyance Pipeline Discharge Outlet would be installed to discharge into Shay Pond, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, MMs BIO-14 through BIO-25 address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including,

but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent

impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

Caribou Creek is a water of the State of California, and as the Shay Pond Replacement Pipeline traverses through Caribou Creek, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Thus, mitigation (MM BIO-14 through BIO-25, BIO-26 and BIO-27) is required to minimize impacts to a level of less than significant.

Stanfield Marsh/Big Bear Lake Discharge Project

USACE 404 Permit

The two most common types of permits issued by USACE under Section 404 of the CWA to authorize the discharge of dredged or fill material into Waters of the U.S. are: a NWP or IP. NWPs are general permits for specific categories of activities that result in minimal impacts to aquatic resources. The discharge must not cause the loss of greater than 1⁄2 acre to Waters of the U.S., including the loss of no more than 300 LF of streambed. Projects proposed under this Program that would exceed these limits would likely require an IP. If the USACE 404 Permit requirements were not met by Program implementation, a significant impact under this issue could occur.

Based on the type of site modifications proposed as part of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. However, as the Stanfield Marsh Conveyance Pipeline Discharge Outlet(s) is a part of this Project, and, based on the design of this project, it is known that discharge to Waters of the U.S. will occur. Thus, as discharge to Waters of the U.S. are anticipated to occur as a result of the Stanfield Marsh Conveyance Pipeline Discharge Outlet discharge of Program Water to Stanfield Marsh, impacts to Waters of the U.S. may occur and a USACE 404 Permit is likely to be required. Thus, mitigation is required to minimize impacts to a level of less than significant. MM BIO-26 would ensure that jurisdictional features are documented in accordance with State and Federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of State or Federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing

maintenance within jurisdictional features. Furthermore, MMs BIO-14 through BIO-25 address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, through the implementation of the above mitigation measures, impacts would be less than significant.

Regional Water Quality Control Board 401 Certification

The Program Area in the Big Bear Valley is within the jurisdiction of the Santa Ana Regional Board. Under Section 401 of the CWA, the RWQCB must certify that the discharge of dredged or fill material into Waters of the U.S. does not violate State water quality standards. The RWQCB also regulates impacts to Waters of the State of California under the Porter-Cologne Act through issuance of a CGP, State General WDR, or WDRs, depending upon the level of impact and the waterway. In addition to the formal application materials and fee (based on area of impact), a copy of the appropriate CEQA documentation must be included with the application. If the RWQCB 401 Certification requirements were not met by Program implementation, a significant impact under this issue could occur.

Based on the type of site modifications proposed as part of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, it is not anticipated that discharge of dredged or fill material into Waters of the U.S. requiring a USACE 404 Permit would be required. However, as the Stanfield Marsh Conveyance Pipeline Discharge Outlet(s) is a part of this Project, and, for the same reasons outlined above under CWA Section 401 permitting, based on the design of this project, it is known that discharge to Waters of the U.S. will occur. Therefore, violation of State water quality standards for Waters of the U.S. may occur and a CWA Section 401 permit is likely to be required. Thus, mitigation (MM BIO-26 and BIO-27) is required to minimize impacts to a level of less than significant.

Waste discharges that can be exempted from the California Code of Regulations requirements are issued WDRs and are regulated by the WDR Program. Typical discharge types include domestic or municipal wastewater, food processing related wastewater, and industrial wastewater. Thus, the actions proposed by the Baldwin Lake Pipeline Alignment Option is anticipated to require a WDR issued by the RWQCB. This is a mandatory requirement that does not require mitigation to ensure compliance. Thus, impacts related

to compliance with RWQCB WDR requirements from implementation of the Baldwin Lake Pipeline Alignment Option would be less than significant.

FGC Section 1602 Lake or Streambed Alteration Agreement

An FGC Section 1602 LSA Agreement is required for all activities that alter streams and lakes and their associated riparian habitat. In addition to the formal application materials and fee (based on cost of the project), a copy of the appropriate CEQA documentation must be included with the application.

In addition to the BRA field survey, Jacobs also assessed the proposed Program Area footprint for the presence of any State and/or Federal jurisdictional waters. Stanfield Marsh is a jurisdictional wetland that is subject to the CWA and FGC under the jurisdictions of the USACE, RWQCB, and CDFW, respectively (Figure 4.5-11). Therefore, any proposed permanent or temporary impacts to Stanfield Marsh associated with the Stanfield Marsh Conveyance Pipeline Discharge Outlet may require CWA Sections 404/401 permits from the USACE and RWQCB, as well as a LSA Agreement from the CDFW. Baldwin Lake, Caribou Creek, Shay Pond/Shay Creek, and the Sand Canyon Channel are all waters of the State of California (Figures 4.5-12 through 4.5-15). Therefore, potential Program impacts to these aquatic resources would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Prior to implementation of any Program Components that may impact State and/or Federal jurisdictional waters, a formal jurisdictional delineation should be conducted by a qualified delineation specialist to determine the extent of any potential Program related impacts to aquatic resources and the appropriate regulatory permitting (if any) required. If the FGC Section 1602 LSA Agreement requirements were not met by Program implementation, a significant impact under this issue could occur. Based on the design of this project, temporary impacts to Stanfield Marsh associated with the Stanfield Marsh Conveyance Pipeline Discharge Outlet may require CWA Sections 404/401 permits from the USACE and RWQCB, as well as a LSA Agreement from the CDFW.

Thus, mitigation is required to minimize impacts to a level of less than significant. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project.

The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, mitigation is required to minimize impacts to a level of less than significant.

Baldwin Lake is a water of the State of California, and as the Baldwin Lake Pipeline Alignment Option traverses through Baldwin Lake, potential Program impacts to aquatic resources from implementation of this project would likely require RWQCB issued WDRs, as well as a CDFW issued LSA. Thus, mitigation (**MM BIO-14 through BIO-25**, **BIO-26** and **BIO-27**) is required to minimize impacts to a level of less than significant.

For all other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, the area that would be impacted has been completely developed, and therefore, it is not anticipated that an FGC Section 1602 LSA Agreement would be required. Therefore, no impacts related to compliance with the FGC Section 1602 would be anticipated.

Other Physical Changes to the Environment

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no biological resources, including federally protected wetlands, of which none exists at the LV Site, are expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

MMs BIO-14 through BIO-25 are required to minimize direct and indirect effects to federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. For discussion of **MMs BIO-14 through BIO-25**, please refer to analysis above throughout this section. **BIO-26 and BIO-27** are discussed below:

BIO-14 Prior to the commencement of construction within or adjacent to any natural area, and during the appropriate periods (e.g., seasons, weather conditions, times of day), a biologist/botanist shall survey the APE to identify native species (alliances, variety, and/or subspecies) within the natural areas that would be appropriate for revegetation. As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas

shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site as identified by the site biologist/botanist pre-construction survey, which shall be implemented in cooperation with regulatory agencies and with oversight from a biologist. The seeds mix shall be verified to contain the minimum amount of no invasive plant species seeds. If seed mix without potential invasive species does not exist for the native species to the APE, the seed mix shall contain the absolute minimum amount of invasive species reasonably available for the Program Area.

BIO-15 During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.

BIO-16 Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.

The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.

BIO-17 A biological monitor shall be present during construction Activities in areas where impacts to riparian, riverine, wetland, endangered species or endangered species Critical Habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.

A biological monitor (biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring

the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and LSA Agreements. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.

BIO-18 All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.

BIO-19 Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special–status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.

BIO-20 Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.

BIO-21 Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.

BIO-22 Plastic mono-filament netting (erosion-control matting) or similar material will <u>not</u> be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.

BIO-23 During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the

use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.

BIO-24 All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.

BIO-25 Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:

- A Schedule for noxious weed surveys shall be addressed.

- Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist).

- The timing of the weed control treatment for each plant species shall be addressed.

- Fire prevention measures shall be addressed.

The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.

BIO-26 Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensating habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for Impacts to jurisdictional waters without any riparian or wetland habitat shall to be mitigated at a minimum 1:1 ratio, with the ultimate compensatory mitigation ratio being determined through negotiation with regulatory agency, and never at a rate of less than 1:1. For loss of any riparian or

other wetland areas, the mitigation ratio will begin at 2:1, and t The ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. This increase in ratio will be determined by the regulatory agency, and must be deemed sufficient by the regulatory agency issuing the permit to compensate for/offset the impacts to the jurisdictional waters and supported species and habitats therein. A Habitat Mitigation and Monitoring Proposal shall be prepared by a biologist or regulatory specialist and reviewed and approved by the appropriate regulatory agencies. These agencies (USACE, RWQCB, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) can impose greater mitigation requirements in their permits, but the implementing agency will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.

BIO-27 A federal and state jurisdictional water preconstruction survey shall be conducted by a biologist or regulatory specialist at least six months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters as defined by state and federal law are within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values in accordance with MM BIO-26. (Final EIR, p. 4-285.)

Level of Significance After Mitigation: Less Than Significant

As stated above, unforeseen direct impacts, indirect impacts, and temporary impacts to natural and man-made water bodies may occur depending upon the design of the infrastructure improvement, and the construction methodology required. **MM BIO-26** would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project. The implementation of **MM BIO-27** would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. Furthermore, **MMs BIO-14 through BIO-25** address the potential for ongoing and project-specific protections to the environment to prevent direct and indirect effects that could affect federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means by future Program facilities.

MM BIO-14 would require revegetation of natural areas with native species to minimize the Project's temporary impacts on wetlands within the area.

MM BIO-15 would require equipment to be washed to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species that could impact wetlands.

MM BIO-16 would require contractor education and environmental training to be conducted by a biologist that would cover specific biological information on the special status species and habitats that may occur in the Program area, and inform the construction workers of the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. This would further minimize the potential for wetlands to be impacted during construction as a result of construction worker awareness.

MM BIO-17 would require a biological monitor to be present during construction in areas where Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. The monitor would ensure that construction workers avoid direct or indirect impacts on sensitive biological resources, including wetlands thereby minimizing any impacts thereof.

MM BIO-18 would ensure that food related trash items are disposed of properly so as to not inadvertently attract any wildlife to the site, or result in litter that could result in impacts to nearby wetlands habitats, thereby minimizing any impacts thereof.

MM BIO-19 would prevent the use of rodenticides and herbicides to prevent poisoning of wetlands, thereby minimizing any impacts thereof.

MM BIO-20 would require exclusion barriers at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction, and movement adjacent to the construction area that could impact wetlands, thereby minimizing any impacts thereof.

MM BIO-21 would identify construction staging areas outside of sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridor to reduce impacts thereof.

MM BIO-22 would prevent the use of plastic mono-filament netting (erosion-control matting) or similar material in order to prevent potential harm to wetlands, thereby minimize impacts thereof.

MM BIO-23 would require construction traffic to be limited to established roads to prevent impacts to sensitive habitats, including wetlands, that may be present outside of these established routes. This would minimize impacts to wetlands.

MM BIO-24 would require the closure of holes or trenches at the end of each day to avoid entrapment of wildlife, including wildlife that is supported by wetlands, and thereby minimize impacts thereof.

MM BIO-25 would require the implementation of a weed control plan to minimize or avoid the spread of weeds that could encroach on special status species and habitats, including wetlands, thereby minimizing impacts thereof.

Thus, through the implementation of mitigation, the Program would have a less than significant impact on federally and state protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

3. Wildlife Movement

Threshold: Would the Project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-258 – 4-307)

Explanation:

BBARWA WWTP Upgrades Project

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on Figures 4.5-11 through 4.5-15. For the BBARWA WWTP Upgrades, the following impacts on wildlife movement or migration may occur:

Construction Impacts: These facilities are anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. This is particularly the case because the BBARWA facility is fenced, which prevents wildlife movement on the ground in the area. However, it is possible that trees or vegetation within the existing BBARWA site may support nesting birds. As such, mitigation to protect nesting birds (MMs BIO-16, BIO-28 and BIO-29) is necessary to minimize impacts thereof. Impacts would be less than significant with the implementation of mitigation.

Operational Impacts: Once installed, these facilities installed at the BBARWA site would be consistent with the existing wastewater facilities located at the BBARWA site, and as the overall setting of the site would remain confined to the existing developed spaces, no operational changes in wildlife movement would be anticipated to occur.

Solar Evaporation Ponds Project

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The

creeks and bodies of water listed below are shown on Figures 4.5-11 through 4.5-15. For the Solar Evaporation Ponds, the following impacts on wildlife movement or migration may occur:

Construction Impacts: This facility is anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. This is particularly the case because the BBARWA facility is fenced, which prevents wildlife movement on the ground in the area. However, it is possible that trees or vegetation within the existing BBARWA site may support nesting birds. As such, mitigation to protect nesting birds (MMs BIO-16, BIO-28 and BIO-29) is necessary to minimize impacts thereof. Impacts would be less than significant with the implementation of mitigation.

Operational Impacts: One of the commenters on the NOP raised concern that waterfowl may utilize the brine settlement ponds, when full, which could result in significant impacts should the waterfowl consume the brine. As such, as mitigation is necessary to minimize the potential for birds to utilize the Solar Evaporation Ponds.

Sand Canyon Recharge Project

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on Figures 4.5-11 through 4.5-15. For the Sand Canyon Monitoring Wells downstream of Sand Canyon, the following impacts on wildlife movement or migration may occur:

Construction Impacts: The monitoring wells are anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. However, as the locations are presently unknown, it is possible that trees or vegetation within these sites may support nesting birds. As such, mitigation to protect nesting birds (MMs BIO-16, BIO-28 and BIO-29) is necessary to minimize impacts thereof. Impacts would be less than significant with the implementation of mitigation.

Operational Impacts: Once installed, the monitoring wells would occupy a small footprint within already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, and as the overall setting of the site would remain confined to developed spaces, no operational changes in wildlife movement would be anticipated to occur.

For the Sand Canyon Recharge Conveyance Pipeline, the following impacts on wildlife movement or migration may occur:

Construction Impacts: This pipeline alignment would occur within existing road ROW or within a small portion of forested area within residentially owned property by which an

easement would be acquired to facilitate the installation of the proposed Sand Canyon Recharge Conveyance Pipeline. It is anticipated that the entirety of the pipeline alignment is confined within roadways and developed populated areas that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. However, it is possible that trees or vegetation within the project footprint may support nesting birds. As such, mitigation to protect nesting birds (MMs BIO-16, BIO-28 and BIO-29) is necessary to minimize impacts thereof.

Operational Impacts: Once installed, the pipeline would be located below ground, and the outlet would be located below grade. The surface will be recompacted and returned to original condition, thereby no operational changes in wildlife movement would be anticipated to occur.

For the Sand Canyon Conveyance Pipeline Discharge Outlet, the following impacts on wildlife movement or migration may occur:

Construction Impacts: The Sand Canyon Channel could result in construction impacts from the installation of the Sand Canyon outlet may cause adverse impacts on migratory species through disturbing or harming nesting birds, which protected under the MTBA, but given the very small footprint of the outlet, and similar to the discharge point at Stanfield Marsh, these impacts would be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained and impacts thereof are minimized for the temporary duration of construction. As stated above, MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. Thus, with implementation of mitigation, impacts would be less than significant.

Operational Impacts: Once installed, the outlet would be located below grade. The footprint of the outlet would occupy less than a 10’ x 10’ area, including the erosion control, which would be designed to blend in with the existing channel surface area. As this feature would be of a small footprint and would be of a small surface area that would not block access to the channel by wildlife, no wildlife movement would be anticipated to be impacted over the long-term.

For the Sand Canyon Booster Station, the following impacts on wildlife movement or migration may occur:

Construction Impacts: This facility is anticipated to be confined to already developed spaces that would not serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. However, it is possible that trees or vegetation within the Sand Canyon Booster Station site may support nesting birds. As such, mitigation to protect nesting birds (MMs BIO-28 and BIO-29) is necessary to minimize impacts thereof.

Operational Impacts: Once installed, the Sand Canyon Booster Station would be consistent with the existing water storage facilities located at the Pump Station site, and as the overall setting of the site would remain confined to the existing developed spaces, no operational changes in wildlife movement would be anticipated to occur.

Shay Pond Discharge Project

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on Figures 4.5-11 through 4.5-15. For the new Shay Pond Pipeline and Shay Pond Replacement Pipeline, the following impacts on wildlife movement or migration may occur:

Construction Impacts: Shay Pond/Shay Creek could result in construction impacts from the installation of the Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipeline. Construction may cause adverse impacts on migratory species through disturbing or harming nesting birds, which protected under the MTBA, but similar to the discharge point at Stanfield Marsh, these impacts would be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained and impacts thereof are minimized for the temporary duration of construction. MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. Thus, with implementation of mitigation, impacts would be less than significant.

Operational Impacts: Once installed, the Shay Pond pipeline would be located below ground, and the outlet would be located below grade. The surface will be recompacted and returned to original condition, thereby no operational changes in wildlife movement would be anticipated to occur.

Stanfield Marsh/Big Bear Lake Discharge Project

There are many stream channels that traverse this area that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. The creeks and bodies of water listed below are shown on Figures 4.5-11 through 4.5-15.

Discharge Pipeline and outlet to Stanfield Marsh:

Construction Impacts: Baldwin Lake, Caribou Creek, Stanfield Marsh and Big Bear Lake could be impacted in various ways by the proposed Program. Stanfield Marsh and Big Bear Lake are anticipated to benefit from the implementation of the proposed Program as a result of increased water available in Big Bear Lake. The discharge point at Stanfield Marsh will be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction. Thus, with implementation of mitigation, impacts would be less than significant.

Based on the discussion under issue (a) (which asks, would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW and USFWS?), above, the proposed discharge of Program Water to Stanfield Marsh/Big Bear Lake would have a less than significant potential to obstruct the beneficial use of either Stanfield Marsh or Big Bear Lake with the implementation of MM HYD-1. Protecting the beneficial uses of these water bodies would protect the RARE79 and WILD80 designations of Stanfield Marsh and Big Bear Lake, thereby minimizing impacts to migratory species supported by Stanfield Marsh and Big Bear Lake. This is because migratory species, in addition to special status species, and other animals and habitats are protected under these beneficial use designations. Furthermore, migratory species utilizing Stanfield Marsh and Big Bear Lake would likely experience enhanced habitat as a result of the proposed Program, and thereby would not be subject to adverse impacts from the proposed Program.

Operational Impacts: Once installed, the pipeline would be located below ground, and the outlet would be located below grade. The surface will be recompacted and returned to original condition, thereby no operational changes in wildlife movement would be

anticipated to occur.

All facilities: in regards to nesting bird impacts, although BAEA and SPOW are not likely to nest in the Program Area due to existing disturbances within and adjacent the proposed Program footprint, the Program Area is suitable to support other nesting bird species. Most native bird species are protected from unlawful take by the MBTA. Additionally, the State of California provides protection for native bird species and their nests in the FGC. In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally February 1st through August 31st. However, if all work cannot be conducted outside of nesting season, the precautionary measures are recommended to ensure MBTA compliance.

Other Physical Changes to the Environment

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no wildlife movement would be expected to be directly or indirectly impacted by the reduced discharge to the LV Site that would occur as a result of Program implementation.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: MMs BIO-16 and BIO-26, BIO-27, BIO-28, BIO-29 and HYD-1 are required to minimize the Program's potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. For discussion of MMs BIO-16 and HYD-1 please refer to analysis above throughout this section. MMs BIO-28 and BIO-29 are discussed below:

BIO-16 Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.

The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.

BIO-17 A biological monitor shall be present during construction Activities in areas where impacts to riparian, riverine, wetland, endangered species or endangered species Critical Habitat occurs. A biological monitor (or

monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.

A biological monitor (biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and LSA Agreements. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.

BIO-18 All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.

BIO-19 Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special–status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.

BIO-20 Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or

CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.

BIO-21 Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.

BIO-22 Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.

BIO-23 During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.

BIO-24 All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.

BIO-25 Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:

- A Schedule for noxious weed surveys shall be addressed.
- Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in

Environmentally Sensitive Areas (as defined by the project biologist).

- The timing of the weed control treatment for each plant species shall be addressed.
- Fire prevention measures shall be addressed.

The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.

BIO-26 Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensating habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for Impacts to jurisdictional waters without any riparian or wetland habitat shall to be mitigated at a minimum 1:1 ratio, with the ultimate compensatory mitigation ratio being determined through negotiation with regulatory agency, and never at a rate of less than 1:1. For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1, and t The ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. This increase in ratio will be determined by the regulatory agency, and must be deemed sufficient by the regulatory agency issuing the permit to compensate for/offset the impacts to the jurisdictional waters and supported species and habitats therein. A Habitat Mitigation and Monitoring Proposal shall be prepared by a biologist or regulatory specialist and reviewed and approved by the appropriate regulatory agencies. These agencies (USACE, RWQCB, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) can impose greater mitigation requirements in their permits, but the implementing agency will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.

BIO-27 A federal and state jurisdictional water preconstruction survey shall be conducted by a biologist or regulatory specialist at least six

months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters as defined by state and federal law are within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values in accordance with BIO-26.

BIO-28 To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal will be conducted outside of the State identified nesting season for applicable bird species (nesting season is approximately from February 15 through September 15 of a given calendar year, depending on the species). Alternatively Additionally, at the discretion of a qualified avian biologist, nesting bird surveys shall be required, where appropriate, regardless of the time of year shall be conducted by a qualified avian biologist no more than three (3) days prior to vegetation clearing or ground disturbance activities.

Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If no active nests are found, no further action would be required. If an active nest is found, the biologist shall set appropriate no-work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. There are no standard nest buffers specified in the MBTA or within the FGC. Disturbance factors including nest location, human activity, activity duration, and noise level may influence nesting behavior and reproductive success, shall be considered by the project biologist in coordination with CDFW and USFWS (as appropriate) in establishing standard buffer distances for individual species on a project- and site-specific basis. The nest(s) and buffer zones shall be field checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive.

Preconstruction nesting bird surveys shall include a nighttime component to address the potential for presence of nocturnal

species. The nesting bird surveys shall consist of a minimum of five (5) consecutive survey days and shall include an additional three (3) consecutive nights of survey for nocturnal species. Nocturnal surveys shall be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds).

Vegetation removal, including any tree removal or pruning, and structure demolition shall be conducted outside the typical nesting season (i.e., between September 1st and January 31st), to the maximum extent feasible. Otherwise, the provisions of the preconstruction nesting bird surveys, above, shall suffice to ensure impacts to nesting birds are minimized.

BIO-29 To avoid any harm to waterfowl that may utilize the Solar Evaporation Ponds, BBARWA shall install bird deterrents at the Solar Evaporation Ponds to discourage waterfowl use of the ponds. The deterrent shall encompass access control through tarps or screens limiting bird access to the surface of the Solar Evaporation Ponds.

HYD-1BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following:

Conduct a monitoring plan to:

- Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);

- Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;

- Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and

- Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.

- Collect nutrient (I.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.

- Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;

- Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.

- If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:

- Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.

- Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).

- Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).

- If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.

The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.

Level of Significance After Mitigation: Less Than Significant

Mitigation to protect nesting birds will be implemented by Watermaster and stakeholders of the Big Bear Valley in future through MM BIO-28. MM BIO-28 will require a nesting bird survey that demonstrates that no bird nests will be disturbed during project construction, or construction will occur entirely outside of nesting season. This will ensure that nesting birds are not impacted by construction activities thereby ensuring compliance with the MBTA and Bird nesting protections (Sections 3503, 3503.5, 3511, and 3513) in the FGC. MM BIO-29 would protect migratory birds that may otherwise use the Solar Evaporation Ponds when full during operation of the proposed Program in the future, and would therefore minimize operational impacts to migratory and nesting birds.

As stated above, MM BIO-26 would ensure that jurisdictional features are documented in accordance with state and federal guidelines. This would aid in identification of jurisdictional features that may be impacted by discharge of fill or streambed alteration by a future Program project, and thereby may impact wildlife linkages and/or wildlife corridors. The implementation of MM BIO-27 would ensure that future projects that would discharge of fill or streambed alteration of state or federal water jurisdictional areas are designed to minimize and be protective of the environment both during construction, and once operational for activities that would require ongoing maintenance within jurisdictional features. The impacts to jurisdictional features would thereby be subject to the provisions of regulatory permitting (CWA Section 401 and 404 permitting, and FGC Section 1602 LSA Agreement permitting), which would ensure that wildlife linkages and corridors are maintained for the temporary duration of construction.

MM BIO-16 would require education of the construction workers, which would ensure that the principals of the MMs identified herein intended to comply with the law are known by the construction workers, which would ensure further protection of nesting birds that could otherwise be impacted by construction. MM HYD-1 is required to ensure that monitoring and adaptive mitigation is implemented to protect to beneficial uses of Stanfield Marsh and Big Bear Lake, minimizing impacts to the RARE and WILD designations thereof. This would ensure that the protection of migratory species and wildlife linkages extended as part of the beneficial use of these water bodies, would be maintained, thereby minimizing potential impacts thereof. As such, the mitigation provided above minimizes the impacts under this issue to a level of less than significant.

4. Local Policies and Ordinances

Threshold: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-258 – 4-307)

Explaation:

The local policies and ordinances pertaining to and protecting biological resources include the following:

- The City of Big Bear Lake's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height.

- San Bernardino County Development Code81 Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County's Development Code would be required. The San Bernardino County Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under

the proposed Program: 88.01.050(f)(1[a]), The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement.

- CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)].

- When projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581].

Compliance with the above local policies and ordinances is necessary to prevent a significant impact from occurring under this issue.

BBARWA WWTP Upgrades Project

BBARWA WWTP Upgrades would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: While no other Program Component is anticipated to result in the removal of trees, the precise locations for other facilities have not been fine tuned. Thus, in the event that the proposed Program would result in tree removal outside of the City of Big Bear Lake, in areas under San Bernardino County jurisdiction, the Program must comply with the San Bernardino County Development Code82 Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County's Development Code would be required. As such, in order to ensure compliance with San Bernardino County's Development Code, mitigation shall be required. MM AES-3 would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources. Thus, impacts would be less than significant through the implementation of mitigation.

Operational Impacts: No trees would be impacted once the pipeline is installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Solar Evaporation Ponds Project

The Solar Evaporation Ponds Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.

Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Sand Canyon Recharge Project

The Sand Canyon Monitoring Wells would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: The precise location for the proposed Sand Canyon Monitoring Wells is not yet known, but the general location is anticipated to be downstream of the Sand Canyon Recharge Area. The installation of the Sand Canyon Monitoring Wells could impact trees within the City of Big Bear Lake. The City of Big Bear Lake's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height. It is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed project will be required to comply with the City of Big Bear Lake Municipal Code for this and any other Program Component that will impact trees of 12" in diameter at breast height; mitigation is provided below to ensure compliance with this requirement. MM AES-3 would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources.

In addition to the required compliance with City of Big Bear Lake regulations pertaining to tree removal, tree removal is also regulated by CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being "timberland use." CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"83 and the "Less Than 3 Acre Conversion Exemption."84 The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from tree removal and nonconformance with policies and regulations pertaining to trees. Thus, in order to avoid a potentially significant impact, the proposed Program must comply

with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (MM AGF-1) described below. MM AGF-1 would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these MMs, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation.

Operational Impacts: No trees would be impacted once the monitoring wells are installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Recharge Conveyance Pipeline would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: As discussed under Subchapter 4.2, Aesthetics, the Sand Canyon Recharge Conveyance Pipeline has a potential to require the removal of several trees because the alignment will traverse through the two private properties as shown on Figure 3-31. Thus, the proposed project will impact scenic resources including trees as part of the proposed project. The installation of this section of pipeline would impact trees within the City of Big Bear Lake. The City of Big Bear Lake's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces stipulates development requirements for projects that would remove existing trees of 12" in diameter at breast height. Though the general location for the Sand Canyon Recharge Conveyance Pipeline has been established, the precise location for this short pipeline alignment is presently unknown. Thus, it is unknown precisely how many trees and what size trees will be removed as part of the installation of this Program Component. Thus, the proposed project will be required to comply with the City of Big Bear Lake Municipal Code for this and any other Program Component that will impact trees of 12" in diameter at breast height; mitigation is provided below to ensure compliance with this requirement. MM AES-3 would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources.

In addition to the required compliance with City of Big Bear Lake regulations pertaining to tree removal, tree removal is also regulated by CAL FIRE. CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption" and the "Less Than 3 Acre Conversion Exemption." The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state

regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from tree removal and nonconformance with policies and regulations pertaining to trees. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (MM AGF-1) described below. MM AGF-1 would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these MMs, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation.

Operational Impacts: No trees would be impacted once the pipeline is installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Conveyance Pipeline Discharge Outlet would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.

Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Booster Station would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.

Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Shay Pond Discharge Project

The Shay Pond Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: None of the policies pertaining to or protecting biological resources outlined above would apply to this Program component. This is because no trees would be impacted by construction. No impacts are anticipated.

Operational Impacts: Given that no trees would be impacted by construction, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Stanfield Marsh/Big Bear Lake Discharge Project

The Stanfield Marsh/Big Bear Lake Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: While no other Program Component is anticipated to result in the removal of trees, the precise alignments for pipelines and other facilities have not been fine tuned. Thus, in the event that the proposed Program would result in tree removal outside of the City of Big Bear Lake, in areas under San Bernardino County jurisdiction, the Program must comply with the San Bernardino County Development Code85 Plant Protection and Management (88.01), which requires a Tree Removal Permit in conjunction with the land use application or development permit. Where such applications or approvals are required, a Tree Removal Permit pursuant to San Bernardino County's Development Code would be required. The San Bernardino County Development Code stipulates the following for the Mountain Region that would be applicable to the activities proposed under the proposed Program: 88.01.050(f)(1[a]), The location of the regulated tree or plant and/or its dripline interferes with an allowed structure, sewage disposal area, paved area, or other approved improvement or ground disturbing activity and there is no other alternative feasible location for the improvement. As such, in order to ensure compliance with San Bernardino County's Development Code, mitigation shall be required. MM AES-3 would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources. Thus, impacts would be less than significant through the implementation of mitigation.

Operational Impacts: No trees would be impacted once the pipeline is installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Based on the discussions above, compliance with local policies and ordinances pertaining to biological resources as a result of Program implementation requires mitigation to avoid a significant impact. Thus, through compliance with CAL FIRE, San Bernardino County, and City of Big Bear Lake regulations, as enforced through MMs AES-3 and AGF-1, below, impacts would be less than significant.

Other Physical Changes to the Environment

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no conflict with any local policies or ordinances protecting biological resources would be expected to occur as a result of the reduced discharge to the LV Site that would occur as a result of Program implementation.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

AES-3: Should the removal of trees be required for a specific Program Component, the implementing agency shall comply with the applicable local jurisdiction's municipal code or development code pertaining to the removal of trees. For Program Components within the City of Big Bear Lake, the implementing agency shall comply with the City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces, where applicable. For Program Components within San Bernardino County, the implementing agency shall comply with the San Bernardino County Development Code Plant Protection and Management (88.01), where applicable.

AGF-1: Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a Timberland Conversion Permit (TCP) pursuant to California Public Resources Code 4621(a) and a Timber Harvesting Plan (THP) pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.

Level of Significance After Mitigation: Less Than Significant

MM AES-3 would ensure that future Program projects conform to tree preservation ordinances within the City of Big Bear Lake and San Bernardino County within which future projects are installed. This would minimize conflicts with local policies and ordinances pertaining to biological resources. MM AGF-1 would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these MMs, impacts would be less than significant.

5. Habitat Conservation Plans

Threshold: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-258 – 4-307)

Explanation:

BBARWA WWTP Upgrades Project

BBARWA WWTP Upgrades would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the BBARWA WWTP Upgrades Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the BBARWA WWTP Upgrades Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Solar Evaporation Ponds Project

The Solar Evaporation Ponds Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Solar Evaporation Ponds Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Solar Evaporation Ponds Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Sand Canyon Recharge Project

The Sand Canyon Monitoring Wells would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the BBARWA WWTP Upgrades Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being "timberland use." CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations

even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"86 and the "Less Than 3 Acre Conversion Exemption."87 The proposed Program will be required to comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from resulting in a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (MM AGF-1) described below. MM AGF-1 would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these MMs, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation. MM AGF-1 would ensure compliance with CAL FIRE regulations, and would therefore minimize conflicts thereof. With the implementation of these MMs, impacts would be less than significant. Thus, impacts would be less than significant with the implementation of mitigation.

Operational Impacts: No trees would be impacted once the monitoring wells are installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Recharge Conveyance Pipeline would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the BBARWA WWTP Upgrades Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. CAL FIRE designates sites containing trees/timberland resources as being "timberland use." CAL FIRE stipulates that when a project will convert timberland to a use other than growing timber a TCP is required [California Public Resources Code 4621(a)]. Also, when projects are converting timberland to another use, the operations are considered commercial timber operations even if the logs are not being sold [California Public Resources Code 4527(a)(1) and (2)]. As such, in addition to the TCP, a THP is required for the removal of the timber [California Public Resources Code 4581]. However, CAL FIRE offers a number of exemptions that could apply to the proposed Program, removing the TCP and THP as requirements to implement the proposed Program. These exemptions are the "Public Agency, Public and Private Utility Right of Way Exemption"88 and the "Less Than 3 Acre Conversion Exemption."89 The proposed Program will be required to comply with and submit an

application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation described below. If an exemption is not available, the project will be required to comply with the above state regulations, and therefore prepare a full THP to obtain a TCP. Without compliance with the above regulations, the proposed Program could result in a potentially significant impact from resulting in a conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Thus, in order to avoid a potentially significant impact, the proposed Program must comply with and submit an application for one of the above exemptions to remove clusters of trees subject to CAL FIRE regulations, which shall be enforced through mitigation (MM AGF-1) described below. MM AGF-1 would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these MMs, impacts would be less than significant.

Operational Impacts: No trees would be impacted once the monitoring wells are installed, therefore, no operational conflicts with the policies pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Conveyance Pipeline Discharge Outlet would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Sand Canyon Conveyance Pipeline Discharge Outlet. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Sand Canyon Conveyance Pipeline Discharge Outlet would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

The Sand Canyon Booster Station would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Solar Evaporation Ponds Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Solar Evaporation Ponds Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Shay Pond Discharge Project

The Shay Pond Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Shay Pond Discharge Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Shay Pond Discharge Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Stanfield Marsh/Big Bear Lake Discharge Project

The Stanfield Marsh/Big Bear Lake Discharge Project would result in the following impacts to local policies and ordinances pertaining to biological resources:

Construction Impacts: No Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan applies to the Stanfield Marsh/Big Bear Lake Discharge Project. However, because the proposed Program may disturb trees within the forest area of the San Bernardino Mountains, CAL FIRE. As the Stanfield Marsh/Big Bear Lake Discharge Project would not involve the removal of forestry subject to CAL FIRE regulations, no potential to conflict with CAL FIRE regulations exists. No impacts are anticipated.

Operational Impacts: No operational conflicts with the Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local or regional conservation plan pertaining to or protecting biological resources outlined above are anticipated. No impacts are anticipated.

Other Physical Changes to the Environment

No physical changes beyond that which presently occurs or could occur under the existing conditions at the LV Site are proposed by the Replenish Big Bear Program. As such, no conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan would occur as a result of the reduced discharge to the LV Site that would occur as a result of Program implementation.

Level of Significance: Potentially Significant

Mitigation Measures: MM AGF-1 is required to minimize the potential for conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

AGF-1: Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)).

Level of Significance After Mitigation: Significant and Unavoidable

MM AGF-1 would ensure compliance with CAL FIRE regulations pertaining to tree removal, and would therefore minimize conflicts thereof. With the implementation of these MM, impacts would be less than significant.

E. CULTURAL RESOURCES

1. Historical Resources / Archaeological Resources

Threshold: Would the Project cause a substantial adverse change in the significance of a historical resource pursuant to State CEQA Guidelines, section 15064.5?

Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines, section 15064.5?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-429 – 4-429)

Explanation:

Cultural Resource Study Conclusions

In summary, 17 historical/archaeological sites, including 1 prehistoric site, 15 historic-period sites, and 1 natural feature that acquired cultural significance in both prehistory and history, were identified as lying within or partially within in the APE. These are listed in **Table 4.6-1**, with the addition of temporary record number 3969-1H, which covers the BBARWA WWTP.

The prehistoric site, 36-002060, was first recorded in 1969 near the intersection of Shay Road and Palomino Drive, in an area that has since been developed into residential properties (NETR Online 1970-2020). As part of the Cultural Resources Report, no artifacts or features of prehistoric origin were observed in the portion of the site lying within the APE boundaries, which is confined in the public ROW of Palomino Drive. As stated above, in light of the extent of prior ground disturbance at this location, the Cultural Resources Report concludes that Site 36-002060 no longer exists within the APE.

Among 15 historic-period sites, 14 are segments of various public roadways that coincide with or cross the proposed pipeline alignments. As working components of the modern transportation infrastructure, these roadways have undergone extensive upgrading and

maintenance work since the end of the historic period, and none of them demonstrate any distinctive historical character. All these roadways were built in the late historic period in accordance with standard designs and construction practices. As such, none of them demonstrate any notable qualities in architecture, technology, or aesthetics, nor do they demonstrate the potential for any important historical/archaeological data. Furthermore, there is no evidence that any of them is closely associated with any historic figures or events of recognized significance. Therefore, none of these 14 previously recorded roadways appear to meet any of the criteria for listing in the National Register or the California Register, and none of them qualify as "historic properties" or "historical resources" under Section 106 and CEQA provisions.

Similarly, the BBARWA WWTP (3969-1H) does not appear to be eligible for listing in the National Register or the California Register. Under Criterion A/1, the original construction of the WWTP dates to a period of rapid population growth in Big Bear Valley area during the post-WWII suburban boom, which is arguably a pattern of events that substantially influenced the course of local, regional, as well as national history. However, as one of the numerous public utility projects completed at the time, the WWTP does not demonstrate a unique or particularly close association with this pattern of events or with any other historic theme. Furthermore, the WWTP is not known to be closely associated with any specific events of recognized significance in history.

Under Criterion B/2, the historical background research has not identified any important persons in association with the history of the BBARWA WWTP. Under Criterion C/3, this utilitarian facility of standard design and construction does not exhibit any significant, special, or remarkable merits in architecture, engineering, technology, or aesthetics, nor does it represent an important example of any property type, period, region, and method of construction or embody the work of a prominent architect, engineer, or builder. Under Criterion D/4, the plant holds little promise for important historical or archaeological data for the study of public utility works in the post-WWII era, a subject that is well documented in existing literature and contemporary publications.

In addition, as a result of alterations and additions made in the modern period, the WWTP's historical components are now mixed with modern additions and replacements on prominent display. Consequently, it no longer retains sufficient historic integrity in the aspects of design, materials, workmanship, and feeling to relate to its early history. Based on these considerations, the BBARWA WWTP does not appear to meet the definition of a "historic property" or a "historical resource."

The last cultural resource identified in the APE, Baldwin Lake (36-015027), has been designated a PHI (No. SBr-014) due to its well-known association with colorful events (i.e. gambling, brothels, and related activities) in early California history and thus inherently qualifies as a "historical resource" under CEQA. Because of the same historical association, and because of its prominent role in local Native American creation story, Baldwin Lake may be considered eligible for the National Register upon full evaluation and thereby qualify as a "historic property" under Section 106 provisions as well. However, since the APE overlaps only a small portion of the lakebed at the BBARWA WWTP and along the Palomino Drive and Baldwin Lake Trail ROW, a full evaluation of the historical significance of Baldwin Lake is beyond the scope of the Cultural Resources Report.

Given the limited involvement of the lakebed in the Program plans and the previously altered cultural landscape in this portion of the APE, the proposed undertaking has little potential to affect the existing characteristics of Baldwin Lake. Based on these considerations, the present study concludes that Baldwin Lake as a whole may be presumed to be a "historic property" for the purpose of this undertaking, with the understanding that the limited impact the undertaking may bring about to the current condition of the APE will not constitute an adverse effect on this "historic property" or "historical resource."

In conclusion, among the 17 cultural resources identified in the APE, the 15 historic-period sites do not appear to qualify as "historic properties" or "historical resources," and the prehistoric site (36- 002060) is no longer extant within the APE boundaries, and the undertaking will not have an adverse effect on Baldwin Lake, a "historical resource" under CEQA and a presumed "historic property" under Section 106. Meanwhile, the subsurface sediments in the vertical APE appear to be relatively low in sensitivity for potentially significant archaeological deposits of prehistoric origin. However, mitigation is required to avoid impacts on historic and archaeological resources that may be below the ground surface.

Program Category 1: Conveyance Pipelines

Construction: An evaluation of cultural resource sensitivity of the various pipeline alignments (to Big Bear Lake, to Shay Pond, to Sand Canyon, and to convey brine at the BBARWA WWTP) is presented in the Cultural Resources Report provided as **Appendix 13, Volume 2** of this DPEIR. As described under Cultural Resource Study Conclusions**,** above, of the 17 cultural resources identified in the APE, the 15 historic-period sites do not appear to qualify as "historic properties" or "historical resources," and the prehistoric site (36-002060) is no longer extant within the APE boundaries. Furthermore, the proposed conveyance pipeline alignment alternative to Big Bear Lake that traverses through Baldwin Lake was determined to not have an adverse effect on Baldwin Lake, a "historical resource" under CEQA and a presumed "historic property" under Section 106. This is because, as described above, given the limited involvement of the unaltered lakebed in the project plans—in that the Program would ensure that the lakebed is returned to its original condition or better once the pipeline is installed, should this alignment alternative be the preferred alternative—and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the undertaking has little potential to affect the existing characteristics of Baldwin Lake. (Final EIR, pp. 4-341 - 4-342.)

Furthermore, the conveyance pipeline alignments would be located within the BBARWA WWTP (3969-1H), which does not appear to be eligible for listing in the National Register or the California Register. Under Criterion A/1, the original construction of the plant dates to a period of rapid population growth in Big Bear Valley area during the post-WWII suburban boom, which is arguably a pattern of events that substantially influenced the course of local, regional, as well as national history. However, as one of the numerous public utility projects completed at the time, the WWTP does not demonstrate a unique or particularly close association with this pattern of events or with any other historic theme. Furthermore, the plant is not known to be closely associated with any specific events of recognized significance in history.

Under Criterion B/2, the historical background research has not identified any important persons in association with the history of the BBARWA WWTP. Under Criterion C/3, this utilitarian facility of standard design and construction does not exhibit any significant, special, or remarkable merits in architecture, engineering, technology, or aesthetics, nor does it represent an important example of any property type, period, region, and method of construction or embody the work of a prominent architect, engineer, or builder. Under Criterion D/4, the WWTP holds little promise for important historical or archaeological data for the study of public utility works in the post-WWII era, a subject that is well documented in existing literature and contemporary publications. As a result of alterations and additions made in the modern period, the WWTP's historical components are now mixed with modern additions and replacements on prominent display. Consequently, it no longer retains sufficient historic integrity in the aspects of design, materials, workmanship, and feeling to relate to its early history. Based on these considerations, the BBARWA WWTP does not appear to meet the definition of a "historic property" or a "historical resource."

Based on these considerations, the Cultural Resources Study concludes that, due to the limited impact the undertaking may bring about to the current condition of the APE, the proposed pipeline alignment that traverses through Baldwin Lake will not constitute an adverse effect on this "historic property" or "historical resource."

The remaining pipeline alignments, while traversing through several roadways that have been recorded as historic, would not impact any historical resources, as the roadways identified within the APE do not appear to qualify as "historic properties" or "historical resources," and furthermore, the prehistoric site (36-002060) is no longer extant within the APE boundaries. Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, CRM TECH recommends a finding of No Impact regarding "historical resources." No further cultural resources investigation is recommended for the conveyance facilities, unless construction plans undergo such changes as to include areas not covered by the Cultural Resources Report. However, if buried cultural materials are discovered during earth-moving operations associated with the project, and these materials are adversely impacted, a potentially significant impact on archaeological or historical resources could occur. Thus, mitigation is required to ensure that all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MMs CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant for the conveyance facilities discussed above. (Final EIR, pp. 4-342 – 4-343.)

<u>Operation</u>: The potential impacts from construction are discussed in detail above. No

operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: As discussed above, the majority of the locations proposed to be developed with Ancillary Facilities have been surveyed as part of the Cultural Resources Report provided as **Appendix 13, Volume 2** of this DPEIR. The locations for the three pump stations, monitoring wells near the Solar Evaporation Ponds at the BBARWA WWTP, and Sand Canyon discharge point pipe outlet and erosion control were included within the scope of the Cultural Resources Report. None of the historical sites identified in **Table 4.6-1** fall within the APE for any of the Ancillary Facilities covered under the scope of the Cultural Resources Report. Furthermore, as stated above, the prehistoric site (36-002060) is no longer extant within the APE boundaries, and therefore would not be impacted by the implementation of the Ancillary Facilities covered under the scope of the Cultural Resources Report. The BBARWA WWTP (3969-1H), within which the monitoring wells and pump stations at the BBARWA WWTP would be installed, does not appear to meet the definition of a "historic property" or a "historical resource." Therefore, the modifications therein proposed by the Program would result in a less than significant impact to historical resources.

Furthermore, the proposed upgrades within the existing BBARWA WWTP are located within the former lake bed of Baldwin Lake, though the entire facility has been filled with material to raise the facility outside of the 100-year flood plain, and therefore, the land within which the BBARWA WWTP lies is no longer representative of the historical Baldwin Lake lakebed. Furthermore, the BBARWA WWTP was determined to not have an adverse effect on Baldwin Lake, a "historical resource" under CEQA and a presumed "historic property" under Section 106. Given the limited involvement of the unaltered lakebed in the project plans and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the proposed installation of the Ancillary Facilities at the BBARWA WWTP has little potential to affect the existing characteristics of Baldwin Lake.

The remaining Ancillary Facilities (except the Sand Canyon Monitoring Wells) would not impact any historical resources, as none were identified within the confines of any other ancillary facility. Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, CRM TECH recommends a finding of No Impact regarding "historical resources." No further cultural resources investigation is recommended for the majority of the proposed Ancillary Facilities, with the exception of the Sand Canyon Monitoring Wells, which is discussed in greater detail below. However, if buried cultural materials are discovered during earth-moving operations associated with the project, and these materials are adversely impacted, a potentially significant impact on archaeological or historical resources could occur. Thus, mitigation is required to ensure that all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. **MM CUL-1** would exclude highly disturbed sites from requiring

further cultural resource evaluation, in addition to those sites for which a cultural resource evaluation has already been prepared (all Program facilities except the Sand Canyon Monitoring Wells, unless the implementing agency is seeking additional State funding or Federal funding for the Program. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MMs CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant for the proposed Ancillary Facilities, with the exception of the Sand Canyon Monitoring Wells.

Forecasting impacts to specific historical or archaeological at the unknown locations within which the Sand Canyon Monitoring Wells would be installed would be speculative. Previously unknown and unrecorded cultural resources may be unearthed during excavation and grading activities for the Sand Canyon Monitoring Wells. If previously unknown potentially unique buried archaeological resources are uncovered during excavation or construction without mitigation, significant impacts could occur. Therefore, as Sand Canyon monitoring well locations are determined and finalized, site-specific studies to identify potentially significant historical and archaeological resources would be required, such as Phase I Cultural Resources Investigations. Additional studies would minimize potential impacts to historical and archaeological resources.

If the Sand Canyon Monitoring Wells are proposed within an existing facility that has been totally disturbed due to it undergoing past engineered site preparation (such as an existing well site), the implementing agency may not be required to complete a follow-on cultural resources report (Phase I Cultural Resources Investigation). However, because the Program has been awarded Federal grants, compliance with NEPA is also necessary, and it is therefore likely that, where the funding is applicable to the Sand Canyon monitoring well components, in order to obtain Federal or State funding, a Phase I Cultural Resources Investigation that covers each site must be prepared because this is a requirement in order to be eligible for State or Federal funding.

If the Sand Canyon Monitoring Wells are proposed within undisturbed areas, a follow-on Phase I Cultural Resources Investigation would be required regardless of whether funding is required. Without this additional investigation, a potentially significant impact on archaeological or historical resources could occur. Further MMs are provided below that address the potential for multiple phases of studies that may be necessary to properly identify and evaluate potential cultural resources for the Sand Canyon monitoring well projects. **MM CUL-3** would ensure that the Sand Canyon Monitoring Wells that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation, and/or where the implementing agency is seeking State funding, will require a follow-on Phase I Cultural Resources Investigation. This **MM** includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that

adequate mitigation is provided in the event that significant cultural resources are located within the Sand Canyon Monitoring Wells sites.

MM CUL-4 would ensure that, after each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site. These mitigation measures would ensure that impacts to any cultural resources are fully addressed and minimized to a level of less than significant with the implementation of mitigation.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

Program Category 3: Solar Evaporation Ponds

Construction: The whole of the evaporation pond installation effort would occur within the confines of the existing BBARWA WWTP site, inclusive of the 175,000 CY of soil export anticipated to be necessary to install the Solar Evaporation Ponds. As discussed under Program Categories 1 and 2, above, the BBARWA WWTP (3969-1H), within which the Solar Evaporation Ponds would be installed, does not appear to meet the definition of a "historic property" or a "historical resource." This is because, given the limited involvement of the unaltered lakebed in the Project plans, and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the undertaking has little potential to affect the existing characteristics of Baldwin Lake. Therefore, the modifications therein proposed by the proposed project would result in a less than significant impact to historical resources.

Furthermore, the proposed upgrades to the existing BBARWA WWTP (the AWPF) are located within the former lake bed of Baldwin Lake, though the entire facility has been filled with material to raise the facility outside of the 100-year flood plain, and therefore, the land within which the BBARWA WWTP lies is no longer representative of the historical Baldwin Lake lakebed. Furthermore, the BBARWA WWTP was determined to not have an adverse effect on Baldwin Lake, a "historical resource" under CEQA and a presumed "historic property" under Section 106. Given the limited involvement of the unaltered lakebed in the project plans and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the proposed installation of the Solar Evaporation Ponds has little potential to affect the existing characteristics of Baldwin Lake.

Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, no further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by the Cultural Resources Report.

However, if buried cultural materials are discovered during earth-moving operations associated with the project, and these materials are adversely impacted, a potentially significant impact on archaeological or historical resources could occur. Thus, mitigation is required to ensure that all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MM CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

Program Category 4: BBARWA WWTP Upgrades

Construction: The whole of the BBARWA WWTP Upgrades effort, including the installation of solar, would occur within the confines of the BBARWA WWTP site, which falls within the scope of the Cultural Resources Report. As discussed under Program Categories 1, 2, and 3, above, the BBARWA WWTP (3969-1H), within which the Solar Evaporation Ponds would be installed, does not appear to meet the definition of a "historic property" or a "historical resource." Therefore, the modifications therein proposed by the proposed project would result in a less than significant impact to historical resources.

Furthermore, upgrades to the BBARWA WWTP are located within the former lake bed of Baldwin Lake, though the entire facility has been filled with material to raise the facility outside of the 100-year flood plain, and therefore, the land within which the BBARWA WWTP lies is no longer representative of the historical Baldwin Lake lakebed. Furthermore, the BBARWA WWTP was determined to not have an adverse effect on Baldwin Lake, a "historical resource" under CEQA and a presumed "historic property" under Section 106. Given the limited involvement of the unaltered lakebed in the project plans and the previously altered cultural landscape in this portion of the APE as a result of the installation of the BBARWA WWTP within the former Baldwin Lake lakebed, the proposed BBARWA WWTP Upgrades have little potential to affect the existing characteristics of Baldwin Lake.

Furthermore, according to **Subsection 4.6.3.2, Geoarchaeological Sensitivity Analysis** presented herein, the likelihood of encountering intact, potentially significant prehistoric cultural remains within the vertical APE appears to be relatively low. Therefore, no further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by the Cultural Resources Report. However, if buried cultural materials are discovered during earth-moving operations associated with the project, all work in that area should be halted or diverted until a

qualified archaeologist can evaluate the nature and significance of the finds. **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered during earthmoving activities. **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program. As such, **MM CUL-2 and CUL-5** below must be implemented to ensure impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a cultural resource exists.

Other Physical Changes to the Environment

The Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. The increase in water in these two areas would occur within a defined urban area per **Figure 4.2-4**, and given that the release of water into Big Bear Lake by way of Stanfield Marsh in and of itself does not include any physical components beyond those discussed under Program Categories 1-4, above, and that the Program would not enable Big Bear Lake to become fuller than the historical shoreline resulting from the installation of the dam creating Big Bear Lake, no historical or archaeological resources would be impacted as a result of this change.

The Program would also result in up to 2,200 AFY less discharge to the LV Site. Even though less discharge may result from implementation of the Program, it is anticipated that the LV Site may continue to be farmed, although the use of the site for farming would be reduced from about 190 acres of farmland to a utilization of about 40 acres. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of secondarily treated effluent or could make the treated effluent available to another party for an alternative use. Under any of the above scenarios, a portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. Given that BBARWA would continue to own the site and ensure it is maintained, it is not anticipated that the reduction in discharge to the LV Site would result in an impact to a historical or archaeological resource. No alterations to the site beyond that which presently occurs as a result of ongoing operations (farming and site maintenance), and beyond the enhanced site maintenance, which may involve planting cover crops, such as sorghum to prevent dust migration or utilizing salt bush and other native shrub species and that the site, would occur. The additional plantings would fall within the confines of the existing LV Site operations, and therefore, there would be no potential to impact historical resources. Furthermore, with no excavation proposed, no unknown archaeological resources buried beneath the surface would be impacted by implementation of the Program.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

CUL-1: If the Sand Canyon Monitoring Wells are proposed within existing facilities that has been totally disturbed due to it undergoing past engineered site preparation (such as a well site), the agency implementing the project will not be required to complete a follow on cultural resources report (Phase I Cultural Resources Investigation) unless the implementing agency is seeking additional State or Federal funding, in which case the implementing agency shall prepare a Phase I Cultural Resources Investigation to satisfy State CEQA-plus or Federal agency requirements.

CUL-2: Where a Phase I Cultural Resources Investigation is not required or has already been completed (for all Program components except the Sand Canyon Monitoring Wells), the following shall be required to minimize impacts to any accidentally exposed cultural resource materials:

- Should any subsurface cultural resources be encountered during construction these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist meeting the Secretary of Interior Standards for Archaeology. Responsibility for making this determination shall be with the implementing agency's trained onsite inspector. An archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate MMs in accordance with the State CEQA Guidelines.

CUL-3: If the Sand Canyon Monitoring Wells are proposed within undisturbed sites and/or a site that will require substantial earthmoving activities and/or excavation, and/or the implementing agency is seeking State or Federal funding, the implementing agency shall complete a follow-on cultural resources report (Phase I Cultural Resources Investigation) regardless of whether implementing agency is seeking State or Federal funding.

Where a Phase I Cultural Resources Investigation is required, the following phases of identification, evaluation, mitigation, and monitoring shall be followed:

1. Phase I (Identification): A Phase I Investigation to identify historical, archaeological, or paleontological resources in a project site shall include the following research procedures, as appropriate:

   - Focused historical/archaeological resources records

searches at SCCIC and/or EIC, depending on the project location, and paleontological resources records searches by NHMLAC, SBCM, and/or the Western Science Center in Hemet;

- Historical background research, geoarchaeological profile analysis, and paleontological literature review;

- Consultation with the NAHC, Native American tribes in the surrounding area in accordance with AB 52, pertinent local government agencies, and local historic preservation groups;

- Field survey of the Program Area by qualified professionals of the pertinent discipline and at the appropriate level of intensity as determined on the basis of sensitivity assessment and site conditions;

- Field recordation of any cultural resources encountered during the survey and proper documentation of the resources for incorporation into the appropriate inventories or databases.

2. Phase II (Evaluation): If cultural resources are encountered in a project site and cannot be avoided, a Phase II investigation shall be required to evaluate the potential significance of the resources in accordance with the statutory/regulatory framework outlined above. A typical Phase II study consists of the following research procedures:

- Preparation of a research design to discuss the specific goals and objectives of the study in the context of important scientific questions that may be addressed with the findings and the significance criteria to be used for the evaluation, and to formulate the proper methodology to accomplish such goals;

- In-depth exploration of historical, archaeological, or paleontological literature, archival records, as well as oral historical accounts for information pertaining to the cultural resources under evaluation;

- Fieldwork to ascertain the nature and extent of the archaeological/paleon-tological remains or resource-sensitive sediments identified during the Phase I study, such as surface collection of artifacts, controlled excavation of units, trenches, and/or shovel test pits, and collection of soil samples;

- Laboratory processing and analyses of the cultural artifacts, fossil specimens, and/or soil samples for the proper recovery, identification, recordation, and cataloguing of the materials collected during the fieldwork and to prepare the assemblage for permanent curation, if warranted.

3. Phase III (Mitigation/Data Recovery): For resources that prove to be significant under the appropriate criteria, mitigation of potential project impact is required. The first option is avoidance by selecting and implementing the Sand Canyon Monitoring Wells at an alternative without significant cultural or paleontological resources. Depending on the characteristics of each resource type and the unique aspects of significance for each individual resource, mitigation may be accomplished through a variety of different methods, which shall be determined by a qualified archaeologist, paleontologist, historian, or other applicable professional in the "cultural resources" field. Typical mitigation for historical, archaeological, or paleontological resources, however, may focus on the following procedures, aimed mainly at the preservation of physical and/or archival data about a significant cultural resource that would be impacted by the project:

- Data recovery through further excavation at an archaeological site or a paleon-tological locality to collect a representative sample of the identified remains, followed by laboratory processing and analysis as well as preparation for permanent curation;

- Comprehensive documentation of architectural and historical data about a significant building, structure, or object using methods comparable to the appropriate level of the HABS and HAER for permanent curation at a repository or repositories that provides access to the public;

- Adjustments to project plans to minimize potential impact on the significance and integrity of the resource(s) in question. (Final EIR, pp. 4-349-4-350.)

4. Phase IV (Monitoring): At locations that are considered sensitive for subsurface deposits of undetected archaeological or paleontological remains, all earth-moving operations shall be monitored continuously or periodically, as warranted, by qualified

professional practitioners. Archaeological monitoring programs shall be coordinated with the nearest Native American groups, who may wish to participate, as put forth in MMs TCR-1 through TCR-3.

CUL-4: After each phase of the studies required by MM CUL-3 has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures shall be prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM, as appropriate and in addition to the implementing agency for the project, for permanent documentation and easy references by future researchers.

CUL-5: Archaeological Monitoring

Due to the heightened cultural sensitivity of the proposed Program Area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work), for individual Replenish Big Bear Program components that are deemed by YSMN to be located within culturally sensitive areas of the Big Bear Valley. A sufficient number of archaeological monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeological consultant and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and approve the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the Program. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

Level of Significance After Mitigation: Less Than Significant

MM CUL-1 would exclude highly disturbed sites from requiring further cultural resource evaluation, in addition to those sites for which a cultural resource evaluation has already been prepared (all Program facilities except the Sand Canyon Monitoring Wells), unless the implementing agency is seeking additional State funding or Federal funding for the Program. Furthermore, **MM CUL-2** would require the implementing agency to adhere to adaptive management procedures pertaining to treatment of cultural resources that may be accidentally discovered

during earthmoving activities.

MM CUL-3 would ensure that the Sand Canyon Monitoring Wells that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation, and/or where the implementing agency is seeking State funding, will require a follow-on Phase I Cultural Resources Investigation. This **MM** includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within the Sand Canyon Monitoring Wells sites. (Final EIR, p. 4-345.)

MM CUL-4 would ensure that, after each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the Program Infrastructure project site.

Finally, **MM CUL-5** would require an archaeological monitor to be present at each of the Program Component sites, at the discretion of the YSMN, at the request of the Tribe as part of the AB 52 consultation. This measure would further ensure that historical, archeological, and prehistoric resources are treated appropriately if unearthed as part of the implementation of the Program.

F. GEOLOGY AND SOILS

1. Fault Rupture

Threshold: Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault; strong seismic ground shaking; seismic-related ground failure including liquefaction; or landslides?

Finding: Less than significant. (Draft EIR, pp. 4-448 – 4-458)

Explanation:

Seismic-Related Ground Failure

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon

Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to seismic ground shaking. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. Pipe outlets are not typically susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. However, this Program Category includes several aboveground structures. The primary and secondary effects of ground shaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers performing site maintenance, as the facilities proposed under this Program Category would not support any employees onsite. Note that none of the proposed facilities envisions hosting human residents.

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. Thus, impacts would be less than significant through the implementation of mitigation.

Program Category 3: Solar Evaporation Ponds Project

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation

Ponds). Construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Solar Evaporation Ponds Project infrastructure. As these facilities would be outdoors, it is not anticipated that the Solar Evaporation Ponds Project would be susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. The primary and secondary effects of ground shaking could damage structural foundations and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers.

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Thus, impacts would be less than significant through the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures

are able to withstand the potential impacts related to seismic ground shaking. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: During operation, ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. This Program Category includes several aboveground structures. The primary and secondary effects of ground shaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers at the BBARWA upgraded WWTP (i.e., AWPF).

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Thus, impacts would be less than significant through the implementation of mitigation.

Combined Program Categories

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because seismic ground shaking may cause structural damage that would could affect persons inside structures to be exposed to risk associated with strong seismic ground shaking when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to

seismic ground shaking. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater seismic ground shaking risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of seismic ground shaking during construction is low. Thus, impacts would be less than significant.

Operation: Operations consist of full advanced water treatment processes; delivery of Program Water to Stanfield Marsh/Big Bear Lake, Shay Pond; delivery of Program Water to Big Bear Lake and to the Sand Canyon Recharge Area, Bear Mountain Golf Course, and Snow Summit Bike Park, operation of the Solar Evaporation Ponds, and delivery of peak flows to LV Site. Ground shaking could result in structural damage and hazards to new and existing facilities, which in turn could affect the operation of the Program infrastructure. Underground pipelines are not typically susceptible to severe damage from seismic ground shaking, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. However, the Program includes several aboveground structures. The primary and secondary effects of ground shaking could damage structural foundations, distort or break pipelines and other water conveyance structures, and cause structural failure. Therefore, structural and mechanical failure of facilities caused by strong seismic ground shaking could potentially threaten the safety of any on-site workers at the BBARWA upgraded WWTP (i.e., AWPF). Note that none of the proposed facilities envisions hosting human residents.

It is anticipated that the structural elements of facilities proposed under this Program Category would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. A licensed geotechnical engineer, a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. The California Professional Engineers Act (Building and Professions Code Sections 6700-6799) and the Codes of Professional Conduct, as administered by BPELS, provide the basis for regulating and enforcing engineering practice in California. Compliance with these construction requirements and site-specific building and facility safety design standards as required in **MM GEO-1** would reduce potential impacts associated with ground shaking to a level of less than significant. **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Thus, impacts would be less than significant through the implementation of mitigation.

Other Physical Changes to the Environment

In the future, peak flows exceeding the AWPF's 2.2 MGD treatment capacity 2.2 MGD will be delivered to the LV Site during winter months. The reduction in undisinfected secondary effluent discharge to this site has no known potential to cause new or different ground shaking potential. The Stanfield Marsh/Big Bear Lake Discharge, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different ground shaking potential. No mitigation is

required at these sites due to implementation of the Program and no impacts would occur.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measure:

GEO-1: Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM GEO-1** would reduce the potential impacts from ground shaking hazards through a design level geotechnical investigation with the implementation of specific design recommendations.

Seismic Related Ground Failure/Liquefaction

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors, which is not anticipated to occur during Conveyance Facility construction. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. There are pipeline locations where potential seismic-related ground failure could cause damage, but would not result in a substantial adverse impact, such that the pipeline could not be repaired. This is because, as discussed above, underground pipelines are not typically susceptible to severe damage from liquefaction, and furthermore are subject to

industry standards that will minimize the potential risk of damage or pipeline rupture. Thus, liquefaction impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater liquefaction risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Through the implementation of **MM GEO-1**, the Ancillary Facilities can be designed with measures to reduce the potential for significant damage to the facilities and any human occupants. If mitigation is insufficient to protect the Ancillary Facilities from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations.

Figure 4.8-6 identified the Sand Canyon Recharge Area as a potential area for liquefaction or ground failure impacts. Using the Sand Canyon Recharge Area to recharge the groundwater basin using Program Water stored in Big Bear Lake could increase the potential for liquefaction within this residential area of Big Bear Valley. This will require a robust monitoring and recharge management system to ensure that recharged water does not mound beneath the recharge area and create new potential for ground failure, thereby resulting in a potentially significant impact. To ensure that this does not occur, the Program will implement **MM GEO-2**. Thus, impacts would be less than significant through the implementation of mitigation.

Program Category 3: Solar Evaporation Ponds Project

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Through the implementation of **MM GEO-1**, the Solar Evaporation Ponds can be designed with measures to reduce the potential for significant damage to the facilities. If mitigation is insufficient to protect the Solar Evaporation Ponds from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations. Thus, impacts would be less than significant through the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater liquefaction risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. Through the implementation of **MM GEO-1**, the BBARWA WWTP Upgrades Project can be designed with measures to reduce the potential for significant damage to the facilities. If mitigation is insufficient to protect the BBARWA WWTP Upgrades Project from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations. Thus, impacts would be less than significant through the implementation of mitigation.

Combined Program Categories

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because liquefaction may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater liquefaction risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: The only Program Areas with seismic-related liquefaction hazard potential are areas with high groundwater table, typically higher than 50 ft below the ground surface. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area. Refer to **Figure 4.8-6**. Except for BBARWA's WWTP site, there are pipeline locations where potential seismic-related ground failure could cause damage, but would not result in a substantial adverse impact, such that the pipeline could not be repaired. This is because, as discussed above, underground pipelines are not typically susceptible to severe damage from liquefaction, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. A significant impact could occur if the projects under this Program Category cannot be designed to accommodate the site-specific potential for liquefaction when constructed. The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical

investigation with the implementation of specific design recommendations. Based on the findings and design recommendations developed in response to **MM GEO-1**, the Program facilities can be designed with measures to reduce the potential for significant damage to the facilities and any human occupants. If mitigation is insufficient to protect the BBARWA WWTP upgrades (i.e., AWPF) or other Program facilities from significant liquefaction-ground failure impacts, a follow-on environmental document will be prepared to address this situation and alternative locations.

Figure 4.8-6 identified the Sand Canyon Recharge Area as a potential area for liquefaction or ground failure impacts. Using the Sand Canyon Recharge Area to recharge the groundwater basin using Program Water stored in Big Bear Lake could increase the potential for liquefaction within this residential area of Big Bear Valley. This will require a robust monitoring and recharge management system to ensure that recharged water does not mound beneath the recharge area and create new potential for ground failure, thereby resulting in a potentially significant impact. To ensure that this does not occur, the Program will implement **MM GEO-2**. Thus, impacts would be less than significant through the implementation of mitigation.

Other Physical Changes to the Environment

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to cause new or different liquefaction hazards. The additional discharge of water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no known potential to cause new or different liquefaction hazards. No mitigation is required at these sites due to implementing the Program.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measure:

GEO-1: Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.

GEO-2: For the Sand Canyon Recharge Area, the Program will develop and implement a recharge monitoring and management plan that will control recharge to ensure that potential liquefaction-ground failure hazards will be controlled to prevent/eliminate the potential for this type of hazard to be created at the recharge location. This may include pumping groundwater to lower the groundwater table within the recharge impact area. This plan shall be reviewed and approved by the Program managers based on its ability to meet this criterion.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM GEO-1** would reduce the potential impacts from liquefaction hazards through a design level geotechnical investigation with the implementation of specific design recommendations. **MM GEO-2** would further ensure that monitoring and recharge management occurs at the Sand Canyon Recharge Area to ensure the recharge efforts do not cause liquefaction.

2. Soil Erosion

Threshold: Would the Project result in substantial soil erosion or the loss of topsoil?

Finding: Less than significant with mitigation (DEIR, pp. 4-461 – 4-466)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography, except the pipeline alignment within Sand Canyon and the Sand Canyon Recharge Project facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Otherwise, the soils in the Program APE are deep, well-drained soils that formed in alluvium. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The Shay Pond Replacement Pipeline, Sand Canyon Recharge Conveyance Pipeline, and Stanfield Marsh/Big Bear Lake Discharge Projects are each project proposed under this Program that are greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites

once the construction is completed. To prevent erosion associated with runoff from construction sites for each proposed site-specific project, the implementing agencies would implement BMPs to ensure that the discharge of storm runoff from construction sites does not cause erosion downstream from the discharge point. Without the implementation of BMPs, a significant erosion impact could occur. However, for the new Shay Pond Conveyance Pipeline, mitigation is necessary to minimize impacts as SWPPP and WQMPs would not be required. The implementation of **MM GEO-3** is necessary to prevent a significant construction related erosion impact, as it would ensure that the proposed facilities associated with the Shay Pond Discharge Project that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Thus, through the implementation of mitigation, impacts related to implementation of the new Shay Pond Conveyance Pipeline would be less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the pipelines are installed belowground, the roadways and compacted dirt throughways will be returned to their original condition. Thus, no new potential for erosion would occur and operational impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography, except the Sand Canyon Recharge facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Otherwise, the soils in the Program APE are deep, well-drained soils that formed in alluvium. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The facilities that would be installed within the overall BBARWA WWTP would be a part of a project that would be greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction. The project areas for the Sand Canyon Monitoring Wells, Sand Canyon Booster Station, and Sand Canyon Conveyance Pipeline Discharge Outlet are each project proposed under this Program that are less than one acre, so a SWPPP would be not be required. Without the implementation of BMPs, a significant erosion impact could occur. For projects larger than one acre the SWPPP would specify BMPs that would minimize erosion impacts to a level of less than significant. However, for the Sand Canyon Monitoring Wells, Sand Canyon Booster Station, and Sand Canyon Conveyance Pipeline Discharge Outlet, mitigation is necessary to minimize impacts as SWPPP would not be required. The implementation of **MM GEO-3** would ensure that the proposed facilities associated with the Program that are less than one acre in size would not exacerbate

conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Thus, through the implementation of mitigation, impacts related to implementation of the Sand Canyon Monitoring Wells, Sand Canyon Booster Station, and Sand Canyon Conveyance Pipeline Discharge Outlet would be less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the Ancillary Facilities are installed, the sites will manage drainage and runoff internally. With no ground disturbing activities anticipated as part of operation, internal drainage mechanisms would prevent erosion from occurring offsite. Thus, no new potential for erosion would occur and operational impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds Project

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The Solar Evaporation Ponds would be greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and

Operation: Operational erosion impacts are not anticipated to occur, as once the Solar Evaporation Ponds are installed, the sites will manage drainage and runoff internally. WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: The Program facilities are shown on **Figure 3-29**. Construction activities for these proposed facilities are all located on essentially flat topography, except the pipeline alignment within Sand Canyon and the Sand Canyon Recharge facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure

compliance with the above Rule.

The BBARWA WWTP Upgrades would be greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. Without the implementation of BMPs, a significant erosion impact could occur. For projects larger than one acre (the BBARWA WWTP Upgrades) the SWPPP and WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the BBARWA WWTP Upgrades are installed, the site will manage drainage and runoff internally. WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

Combined Program Categories

Construction: The Program facilities are shown on **Figure 3-29**, which include pipelines, pump stations, monitoring wells, upgrades to BBARWA's WWTP to achieve full advanced treatment, water recharge facilities, and Solar Evaporation Ponds. Construction activities for these proposed facilities are all located on essentially flat topography, except the pipeline alignment within Sand Canyon and the Sand Canyon Recharge facilities. Soils on the floor of Baldwin Lake and near Big Bear Lake consist of Grunney Series and Moonridge-Shay Road and Caribou Creek Series soils (Refer to **Figure 4.8-7**, Tables 1 and 2 of **Appendix 15 of Volume 2** to this DPEIR for the location of these soils and their description). Only the Grunney soils are poorly drained (dry lakebed) such that excavation and grading could result in soil erosion during rain or high wind events. Otherwise, the soils in the Program APE are deep, well-drained soils that formed in alluvium. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds as this requirement is intended to prevent significant wind-induced soil erosion. As a mandatory requirement, mitigation is not required to ensure compliance with the above Rule.

The BBARWA WWTP Upgrades and Solar Evaporation Ponds are each project proposed under this Program that are greater than one acre. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. The project areas for the monitoring wells, pump stations, Sand Canyon Recharge pipe outlet and erosion control are each project proposed under this Program that are less than one acre, so a SWPPP would be required. To prevent erosion associated with runoff from construction sites for each proposed site-specific project, the implementing agencies would implement BMPs to ensure that the discharge of storm runoff from construction sites does not cause erosion downstream from the discharge point. Without the implementation of BMPs, a significant erosion impact could occur. The implementation of BMPs would be enforced through mitigation identified below. The implementation of **MM GEO-3** would ensure that the proposed facilities associated with the Program that are less than one acre in size would not exacerbate

conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Adherence to these conditions and the mitigation provided below would ensure that potential soil erosion and loss of topsoil impacts would be minimized to less than significant.

Operation: Operational erosion impacts are not anticipated to occur, as once the pipelines are installed belowground, the roadways and compacted dirt throughways will be returned to their original condition. Operational erosion impacts are not anticipated to occur, as once the Ancillary Facilities are installed, the sites will manage drainage and runoff internally. With no ground disturbing activities anticipated as part of operation, internal drainage mechanisms would prevent erosion from occurring offsite. Thus, no new potential for erosion would occur and operational impacts would be less than significant.

Operational erosion impacts are not anticipated to occur, as once the BBARWA WWTP Upgrades and Solar Evaporation Ponds are installed, the sites will manage drainage and runoff internally. WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. WQMP would specify BMPs that would minimize erosion impacts to a level of less than significant.

Other Physical Changes to the Environment

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, and at present, the discharge is planned to continue to be utilized by the farmer who leases the LV Site from BBARWA. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) or could make the treated effluent available to another party for an alternative use. Under any of the above scenarios, a portion or all of the LV Site would become fallow as a result of the reduction or cessation of farming operations, and would continue to be maintained by BBARWA. This reduction in discharge could result in soil erosion greater than that which could occur at present due to the reduced vegetation present on the site from the reduced farming operations. At present, BBARWA and the farmer who leases the LV Site are responsible for maintaining the site. Under the Program, BBARWA is considering enhancing site maintenance at the LV Site within areas that would become fallow from the reduction or cessation of farming operations at the Site. Enhanced site maintenance options are presently being explored by BBARWA, and include, but are not limited to, the following possible options:

- Weed abatement and dust control through use of dust control applications and eco-conscious weed killing applications;
- Planting cover crops, such as sorghum to prevent dust migration; and/or
- Restoration and stabilization of the site utilizing salt bush and other native shrub species, which are self-sustaining with precipitation over the long term.

It is anticipated that by implementing any of the above maintenance practices to maintain

the LV Site, which are incorporated into the operation of the Program, soil erosion or loss of top soil would be minimized below significance thresholds. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore, would have no new potential to cause soil erosion or loss of top soil. No mitigation is required at these sites due to implementing the Program.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measure:

GEO-3: For each site-specific project that is less than one acre in size requiring ground disturbing activities such as grading, the implementing agencies shall identify and implement BMPs to minimize soil erosion and loss of topsoil comparable to that which would be required under a SWPPP (BMPs may include, but are not limited to hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from the construction site does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM GEO-3** would ensure that the proposed facilities associated with the Program that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs. Furthermore, the maintenance at the LV Site that has been incorporated into Program operations would ensure that erosion control is implemented and maintained at the LV Site. Larger projects (one-acre or more) must implement SWPPPs that are mandated by the State and County to control runoff during construction and WQMPs must be implemented to control runoff and erosion from specific facility sites once the construction is completed. Again, this is a mandatory requirement that the implementing agencies will implement and ensure that post-development runoff and erosion potential is controlled.

3. Unstable Soils

Threshold: Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-466 – 4-471)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Given that the general locations of the Conveyance Pipeline Alignments are known, it is possible to review the potential for soil instability at a project level. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because on-site or off-site landslide, lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with lateral spreading, subsidence, liquefaction or collapse when indoors, which is not anticipated to occur during Conveyance Facility construction. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas and therefore the risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Overall, construction would be temporary in nature and the probability of liquefaction during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Given that the general locations of the Conveyance Pipeline Alignments are known, it is possible to review the potential for soil instability at a project level. The Conveyance Pipelines would be installed in locations that are generally flat or are within flat areas of roadways in residential areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8−6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. Therefore, adverse effects involving landslides would be less than significant without the need for added mitigation. The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area, and these areas could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, there are pipeline locations where potential soil instability could cause damage, but would not result in a substantial adverse impact, such that the pipeline could not be repaired. This is because, as discussed above, underground pipelines are not typically susceptible to severe damage from soil instability, and furthermore are subject to industry standards that will minimize the potential risk of damage or pipeline rupture. Thus, soil instability impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump

Stations

Construction: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. As previously discussed, landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslide or mudflow/mudslide hazards. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to lateral spreading, subsidence, liquefaction or collapse, as well as landslide. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater lateral spreading, subsidence, liquefaction or collapse and landslide risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of lateral spreading, subsidence, liquefaction or collapse during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. As previously discussed, landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslide or mudflow/mudslide hazards. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Furthermore, the Sand Canyon Monitoring Wells, while specific site locations are not yet known, would be located downstream of the Sand Canyon Recharge Area. This area is not located within an area exposed to landslide or mudflow. The Sand Canyon Booster Station is located in an area with low to moderate landslide susceptibility. However, this site has been entirely developed, and has not experienced landslide in recent history. Thus, given that the Sand Canyon Booster Station site has been developed, it is not anticipated to be exposed to landslide or mudflow.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, near Big Bear Lake, and near the Sand Canyon Recharge Area, and these areas could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, there are Ancillary Facilities locations where potential soil instability could cause damage to structures or facilities, and therefore implementation of the proposed Ancillary Facilities may cause a significant and unavoidable impact related to soil instability. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Program Category 3: Solar Evaporation Ponds Project

Construction: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally be at risk when working indoors. This is because lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with lateral spreading, subsidence, liquefaction or collapse when indoors. Overall, construction would be temporary in nature and the probability of lateral spreading, subsidence, liquefaction or collapse during construction is low. Furthermore, in particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). The risk associated with landslide occurring and significantly impacting construction activities would be low. Overall, construction would be temporary in nature and the probability of landslide during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or

landslide hazard exposure. As the Solar Evaporation Ponds would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, which could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, the Solar Evaporation Ponds may be located where potential soil instability could cause damage to these facilities, and therefore implementation of the proposed Solar Evaporation Ponds may cause a significant and unavoidable impact related to soil instability. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas. According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally be at risk when working indoors. This is because landslide, lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with liquefaction when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to landslide, lateral spreading, subsidence, liquefaction or collapse. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide, lateral spreading, subsidence, liquefaction or collapse risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide, lateral spreading, subsidence, liquefaction or collapse during construction is low. Thus, impacts would be less than significant.

Operation: Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Landslides and mudflow hazards exist throughout Big Bear Valley on steep hillsides and in creek and streambed areas.

According to the San Bernardino Countywide Plan Liquefaction and Landslide Map (**Figure 4.8-6**), none of the Program Areas are identified as subject to landslides or mudflow/mudslides. In particular, the BBARWA WWTP site on Baldwin Lake is not identified as having any rockfall or landslide hazard exposure. As the BBARWA WWTP Upgrades Project would be installed within the BBARWA WWTP site, adverse effects involving landslides would be less than significant without the need for added mitigation.

The areas with the groundwater table potentially less than 50 ft would be on Baldwin Lake, which could be susceptible to lateral spreading, subsidence, liquefaction, or collapse. Refer to **Figure 4.8-6**. Based on the above location data, the BBARWA WWTP Upgrades may be located where potential soil instability could cause damage to these facilities, and therefore implementation of the proposed BBARWA WWTP Upgrades may cause a significant and unavoidable impact related to soil instability. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Combined Program Categories

Construction: Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally be at risk when working indoors. This is because landslide, lateral spreading, subsidence, liquefaction or collapse may cause structural damage that would could affect persons inside structures to be exposed to risk associated with landslide, lateral spreading, subsidence, liquefaction or collapse when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to liquefaction. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater landslide, lateral spreading, subsidence, liquefaction or collapse risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of landslide, lateral spreading, subsidence, liquefaction or collapse during construction is low. Thus, impacts would be less than significant.

Operation: Within Big Bear Valley, non-seismically induced geologic hazards, such as landslides, subsidence, lateral spreading, settlement, and slope failure can be caused by unstable soils, which occur in limited areas of the Program Area. Soil instability from landslides, subsidence, lateral spreading, settlement, and slope failure can cause collapse or damage to structures. Given that the general locations of the Program facilities are

known, and based on the above discussion, the issue of landslide for all Program facilities would be less than significant. As there is a potential for some facilities to be located within areas that are considered to be susceptible to lateral spreading, subsidence, liquefaction, or collapse the Program would be exposed to potentially significant soil instability impacts. As a result, **MM GEO-1**, is required to minimize lateral spreading, subsidence, liquefaction, collapse and other soil instability impacts as a result of Program implementation. With the implementation of **MM GEO-1** for the major site facilities, adverse effects involving unstable soils would be less than significant. Furthermore, pipelines failure can occur, but can be repaired and placed back into operation with no loss of human life. Therefore, impacts from the development of the proposed pipeline alignments are considered less than significant.

Other Physical Changes to the Environment

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse hazards. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the provision of additional or alternative water sources at these sites would occur within the limits of that which has occurred historically or could occur without the Program implementation naturally, and therefore would have no known potential to result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse hazards. No impacts would occur, and no mitigation is required at these sites due to implementing the Program.

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: Refer to **MM GEO-1**, above.*

GEO-1: Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM GEO-1** would reduce the potential impacts related to unstable soils through a design level geotechnical investigation with implementation of specific

design recommendations for future Program projects.

4. Expansive Soils

Threshold: Would the Project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-471 - 4-75)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed underground and outdoors. Construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with l expansive soils when indoors, which is not anticipated to occur during Conveyance Facility construction. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. However, the proposed pipelines would be installed below ground; soils with expansive characteristics could exert pressure on the pipelines during times of saturation, potentially threatening pipeline stability. Therefore, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for

expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Sand Canyon Recharge Pipeline Discharge Outlet). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors. The structures within which the pump station and monitoring wells would be installed, would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to expansive soils. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater expansive soils risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. As some Ancillary Facilities would be installed within these locations, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

Program Category 3: Solar Evaporation Ponds Project

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds). Construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. As the Solar Evaporation Ponds would be installed within Baldwin Lake, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to expansive soils. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater expansive soils risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for

expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. As the BBARWA WWTP Upgrades would be installed within Baldwin Lake, adverse effects involving expansive soils would be potentially significant. Therefore, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects. Therefore, impacts would be less than significant with mitigation incorporated.

Combined Program Categories

Construction: The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Construction of the proposed facilities would be temporary, with the majority of the proposed facilities proposed to be developed outdoors (Solar Evaporation Ponds, pipelines, solar, and some upgrades to the BBARWA WWTP). The remaining facility construction would occur indoors or would occur as the structures housing the proposed facilities are being installed. Thus, construction workers would generally only be at risk when working indoors. This is because expansive soils may cause structural damage that would could affect persons inside structures to be exposed to risk associated with expansive soils when indoors or when installing solar atop a habitable structure. The structures within which the AWPF at BBARWA's WWTP, pump stations, and monitoring wells or on which the roof top solar would be installed would be designed and developed to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino County and City of Big Bear Lake areas. This would ensure that as these structures are built, the structures are able to withstand the potential impacts related to expansive soils. Furthermore, construction within the interior or on the roof of any existing structures would not post any greater expansive soils risk than that which exists during operation of the BBARWA WWTP at present. Overall, construction would be temporary in nature and the probability of expansive soils during construction is low. Thus, impacts would be less than significant.

Operation: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. As stated above, soils throughout the Program Area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The only area of concern for expansive soils would be on Big Bear Valley floor, particularly on Baldwin Lake where clay soils, which are known to exhibit expansive properties, do occur. Therefore, adverse effects involving expansive soils would be potentially significant. As such, the implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects.

Proposed pipelines would be installed below ground; soils with expansive characteristics could exert pressure on the pipelines during times of saturation, potentially threatening pipeline stability. Therefore, adverse effects involving expansive soils would be potentially significant. As such, mitigation is required to minimize impacts to a less than significant level by ensuring that pipeline and all other Program facilities are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations. Therefore, impacts would be less than significant with mitigation incorporated.

Other Physical Changes to the Environment

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site would not include the installation of structures that could be impacted by the presence of expansive soils on site. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond as the installation of structures necessary to facilitate this change have been discussed above as part of the overall Program facilities, and would not include construction beyond that which has been analyzed under Combined Program Categories, above, and therefore, there is no potential for expansive soil impacts. No mitigation is required at these sites due to implementing the Program.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

GEO-1: Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future Program projects.

5. Paleontological Resources

Threshold: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-476 – 4-480)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Conveyance Facilities traverse through areas with low-to-high, and high paleontological sensitivity. Thus, there is a potential for such resources to exist within the conveyance pipeline alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within an individual project site would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Ancillary Facilities may be installed within areas with low-to-high, and high paleontological sensitivity. Thus, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or

construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within individual Program facility sites would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

Program Category 3: Solar Evaporation Ponds Project

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Solar Evaporation Ponds Project is located within an area containing low-to-high sensitivity. As the Solar Evaporation Ponds Project would be located within Baldwin Lake, there is a lower potential to uncover paleontological resources than in other areas of the program. Regardless, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within individual Program facility sites would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

Program Category 4: BBARWA WWTP Upgrades Project

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils

developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the BBARWA WWTP Upgrades Project is located within an area containing low-to-high sensitivity. As the BBARWA WWTP Upgrades Project would be located within Baldwin Lake, there is a lower potential to uncover paleontological resources than in other areas of the program. Regardless, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within individual Program facility sites would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

Combined Program Categories

Construction: The San Bernardino Countywide Plan and Big Bear Lake General Plan indicate that only limited portions of Big Bear Valley areas are sensitive to paleontological resources. Most of Big Bear Valley consists of granitic-type bedrock and residual soils developed on this bedrock. However, in the floor areas of Big Bear Valley, previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading-trenching activities for individual projects. This is demonstrated on **Figure 4.8-9**, which depicts the San Bernardino Countywide Plan EIR Paleontological Sensitivity-Mountain Region Map, the Program Area traverses through areas with low-to-high, and high paleontological sensitivity. Thus, there is a potential for such resources to exist within the individual Program facility sites and alignments. If previously unknown potentially unique paleontological resources are uncovered during excavation or construction, significant impacts could occur. The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. Therefore, mitigation would be implemented that would require site specific studies to identify potentially significant paleontological resources. Additional studies that would identify management measures to minimize impacts to any paleontological resources found within a Replenish Big Bear project site would ensure that impacts to paleontological resources are less than significant. Therefore, impacts would be less than significant with mitigation incorporated.

Operation: The potential impacts from construction are discussed in detail above. No

operational impacts are anticipated, as once the facilities are installed, no potential to impact paleontological resources exists.

Other Physical Changes to the Environment

In the future, treated effluent is likely to continue being delivered to the LV Site during winter months, but the reduction in discharge of treated effluent to this site has no known potential to create new or different potential for impacts to paleontological resources. The additional discharge of Program Water to Big Bear Lake, and the potential change in water source at Shay Pond would not require construction of any kind beyond that which has been analyzed under Combined Program Categories, above, and therefore, would have no known potential to create new or different potential for impacts to paleontological resources. No mitigation is required at these sites due to implementing the Program.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measure:

GEO-4: For project-level development involving ground disturbance in alluvial deposits, a qualified paleontologist shall be retained to determine the necessity of conducting a study of the Project Area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resource records search to be conducted at the SBCM and/or other appropriate facilities; a field survey or monitoring where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. Treatment of any discovered paleontological resources shall follow current professional standards.

Level of Significance Before Mitigation: Less Than Significant

The implementation of **MM GEO-4** would require a site-specific study to identify and mitigate impacts to potentially significant paleontological resources, which would minimize potential impacts to paleontological resources. No mitigation is required for facilities located where bedrock occurs at the surface or where only residual soils occur.

G. HAZARDOUS AND HAZARDOUS MATERIALS

1. Hazardous Materials

Threshold: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-561 – 4-457)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of conveyance pipeline can require delivery of hazardous materials (such as petroleum products) to support their installation. Implementation of mitigation outlined below, is necessary to avoid a significant impact under this issue and ensure that the use and generation of hazardous substances in support of both construction and operation of Program Category 1 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. These MMs will be applied to these future Program facilities and would reduce potential impacts to a level of less than significant.

Operation: Long-term operation of Conveyance Facilities would not require use of hazardous materials. These facilites would be installed belowground, and the remaining Program facilities outlined below would support the transmission of brine, Program Water, and Lake Water through the new pipelines. Thus, no potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials existings. No impacts would occur.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: In most instances these proposed facilities would not involve the routine transport, use, or disposal of hazardous materials. Construction activities would be required for the installation of proposed monitoring wells and pump stations at the existing BBARWA WWTP and Sand Canyon Recharge Area. Construction activities required for implementation of the facilities would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. The anticipated construction activities described above would temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. The implementation of mitigation, outlined below, is required to ensure that the use and generation of hazardous substances in support of both construction of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction to ensure that the site contamination level has been

reduced to a level that complies with State and Federal law. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Operation: In most instances these proposed facilities would not involve the routine transport, use, or disposal of hazardous materials. However, in certain instances hazardous materials are used routinely in support of drilling monitoring wells and installing and operating pump stations, and related treatment operations, and thus, some activities in support of Program Category 2 may generate routine transport of hazardous materials. Construction activities would be required for the installation of proposed monitoring wells and pump stations at the existing BBARWA WWTP and Sand Canyon Recharge Area. Construction activities required for implementation of the facilities would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. The anticipated construction activities described above would temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. Long term operation of the monitoring wells and pump stations can require small quantities of hazardous materials such as cleaning supplies and petroleum products, but typically only minimal quantities to keep equipment operating safely and efficiently. Thus, construction impacts would be the same as Program Category 1, and the implementation of **MMs HAZ-1** through **HAZ-5**, outlined below, is necessary to avoid a significant impact under this issue and ensure that the use and generation of hazardous substances in support of both construction and operation of Program Category 2 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law.**MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of these facilities can require delivery of hazardous materials (namely petroleum products) to support their installation, similar to Program Categories 1 and 2, above. This could result in a potentially significant impact to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. As noted under Program Categories 1, and 2, above, the implementation of mitigation outlined below, is required to ensure that the use and generation of hazardous substances in support of both construction of Program Category 4

facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Operation: Installation of these facilities can require delivery of hazardous materials (namely, petroleum products) to support their installation. Long term operation of the Solar Evaporation Ponds is not anticipated to require use of hazardous materials.

However, the Solar Evaporation Ponds will require management. Typically, Solar Evaporation Ponds are lined shallow basins in which concentrate evaporates naturally as a result of solar radiation. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically, and disposed of off-site to the local landfill, though the use of hazardous materials to remove the brine is not anticipated. No use of hazardous materials in brine disposal is anticipated. Other management may include a requirement to manage insects, primarily midges. This can be accomplished with a mix of insect control activities, but most often includes some use of pesticides. The use of pesticides, which are typically hazardous materials (poisons), is controlled through cooperation with those county agencies assigned the responsibility for controlling vectors, such as mosquitos. Mitigation is provided below to address management of pesticide use to minimize hazards at the Solar Evaporation Ponds and the environment surrounding the Solar Evaporation Ponds.

Other than the use of pesticides to control vectors, impacts would be the same as Program Categories 1 and 2. Additionally, Operational and Construction impacts would be the same as Program Category 1 and 2, and the implementation of **MMs HAZ-1** through **HAZ-6**, outlined below, is necessary to avoid a significant impact under this issue and ensure that the use and generation of hazardous substances in support of operation of Program Category 3 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law.**MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be

considered adverse to public health and water quality. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of these facilities can require delivery of hazardous materials (namely petroleum products) to support their installation, similar to Program Categories 1 through 3, above. This could result in a potentiall significant impact to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. As noted under Program Categories 1, 2, and 3, above, the implementation of **MMs HAZ-1** through **HAZ-6**, outlined below, is required to ensure that the use and generation of hazardous substances in support of both construction of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law.**MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Operation: Long-term operation of the AWPF would be similar to that which occurs at the BBARWA WWTP at present, but with additional treatment trains utilizing new treatment systems and chemicals to achieve full advanced treatment. The modest quantities of hazardous materials required to operate the full advanced treatment train, such as chemical provisions for supplemental carbon and chemical precipitant addition for denitrification and phosphorus, sodium hypochlorite or hydrogen peroxide as part of the chemical injection and mixing system required as part of the AOP process, etc. (refer to **Table 3-4** in Chapter 3, Program Description for a full description of the AWPF treatment process upgrades) would not enter the atmosphere in the quantities and form used, and therefore would not pose a significant hazard, as the established handling protocols per Federal, State, and local laws and regulations (including the HMBP) minimize the potential for a hazard to occur. However, as noted under Program Categories 1, 2, and 3, above, the implementation of **MMs HAZ-1** through **HAZ-6**, outlined below, is required to ensure that the use and generation of hazardous substances in support of operation of Program Category 4 facilities would not pose a significant hazard to workers, adjacent land uses, or the environment. **MM HAZ-1** would require implementation of an HMBP and the BMPs

therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law.**MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. These **MMs** will be applied to these future Program facilities and would reduce potential impacts to below a level of less than significant.

Other Physical Changes to the Environment

The proposed Program would also result in other physical changes to the environment, including future release of Program Water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water, the existing water source—groundwater—in support of the Stickleback fish at Shay Pond, and a decrease of up to 2,200 AFY less discharge to the LV Site, for a total estimated annual discharge to Lucerne Valley of about 340 AFY.

These other physical changes would not involve the routine transport, use, or disposal of hazardous materials, and thus, a significant hazard to the public or the environment would not occur.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant Impact

Mitigation Measures:

HAZ-1: For Program facilities that handle hazardous materials or generate hazardous waste, the HMBP prepared and submitted to the CUPA shall incorporate BMPs designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for HMBPs. The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The HMBP shall be approved prior to operation of the given facility.

HAZ-2: The HMBP shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility

shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.

HAZ-3: Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.

HAZ-4: All hazardous materials during both operation and construction of Program facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and Federal law.

HAZ-5: Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and Federal law.

HAZ-6: Vector management plans shall be prepared and use of pesticides shall be reviewed and coordinated with the San Bernardino Vector Control Program for approval prior to implementing vector control at any of the new or expanded storage basins. All pesticides shall be applied in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.

Level of Significance After Mitigation: Less than Significant

MM HAZ-1 would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials.

MM HAZ-2 would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials.

MM HAZ-3 would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite.

MM HAZ-4 would require disposal of hazardous materials in compliance with State and Federal law.

MM HAZ-5 would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law.

MM HAZ-6 would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.

Cumulative Impact Analysis

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Big Bear Valley area continues to develop, the addition of more development could create a significant hazard to the public or the environment through the routine transport, use, and/or disposal of hazardous materials. However, all cumulative development would be subject to Federal, State, and local regulations related to the routine transport, use, storage, and disposal of hazardous materials. Since the individual projects proposed under the Program would result in less than significant impacts related to the routine handling, use, and/or disposal of hazardous materials through the implementation of mitigation, the Program's contributions to such impacts would be not be cumulatively considerable, and therefore, would not result in a significant cumulative impact.

2. Waste Sites

Threshold: Would the Project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Finding: Less than significant with mitigation. (Draft EIR, pp. 5-574 - 4-577)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed Conveyance Pipelines would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, given that the pipeline alignments would be located in close proximity to one open Clean-Up case, unknown contaminants may exist within the Program facility area. Thus, during project construction, it is possible that contaminated soil and/or groundwater could be encountered during excavation, thereby posing a health threat to construction workers, the public, and the environment. Additionally, occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated

site. Once encountered, there are existing protocols to address such contamination. In addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination and avoid a potentially significant impact, notification of regulatory agencies and following their guidance would ensure Conveyance Pipelines would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact.

Operation: Once the Conveyance Pipelines are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed Ancillary Facilities would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. However, in addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination, notification of regulatory agencies and following their guidance would ensure Ancillary Facilities would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact.

Operation: Once the Ancillary Facilities are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

Program Category 3: Solar Evaporation Ponds

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed Solar Evaporation Ponds would not be located on a site which is included on a

list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. However, in addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination, notification of regulatory agencies and following their guidance would ensure Solar Evaporation Ponds would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact.

Operation: Once the Solar Evaporation Ponds are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation beyond the removal of brine, which would occur within the Solar Evaporation Ponds liners, would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

Program Category 4: BBARWA WWTP Upgrades

Construction: The hazardous sites analysis undertaken for this Program, including records searches on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed that there are eight active cleanup sites in the Bear Valley Basin identified on the SWRCB GeoTracker website. These sites are discussed under **Subsection 4.10.2.2, Environmental Setting: Big Bear Valley**, and are shown on **Figure 4.10-4**, which indicates that the proposed BBARWA WWTP Upgrades would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Additionally, occasionally, a project that involves subsurface excavation or exploration may encounter an unknown contaminated site. Once encountered, there are existing protocols to address such contamination. In addition to implementing **MM HAZ-7**, which would address encounters with unknown contamination, notification of regulatory agencies and following their guidance would ensure BBARWA WWTP Upgrade facilities would have a less than significant impact related to contaminated sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. With implementation of mitigation measures, potential conflicts with contaminated sites can be reduced to a less than significant impact level for future Program facilities.

Operation: Once the BBARWA WWTP Upgrades are operational, there would be no new potential to encounter hazardous sites beyond that which is discussed under the construction header above. No soil excavation would occur during operation that could result in encountering an unknown contamination site. Thus, no impacts during operation would occur.

Other Physical Changes to the Environment

The additional Program Water discharged to Big Bear Lake and the change in water source at Shay Pond as a result of the proposed Program operations would not have a potential to

be exposed to or exacerbate hazardous conditions from existing contaminated sites identified on **Figure 4.10-4** within the Big Bear Valley.

As shown on **Figure 4.10-9** and **4.10-10**, the are no sites that are included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 within the LV Site. Furthermore, the only site that is within close proximity to the LV Site is the Victorville PBR No. 8 (Site 80000528), which is a former firing range that may contain explosives and munitions debris soil contamination. Given that the media affected at this site is soil, not groundwater, it is not anticipated that the reduced discharge to the LV Site would be exposed to or exacerbate hazardous conditions from this existing contaminated site.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

HAZ-7: All accidental spills or discharge of hazardous material during construction activities shall be reported to the local CUPA and shall be remediated in compliance with applicable Federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into SWPPP prepared for each future facility developed under the Program, or where an SWPPP is not required due Project size, shall be incorporated as a BMP. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.

HAZ-8: Should an unknown contaminated site be encountered during construction of Program facilities, all work in the immediate area shall cease; the type of contamination and its extent shall be determined by a hazardous materials specialist, such as an Environmental Scientist; and the local CUPA or other regulatory agencies (such as the DTSC or Santa Ana Regional Board) shall be notified. Based on investigations of the contamination, the site may be closed and avoided or the contaminant(s) shall be remediated to a threshold acceptable to the CUPA or other regulatory agency threshold and any contaminated soil or other material shall be delivered to an authorized treatment or disposal site.

Level of Significance After Mitigation: Less Than Significant

While it is not anticipated that facilities under the proposed Program would be installed on a known site containing hazardous contamination, during project construction, it is possible that contaminated soil and/or groundwater could be encountered during excavation, thereby posing a health threat to construction workers, the public, and the environment. Impacts would be potentially significant. Therefore, mitigation is necessary to minimize

impacts. The implementation of **MM HAZ-8** would identify recommendations and cleanup measures to reduce risk to the public and the environment from development on hazardous materials sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils. Therefore, impacts to the public and the environment related to hazardous materials sites would be less than significant with implementation of mitigation.

Cumulative Impact Analysis

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of developments could be located on sites that are included on a list of hazardous materials sites and as a result, could create significant hazards to the public or the environment. Since the proposed Program projects are not anticipated to be constructed on existing open hazardous material sites, but may be installed within sites containing unknown hazardous contamination, impacts would be cumulatively considerable and therefore, would result in a potentially significant cumulative impact. The implementation of **MMs HAZ-8** would ensure that the proposed facilities' contribution to cumulative development on hazardous materials sites would be reduced to less than cumulatively considerable by requiring recommendations and cleanup measures to reduce risk to the public and the environment from development on hazardous materials sites. Implementation of **MM HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils such that the proposed Program would not contribute to significant cumulatively considerable impacts.

3. Accident or Upset

Threshold: Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-567-4-572)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: As discussed above, construction activities associated with implementation of the proposed Conveyance Facilities could create hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials used in construction activities and equipment. Construction activities may involve the use of adhesives, solvents, paints, thinners, petroleum products, and other chemicals. Cal/OSHA regulations provide for the proper labeling, storage, and handling of hazardous materials to reduce the potential harmful health effects that could result from worker exposure to hazardous materials. If not properly handled, however, accidental release of these substances could expose construction workers, degrade soils, or become entrained in stormwater runoff, resulting in adverse effects on the public or the

environment. Agencies implementing Program Category 1 projects are required to comply with all relevant and applicable Federal, State, and local laws and regulations that pertain to the accidental release of hazardous materials during construction of proposed facilities such as California Health and Safety Code Sections 25500 et seq. Compliance with all applicable Federal, State, and local regulations can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact, but a contingency **MM** is provided to ensure accidental releases and any related contamination would not significantly affect the environment at facility locations, thereby avoiding a potentially significant impact. **MM HAZ-7**, would minimize the potential hazard to the public or environment due to accidental release.

The use of hazardous materials and substances during construction would be subject to the Federal, State, and local health and safety requirements for the handling, storage, transportation, and disposal of hazardous materials, summarized in the Regulatory Setting. With compliance with these regulations, and preparation and implementation of **MM HAZ-7**, hazardous material impacts related to construction activities would be less than significant.

Operation: Operation of the proposed Conveyance Facilities would consist of facilities designed transport and/or discharge Program Water. Hazardous materials would not be associated with the regular operation of these facilities. Therefore, operational impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction impacts would generally be the same as Program Category 1. While it is not anticipated that Program Category 2 facilities would be developed on sites that require demolition of structures, a possibility exists for this to occur. Thus, where structures would be required to be demolished, such structures would need appropriate abatement of identified asbestos prior to demolition. Federal and State regulations govern the demolition of structures where materials containing lead and asbestos are present. ACMs are regulated both as a hazardous air pollutant under CAA and as a potential worker safety hazard under the authority of Cal/OSHA. These requirements include SCAQMD Rules and Regulations pertaining to asbestos abatement (including Rule 1403); Construction Safety Orders 1529 (pertaining to asbestos) and 1532.1 (pertaining to lead) from California Code of Regulations Title 8; CFR Title 40, Part 61, Subpart M (pertaining to asbestos); and lead exposure guidelines provided by HUD. Asbestos and lead abatement must be performed and monitored by contractors with appropriate certifications from the California Department of Health Services.

In addition, Cal/OSHA has regulations concerning the use of hazardous materials, including requirements for safety training, availability of safety equipment, hazardous materials exposure warnings, and emergency action and fire prevention plan preparation. Cal/OSHA enforces the hazard communication program regulations, which include provisions for identifying and labeling hazardous materials, describing the hazards of chemicals, and documenting employee-training programs. All demolition that could result in the release of lead and/or asbestos would be conducted in accordance with Cal/OSHA

standards. Adherence to existing regulations and the **MM** provided below would ensure that potential impacts related to ACMs and LBPs would be less than significant. Compliance with all applicable Federal, State, and local regulations can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact, but a contingency **MM** is provided to ensure accidental releases and any related contamination would not significantly affect the environment at facility locations, thereby avoiding a potentially significant impact. **MM HAZ-7**, would minimize the potential hazard to the public or environment due to accidental release. Impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed facilities could include the storage and use of chemicals. Any storage tanks would be designed in accordance with the applicable hazardous materials storage regulations for long-term use summarized in the Regulatory Setting. The delivery and disposal of chemicals to and from wastewater treatment facility site would occur in full accordance with all applicable Federal, State, and local regulations. The established handling protocols per Federal, State, and local laws and regulations would ensure operational impacts for Program Category 2 facilities would be less than significant.

As noted in the Regulatory Setting, an HMBP must be prepared to avoid a significant adverse impact. Thus, **MMs HAZ-1** and **HAZ-2** shall be implemented for the proposed Program facilities as required by the San Bernardino County CUPA. The HMBP would minimize hazards to human health and the environment from fires, explosions, or an accidental release of hazardous materials into air, soil, surface water, or groundwater. Compliance with all applicable Federal, State, and local regulations regarding the handling, storage, transportation, and disposal of hazardous materials, and preparation and implementation of the HMBP would reduce potential impacts to the public, employees, or the environment related to the transport, use, or disposal of hazardous materials to a less than significant impact.

Program Category 3: Solar Evaporation Ponds

Impacts would generally be the same as Program Categories 1 and 2.

Construction: The primary difference is that the construction effort for the Solar Evaporation Ponds would be the largest in size of the facilities proposed under the Program. Regardless, compliance with all applicable Federal, State and local regulations regarding the handling, storage, transportation, and disposal of hazardous materials is required. However, a potentially significant impact may occur and preparation and implementation of the **MMs HAZ-7** would reduce potential impacts to the public, employees, or the environment related to the transport, use, or disposal of hazardous materials to a less than significant impact.

Operation: Operation of the proposed Solar Evaporation Ponds would consist of periodically removing the salt crystals and hauling the precipitated crystal to the local landfill. The brine would not be considered a hazardous material, and thus the handling of hazardous materials would not be associated with the regular operation of these facilities. Furthermore, as noted in the Regulatory Setting, an HMBP must be prepared to avoid a

significant adverse impact. Thus, **MMs HAZ-1** and **HAZ-2** and implemented for the proposed Program facilities as required by the San Bernardino County CUPA. The HMBP would minimize hazards to human health and the environment from fires, explosions, or an accidental release of hazardous materials into air, soil, surface water, or groundwater. Therefore, operational impacts would be less than significant with the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction impacts would be the same as Program Category 1, 2, and 3. Compliance with all applicable Federal, State, and local regulations can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact, but a contingency **MM** is provided to ensure accidental releases and any related contamination would not significantly affect the environment at facility locations, thereby avoiding a potentially significant impact. **MM HAZ-7** would minimize the potential hazard to the public or environment due to accidental release. Impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the AWPF would consist of upgrades to the existing facilities designed to treat wastewater. The modest quantities of hazardous materials required to operate the AWPF's treatment train, such as chemical provisions for supplemental carbon and chemical precipitant addition for denitrification and phosphorus, sodium hypochlorite or hydrogen peroxide as part of the chemical injection and mixing system required as part of the AOP process, etc. (refer to **Table 3-4** in Chapter 3, Program Description for a full description of the WWTP treatment process upgrades) would not enter the atmosphere and in the quantities and form used, and therefore would not pose a significant hazard, as the established handling protocols per Federal, State, and local laws and regulations minimize the potential for a hazard to occur. However, implementation of **MMs HAZ-1** through **HAZ-7** are required to minimize potential impacts from accidental release of hazardous materials to a less than significant impact. **MM HAZ-1** would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials. **MM HAZ-2** would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials. **MM HAZ-3** would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite. **MM HAZ-4** would require disposal of hazardous materials in compliance with State and Federal law. **MM HAZ-5** would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law. **MM HAZ-6** would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality. **MM HAZ-7** would minimize the potential hazard to the public or environment due to accidental release. Thus, impacts would be less than significant through the implementation of mitigation.

Other Physical Changes to the Environment

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh, possible utilization of Program Water in place of the existing water source — groundwater — in support of the Stickleback fish at Shay Pond, and a decrease about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY.

These other physical changes to the environment would not involve construction or operation of any new facilities. Thus, no significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment is anticipated to occur.

Combined Program Categories

Mitigation Measures: ***MMs HAZ-1*** *through* ***HAZ-7*** *are required to minimize impacts:*

HAZ-1: For Program facilities that handle hazardous materials or generate hazardous waste, the HMBP prepared and submitted to the CUPA shall incorporate BMPs designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for HMBPs. The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The HMBP shall be approved prior to operation of the given facility.

HAZ-2: The HMBP shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.

HAZ-3: Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.

HAZ-4: All hazardous materials during both operation and construction of Program facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and Federal law.

HAZ-5: Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient

samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and Federal law.

HAZ-6: Vector management plans shall be prepared and use of pesticides shall be reviewed and coordinated with the San Bernardino Vector Control Program for approval prior to implementing vector control at any of the new or expanded storage basins. All pesticides shall be applied in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.

HAZ-7: All accidental spills or discharge of hazardous material during construction activities shall be reported to the local CUPA and shall be remediated in compliance with applicable Federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into SWPPP prepared for each future facility developed under the Program, or where an SWPPP is not required due Project size, shall be incorporated as a BMP. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.

Level of Significance After Mitigation: Less Than Significant

MM HAZ-1 would require implementation of an HMBP and the BMPs therein to minimize the potential for accidental release of hazardous materials.

MM HAZ-2 would require assessment of the accidental release scenarios and identify equipment and personnel training necessary to control and prevent the spread of any accidentally released hazardous materials, thereby minimizing exposure to and spread of hazardous materials.

MM HAZ-3 would require modeling of pathways for hazardous materials to contain hazardous material and manage hazardous materials appropriately to avoid exposure of hazardous materials at nearby sensitive receptors, thereby preventing hazardous materials impacts from storage and use onsite.

MM HAZ-4 would require disposal of hazardous materials in compliance with State and Federal law.

MM HAZ-5 would require cleanup of any contaminated areas as a result of accidental release during construction or operation to ensure that the site contamination level has been reduced to a level that complies with State and Federal law.

MM HAZ-6 would require vector management to ensure that pesticides are utilized in accordance with State and label requirements to minimize potential for residual

concentrations that may be considered adverse to public health and water quality.

MM HAZ-7 would minimize the potential hazard to the public or environment due to accidental release.

Cumulative Impact Analysis

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of more development could create a significant hazard to the public or the environment through potential hazard to the public or environment due to accidental release. However, all cumulative development would be subject to Federal, State, and local regulations related to accidental release of hazardous materials. Since the proposed Program facilities would result in less than significant impacts related to accidental release of hazardous materials during both construction and operation through the implementation of mitigation, the Program's contributions to such impacts would be not be cumulatively considerable, and therefore, would not result in a significant cumulative impact.

4. Public Airports

Threshold: For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-578 – 4-582)

Explanation:

The only airport located in the vicinity of the Program is the Big Bear Airport, as shown on **Figure 4.10-7**, which depicts the airport safety review area for the Big Bear Airport.

Program Category 1: Conveyance Pipelines

Construction: Pipelines are anticipated to be constructed below the ground surface within existing public ROW, and as such, no operational impacts pertaining to airports would occur. Construction of Conveyance Pipelines has a potential to be located adjacent to the Big Bear Airport could be installed within the Big Bear Airport's safety review area. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options have been overlaid on the Big Bear Airport Layout Map (**Figure 4.10-14**) and the Big Bear Airport Safety Review Area Map (**Figure 4.10-15**). These Maps indicate that, regardless of the alignment selected by BBARWA for Big Bear Lake Discharge conveyance pipeline, a portion of the alignment will be constructed within one of the three airport safety review areas. During construction of facilities in close proximity to or within the Big Bear Airport, there is a potential for workers at the site to be exposed to hazards from the Big Bear Airport. Construction contractors would be required to comply with Cal/OSHA regulations related to exposure to airport hazards, such as noise. The requisite adherence to these regulations

would reduce construction worker exposure to airport-proximity related hazards such as noise, such that proposed Program construction activities would not expose employees to airport safety hazards. Construction impacts across all Program Categories related to airport and aircraft hazards would be less than significant, and no mitigation is required.

Operation: During operation, the Conveyance Facilities are anticipated to be unmanned and therefore would not put any workers at risk, except where maintenance is required. Therefore, potential airport hazard impacts could be potentially significant. **MM HAZ-9** would require facilities within the airport safety zones to be designed in conformance with the ALUCP, or, where a conflict with the ALUCP is identified, the facility shall be relocated or redesigned to avoid a conflict with the ALUCP, thereby avoiding a potentially significant conflict with an airport safety zone. Implementation of **MM HAZ-9** would ensure that the proposed Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options would not conflict with airport operations and would protect the workers within the airport safety review areas; thus, impacts would be less than significant.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

HAZ-9: For projects within airport safety zones, facility design shall follow the guidelines of the appropriate ALUCP. If a potential conflict with an ALUCP is identified as a result of implementation of Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, the implementing agency shall relocate the facility outside the area of conflict, or if the site is deemed essential, the implementing agency shall propose an alternative design that reduces any conflict to a less than significant impact, with no conflicts with the ALUCP.

Level of Significance After Mitigation: Less Than Significant

Most proposed projects' locations would occur outside of the Big Bear Airport safety review areas, but the proposed Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options alignment alternatives traverse through the Big Bear Airport safety review areas, which in turn could result in a safety hazard for people residing or working in the Program Area. Therefore, airport hazard impacts could be potentially significant. Thus, mitigation is required. The implementation of **MM HAZ-9** would ensure compliance with the appropriate airport land use plan, minimization of conflicts with the airport safety review areas, and coordination with the appropriate airport management agencies to ensure safety for people residing or working within the Program Area during construction and operation of the Program facilities. **MM HAZ-9** would require facilities within the airport safety zones to be designed in conformance with the ALUCP, or, where a conflict with the ALUCP is identified, the facility shall be relocated or redesigned to avoid a conflict with the ALUCP, thereby avoiding a potentially significant conflict with an airport safety zone.

Cumulative Impact Analysis

Implementation of **MM HAZ-9** and compliance with the appropriate airport land use plan and coordination with the appropriate airport management agencies would ensure that the proposed facilities would not contribute to cumulative impacts, significant or otherwise, related to development within airport safety zones.

5. Emergency Plans

Threshold: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-582 – 4-587)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Conveyance pipeline installation would require construction along or in public roadways, with some areas of the Conveyance Pipelines located in undisturbed areas, such as a dirt pathway within Baldwin Lake or along undisturbed pathways from Shay Road to Shay Pond, or in a forested area between Ridgecrest Drive and Sand Canyon Road. Pipeline installed within public roadways could interfere with an adopted emergency response plan or emergency evacuation plan. The San Bernardino Countywide Plan PEIR identifies SR-18 and SR-38 in the vicinity of the Program Area as emergency evacuation routes, this is illustrated on **Figure 4.10−16**, the San Bernardino Countywide Plan Evacuation Route Map. The proposed Program conveyance pipeline alignments have been designed to avoid conflicts with these roadways—as demonstrated on **Figures 3-2**, **Figure 3-34**, **and 3-31**—and therefore would not interfere with adopted emergency evacuation routes. However, in order to ensure adequate emergency circulation during construction of the proposed pipelines, **MMs TRAN-1** and **WF-1**, identified under **Subchapters 4.18 and 4.21** of this DPEIR, respectively, would be required. This is because this construction activity, and other anticipated construction activities associated with conveyance systems, could potentially block access to roadways and driveways for emergency vehicles. The construction-related impacts, although temporary, could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. However, at no time during the installation of the Conveyance Pipelines will the entirety of the roadways be closed. It is anticipated that the installation of the proposed conveyance pipeline alignments within road ROW, would require only one lane to be closed, which would allow for through-traffic so long as a traffic management plan is developed and implemented, which shall be enforced through the implementation of **MMs TRAN-1** and **WF-1**. Construction impacts would be less than significant through the implementation of mitigation.

Operation: Following construction, the operation of the pipelines would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan as they would be located underground. Impacts related to an adopted emergency plan would be less than significant during operation.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significan

Mitigation Measures:

TRAN-1: Prepare and Implement Construction Transportation Management Plan

A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:

Construction Traffic Routes and Staging Locations: The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.

Damage Repair: The TMP shall include the following requirements to minimize damage to the existing roadway network:

- A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.

- The roadway network along the proposed Program Water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.

- Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.

Coordination with Emergency Services: The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if

lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.

Coordination with Active Transportation Facilities: The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.

Coordination with SBCTA: If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.

Coordination with Caltrans: If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.

Coordination with Nearby Construction Sites: The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:

- All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;
- All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and
- The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.

Transportation Control and Safety: The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.

Plan Approval: The TMP shall be submitted to SBCTA for review and approval.

WF-1: Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for

maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.

Level of Significance After Mitigation: Less Than Significant

Program Category 1 proposed Conveyance Pipelines would be constructed, in part, within public ROW. This construction activity, and other anticipated construction activities associated with conveyance systems, could potentially block access to roadways and driveways for emergency vehicles. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be potentially significant. Therefore, mitigation is necessary to minimize impacts. The implementation of **MMs TRAN-1** and **WF-1**, identified under **Subchapters 4.18 and 4.21** of this DPEIR, respectively, would require the preparation of a TMP with comprehensive strategies to reduce potential disruption to emergency evacuation or an emergency response plan. Therefore, potential significant impacts to emergency access and evacuation would be reduced to a less than significant level.

6. Wildland Fires

Threshold: Would the Project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-588 – 4-592)

Explanation:

The majority of the Big Bear Valley is located within a very high FHSZ, as shown on **Figure 4.10-5**, which depicts the San Bernardino Countywide Plan FHSZ Map. In relation to the physical components of the Program, the features that would be developed within the BBARWA WWTP are designated as being within a high FHSZ. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverse through areas designated as being within very high, high, and moderate FHSZs. The Sand Canyon Recharge Project traverses through an area designated as being within a very high FHSZ. The Shay Pond Replacement Pipeline and new Shay Pond Conveyance Pipelines traverse through an area designated as being within a very high FHSZ. These FHSZs are almost entirely located within State Responsibility Areas with the exception of those areas that

fall within the City of Big Bear Lake, which are in Local Responsibility Areas (**Figure 4.10-6**).

The LV Site is designated as being within a moderate FHSZ on the San Bernardino Countywide Plan FHSZ Map (**Figure 4.10-11**) within an area with a State Responsibility Area as shown on the San Bernardino Countywide Plan Fire Responsibility Areas Map (**Figure 4.10-12**).

Program Category 1: Conveyance Pipelines

Construction: The proposed pipelines would be constructed primarily within paved roadway ROW, with some areas of the Conveyance Pipelines located in undisturbed areas, such as a dirt pathway within Baldwin Lake or along undisturbed pathways from Shay Road to Shay Pond, or in a forested area between Ridgecrest Drive and Sand Canyon Road. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs.

Operation: During operation, the proposed facilities would distribute Program Water from the AWPF, Big Bear Lake, or Resort, throughout the Program Area, and these facilities would not be constructed of flammable materials or involve any spark-producing activities. Thus, operation of the proposed Conveyance Pipelines would have a less than significant potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Impacts would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The ancillary features that would be developed within the BBARWA WWTP are designated as being within a high FHSZ. The Sand Canyon Booster Station and Sand Canyon Monitoring Wells would be located within areas designated as being within a very high FHSZ. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs to reduce impacts to

a level of less than significant.

Operation: CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The Ancillary Facilities would be supplied and operate on electricity and would be enclosed within structures. These structures would be required to meet current CBC standards, which stipulates that all projects in fire hazard severity zones shall be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code Chapter 49; and regulatory requirements for defensible space including California Public Resources Code Sections 4291 et seq. and San Bernardino County Code of Ordinances Sections 23.0301 et seq. The facilities proposed under this Program will comply with the CBC. Furthermore, **MM WF-2** shall be enforced for those facilities located in high and very high FHSZs. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. All Ancillary Facilities would be unmanned and would only require routine maintenance; therefore, no people would be exposed to a significant risk involving wildland fires. Operational impacts of the proposed Program facilities would be less than significant with implementation of **MM WF-2**.

Program Category 3: Solar Evaporation Ponds

Construction: The Solar Evaporation Ponds are located in an area designated as being within a high FHSZ. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs. Impacts would be less than significant through the implementation of mitigation.

Operation: CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The Solar Evaporation Ponds would be not require electricity to operate, other than the electricity needed to supply the BBARWA WWTP Upgrades Project operations. These Solar Evaporation Ponds Project would be required to meet current CBC standards, which stipulates that all projects in fire hazard severity zones shall be designed, built, and operated in accordance with state regulations specifying building materials and structural designs for structures in such zones, including CBC Chapter 7A and California Fire Code Chapter 49; and regulatory requirements for defensible space including

California Public Resources Code Sections 4291 et seq. and San Bernardino County Code of Ordinances Sections 23.0301 et seq. The Solar Evaporation Ponds proposed under this Program will comply with the CBC. Furthermore, **MM WF-2** shall be enforced for those facilities located in high and very high FHSZs. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. The Solar Evaporation Ponds would be unmanned, with the exception of the new and existing employees that would support the overall BBARWA operations. Given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, it is not anticipated that any greater any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. As the Program would install facilities that are consistent with the existing site use, and is not anticipated to introduce substantial new persons to the Solar Evaporation Ponds area as part of Program operations, it is not anticipated that any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. Ultimately, as with Program Categories 1 and 2, above, **MM WF-2** would be required to reduce potential wildland fire hazard impacts to a less than significant impact level. Impacts would be less than significant through the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades

Construction: The BBARWA WWTP Upgrades are located in an area designated as being within a high FHSZ. CAL FIRE designates most of the areas within the Program Area as being located within high and very high FHSZs due to the Program's location within the Big Bear Valley. Thus, there is a potential for facilities to be located within or near wildland areas with high fire risk. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose construction workers to wildfire risks. Impacts would be potentially significant. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Therefore, **MM WF-2** shall be implemented for these facilities in high and very high FHSZs. Impacts would be less than significant through the implementation of mitigation.

Operation: Impacts would be generally the same as Program Categories 1, 2, and 3. However, BBARWA WWTP/AWPF operations include structures that would be manned, as BBARWA operations are housed at the WWTP. BBARWA does not anticipate a substantial increase in the number of permanent employees as a result of the implementation of the Program (an anticipated five new employees would be required in support of BBARWA as a result of implementation of the Program). It is anticipated the operation of the BBARWA WWTP would be the only site operation within the Program Area that would require on-site personnel, but given the minimal number of additional workers that would be employed by BBARWA as a result of Program implementation, it is not anticipated that any greater any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. As the Program would install facilities that are consistent with the existing site use, and is not anticipated to introduce substantial new persons to the BBARWA WWTP area as part of

Program operations, it is not anticipated that any greater risk involving wildland fire exposure than that which occurs at present would occur as a result of Program implementation. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. Ultimately, as with Program Categories 1 through 3, above, **MM WF-2** would be required to reduce potential wildland fire hazard impacts to a less than significant impact level. Impacts would be less than significant through the implementation of mitigation.

Other Physical Changes to the Environment

The proposed Program would also result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh, utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease of about 2,200 AFY less discharge to the LV Site, for a total discharge to Lucerne Valley of about 340 AFY.

The additional Program Water discharged to Big Bear Lake, change in water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. However, the provision of additional water resources available for use in the Big Bear Valley, which is almost entirely located within high and very high FHSZs would be beneficial to wildfire protections, as the provision of additional water would provide redundancies in the water resources available for fire flow and fire protection in the event of a wildfire.

As the LV Site does not propose any new operations beyond those that already occur at the LV Site in support of the existing farming operation, continuation and enhancement of maintaining the LV Site, and discharge of effluent to the onsite recharge basins, has no greater potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires would occur as a result of implementation of the proposed Program. The continuation and enhancement of site maintenance at the LV Site would ensure that vegetation that could create greater wildfire hazard is removed and stabilized within the LV Site. This is anticipated to ensure that, even though less effluent will be discharged to the LV Site, the proposed Program would not contribute to greater wildfire risk at the LV Site than that which exists at present. Furthermore, given the high desert location of the LV Site, the area is only considered to be moderately susceptible to wildfire risk as shown on **Figure 4.10-11**. Thus, other physical changes to the environment would have a less than significant potential to expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. Impacts would be less than significant.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

WF-2: Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.

Level of Significance After Mitigation: Less Than Significant

As discussed at the beginning of the discussion provided under this issue, many of the proposed Program would be located within or near a wildland area with high or very high fire risk. Impacts would be potentially significant and require implementation of **MM WF-2** to reduce impacts to a less than significant level. **MM WF-2** would require fire reduction measures to be incorporated into the fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site to avoid potentially significant wildfire risks. The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan for Program infrastructure proposed within very high FHSZs, and it would identify comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential significant impacts due to the installation of Program infrastructure would be reduced to less than significant level with the implementation of **MM WF-2**.

H. HYDROLOGY AND WATER QUALITY

1. Water Quality Standards

Threshold: Would the Project violate any water quality standards or waste discharge requirements?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-637 – 4-667)

Explanation:

Stanfield Marsh/Big Bear Lake Discharge – Impacts on Surface Water Quality

As part of the Program, BBARWA will discharge Program Water to the east end of Stanfield Marsh, then flow into Big Bear Lake. Stanfield Marsh and Big Bear Lake are connected through a set of culverts under the Stanfield Cutoff. This section evaluates if the Program Water discharged to Stanfield Marsh/Big Bear Lake will cause these water bodies to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality.

The Federal antidegradation policy was included in the EPA's first water quality standards regulation in 1975.[10] The Federal antidegradation policy applies to surface water, regardless of the quality of the water. Under the Federal policy, "*existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*" In addition, where the quality of waters exceeds levels necessary to support the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality of water must be maintained and protected unless the state finds that:

1. Allowing lower quality is necessary to accommodate important economic or social development in the area in which the waters are located;

2. Water quality is adequate to protect existing beneficial uses fully; and

3. The highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable BMPs for nonpoint source control are achieved.

The Federal regulations further require that if a state determines it is necessary to lower the water quality of high-quality waters, this determination will be based on both an analysis of alternatives that would lessen or prevent degradation and an analysis related to economic or social development in the area in which the waters are located. The Federal policy applies to reductions in water quality after the policy was adopted in November 1975 (State Water Board 1994). The Federal regulations also require that state water quality standards[11] include an antidegradation policy consistent with the Federal policy. SWRCB has interpreted Resolution 68-16 to incorporate the Federal policy where the Federal policy applies under Federal law.[12] Resolution No. 68-16 is the State's antidegradation policy and applies to surface water and groundwater.

As discussed above, under the State and Federal antidegradation policies, the Santa Ana

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[10] The Federal antidegradation policy was originally based on the Clean Water Act's objectives, including the objective to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a)) In 1987, the Clean Water Act was amended to expressly require satisfaction of antidegradation requirements for revisions of certain effluent limitations. (33 U.S.C. § 1313(d)(4)(B))

[11] The State Water Board continues to reserve its arguments regarding the USEPA's authority to adopt standards for flow and operations, including standards for salinity intrusion. (See Bay-Delta Water Quality Control Plan, footnote 3.) To the extent the proposed flow and salinity water quality objectives are state-only standards, the Federal antidegradation policy would not apply.

[12] The State Water Board continues to reserve its arguments regarding the USEPA's authority to adopt standards for flow and operations, including standards for salinity intrusion. To the extent the proposed flow and salinity water quality objectives are state-only standards, the Federal antidegradation policy would not apply.

Regional Board, which are the regulating agency for the Stanfield Marsh/Big Bear Lake discharge, is required to make a finding regarding the satisfaction of the policies as they pertain to surface water discharges for which the Santa Ana Regional Board issues an NPDES permit. The State antidegradation policy, which incorporates the Federal antidegradation policy, seeks to maintain the existing high quality of water to the maximum extent possible, and only allows a lowering of water quality if:

- Changes in water quality are consistent with maximum benefit to the people of the State, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards, and

- WDRs for a proposed discharge will result in the best practicable treatment or control of the discharge necessary to assure:

  - No pollution or nuisance; and

  - Highest water quality consistent with maximum benefit to the people of the State.

In February of 2022, an Antidegradation Analysis (**Appendix 3**) was completed to evaluate the water quality impacts that the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond would have on the beneficial uses of each water body. In general, an antidegradation analysis provides regulators with the information needed to determine whether a proposed discharge is consistent with the State of California and Federal antidegradation policies. As required by the CWA, the discharge of any pollutant or combination of pollutants to surface waters that are deemed Waters of the U.S., as is Big Bear Lake discharge, must be regulated by an NPDES permit. Because the Stanfield Marsh/Big Bear Lake is a new discharge to a surface Waters of the U.S., an NPDES permit must be obtained from the Santa Ana Regional Board.

At the time of completion of the Antidegradation Analysis (**Appendix 3**), it was assumed that BBARWA would produce disinfected, advanced treated effluent through tertiary filtration using ultrafiltration, and RO treatment with UV disinfection. Since then, an AOP system has been added to the treatment process to produce purified water (i.e., Program Water). Therefore, the water quality of the proposed discharge is anticipated to be the same or better than the assumptions used in the Antidegradation Analysis, so the general conclusions still apply.

The Antidegradation Analysis evaluated the projected Program Water quality, the ambient water quality of Big Bear Lake, and the most stringent WQO or criterion to determine if the proposed discharge would degrade water quality in Big Bear Lake. **Table 4.11-7** shows the Antidegradation results. Overall, the Antidegradation Analysis concluded that no constituents in the Program Water exceeded their most stringent WQO or criterion, and only boron and TIN exceeded Big Bear Lake's ambient water quality concentrations. The Antidegradation Analysis completed more analyses on these constituents to determine their overall impact.

As discussed in the Antidegradation Analysis, TDS, TIN, TN, TP, and chlorophyll-a were

evaluated using a 2D hydrodynamic-water quality model (CE-QUAL-W2) developed for Big Bear Lake by Dr. Anderson, a limnologist who has in-depth knowledge of Big Bear Lake. The model was used to predict the long-term average water quality of these constituents in Big Bear Lake under the average hydrologic conditions (50th percentile), and under increased and time-varying flows. The model simulation also assessed the impact of a TP Offset Program, which is being proposed to offset all the TP added by the Program Water and be consistent with the Nutrient TMDL. For comparison, the model also simulated a NPA to predict the baseline condition. The predicted concentrations are presented in **Table 4.11-8.** Please note that this model run did not account for Program Water extractions, which are discussed in the **Sand Canyon Groundwater Quality** section, because extractions were predicted to improve the water quality of Big Bear Lake, so the conclusions of this scenario are the most conservative. It is expected that the inclusion of these water extractions would only improve conditions.

The model simulations predicted that the long-term average concentrations of TDS, TIN, TN, TP, and chlorophyll-a were lower with the Program Water at various rates as compared to the predicted baseline condition, except for TIN under the 2,200 AFY + TP Offset. It is unclear why the model predicted increased TIN under this scenario while all other scenarios showed significantly reduced TIN values relative to the modeled baseline; however, the modeled difference in TIN between the Baseline and 2,200 AFY + TP Offset scenarios is approximately 4%, which is within the range of model variance and is considered statistically insignificant. Therefore, this analysis concludes that projected long-term average concentration of TIN is similar to the modeled baseline condition. Thus, the water quality impacts related to TIN would be less than significant because similar or better conditions would be maintained.

In the Antidegradation Analysis, a simple spreadsheet model was completed because very few data points were available to evaluate the contribution of Big Bear Lake discharge to boron concentrations in Big Bear Lake over time. The calculations are shown in Appendix F of the Antidegradation Analysis (**Appendix 3**). This analysis began with the ambient boron concentration in Big Bear Lake of 0.054 mg/L (which was based on one sample collected in December 2021) and, it was assumed that the natural inflows had a boron concentration of 0 mg/L to estimate the incremental increase of boron in Big Bear Lake as a result of the Big Bear Lake discharge. The 1977-2020 annual inflow and outflow were obtained from the Big Bear Watermaster annual reports, and a 43-year simulation was performed based on a repeat of this historic hydrology. The mass balance equation can be found in **Appendix 3** on page 41.

The projected boron concentration in the proposed Stanfield Marsh/Big Bear Lake discharge (0.11 mg/L) is anticipated to exceed Big Bear Lake ambient water quality (0.054 mg/L), but remain well below the most stringent criterion of 0.75 mg/L for the protection of sensitive crops. The Big Bear Lake's boron assimilative capacity, defined as the difference between the criterion and the ambient water quality, is 0.694 mg/L (i.e., 0.75 mg/L – 0.054 mg/L). Per the 2018 Recycled Water Policy, if a groundwater recharge project proposes to utilize less than 10 percent of the available assimilative capacity in a basin or subbasin, the antidegradation analysis only needs to demonstrate that the project will use less than 10 percent of the available assimilative capacity. If a similar approach is used for Big Bear Lake, 10 percent of the assimilative capacity for boron would be 0.0694

mg/L. If this is added to the ambient water quality, the maximum boron concentration in Big Bear Lake would be about 0.123 mg/L. As shown in **Exhibit 4.11-14**, the projected boron concentrations with the proposed Program Water discharge to Stanfield Marsh/Big Bear Lake are not forecast to exceed this concentration. Thus, the water quality impacts related to boron would be less than significant because less than 10% of the assimilative capacity would be consumed.

In addition, the projected boron concentration with the Program Water is considered safe for agricultural crops like citrus trees that show sensitivity to boron starting at concentrations between 0.5 – 0.75 mg/L (USDA, 1990). The projected boron concentration will remain low compared to the most stringent criterion of 0.75 mg/L, which exists in the Santa Ana Basin Plan for the protection of water used to irrigate sensitive crops. Furthermore, while the DDW does not have an MCL for boron, the notification limit is 1 mg/L. Thus, as the boron concentrations within Big Bear Lake would be well below both the criterion for agricultural crops and the notification limit for drinking water at 0.12 mg/L. However, an AMMP shall both monitor boron levels, and implement mitigative strategies to ensure compliance with the NPDES permit for discharge to Stanfield Marsh and the Big Bear Lake to prevent any violation of water quality standards for either body of water, and for downstream users of water from Big Bear Lake. **MM HYD-1** would monitor the boron levels of the Program Water discharge, and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the project by meeting the WQOs, and thereby protecting the water quality of Big Bear Lake and Stanfield Marsh.

As shown in **Tables 4.11-7** and **4.11-8**, Big Bear Lake discharge is predicted to improve Big Bear Lake water quality for TDS, TP, TN, and chlorophyll-a as compared to modeled baseline conditions, and result in similar water quality for TIN as compared to the modeled baseline. In addition, the proposed discharge is anticipated to feature concentrations similar to or lower than ambient water quality and the most stringent water quality objective for criterion for all constituents evaluated except for boron. For boron, concentrations in Big Bear Lake are anticipated to increase as compared to baseline conditions, but remain well below the most stringent water quality objective of 0.75 mg/L and consume less than 10% of the assimilative capacity.

Therefore, the proposed discharge to the Stanfield Marsh/Big Bear Lake at a discharge rate up to 2,200 AFY was determined to comprise the best practicable treatment and control and is anticipated to be consistent with State and Federal antidegradation policies, and thus, impacts would be less than significant with the implementation of **MM HYD-1**, for the following reasons:

- The proposed discharge to Stanfield Marsh/Big Bear Lake will not adversely affect existing or probable beneficial uses of either receiving water or downstream receiving waters, nor will the discharges cause water quality to not meet applicable water quality objectives.

- Overall, the proposed discharge is estimated to improve water quality in Big Bear Lake for TDS, TN, TP, and chlorophyll-a, maintain similar water quality

for TIN, and have a very minor impact on boron. Future boron concentrations in Big Bear Lake are estimated to increase very slightly due to the proposed BBARWA discharge but are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron and consume less than 10% of the assimilative capacity. The Lake Analysis shows that projected ambient Lake concentrations of TIN and chlorophyll-a with the proposed discharge will exist below their relevant water quality objective (TIN) or TMDL target (chlorophyll-a). The Lake Analysis also shows that ambient Lake concentration of TDS and TP with the proposed discharge are estimated to exceed the 175 mg/L TDS WQO and the 35 µg/L TP TMDL target, respectively (**refer to Table 4.11-7**). However, the modeled baseline condition is projected to result in Lake concentrations for TDS, TP, TIN, and chlorophyll-a that exceed those concentrations more often than all modeled BBARWA discharge scenarios. The modeled results for the proposed BBARWA discharge, when combined with a TP Offset Program, show the greatest improvements to future ambient Lake concentrations as compared to the modeled baseline condition. As such, TDS and TP concentrations are anticipated to improve with the implementation of the Program.

- Based on the above, the proposed discharge to Stanfield Marsh/Big Bear Lake is consistent with State and Federal antidegradation policies, in that minor lowering of water quality boron in Big Bear Lake (i.e., less than 10% of the assimilative capacity) is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State. Furthermore, **MM HYD-1** would monitor the boron levels of the Program Water discharge, and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the project by meeting the WQOs, and thereby protecting the water quality of Big Bear Lake and Stanfield Marsh.

- Based on the above, the request to permit new discharge to Stanfield Marsh/Big Bear Lake is consistent with the Porter-Cologne Act, in that the resulting water quality will constitute the highest water quality that is reasonable, considering all demands placed on the waters, economic and social considerations, and other public interest factors.

- Given that, with mitigation, the Program would not exceed any WQOs for Big Bear Lake or Stanfield Marsh, the REC-1 and REC-2 beneficial uses of Big Bear Lake and Stanfield Marsh would be maintained.

In addition to the Antidegradation Analysis (**Appendix 3**), a technical memorandum (Memo) was prepared by GEI titled *"Analysis of Aquatic Life Effects of Replenish Big Bear Program's Discharge to Stanfield Marsh,"* and dated October 2023 (**Appendix 19**). This Memo evaluated modeled outputs from Dr. Anderson's Big Bear Lake model, partial data from the BBARWA AWPF pilot study collected from June through September 2023, and

the antidegradation analysis to evaluate potential impacts on beneficial uses related to aquatic life. The Memo also described the data gaps that limit GEI's understanding of how the Stanfield Marsh/Big Bear Lake discharge will affect beneficial uses related to aquatic life and how these beneficial uses of Stanfield Marsh and Big Bear Lake will be protected through the implementation of the Program. Data gaps and sources of uncertainty were addressed by recommending an adaptive management and monitoring plan.

The discharge to Shay Pond was not evaluated by GEI in this Memo because this Program Component will not be implemented in the near future. This is because the utilization of the Program Water in support of Shay Pond resulting from the implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. Should the Program Team decide to modify the water supply at Shay Pond, the water quality impacts on the Stickleback and Shay Pond shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**.

The GEI Memo reviewed and identified the beneficial uses of Stanfield Marsh and Big Bear Lake that protect aquatic life, wildlife, and habitats to assess the water quality conditions that could impact these beneficial uses. Beneficial uses of both Stanfield Marsh and Big Bear Lake are listed in **Table 4.11-1**. The beneficial uses defined in the Santa Ana Basin Plan for Big Bear Lake and Stanfield Marsh that protect aquatic life, wildlife, and habitats and are described below:

- **Commercial and Sport Fishing (COMM)** Uses of water for commercial or recreational collection of fish and shellfish, or other organisms including, but not limited to, uses involving organisms intended for human consumption or bait purposes.
    - This beneficial use protects commercial fishing, which can be an indicator of the health of the wildlife and special status species utilizing Big Bear Lake for foraging and food, such as the American Bald Eagle. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.
- **Warm Freshwater Habitat (WARM)** Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
    - This beneficial use protects warm water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.
- **Cold Freshwater Habitat (COLD)** Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

- This beneficial use protects cold water ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.

- **Wildlife Habitat (WILD**) Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.

  - This beneficial use protects ecosystems that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.

- **Rare, Threatened, or Endangered Species (RARE)** Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or Federal law as rare, threatened, or endangered.

  - This beneficial use protects habitats that may support wildlife, special status habitats, and special status species. Thus, the preservation of this beneficial use indicates that discharge of Program Water to Stanfield Marsh and Big Bear Lake would not violate a water quality standard.

The parameters that were identified by the GEI Memo that could potentially impact these beneficial uses are algae, temperature, nutrients, dissolved oxygen, pH, boron, and reinvasion by undesirable species. The general observations, analyses, and conclusions of each of these indicators are discussed below and discusses how the COMM, WARM, COLD, WILD, and RARE beneficial uses can be maintained as part of the Program.

Algae

It is possible that the rewetting of Stanfield Marsh will result in an increase in biologically available phosphorus,[13] which would increase algal growth in Stanfield Marsh, and in Big Bear Lake, if Stanfield Marsh spilled to Big Bear Lake during rewetting. The increase in phosphorus depends on interstitial pore size, total organic carbon in soils,[14] presence of aquatic vegetation, and the extent of the varial zone.[15] A small varial zone may help reduce the amount of phosphorus that is re-released into the aquatic environment. Other factors can include the seasonal timing of rewetting and the amount of uptake and storage by

[13] Surridge, B. W. J., A. L. Heathwaite, and A. J. Baird. 2012. Phosphorus mobilization and transport within a long-restored floodplain wetland. Ecological Engineering 44:348-359.
[14] Gale, P. M., K. R. Reddy, and D. A. Graetz. 1994. Phosphorus retention by wetland soils used for treated wastewater disposal. Journal of Environmental Quality 23(2):370-377.
[15] Song, K-Y., K-D., Zoh, and H. Kang. 2007. Release of phosphate in a wetland by changes in hydrological regime. Science of the Total Environment 380(1-3):13-18.

rooted and floating macrophytes – management strategies such as planting of rooted macrophytes can be employed during rewetting, to reduce the amount of phosphorus that remains in Stanfield Marsh and moved into the Big Bear Lake.[16] Limiting the available nutrients in the water column would reduce the probability of nuisance algae blooms. Physical conditions in the rewetted Stanfield Marsh and projected levels of phosphorus in the Program Water should not contribute to increased levels of cyanobacteria. The rewetted Stanfield Marsh will be shallow and well-mixed.[17] Cyanobacteria benefit from stratified conditions because of their natural buoyancy but do not thrive in well-mixed water columns. Thus, it is not anticipated that excessive algal growth in inland surface receiving waters would occur, and therefore, the narrative criterion for algae is predicted to be met by the proposed Program. As a result, the beneficial uses would be maintained under the Program. No impacts related to beneficial uses from algae are anticipated to occur.

Temperature

The COLD beneficial use is more stringent than the WARM beneficial use. Because Stanfield Marsh was mostly dry from 2015 through 2022, temperature modeling was required to estimate Program effects.[18] Dr. Anderson used his Big Bear Lake model to simulate a run a five-year simulation period, with minimum effluent temperatures of 12°C, a maximum temperature of 22°C, and a scenario of approximately 2,200 AFY of discharge.

Under the modeling scenario, water temperature excursions over 5°F/2.8°C in Stanfield Marsh only occurred during discrete periods when water levels were exceptionally low (≤ 1 meter). However, because of the frequency at which low water levels would occur, the number of excursions would be substantial. Results from the Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake prepared by Dr. Anderson highlighted some important general findings. Stanfield Marsh and Big Bear Lake are hydrologically connected through a set of culverts. For water flows to move from Stanfield Marsh into Big Bear Lake, Stanfield Marsh must first be filled before it starts flowing into the Big Bear Lake. Warm Program Water discharged to the easternmost section of Stanfield Marsh will quickly lose heat through exchange with the atmosphere and will be diluted with existing water. Higher lake levels afford greater opportunity for heat loss and dilution such that temperature effects are more likely at low lake levels. As a result of the modeling, the addition of warm Program Water to Stanfield Marsh does not alter the heat budget for Big Bear Lake and is not predicted to alter lake temperature, duration, or intensity of thermal stratification.

Program-specific information about inflow temperatures is needed to conduct a more complete analysis. Temperature represents beneficial uses for both Stanfield Marsh and Big Bear Lake that could potentially impact wildlife, aquatic life, and habitats if obstructed by the Program. As such, mitigation is necessary to minimize the potential for inflow temperature to Stanfield Marsh and Big Bear Lake falls within the confines of the narrative temperature WQO. **MM HYD-1** would monitor the temperature of the Program Water and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant

[16] Steffenhagen, P., D. Zak, K. Shultz, T. Timmermann, and S. Zerbe. 2012. Biomass and nutrient stock of submersed and floating macrophytes in shallow lakes formed by rewetting of degraded fens. Hydrobiologia 692:99-109.
[17] Dr. Anderson, personal communication 08/2023
[18] Dr. Anderson, M. 2022a. Assessment of Inflow Temperature on Temperature in Stanfield Marsh and Big Bear Lake.

to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from temperature would be less than significant through the implementation of mitigation.

Nutrients

Nutrient constituents are typically TIN, TN, TP, and chlorophyll-a. As discussed in the Antidegradation Analysis (**Appendix 3**), the proposed discharge is estimated to improve water quality in Big Bear Lake for TN, TP, and chlorophyll-a, maintain similar water quality for TIN. The predicted long-term average concentrations of TIN, TN, TP, and chlorophyll-a were lower with the proposed Program Water at various rates as compared to the predicted baseline condition, except for TIN under the 2,210 AFY + TP Offset. It is unclear why the model predicted increased TIN under this scenario while all other scenarios showed significantly reduced TIN values relative to the modeled baseline; however, the modeled difference in TIN between the Baseline and 2,210 AFY + TP Offset scenarios is approximately 4 percent, which is within the range of model variance and is considered statistically insignificant.

Although modeling shows the projected long-term average concentration of TIN is similar to the modeled baseline condition, the pilot study results (**Appendix 19** Table 3 of GEI's TM) indicated that the average TIN exceeded the Santa Ana Basin Plan WQO. Treatment process optimization is being explored to attain a higher removal efficiency to meet the most stringent TIN WQO of 0.15 ppm. As TIN has a WQO under the Santa Ana Basin Plan, if this objective is not met, the beneficial uses of Stanfield Marsh and/or Big Bear Lake may be obstructed by the Program. For the purposes of this analysis, it is assumed that treatment optimization will result in attainment of 0.15 ppm TIN. As a result, the beneficial uses would be maintained under the Program. However, if additional treatment equipment is needed to meet this objective or if regulatory compliance mechanisms are pursued to allow discharge above the objectives, consistency with the Program CEQA documentation will be verified, and, if determined necessary to comply with CEQA, subsequent CEQA documentation will be conducted. Impacts under this issue would therefore be less than significant.

Data Gaps and Limitations

Although modeling and a pilot study have been conducted for this Program, there are still some data gaps to better understand the potential impacts to the designated beneficial uses for Stanfield Marsh and Big Bear Lake with respect to aquatic wildlife and plants. These data gaps would be best resolved when Program Water is discharged to Stanfield Marsh, as the impacts cannot be measured until the Program water is discharged into Stanfield Marsh and wetted, and further, would be monitored with mitigative adaptation to any impacts through **MM HYD-1**. Constituents of interest with data gaps are boron, dissolved oxygen, pH, and temperature. These constituents are further explained below. However, the specific data gaps for each parameter are outlined as follows:

- **Boron:** There is uncertainty as to how boron would be assimilated into Stanfield Marsh. This is because, in order to discharge Program Water to Stanfield Marsh

and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to understand fully how boron in the Program Water into Stanfield Marsh without first observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation.

- **Dissolved Oxygen**: Data is not currently available to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or purified water. This is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or Program Water without the Program being operational, and observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation.

- **pH**: The buffering capacity of Stanfield Marsh itself is currently unknown because it has been mostly dry since 2015, but soil chemistry has a large effect on the pH of small bodies of water. As such, it is not presently known precisely how the Program will impact the pH of Stanfield Marsh, and therefore observation of how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation, is necessary to bridge this data gap.

- **Temperature**: There is uncertainty about predicted temperatures arise because no temperature data is available for the Program Water - theoretical temperature ranges were developed using data from a pilot project near sea level and corrected for elevation, but still, there is a gap in data that can only be filled once the Program is operational.

- **Reinvasion of Invasive Species**: Invasive plants and aquatic animals (vertebrate or otherwise) will be able to access Stanfield Marsh when it is rewetted, but it is impossible to predict precisely how discharge of Program Water will influence the proliferation of invasive species.

Boron

Boron is a naturally occurring element, and boron deposits are found in desert areas in California.[19] Anthropogenic sources of boron include industrial wastewater discharges, municipal wastewater discharges, and agricultural practices. As referenced in Schoderboeck et al. (2011),[20] boron does not biodegrade in surface water or sediments in freshwater environments.

California's searchable database for water quality goals also lists an agricultural goal of

[19] State Water Resources Control Board (State Water Board). 2017. Groundwater Information Sheet: Boron (B). Division of Water Quality Gama Program. 7 pages. Accessed at: https://www.waterboards.ca.gov/gama/docs/coc_boron.pdf (accessed 10/19/23)

[20] Schoderboeck, L. S. Muhleger, A. Losert, C. Guasterer, and R. Hornek. 2011. Effects assessment: boron compounds in the aquatic environment. Chemosphere 82: 483-487.

0.7 ppm based on tolerance of various crops to boron reported in Ayers and Westcott;[21] this concentration of 0.7 ppm is well above the effluent concentration of 0.12 ppm. Boron toxicity can affect most crops, but there is a wide range of tolerance; the most sensitive crops are affected by boron concentrations approaching 0.5 ppm. Schoderboeck et al. (2011) also assessed toxicity data for aquatic environments through two approaches and review of extensive data; these two approaches resulted in predicted no effect concentrations in aquatic environments of 0.18 and 0.34 ppm. Boron is accumulated by rooted aquatic plants and algae; the extent to which this occurs is species-specific. Boron does not biomagnify or bioconcentrate in the food web or become concentrated in fish or invertebrates.[22]

While boron concentrations in the Program Water are estimated to consume less than 10% of the assimilative capacity and be below receiving water limits as identified in the Santa Ana Basin Plan, there is uncertainty as to how boron would be assimilated into Stanfield Marsh. This is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to understand fully how boron in the Program Water into Stanfield Marsh without first observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation. It appears that uptake by plants can be a significant source of sequestration of boron, suggesting that management of rooted macrophytes may provide a method of removing excess boron from Stanfield Marsh. To determine potential impacts on aquatic wildlife and plants in Stanfield Marsh and Big Bear Lake, it is recommended to conduct boron monitoring once Program Water is discharged to Stanfield Marsh. Quarterly monitoring is recommended of the Program Water effluent to observe the boron concentration prior to introduction into Stanfield Marsh and at the existing TMDL Sampling Station MWDL9. This location is already an established sampling station through the Big Bear Lake Nutrient TMDL and is representative of Stanfield Middle. If observed boron levels do not meet the Santa Ana Basin Plan WQO, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to the introduction of native plants to absorb boron in Stanfield Marsh. **MM HYD-1** would monitor the boron levels of the Program Water discharge, and, if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from boron would be less than significant through the implementation of mitigation.

Dissolved oxygen

Dissolved Oxygen has a narrative WQO that must be met pursuant to the WARM and COLD beneficial uses, and is therefore integral to protecting the wildlife, aquatic life, habitats that are supported by the beneficial uses of Stanfield Marsh and Big Bear Lake.

[21] Ayers, R.S. and D.W. Westcott. 1985. Water Quality for Agriculture. Food and Agriculture Organization of the United Nations. Accessed at: https://www.fao.org/3/T0234E/T0234E00.htm#TOC (accessed 10/19/23)

[22] CMME. 2009. Canadian water quality guidelines for the protection of aquatic life: boron. Canadian Council of Ministers and Environment. Available online: http://ceqg-rcqe.ccme.ca. (accessed 10/19/23)

Data is not currently available to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or Program Water. As stated above, this is because, in order to discharge Program Water to Stanfield Marsh and Big Bear Lake, an NPDES Permit and WDR must first be obtained. Thus, it would be impossible to predict dissolved oxygen levels in Stanfield Marsh, Big Bear Lake, or Program Water without the Program being operational, and observing how the Program Water interacts with the existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation. However, low dissolved oxygen levels could be ameliorated through aeration of effluent. Stanfield Marsh is shallow enough that stratification is unlikely to occur (Dr. Anderson, personal communication). In other words, the water column in Stanfield Marsh would be mixed through water movement and via wind mixing, which would facilitate roughly equal concentrations of dissolved oxygen throughout the water column. Also, it is possible to speculate on dissolved oxygen levels in the Program Water, but there is considerable uncertainty surrounding what will happen when this Program Water enters Stanfield Marsh. Low-nutrient water entering Stanfield Marsh may also suppress dissolved oxygen levels by reducing algae and macrophyte production of dissolved oxygen (Dr. Anderson, personal communication). To determine potential impacts to aquatic wildlife, once Program Water is discharged into Stanfield Marsh, dissolved oxygen should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed dissolved oxygen levels do not meet the Santa Ana Basin Plan WQO designated beneficial uses for COLD and WARM, mitigative actions may include but not be limited to the introduction of mechanical intervention to stabilize dissolved oxygen levels. **MM HYD-1** would monitor the dissolved oxygen levels of the Program Water discharge, and, if observed exceeding NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from dissolved oxygen would be less than significant through the implementation of mitigation.

pH

The Santa Ana Basin Plan pH of inland surface waters water quality objective cannot have pH levels depressed below 6.5; pH values below this level also tend to be associated with lower fish and macrophyte productivity.[23] The volume of water entering Stanfield Marsh is significant (up to 2.2 MGD, or 3.4 cfs), so the entire volume of Stanfield Marsh will likely turn over multiple times in a year. While the Program Water hardness was predicted to be low at 50 ppm of calcium carbonate (CaCO3),[24] the pilot study results were non-detect because the Program Water was not stabilized. The estimated hardness after stabilization is 25 ppm. The low alkalinity and hardness values of the effluent suggest a low buffering capacity and susceptibility to a change in pH upon entering Stanfield Marsh. The buffering capacity of Stanfield Marsh itself is currently unknown because it has been mostly dry since 2015, but soil chemistry has a large effect on the pH of small bodies of water. As such, it is not presently known precisely how the Program will impact the pH of Stanfield Marsh, and therefore observation of how the Program Water interacts with the

[23] Avault, J. W. 1996. Fundamentals of Aquaculture: a step-by-step guide to commercial aquaculture. AVA Publishing, Baton Rouge, LA.
[24] Dr. Anderson, M. 2022b. Effect of Sand Canyon and Irrigation Withdrawals on Lake Level. Draft Technical Note. 5 pp.

existing water sources in Stanfield Marsh and Big Bear Lake upon Program operation, is necessary to bridge this data gap. Despite minor potential pH concerns in Stanfield Marsh, the low hardness of the effluent suggests that it would likely have a negligible effect on the pH of Big Bear Lake, given its large relative volume to the Program Water and its higher hardness of 157 ppm.

The expected pH of the effluent is low at 6.09. Since the treatment process maintains a neutral pH between 7 and 8 upstream of the reverse osmosis process, and then become slightly acidic downstream of reverse osmosis, post-treatment chemical addition will be employed to adjust the pH to a neutral level such that the effluent is within the Santa Ana Basin Plan water quality numerical objectives for pH. To determine potential impacts to aquatic wildlife, once purified water is discharged into Stanfield Marsh, pH should be monitored during and after re-wetting of Stanfield Marsh at the Program Water effluent and at existing TMDL Sampling Station MWDL9. If observed pH levels do not meet the Santa Ana Basin Plan WQO for inland surface waters, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to introduction of a chemical intervention to stabilize pH levels. **MM HYD-1** would monitor the pH levels of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant. Thus, impacts to beneficial uses from pH would be less than significant through the implementation of mitigation.

Temperature

As discussed above, temperature represents beneficial uses for both Stanfield Marsh and Big Bear Lake that could potentially impact wildlife, aquatic life, habitats if obstructed by the Program. Temperature modeling data show that excursions of the COLD standard occurred 44 percent of the time, during low water, when Stanfield Marsh might otherwise be dry. While it is suspected that maintenance of flows and the presence of water are preferable in dry years, even if the COLD standards are not met, this could be confirmed with an AAMP. Additional uncertainty about predicted temperatures arise because no temperature data is available for the Program Water - theoretical temperature ranges were developed using data from a pilot project near sea level and corrected for elevation, but still, there is a gap in data that can only be filled once the Program is operational. As indicated in earlier discussions on the temperature modeling data, additional monitoring is recommended once the Program Water is discharged into Stanfield Marsh. Temperature modeling is recommended to be conducted using an online analyzer to obtain continuous readings of the Program Water in Stanfield Marsh. Similar to previous discussions on location of monitoring, the existing TMDL Sampling Station MWDL9 can be utilized. If observed temperature levels do not meet the Santa Ana Basin Plan WQO designated beneficial uses for COLD and WARM, the beneficial uses of Stanfield Marsh and/or Big Bear Lake that could potentially impact special status species may be obstructed by the Program. As such, mitigative actions may include but not be limited to introduction of a temperature cooling mechanism to lower the temperature of the Program Water before it is introduced into Stanfield Marsh. **MM HYD-1** would monitor the temperature of the

Program Water discharge, and, if observed exceeding permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the temperature based beneficial uses are maintained under the Program and minimizing water quality impacts to a level of less than significant.

Reinvasion by Undesirable Species

Invasive plants and aquatic animals (vertebrate or otherwise) will be able to access Stanfield Marsh when it is rewetted. Because it is upstream of Big Bear Lake, it may be desirable to prevent contamination of Stanfield Marsh by species such as Eurasian Watermilfoil (*Myriophyllum spicatum*) and Common Carp (*Cyprinus carpio*), which are known invasive species that appear in Big Bear Lake. Proliferation of Eurasian Watermilfoil can cause periodic depression in dissolved oxygen levels, and this species adversely affects all beneficial uses relating to the protection of aquatic life. As the reinvasion by undesirable species can only occur once Stanfield Marsh is rewetted, monitoring is the only means by which to observe whether such species become invasive in Stanfield Marsh from Program implementation. Thus, it is recommended for monitoring to be conducted at least on a bi-yearly basis to observe the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake, which shall be a requirement of Program implementation through **MM HYD-1**. Furthermore, mitigative actions under **MM HYD-1** if invasive species are observed, would include invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions to remove the invasive species present as a result of introduction of the Program Water. Additionally, **MM HYD-1** requires an account of invasive species within Stanfield Marsh and Big Bear Lake to be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program. This would protect the beneficial uses of Stanfield Marsh and Big Bear Lake by preventing invasive species proliferation in Stanfield Marsh and Big Bear Lake, thereby protecting the special status species and habitats by which the beneficial uses support. Thus, impacts to beneficial uses from invasive species would be less than significant through the implementation of mitigation.

Stanfield Marsh and Big Bear Lake Beneficial Use (COMM, WARM, COLD, WILD, and RARE) Conclusion

Data gaps were identified for boron, dissolved oxygen, pH, and temperature. To close the data gap, monitoring is recommended once the Program's water is introduced to Stanfield Marsh/Big Bear Lake, and further, as discussed under Data Gaps, above, would be monitored with mitigative adaptation to any impacts through **MM HYD-1**. The Program's discharge effluent would be monitored along with utilizing existing Nutrient TMDL Sampling Station MWDL9. In addition to the identified water quality constituents, at a minimum bi-yearly monitoring is recommended to observe the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake. This monitoring shall be enforced through the implementation of **MM HYD-1**. Additionally, the actions necessary to adapt and mitigate any beneficial use or WQO conflicts observed through the monitoring program that will be undertaken as part of Program operations shall be enforced through **MM HYD-1.**

This Program is anticipated to provide beneficial impacts to the Big Bear Valley. In addition to providing a sustainable water supply to the area and increasing Big Bear Lake levels, rewetting of Stanfield Marsh will be critical to replacing the wetland habitat that was lost in the late 1800s with the construction of the Bear Creek Dam. Thus, the Program would help support the WILD and RARE designated beneficial uses for Stanfield Marsh and Big Bear Lake. The introduction of a TP Offset Program will assist with meeting the Big Bear Lake Nutrient TMDLs. Thus, the proposed discharge of Program Water to Stanfield Marsh/Lake would have a less than significant potential to obstruct the beneficial use of either Stanfield Marsh or Big Bear Lake with the implementation of **MM HYD-1**. Therefore, the potential for the Program to violate water quality standards would be less than significant with the implementation of **MM HYD-1.**

HYD-1BBARWA in collaboration with BBMWD and BBCCSD will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;

- Conduct a monitoring plan to:
    - Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);
    - Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;
    - Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and
    - Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.
    - Collect nutrient (I.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.
- Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;
- Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake at least on a bi-yearly basis. If

observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.

If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:

- Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.
- Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).
- Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).

If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.

The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.

Standfield Marsh Big Bear Lake Discharge – Impacts on Downstream Surface Water Quality

As part of the Program, additional inflows into Big Bear Lake will result in higher lake levels than would otherwise occur, which will result in increased releases of water from Big Bear Lake during wet periods for flood control purposes. In addition, higher lake levels may enable BBMWD to negotiate their current Big Bear Lake management strategy to minimize spills and optimize releases to enable additional water to be captured downstream for recharge of the San Bernardino Basin, rather than being discharged to the ocean during high flow periods. This section evaluates if the additional Big Bear Lake releases as a result of the Program Water discharged to Stanfield Marsh/Big Bear Lake will cause downstream water bodies to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Based on a review of the WQOs in the Santa Ana Basin Plan, and as shown on **Table 4.11-9**, below, Big Bear Lake has same or more stringent water quality objectives than downstream receiving waters (i.e., surface and groundwaters); therefore, meeting the objectives of Big Bear Lake will also meet the objectives of all downstream receiving waters, so it can be concluded that downstream uses will be protected.

In addition, the Antidegradation Analysis (**Appendix 3**) considered impacts on the downstream receiving water by evaluating the beneficial uses and the most stringent water quality criteria, as shown in **Table 4.11-9**, above. The most stringent WQOs downstream of Big Bear Lake are Bear Creek, which is located about 5 miles south of Big Bear Lake, and Santa Ana River Reach 6, which is located about 17 miles downstream from Big Bear Lake. Overall, Big Bear Lake has more stringent water criteria than Santa Ana River Reach 6, but Bear Creek has more stringent objectives for hardness, sodium, and sulfate than Big Bear Lake. **Table 4.11-7**—which depicts the anticipated Program Water discharge quality as measured by the pilot study—shows that the proposed Program Water discharge would be below these lower WQO limits. The Santa Ana River Reach 6 is also included in California's 2018 Section 303(d) list of impaired water bodies for cadmium, lead, and copper, so these trace metals were added to the analysis. Projected average concentrations of the three trace metals in the proposed discharge are significantly below the hardness-based CTR chronic criterion calculated for each metal using a median total hardness value of 99 mg/L calculated for Reach 6, as shown in **Table 4.11-7**. Cadmium, copper, and lead concentrations contained in the Program Water proposed for discharge to Big Bear Lake are not anticipated to lower water quality in Santa Ana River Reach 6 for these trace metals, nor are they anticipated to affect future load or WLA included in an adopted TMDL. Thus, the water quality impacts related on downstream beneficial uses would be less than significant, because the Program Water will meet the most stringent objectives which are applied to Big Bear Lake. (Final EIR, p. 4-655.)

Shay Pond Discharge – Impacts on Surface Water Quality

As part of the Program, up to 80 AFY of Program Water is proposed to be discharged to Shay Pond. The utilization of the full advanced treated water in support of Shay Pond resulting from implementation of the proposed Program is currently being considered at a conceptual level by the Program Team due to the regulatory costs and hurdles that would be necessary to modify the water source supporting the Stickleback. The proposed Shay Pond Discharge is intended to replace potable water that is currently discharged to the pond to support the Stickleback, a State and Federal listed endangered species. This section evaluates if the Program Water that will be discharged will cause this water body to violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.

In February of 2022, an Antidegradation Analysis (**Appendix 3**) was completed to evaluate the water quality impacts that the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond would have on the beneficial uses of each water body. In general, an antidegradation analysis provides regulators with the information needed to determine whether a proposed discharge is consistent with State and Federal antidegradation policies. As required by the CWA, an NPDES permit will be requested from the Santa Ana Regional Board once this Program Component is ready for implementation.

Under the State and Federal antidegradation policies, the Santa Ana Regional Board is required to make a finding regarding the satisfaction of the policies as they are responsible for regulating the discharge to Shay Pond, once this component is ready for implementation. The State antidegradation policy, which incorporates the Federal antidegradation policy, seeks to maintain the existing high quality of water to the maximum

extent possible, and only allows a lowering of water quality if:

- Changes in water quality are consistent with maximum benefit to the people of the State, will not unreasonably affect present and potential beneficial uses, and will not result in water quality lower than applicable standards, and

- Waste discharge requirements for a proposed discharge will result in the best practicable treatment or control of the discharge necessary to assure:

  - No pollution or nuisance; and

  - Highest water quality consistent with maximum benefit to the people of the State.

At the time of completion of the Antidegradation Analysis (**Appendix 3**), it was assumed that BBARWA would produce disinfected, advanced treated effluent through tertiary filtration using ultrafiltration, and RO treatment with UV disinfection. Since then, an AOP system has been added to the treatment process to produce Program Water. Therefore, the water quality of the proposed discharge is anticipated to be the same or better than the assumptions used in the Antidegradation Analysis, so the general conclusions still apply.

The Antidegradation Analysis evaluated the average quality of potable groundwater supply, projected Program Water quality, the ambient water quality of Shay Pond, and the most stringent WQO or criterion to determine if proposed discharge would degrade water quality in Shay Pond. Per the Antidegradation Analysis, water quality data for the specific well that discharges to Shay Pond is not available so the data used in the antidegradation analysis was obtained by compiling and averaging the water quality data from seven drinking water wells near Shay Pond, which is expected to be representative of the quality of groundwater currently discharged to Shay Pond. BBCCSD collected this data in 2020. For the Antidegradation Analysis, the existing water quality of potable water supplies near Shay Pond were compared to the projected effluent quality of the proposed Shay Pond Discharge to determine if there is a potential for degradation of Shay Pond water quality as a result of the proposed discharge. **Table 4.11-10** shows the Antidegradation results.

Overall, the projected effluent quality of the proposed discharge to Shay Pond is better than the current potable water supply for chloride, hardness, sodium, sulfate, TDS, TN, aluminum, and specific conductance. This is evidenced by the results of the pilot project results presented in **Table 4.11-10.** The projected effluent quality of the proposed discharge is expected to be of similar quality as existing potable water supplies for ammonia, fluoride, MBAS, cadmium, copper, and lead. Boron may be the only constituent that could be above the existing potable water supply quality. The projected boron effluent quality of the proposed Shay Pond Discharge (0.11 mg/L) is anticipated to exceed Shay Pond ambient water quality (0.059 mg/L – based on one sample collected in November 2021), but remain well below the most stringent criterion of 0.75 mg/L for the protection of sensitive crops. Therefore, Shay Pond's boron assimilative capacity, defined as the difference between the criterion and the ambient water quality, is 0.691 mg/L (i.e., 0.75 mg/L – 0.059 mg/L). Per the 2018 Recycled Water Policy, if a groundwater recharge project proposes to utilize less than 10 percent of the available assimilative capacity in a basin or subbasin, the

antidegradation analysis only needs to demonstrate that the project will use less than 10 percent of the available assimilative capacity. If a similar approach is used for Shay Pond, this means an increase of up to 0.0691 mg/L would be allowed. If this is added to the ambient water quality, the maximum boron concentration in Big Bear Lake would be about 0.128 mg/L, which is higher than projected Program Water. The projected boron concentrations with the proposed Program Water discharge to Shay Pond are not estimated to exceed this concentration. Thus, the water quality impacts related to boron would be less than significant because less than 10% of the assimilative capacity would be consumed.

The proposed project is estimated to potentially cause a very minor increase in boron concentrations in Shay Pond and downstream in Shay Creek, but concentrations are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron, and consume less than 10% of the assimilative capacity. As with the Stanfield Marsh/Big Bear Lake discharge, boron is not predicted to exceed the WQO. This is because the request to permit a new discharge to Shay Pond is consistent with Federal and state antidegradation policies in that the minor lowering of water quality for boron in Shay Pond (see **Table 4.11-10**) is necessary to accommodate important economic or social development,[25] will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State. Furthermore, **MM HYD-1** would monitor the boron levels of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant.

Additional coordination with CDFW would need to be conducted to ensure the Stickleback located in Shay Pond are protected before discharge of a new water source is implemented. As mentioned in this DPEIR, this Program Component is not planned for the near future. Should the Program Team ultimately decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6**, below. Furthermore, should the impacts to the Stickleback fall outside the scope of that which has been analyzed in this DPEIR, preparation of a project-specific subsequent CEQA documentation would be required. **MM BIO-6** would be required to ensure the preparation of the additional studies that will be necessary to ensure that the product water is suitable to support Stickleback at Shay Pond. Therefore, should the Program Team decide to modify the water supply at Shay Pond, the impacts shall be fully analyzed through the implementation of an AMMP, as required by **MM BIO-6.**

BIO-6 In order to change the water source at Shay Pond, an AMMP shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a MOU (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to the lay a solid framework for the development of an

[25] Maintain and improve recreation and tourism in the Big Bear Lake region which in turn stimulates the local and regional economies.

AMMP. The MOU will determine if additional permitting will be required from both the state and Federal government for the take of an endangered species.

The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible.

As part of the MOU and AMMP implementation process, BBARWA, in association with BBCCSD shall obtain the following data to be provided to CDFW and/or USFWS:

- Data on the chemical characteristics of the recycled water to be used for the Project, including contaminants likely to result in hormone disruption of fish species;

- Data on the physical characteristics of the recycled water that are likely to impact fish species, such as water temperature, dissolved oxygen, and pH;

- A comparison of water quality for the recycled water versus the groundwater currently being used to discharge to Shay Pond to ascertain if the change in water source would introduce contaminants that may impact the reproduction and survival of the stickleback. (Final EIR, p. 4-659.)

Therefore, the potential for the Program to violate water quality standards would be less than significant with the implementation of **MM BIO-6 and HYD-1**.

The proposed discharge to Shay Pond would occur at a rate of up to 80 AFY, would comprise best practicable treatment and control imposed on BBARWA in order to support the Stickleback species, and would be consistent with State and Federal antidegradation policies for the following reasons:

- The proposed discharge to Shay Pond will not adversely affect existing or probable beneficial uses of either receiving water or downstream receiving waters, nor will the discharges cause water quality to not meet applicable WQOs. This is because while the proposed project is estimated to potentially cause a very minor increase in boron concentrations in Shay Pond and downstream in Shay Creek, the concentrations are estimated to remain well below the 0.75 mg/L Santa Ana Basin Plan objective for boron and consume less than 10% of the assimilative capacity. Thus, boron is not predicted to exceed the WQO. The request to permit a new discharge to Shay Pond is consistent with Federal and state antidegradation policies in that the minor lowering of water quality for boron in Shay Pond (see **Table 4.11-10**) is necessary to accommodate important

economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State.

- Overall, the proposed BBARWA discharge is estimated to have a very minor impact on Shay Pond water quality and Shay Creek water quality downstream of the pond because similar water quality would be maintained or improved. This is shown on **Table 4.11-10,** above, which indicates that for ammonia as N, chloride, fluoride, total hardness, MBAS, sulfate, TDS, TN, cadmium, copper, lead, aluminum, and specific conductance, the projected Program Water quality is below the ambient and most stringent WQO or criterion. The proposed discharge to Shay Pond is anticipated to lower the concentrations of the constituents analyzed compared to existing ambient concentrations that are largely influenced by the groundwater currently discharged by BBCCSD to Shay Pond to maintain water levels for the endangered Stickleback.

- Based on the above, the request to permit new discharge to Shay Pond is consistent with the Porter-Cologne Act in that the resulting water quality will constitute the highest water quality that is reasonable, considering all demands placed on the waters, economic and social considerations, and other public interest factors.

Based on the above discussion, the proposed discharge of Program Water would have a less than significant impact to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality through the implementation of **MMs HYD-1** and **BIO-6**. **MMs HYD-1** and **BIO-6** are required to ensure that this Program Component is carried forth prior to any alteration in water source resulting from Program implementation. It would require monitoring of the boron levels of the Program Water discharge, and if observed exceeding the NPDES permit requirements (which would be crafted pursuant to the WQOs), corrective actions would be taken, thereby ensuring the beneficial uses are maintained under the Program by meeting the WQOs and minimizing water quality impacts to a level of less than significant.

Sand Canyon Groundwater Recharge – Impacts on Bear Valley Basin Water Quality

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake and discharging it into Sand Canyon, which serves as a flood control channel (refer to **Figure 1−6**). The Program Water will be discharged at the top of the Sand Canyon Recharge Area. No channel modifications to the channel bottom are anticipated since it is expected that the Program Water stored in Big Bear Lake will percolate within the defined Sand Canyon Recharge Area (**Figure 3-32)**. The discharge will consist of a pipe outlet at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. The channel slope will be protected from erosion using rip rap or similar erosion control methods.

In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear

Mountain Golf Course and for dust control of the Snow Summit Bike Park. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized at each location under the Program. Based on current recycled water regulations, the use of the Program Water stored in Big Bear Lake would be regulated under the Statewide Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW). This Order sets rules for recycled water users to avoid the overapplication of recycled water that would result in runoff or groundwater recharge. Therefore, it can be assumed that these proposed uses will not impact water quality of the Big Bear Valley Basin. This section evaluates whether the use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area has the potential to cause violations of any water quality standards in the Bear Valley Basin, violations of expected WDRs or otherwise degrade surface or groundwater quality.

Per the Santa Ana Basin Plan, the Bear Valley Basin has a TDS objective of 300 mg/L, a hardness objective of 225 mg/L, a sodium objective of 20 mg/L, a chloride objective of 10 mg/L, a nitrate as N objective of 5 mg/L, and a sulfate objective of 20 mg/L. As shown in **Table 4.11-11**, Big Bear Lake has more stringent WQOs, so the proposed discharge of Program Water is estimated to improve water quality in Big Bear Lake via Stanfield Marsh and is estimated to improve water quality in Big Bear Lake for TDS, TN, and maintain similar water quality for TIN as demonstrated above and in the Antidegradation Analysis for Proposed Discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (WSC/LWA, 2022). **Tables 4.11-7** and **4.11-8** demonstrate that the Big Bear Lake discharge is predicted to improve Big Bear Lake water quality for TDS, TP, TN, and chlorophyll-a as compared to modeled baseline (i.e. existing) conditions, and result in similar water quality for TIN as compared to the modeled baseline. For boron, concentrations in Big Bear Lake are anticipated to increase as compared to baseline conditions, but remain well below the most stringent WQO of 0.75 mg/L, and consume less than the 10% assimilative capacity. Furthermore, as previously stated, the request to permit a new discharge to Big Bear Lake/Stanfield Marsh is consistent with Federal and state antidegradation policies in that the minor lowering of water quality for boron in to Big Bear Lake/Stanfield Marsh (see **Table 4.11-7**) is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable water quality objectives, and is consistent with the maximum benefit to the people of the State.

Table 4.11-11 demonstrates that the Big Bear Lake objectives are more stringent than the WQOs for the Bear Valley Basin. Per conversations with DDW, Big Bear Lake may be designated as a non-restricted recycled water impoundment, and the future use of Big Bear Lake water for groundwater recharge via surface application would be subject to recycled water regulations. For possible non-potable recycled water uses for landscape irrigation, dust control, snowmaking, and nonrestricted impoundment, these uses would be regulated Order WQ 2016-0068-DDW.

To permit the Sand Canyon Recharge Area project via surface application, BBLDWP, the lead proponent of the Sand Canyon Recharge Area Program Component, will need to submit a Report of Waste Discharge (ROWD) and technical studies to the Santa Ana Regional Board to obtain a WDR permit to implement the proposed uses in the Sand Canyon Recharge Area. As part of the WDR permit process, an antidegradation analysis

will be prepared to evaluate the water quality impacts in more detail than this technical memorandum to demonstrate that the project is consistent with State antidegradation policy. An antidegradation analysis is robust and is used by regulators to set permit conditions. Another study that will be completed as part of the ROWD is a Title 22 Engineering Report. This report will describe how the permittee will comply with the regulations applicable to a surface application groundwater recharge project. Overall, the WDR permitting process ensures that the beneficial uses of the Bear Valley Basin are protected by setting permit requirements to mitigate and/or avoid impacts. These studies will be completed once the design of the AWPF and Sand Canyon Recharge Area facilities are more developed to provide the necessary information.

To evaluate the potential impacts that the Program Water stored in Big Bear Lake will have on the Bear Valley Basin, the same model used for the Big Bear Lake Analysis (Dr. Anderson 2021 and 2022) was used to simulate the water quality of the blended Program Water and natural water in Big Bear Lake at the proposed extraction point. The extraction point is located near Rathbun Creek, and Program Water would be extracted using an existing pump station and pipeline used by the Bear Mountain and Snow Summit Resorts to extract Lake water for snowmaking (refer to **Figures 3-3 and 3-29**). The model simulated the extraction of Program Water stored in Big Bear Lake for groundwater recharge (380 AFY) and possible landscape irrigation (120 AFY). The model showed that Big Bear Lake extractions improved water quality (at least for TDS), so this scenario is more conservative as additional extraction would yield better water quality results. This simulation evaluated predicted conditions for a 41-year time period using available meteorological and hydrologic data for 2009-2019 and a probability-based forward forecast using the median hydrologic scenario with about 2,200 AFY of Program Water being discharged into Big Bear Lake. These assumptions are consistent with the assumptions used to evaluate the impacts to Big Bear Lake without the extractions. This simulation and narrative data therein are described in **Appendix 18** to this DPEIR, which is a Memorandum prepared by WSC and Dr. Anderson, dated October 1, 2023.

Based upon the data compiled by WSC, Program Water withdrawn from Big Bear Lake and used for recharge of Sand Canyon and possible landscape irrigation is predicted to have mean concentrations of 18.2, 13.3 and 8.3 mg/L for sodium, chloride and sulfate, respectively, and a mean hardness value of about 97.8 mg/L $CaCO_3$ (**Table 4.11-12).** The approach to estimate these concentrations are described in **Appendix 18**. The maximum concentrations of these ions that would be present in recharge water under protracted drought were on the order of about 50% higher than mean values, but were similarly on the order of 50% lower during extreme wet conditions. The Program Team will work with the Regional Board during development of the WDR permit for Sand Canyon recharge to consider the possibility of using extended averaging periods (such as a 5-year or 10-year average) for compliance for some constituents, recognizing that variable local hydrology may result in short term changes in recharge water quality that may balance out over a longer period and still maintain compliance with water quality objectives. In addition, the recharge operation will be operated adaptively based on groundwater levels and water quality trends and can be paused if needed to ensure compliance with permitted water quality limits.

Table 4.11-12 presents the Program Water quality stored in Big Bear Lake that would be

used for groundwater recharge at Sand Canyon and irrigate the Bear Mountain Golf Course. The mean values from **Table 4.11-12**, the Bear Valley Basin WQOs, and the ambient water quality of the Bear Valley Basin in the Sand Canyon Recharge Area, which were estimated by averaging water quality data from five drinking water wells near the Sand Canyon Recharge Area are shown in **Table 4.11-13**. The water quality data was collected in 2014, 2017, and 2021.

The projected Program Water stored in Big Bear Lake for subsequent Lake uses and the ambient water quality near the Sand Canyon Recharge Area were assessed to determine if the proposed future uses of Program Water stored in Big Bear Lake would result in concentrations that exceed existing ambient water quality and/or relevant WQOs or criteria. In order to determine whether the Sand Canyon Recharge Area Project would violate water quality standards, the model predicted mean concentrations for the Program Water stored in Big Bear Lake that would be used for groundwater recharge and possible irrigation were compared against the following:

- If the Program Water stored in Big Bear Lake is below the ambient and most stringent WQO or criterion, no degradation is anticipated.

- If the Program Water stored in Big Bear Lake is above the ambient water quality, but below the most stringent WQO or criterion, there is assimilative capacity available, which would indicate that the WQO would not be violated.

- If the Program Water stored in Big Bear Lake is above the most stringent WQO or criterion, but below the ambient water quality, there is a possibility of water quality improvements, which would provide benefit by improving conditions and help improve conditions to help attain the WQO.

- Finally, if the Program Water stored in Big Bear Lake is above ambient water quality and the most stringent WQO or criterion degradation is anticipated, a complete analysis may be required.

As shown in **Table 4.11-13**, the ambient conditions reflect that the existing water quality of the Bear Valley Basin near the Sand Canyon Recharge Area exceeds the WQOs for TDS, chloride, sulfate, and hardness. The Program Water stored in Big Bear Lake is estimated to be of better quality than ambient and the most stringent WQO for TDS, nitrate as N, sulfate, and hardness, so no further analysis is needed because the Program Water is predicted to improve water quality conditions and comply with WQOs. The sodium concentration in the Program Water stored in Big Bear Lake is estimated to be above the ambient water quality but below the WQO. Therefore, there is some limited assimilative capacity. The estimated chloride concentration in the Program Water stored in Big Bear Lake is estimated to be below the ambient water quality, but above the WQO. Therefore, the project has the potential to improve or maintain the existing water quality conditions of the Bear Valley Basin near the Sand Canyon Recharge Area because the Bear Valley Basin is currently exceeding the WQO.

Per the Santa Ana Basin Plan, the presence of sodium in drinking water may be harmful to persons suffering from cardiac, renal, and circulatory diseases. As noted in the Santa Ana

Basin Plan, the California Department of Health Services and the EPA have not established a limit on the concentration of sodium in drinking water, but recommend for sodium concentrations to not exceed 180 mg/L in groundwaters designated MUN as a result of controllable water quality factors. As shown in **Table 4.11-13**, the sodium concentration in the Program Water stored in Big Bear Lake is less than 20 mg/L, well below this threshold and therefore would not be harmful to the MUN use of the Bear Valley Basin. Further, for informational purposes, excess concentrations of sodium in irrigation water reduce soil permeability to water and air. Under the Santa Ana Basin Plan, groundwaters designated as AGR must not exceed a sodium absorption ratio of 9 as a result of controllable water quality factors. The groundwater basin is not designated as an AGR therefore, this threshold is not applicable. For informational purposes, the sodium absorption rate for Program Water stored in Big Bear Lake is 0.8, so the possible use of the Program Water for irrigation is not expected to be problematic.

Per the Santa Ana Basin Plan, excess chloride concentrations lead primarily to economic damage rather than public health hazards. For informational purposes, excess chlorides can significantly affect the corrosion rate of steel and aluminum and can be toxic to plants. Per the Santa Ana Basin Plan, a safe value for irrigation is considered to be less than 175 mg/L of chloride. Excess chlorides affect the taste of potable water, so drinking water standards are generally based on potability rather than on health. The secondary maximum contaminant upper limit for chloride is 500 mg/L (CCR, Division 4, Chapter 15, Article 16, § 64449), so chloride concentrations should not exceed this limit in groundwaters designated as MUN. As shown in **Table 4.11-13,** the chloride concentrations in the Bear Valley Basin and the Program Water stored in Big Bear Lake are approximately 15 mg/L, far below the 500 mg/L and 175 mg/L thresholds discussed above, and therefore the Program Water stored in Big Bear Lake would not be harmful to the MUN use of the Bear Valley Basin and would be suitable for possible use for irrigation.

The Program Water stored in Big Bear Lake is estimated to be of better quality than ambient and the most stringent WQO for TDS, nitrate as N, sulfate, and hardness and is therefore predicted to improve water quality conditions in the Bear Valley Basin. Although the Program Water stored in Big Bear Lake is projected to have a higher concentration than the established chloride WQO objective, the discharge is necessary to provide important economic and social benefits, the discharge may help reduce current ambient chloride concentrations in the Bear Valley Basin, and the beneficial uses of the Bear Valley Basin would be protected. Therefore, as this exceedance for chloride is below the ambient water quality of the Bear Valley Basin, and is necessary to accommodate important economic or social development, will not unreasonably affect beneficial uses, will not cause further exceedances of applicable WQOs, and is consistent with the maximum benefit to the people of the State, the Sand Canyon Recharge Area Project would not violate water quality standards and impacts would be less than significant. However, **MM HYD-1** is intended to prevent Program Water stored in Big Bear Lake from exceeding any of the limits set in the Sand Canyon Recharge Area WDR permit. Furthermore, the use of Program Water for Sand Canyon Recharge Area groundwater recharge will be paused until permit conditions are met.

<u>Summary of Impacts to Water Quality from Program Operations</u>

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

HYD-1BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;

- Conduct a monitoring plan to:
  - Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);
  - Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;
  - Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and
  - Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.
  - Collect nutrient (I.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.
- Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;
- Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.

If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:

- Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.
- Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).
- Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).

If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.

The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.

Level of Significance After Mitigation: Significant and Unavoidable

The proposed Stanfield Marsh/Big Bear Lake and Shay Pond Discharges would have a less than significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality as BBARWA is investing in the best available technologies to produce Program Water that meets State and Federal limits and thereby a less than signific impact under this issue. The use of Program Water stored in Big Bear Lake for groundwater recharge has the potential to violate the chloride WQO of the Bear Valley Basin, as the Program Water stored in Big Bear Lake may exceed the chloride WQO. However, the Program Water stored in Big Bear Lake is estimated to be better quality than ambient so it would help improve or maintain ambient water quality conditions. In addition, the use of Program Water for recharge would help improve the water quality of TDS, nitrate as N, sulfate, and hardness, and maintain sodium concentrations. The benefit that the Program Water stored in Big Bear Lake will bring to the Bear Valley Basin exceeds the slight chloride WQO exceedance. However, **MM HYD-1** is intended to ensure that monitoring and adaptive management and mitigation are implemented to protect to beneficial uses of Stanfield Marsh, Big Bear Lake, and the Bear Valley Basin.

The reduced discharge to the LV Site under as a result of the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source. The Lucerne Valley Basin currently exceeds the MCLs, so the reduced flows would have a significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Thus, as no mitigation is available to minimize the degradation of water quality in the Lucerne Valley Basin, a significant and unavoidable impact to the water quality of the Lucerne Valley

Basin is projected to occur.

2. Groundwater Supplies

Threshold: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-667 – 4-765)

Explanation:

Sand Canyon Groundwater Recharge – Impacts on Bear Valley Basin Groundwater Sustainability

As part of the Program, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear Mountain Golf Course and for dust control of the Snow Summit Bike Park. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized at each location under the Program. Based on current recycled water regulations, the use of the Program Water stored in Big Bear Lake would be regulated under the Statewide Water Reclamation Requirements for Recycled Water Use (Order WQ 2016-0068-DDW). This Order sets rules for recycled water users to avoid the overapplication of recycled water that would result in runoff or groundwater recharge. This section evaluates whether the use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area or other uses, such as irrigation, has the potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management.

Overall, the Sand Canyon Recharge Area component will help the groundwater supply by adding a new source of water and recharge of the Bear Valley Basin. The landscape irrigation use will help offset the use of potable water for irrigation, resulting in more groundwater staying in the Bear Valley Basin.

To date, annual groundwater production in the Bear Valley Basin has never exceeded the perennial yield estimate, and groundwater levels periodically recover to historical high conditions during wet periods. However, due to relatively limited aquifer storage in the Bear Valley Basin, groundwater levels can vary widely between periods of relatively high precipitation and periods of low precipitation. As such, it is critical to monitor and manage groundwater levels to ensure adequate supplies during periods of prolonged drought. Since 2003, local agencies have implemented groundwater monitoring and management programs that have been successful at managing groundwater supplies to address periodic drought conditions, including the recent dry period between 2011 and 2017.

The Program will provide substantial benefits to help mitigate localized imbalances in the Bear Valley Basin. While the Bear Valley Basin as a whole is sustainable, there are localized areas that show persistent groundwater level declines, which may exceed

established sustainability criteria if allowed to continue. One such area is in the vicinity of the Bear Mountain Golf Course. The landscape for the course is irrigated, in part, from private wells located on or near the property. As shown in Error! Reference source not found.**6**, groundwater levels in the monitoring well Sand Canyon No. 1, which were evaluated for the Bear Valley GSP (**Appendix 8),** have shown an overall decline since 1992, despite periodic recovery during wet years. Without a change in groundwater management in the area, groundwater levels in this well could drop below the minimum threshold by 2042 (see Error! Reference source not found.**6**).

The Program would facilitate groundwater recharge at Sand Canyon by way of utilizing an existing pump station and pipeline from Big Bear Lake to Bear Mountain Ski Resort, and constructing a new pipeline from a new pump station at the existing Resort Storage Pond located at Bear Mountain Ski Resort that would reach the recharge point at Sand Canyon. No new infrastructure is needed to extract the Sand Canyon Recharge Area water from the Bear Valley Basin. The Sand Canyon Recharge Area water will become potable groundwater and will be extracted using BBLDWP's existing potable wells located downstream of the Sand Canyon Recharge Area. The wells are located at least six months of travel time from the Sand Canyon Recharge Area, as required by groundwater recharge regulations.

Groundwater recharge at Sand Canyon was evaluated by Thomas Harder & Co to assess the feasibility of recharging the groundwater aquifer at Sand Canyon using surface water from Big Bear Lake and estimate the annual recharge capacity. This study can be found in the "Sand Canyon Recharge Evaluation" prepared by Thomas Harder & Co, dated November 29, 2017 (**Appendix 4**). The Sand Canyon Recharge Evaluation found that the recharge potential at Sand Canyon is approximately 380 AFY over a 6-month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day.

As described in Chapter 3, Program Description, the following are operation strategies for the Sand Canyon Recharge Area Project are recommended so the Program Water stored in Big Bear Lake can percolate and still meet the travel time required to the nearest downstream well; these components shall be adhered to as part of Program implementation:

- Recharge will occur within the defined Sand Canyon Recharge Area.
- Recharge will not occur during periods where natural surface flows occur in the channel.
- Recharge will occur over a 6-month dry weather period (April-October).
- Flows will be reduced or stopped if Program Water does not fully percolate within the defined recharge area. This shall be reinforced through the implementation of **MM HYD-2** provided below.
- BBLDWP will monitor the discharge and percolation performance as needed to comply with permit requirements for the Sand Canyon Recharge Area Project operation. This shall be reinforced through the implementation of **MM HYD-3**

provided below.

Through the above operational scenario, the Sand Canyon Recharge Area Project can be implemented without significantly impacting the Bear Valley Basin, and would therefore have a less than significant potential to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management. Based on the analysis presented in the "Sand Canyon Recharge Evaluation" (**Appendix 4**), the Sand Canyon Recharge Area Project would enhance groundwater recharge, and increase groundwater supplies. Furthermore, through the implementation of **MMs HYD-2 and HYD-3**, sustainable groundwater management of the Bear Valley Basin will be maintained. Impacts would be less than significant through the implementation of **MMs HYD-2 and HYD-3**.

HYD-2: The Sand Canyon Recharge Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall <u>not</u> occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.

HYD-3: BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and the DDW.

Based on the above discussion, the proposed use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area and possible landscape irrigation would have a less than significant potential to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management, as these proposed uses will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in Bear Valley Basin. Therefore, impacts would be less than significant with mitigation.

<u>Summary of Impacts to Groundwater from Replenish Big Bear Program Operations</u>

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

HYD-2: The Sand Canyon Recharge Area Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall <u>not</u> occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.

HYD-3: BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and DDW.

Level of Significance After Mitigation: Significant and Unavoidable

Mitigation measures are required to reduce impacts from the Sand Canyon Recharge Area Project operations on the underlying groundwater basin. **MM HYD-2** would ensure that the Sand Canyon Recharge Area Project operations occur within the defined area on **Figure 3-32**, and that operations would be modified if the recharge was not to fully percolate. **MM HYD-3** would require BBLDWP to monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation. When combined with **MM HYD-2**, monitoring the discharge and percolation performance would ensure that operations of the Sand Canyon Recharge Area Project would continue to enable the Bear Valley Basin to operate sustainably.

As discussed above, no mitigation is available to reduce the potential for a significant and unavoidable impact to occur to the Lucerne Valley Basin as a result of Program Implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged to the Lucerne Valley Basin on an annual basis. Therefore, the Program would have a significant and unavoidable potential to substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the Lucerne Valley Basin.

However, it is important to note that BBARWA's wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Basin, but only considered to be an accounting for that supply (**Appendix 23**). Since BBARWA's wastewater is not included in the LV Basin's annual yield calculation or claim to that supply, BBARWA is not bound by the LV Basin's adjudication and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA's discretion (**Appendix 24**).

3. Erosion or Siltation

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-676 – 4-681)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. However, given the small size area in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) is necessary to enforce BMPs is provided below to minimize potentially significant impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

With implementation of such BMPs and compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: During operation of the proposed Ancillary Facilities, the presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Operation of the proposed Ancillary Facilities would require mitigation (**MMs HYD-5 and HYD-6**) to minimize the potential for these changes resulting in a less than significant impact.

Program Category 3: Solar Evaporation Ponds

Construction: Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by

BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems.

Operation: During operation of the proposed Solar Evaporation Ponds, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for erosion on- or off-site could occur. Thus, in order to avoid a potentially significant impact, and in accordance with the San Bernardino County MS4 Permit, mitigation to address this issue is required. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Impacts would be less than significant with the implementation of mitigation (**MMs HYD-5** and **HYD-6**) to address implementation of a drainage management plan or otherwise retain runoff onsite.

Program Category 4: BBARWA WWTP Upgrades

Construction: Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWPF and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino MS4 Permit, where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite erosion would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems.

Operation: During operation of the proposed BBARWA WWTP Upgrades, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for erosion on- or off-site could occur. Thus, in order to avoid a potentially significant impact, and in accordance with the San Bernardino County MS4 Permit, mitigation to address this issue is required. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Impacts would be less than significant with the implementation of mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite is required to reduce the potential for erosion on- or off-site impacts to a level of less than significant (**MMs HYD-5** and **HYD-6**).

Combined Project Categories

The majority of the proposed facilities would not result in the addition of impervious surfaces that would result in substantial erosion or siltation onsite or offsite. The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels.

The presence of new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential erosion and siltation impacts to a level of less than significant.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall

select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-5: Prior to commencement of construction of project facilities, the implementing agency shall be required to either:

(1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:

(2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall

identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.

HYD-6: For long-term mitigation of site disturbances at Program facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.

Level of Significance After Mitigation: Less Than Significant

MM HYD-4 would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects.

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur. Impacts would be less than significant with mitigation.

MM HYD-6 would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level.

4. Flooding

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-682 – 4-686)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which

the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could ultimately provide flooding on- or off-site without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP), where applicable, would be required; these plans would ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. This measure would control urban runoff and thereby reduce potential on- and off-site flooding. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential for on- or off-site flooding would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant with mitigation incorporated.

Operation: During operation of the proposed Ancillary Facilities, the presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for on- or off-site flooding could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, on- and off-site flooding is minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in flooding onsite or offsite would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for flooding on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. Thus, **MMs HYD-5 and HYD-6** are required to minimize the potential for significant impacts to the drainage patterns on- and off-site. Impacts would be less than significant through the implementation of mitigation.

Program Category 3: Solar Evaporation Ponds

Construction: Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or the San Bernardino County MS4 Permits (WQMP), where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: During operation of the proposed Solar Evaporation Ponds, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for on- or off-site flooding could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, on- and off-site flooding is minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in flooding onsite or offsite would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for flooding on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. **MMs HYD-5 and HYD-6** are required to minimize the potential for significant impacts to the drainage patterns on- and off-site. Impacts would be less than significant through the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades

Construction: Impacts would be the same as those identified under Program Category 1, 2, and 3. Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWPF and associated infrastructure and facilities may pose a greater

potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP), where applicable, would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would result in flooding on- or off-site would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant.

Operation: During operation of the proposed BBARWA WWTP Upgrades, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential for on- or off-site flooding could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, on- and off-site flooding is minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur, thereby avoiding potentially significant impacts under this issue. **MM HYD-6** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for erosion on- or off-site to an insignificant level, thereby avoiding potentially significant impacts under this issue. **MMs HYD-5 and HYD-6** are required to minimize the potential for significant impacts to the drainage patterns on- and off-site. Impacts would be less than significant through the implementation of mitigation.

Combined Project Categories

The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts below significance thresholds to a level of less than significant.

The presence of new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential on- and off-site impacts to a

level of less than significant.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: ***MMs HYD-4*** *through* ***HYD-6*** *are required to minimize potential on- and off-site flooding impacts in addition to the mitigation provided below.*

HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-5: Prior to commencement of construction of project facilities, the implementing agency shall be required to either:

(1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater;

or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:

(2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.

HYD-6: For long-term mitigation of site disturbances at Program facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.

Level of Significance After Mitigation: Less Than Significant

MM HYD-4 would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would control urban runoff and thereby reduce potential on- and off-site flooding.

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential on- or off-site flooding would occur. Impacts would be less than significant with mitigation.

MM HYD-6 would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future Program facility sites to minimize the potential for on- or off-site flooding to an insignificant level.

5. Runoff

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantially additional sources of polluted runoff or impede or redirect flood flows?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-693 – 4-697)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could ultimately provide flooding on- or off-site without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP) where applicable would be required; these plans would ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant through the implementation of mitigation.

Operation: During operation of the proposed Ancillary Facilities, the presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to increase the rate or amount of

surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, no substantial increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would occur, and impacts are minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Mitigation (**MM HYD-5**) is required to address the potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

Program Category 3: Solar Evaporation Ponds

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would therefore be less than significant.

Operation: During operation of the proposed the Solar Evaporation Ponds, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide

substantial additional sources of polluted runoff could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, no substantial increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would occur, and impacts are minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Mitigation (**MM HYD-5**) is required to address the potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

Program Category 4: BBARWA WWTP Upgrades

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1, 2, and 3. Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWPF and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would therefore be less than significant.

Operation: During operation of the proposed the BBARWA WWTP Upgrades, the presence of new facilities at the site and changes in the extent of permeable or impermeable surfaces could alter the direction and volume of overland flows during both wet and dry periods. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which

would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Implementation of drainage improvements within future Program facility sites during construction will ensure that, during operation, no substantial increase the rate or amount of surface runoff in a manner that would result in create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff would occur, and impacts are minimized to a less than significant level. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Mitigation (**MM HYD-5**) is required to address the potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant with mitigation incorporated.

Combined Project Categories

The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns, which could result in excess runoff. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts such that a significant impact would not occur.

The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff and reduce impacts to a less than significant level.

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: **MMs HYD-4** and **HYD-5** are required to minimize potential for Program facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.*

HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-5: Prior to commencement of construction of project facilities, the implementing agency shall be required to either:

(1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:

(2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.

Level of Significance After Mitigation: Less Than Significant

MM HYD-4 would require implementation of BMPs for projects of less than one acre in

size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would control urban runoff and thereby reduce potential for substantial polluted runoff.

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Impacts would be less than significant with mitigation.

6. Flood Flows

Threshold: Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which impede or redirect flood flows?

Finding: Less than significant. (Draft EIR, pp. 4-693 – 4-697)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. The proposed Ancillary Facilities could alter the existing drainage patterns at each project site. The majority of the proposed Ancillary Facilities would be installed within disturbed sites, but it is possible that monitoring wells at the Solar Evaporation Ponds and the pipe outlet and erosion control at Sand Canyon would be installed within undeveloped areas. However, given the small area (less than one half acre) within which the proposed Ancillary Facilities will be installed, it is not anticipated that substantial changes in drainage would occur. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could ultimately provide flooding on- or off-site without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP) where applicable would be required; these plans would ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would impede or redirect flood flows.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the

implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential to impede or redirect flood flows would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would be less than significant with the implementation of mitigation.

Operation: Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), a majority of the Ancillary Facilities would be installed mostly outside of flood hazard areas. However, the proposed Sand Canyon pipe outlet and erosion control would be installed within a 1% annual chance flood area. Additionally, much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding events. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to impede or redirect flows could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. **MM HYD-5** requires that either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur, which would avoid a potentially significant impact related to creation or contribution of runoff that would impede or redirect flood flows. Thus, this Program Component would have no potential to impede or redirect flood flows, as the alterations to the Sand Canyon channel will be extremely limited, and would continue to enable runoff to flow in a controlled manner. Therefore, with the implementation of mitigation required to address the potential for Program facilities to create or contribute runoff that would impede or redirect flood flows, impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Impacts would be both the same as those discussed under Project Categories 1 and 2 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1 and 2. The proposed Solar Evaporation Ponds could alter the existing drainage patterns of the Solar Evaporation Ponds area. The Solar Evaporation Ponds would be installed within the compacted dry lakebed of Baldwin Lake, which has been previously disturbed by BBARWA operations, and the evaporation pond installation may pose a greater potential to significantly alter the drainage pattern of the

project footprint. The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would impede or redirect flood flows would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Impacts would therefore be less than significant.

Operation: Impacts would be both the same as those discussed under Project Categories 1 and 2 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding events. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to impede or redirect flows could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. **MM HYD-5** requires that either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur, which would avoid a potentially significant impact related to creation or contribution of runoff that would impede or redirect flood flows. Thus, this Program Component would have no potential to impede or redirect flood flows, as the alterations to the Solar Evaporation Ponds would continue to enable runoff to flow in a controlled manner. Therefore, with the implementation of mitigation **(MM HYD-5)** required to address the potential for Program facilities to create or contribute runoff that would impede or redirect flood flows, impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Impacts would be the same as those discussed under questions c(i) and c(ii) above. Impacts would be the same as those identified under Program Category 1, 2, and 3. The proposed BBARWA WWTP Upgrades could alter the existing drainage patterns of the BBARWA WWTP site. The BBARWA WWTP Upgrades would be installed within the existing BBARWA WWTP, which has been previously disturbed by BBARWA operations, but the AWPF and associated infrastructure and facilities may pose a greater potential to significantly alter the drainage pattern of the project footprint. The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each

site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets.

Through compliance with conditions of required permits governing storm water runoff from construction sites, potential increase in the rate or amount of surface runoff in a manner which would impede or redirect flood flows would be reduced and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Thus, impacts would be less than significant.

Operation: Impacts would be both the same as those discussed under Project Categories 1, 2, and 3 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the BBARWA WWTP Upgrades would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP site has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. During project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant potential to impede or redirect flows could occur. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. **MM HYD-5** requires that either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur, which would avoid a potentially significant impact related to creation or contribution of runoff that would impede or redirect flood flows. Thus, this Program Component would have no potential to impede or redirect flood flows, as the alterations to the BBARWA WWTP Upgrades would continue to enable runoff to flow in a controlled manner. Therefore, with the implementation of mitigation **(MM HYD-5)** required to address the potential for Program facilities to create or contribute runoff that would impede or redirect flood flows, impacts would be less than significant.

Combined Project Categories

The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns, which could result in impeding or redirecting flood flows. Compliance with the CGP, SWPPP, San Bernardino County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels.

The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for Program facilities to impede or redirect flood flows. While there are a few Program facilities that would be located within flood hazard zones, the potential to impede or redirect flows would be less than significant, as discussed above.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: ***MMs HYD-4 and HYD-5*** *is required to minimize the potential for Program facilities to impede or redirect flows.*

HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-5: Prior to commencement of construction of project facilities, the implementing agency shall be required to either:

(1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:

(2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.

Level of Significance After Mitigation: Less Than Significant

During project design, overland flows and drainage at each Program facility site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the San Bernardino County MS4 Permit. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, such that no substantial increased potential for impeding or redirecting flood flows would occur. Impacts would be less than significant with mitigation.

7. Flood Hazard

Threshold: In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to project inundation?

Finding: Less than significant. (Draft EIR, pp. 4-699 – 4-702)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: No Ancillary Facilities would be installed near Big Bear Lake, therefore seiche impacts would not be expected to occur. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), a majority of the Ancillary Facilities would be installed mostly outside of flood hazard areas. However, the proposed Sand Canyon pipe outlet and erosion control would be installed within a 1% annual chance flood area. Additionally, much of Baldwin Lake is

delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site for the Ancillary Facilities installed therein. The construction of proposed facilities would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns, and could risk of release of pollutants to due flooding without preventative measures in place. Compliance with the CGP, SWPPP, or San Bernardino County MS4 Permits (WQMP) where applicable would be required; these plans would ensure that risk of release of pollutants to due flooding is minimized to a level of less than significant.

However, as stated under question c(i) above, given the small size of the site in which the Ancillary Facilities would be developed, mitigation (**MM HYD-4**) to enforce BMPs is provided below to minimize impacts at sites that are less than an acre and are therefore not subject to the CGP or SWPPP. **MM HYD-4** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects, thereby avoiding a potentially significant impact under this issue. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing risk of release of pollutants to due flooding. With implementation of such BMPs, compliance with conditions of required permits governing storm water runoff from construction sites, and retention of runoff on site where feasible, the potential to risk of release of pollutants during construction to due flooding on or offsite is less than significant with the implementation of mitigation.

Operation: The Ancillary Facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. Should inundation occur, most pollutants, including hazardous materials, would be stored inside of structures and the potential for pollutants or contaminants to be incorporated and transported due to inundation is considered to be a less than significant impact. As stated under Program Category 1, above, seiche at Big Bear Lake could occur; however, due to the distance and the difference in elevation of the proposed Ancillary Facilities, it is not anticipated that seiche could post an impact that would result in inundation and thereby risk release of pollutants. No Program Category 2 seiche impacts would occur. However, during project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant risk of release of pollutants could occur where these issues are not addressed. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Thus, release of pollutants due to inundation impacts would be less than significant with the implementation of **MM HYD-5**. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and risk of release of pollutants to due flooding would be reduced to a level of less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Impacts would be both the same as those discussed under Project Categories 1 and 2 above. Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact.

The construction of proposed Solar Evaporation Ponds would require activities such as excavation and demolition, which would require the use of petroleum products necessary to complete construction. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing the risk of release of pollutants to due flooding. Thus, impacts would be less than significant

Operation: Impacts would be the same as those discussed under Project Categories 1 and 2 above. The Solar Evaporation Ponds would not be installed near Big Bear Lake, therefore seiche impacts would not be expected to occur. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil.

Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site for the Solar Evaporation Ponds installed therein. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. However, during project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant risk of release of pollutants could occur where these issues are not addressed. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Should inundation occur, most pollutants, including hazardous materials, would be stored inside of structures and the potential for pollutants or contaminants to be incorporated and transported due to inundation is considered to be a less than significant impact through the implementation of **MM HYD-5**. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and risk of release of pollutants to due flooding would be reduced to a level of less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Based on a review of the San Bernardino Countywide Plan Flood Hazards Map (**Figure 4.11-6**), the Solar Evaporation Ponds would be installed mostly within a 1% annual chance flood area in Baldwin Lake. Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil. Thus, the likelihood of a seiche that would pose substantial risk of injuries or major property damage to life or property next to Big Bear Lake and Stanfield Marsh was considered to be low in the San Bernardino Countywide Plan EIR, and would therefore result in a less than significant seiche and tsunami related construction impact

The construction of proposed BBARWA WWTP Upgrades would require activities such as pavement breaking, ditching, drilling, excavation and demolition, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, or San Bernardino MS4 Permits where applicable would be required. Each of these permits and plans would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets, thereby minimizing the risk of release of pollutants to due flooding. Thus, impacts would be less than significant.

Operation: Impacts would be the same as those discussed under Project Categories 1, 2, and 3 above. The BBARWA WWTP Upgrades would not be installed near Big Bear Lake, therefore seiche impacts would not be expected to occur. Due to the distance between the Big Bear Valley and the Pacific Ocean—a distance of more than 60 miles separated by mountains—the risk for tsunami is nil.

Much of Baldwin Lake is delineated as being located within the 100-year (1% annual chance) flood hazard, however, the area that is developed within BBARWA's existing WWTP has been built up to avoid the floodplain, which would remain the case internal to the BBARWA WWTP site for the AWPF and other facility upgrades installed therein. These facilities would be installed to withstand flooding, and erosion control would require ongoing maintenance to ensure continued efficacy in the event of any future flooding or inundation events. However, during project design and operation, if overland flows and drainage at each Program facility site are not assessed and drainage facilities are not designed such that no net increase in runoff would occur, a significant risk of release of pollutants could occur where these issues are not addressed. Thus, in order to avoid a potentially significant impact, mitigation to address this issue is required. Should inundation occur, most pollutants, including hazardous materials, would be stored inside of structures and the potential for pollutants or contaminants to be incorporated and transported due to inundation is considered to be a less than significant impact through the implementation of **MM HYD-5**. As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and risk of release of pollutants to due flooding would be reduced to a level of less than significant.

Combined Project Categories

The presence of all new facilities at each project site could create a new risk for pollutants within a given site to be released as a result of inundation. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for Program facilities to risk release of pollutants from inundation. Furthermore, given that the Bear Valley Basin contains areas that are located within flood hazard zones, the development of several facilities in a given area may, when combined, result in a substantial potential to release pollutants as a result of inundation; as such, mitigation is required to minimize impacts thereof.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: ***MM HYD-4 and HYD-5*** *are required to minimize the potential for Program facilities to release pollutants as a result of inundation.*

HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:

- The use of silt fences or coir rolls;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;
- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

HYD-5: Prior to commencement of construction of project facilities, the implementing agency shall be required to either:

(1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site

development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall:

(2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.

Level of Significance After Mitigation: Less Than Significant

MM HYD-4 would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would minimize risk of release thereof due to flooding inundation.

As required by **MM HYD-5**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure that pollutants are managed on site and the potential for risk of release thereof due to inundation is minimized. Impacts would be less than significant with mitigation.

I. LAND USE AND PLANNING

1. Conflicts With Plans

Threshold: Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-722, 4-725)

Explanation:

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the

communities, such as that which is proposed under this Program Category. Construction of these facilities is necessary to operate said infrastructure to support Big Bear Valley. Furthermore, construction is temporary in nature, and as such, the presence of construction equipment and workers supporting construction would not result in any permanent impacts beyond those that are discussed below under operation. Therefore, construction of the facilities proposed under this Program Category would have no potential to conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. No impacts are anticipated.

Operation: The two General Plans that pertain to the area within which the Big Bear Valley is located support the provision of adequate infrastructure to support the communities, such as that which is proposed under this Program Category.

Proposed facilities include aboveground structures such as monitoring wells and pump stations. Other facilities, such as the improvements to the channel at Sand Canyon would be located either underground or at a below ground level. In general, a majority of proposed Conveyance Pipelines would be aligned through the existing public ROW, and existing easements owned or to be acquired by BBARWA or another implementing agency to reduce the number of easements required for construction and maintenance.

The proposed new wells are anticipated to be installed south of the Sand Canyon Recharge Area and pipeline alignment (refer to **Figure 3-28** in the Program Description), or within the BBARWA WWTP site. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. The pump stations would be located within identified sites (BBARWA WWTP and Resort Storage Pond) that presently contain existing water or wastewater infrastructure facilities. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise locations for a few of the proposed Program facilities are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any project facilities that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment.

As stated above, the City of Big Bear Lake and San Bernardino County each have adopted General Plans that support the provision of adequate infrastructure, and the RTP/SCS/Connect SoCal also promotes this goal. Furthermore, the City of Big Bear Lake identifies specific goals and policies intended to support BBARWA's utilization of recycled water, in this case Program Water, in Big Bear Valley. In addition, BBARWA, BBCCSD, BBLDWP, and BBMWD would coordinate directly with local and regional agencies with jurisdiction to ensure compatibility with existing adjacent land uses and consistency with adopted plans, otherwise a potentially significant land use incompatibility could occur. **MM LU-1** is provided below to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As determined by the consistency analysis above, the proposed Program would have a less than significant potential to cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an

environmental effect through the implementation of **MM LU-1**. Impacts would be less than significant through the implementation of mitigation.

Mitigation Measures:

LU-1: Following selection of sites for future Replenish Big Bear Program related facilities, each site and associated facility shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where future facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or subsequent CEQA documentation shall be prepared that identifies the specific project design features or MMs that will be utilized to reduce potential incompatible activities or effects to below significance thresholds established in the general plan for the jurisdiction where the facility will be located.

Level of Significance After Mitigation: Less Than Significant Impact

MM LU-1 would ensure that the facilities associated with the Program are developed in appropriate areas, and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. This measure will minimize impacts below significance thresholds. For these reasons, the proposed project would result in a less than significant impact related to potential conflicts with land use plans, policies, or regulations.

J. NOISE

1. Noise Standards

Threshold: Would the Project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-768 – 4-769)

Explanation:

Construction Activities at the Sand Canyon Recharge Project

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Program construction noise level impacts at the nearby sensitive receiver locations were completed for the Sand Canyon Recharge Project. Refer to **Figure 4.14-6,** which show all sensitive receiver locations. To assess a reasonable worst-case construction scenario and account for the dynamic nature of construction activities, the Program construction noise analysis models the equipment combination with the highest reference level as a moving point source within the construction area (Program site boundary or alignment).

As shown on **Table 4.14-8**, simultaneous construction of the Sand Canyon Recharge

Conveyance Pipeline improvements, the Sand Canyon Booster Station, and the Sand Canyon Conveyance Pipeline Discharge Outlet, the highest construction noise levels are expected to be 65.5 to 72.8 dBA L_{eq} at the nearest receiver locations, estimated at 20-feet from the pipeline centerline. Appendix 8.3 of the NIA includes the detailed CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L_{eq}. Therefore, no mitigation is required for daytime construction activities at the Sand Canyon Recharge Conveyance Pipeline improvements, the Sand Canyon Booster Station, and the Sand Canyon Conveyance Pipeline Discharge Outlet as the nearest sensitive receiver locations will below the daytime noise significance threshold, and therefore less than significant.

As indicated pipeline construction would occur within 30 ft of noise sensitive residential receivers along the majority of the Sand Canyon Recharge Conveyance Pipeline, at 30 feet pipeline construction activity is estimated to generate noise levels up to 79.1 dBA L_{eq} for segments with paving and 75.6 dBA L_{eq} for the segments without paving. Appendix 8.4 of the NIA includes the CadnaA construction noise model inputs. These noise levels would not exceed the applicable daytime noise level limit of 80 dBA L_{eq}. Therefore, no mitigation is required for daytime construction activities at the Sand Canyon Recharge Area, as the nearest sensitive receiver locations will below the daytime noise significance threshold, and therefore less than significant.

The highest construction noise levels during the evaporation pond and Sand Canyon Monitoring Well drilling activities noise levels are expected to exceed the daytime and nighttime noise level limit at the nearest receiver locations within 125 ft and 325 ft, respectively, utilizing the Composite Reference Noise Level (dBA L_{eq}) and Reference Power Level (dBA L_w) shown in **Table 4.14-5** to determine reference noise levels for well drilling. Since the exact locations of these activities are unknown, and these activities would occur for 24 hours a day for up to two weeks, thus without mitigation these activities will exceed the applicable noise level limit during the day and nighttime if located within 325 ft of residences. This would be considered a significant impact. Therefore, mitigation is required for nighttime well drilling activities that are a part of the Sand Canyon Monitoring Well.

With implementation of the barrier, enforced through **MM NOI-1**, noise levels would be reduced to a maximum noise level of 69 dBA L_{eq} at 50 ft. None of the potential monitoring well locations would be located within 50 ft of residences.

Conclusion: **Combined Program Categories**

To evaluate whether the Program will generate potentially significant short-term (construction) noise levels at nearby receiver locations, a construction related daytime noise level limit of 80 dBA L_{eq}, a nighttime noise level limit of 70 dBA L_{eq} (FTA Transit Noise and Vibration Impact Assessment Manual, 2018). The construction noise analysis shows that with **MM NOI-1**, the nearby receiver locations will satisfy the daytime and nighttime significance thresholds during Program construction activities. Therefore, the noise impacts due to Program construction noise is considered *less than significant* at all receiver locations.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

NOI-1: To comply with the day- and nighttime noise level limit during the whole of well drilling activities, noise barriers with a minimum height of 14 ft shall be erected surrounding the drilling rig monitoring well locations such that the pumps, compressors, and the drilling rig are completely shielded from nearby residential areas. An effective barrier requires a weight of at least 2 pounds per square foot of face area with no decorative cutouts, perforations, or line-of-sight openings between shielded areas and the source. Examples of temporary barrier material includes 5/8-inch plywood, 5/8 inch oriented-strand board, or sound blankets capable of providing a minimum sound transmission loss (STC) of 27 or a NRC of 0.85.

K. PUBLIC SERVICES

1. Fire Protection

Threshold: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-800 – 4-808)

Explanation:

Program Category 1: Conveyance Pipelines

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the Conveyance Pipelines would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, Conveyance Pipeline construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency

evacuations, which could result in a potentially significant impact. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. Therefore, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Additionally, during construction, because all Conveyance Pipelines would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment, which could result in a potentially significant impact on fire protection and emergency response. As such, the **MM WF-2** is required, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, Conveyance Facility construction activities would have a less than significant impact to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees that would support BBARWA's AWPF operations. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of this Program Category is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

Operation of the Conveyance Facilities would not result in any hazardous conditions that could involve fire protection or emergency response. Thus, there would be no impacts as a result of conveyance facility operation. As a result, no new fire protection facilities or altered facilities would be required.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the Conveyance Pipelines would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15,**

Population and Housing, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, Ancillary Facility construction activities could have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures to connect the Ancillary Facilities to the pipeline system, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. Therefore, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Additionally, during construction, because all Ancillary Facilities would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment, which could result in a potentially significant impact on fire protection and emergency response. As such, the **MM WF-2** is required, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, Ancillary Facility construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

<u>Operation</u>: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees that would support BBARWA's AWPF operations. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of this Program Category is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed Ancillary Facilities may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA and the Program Team agencies have developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially

hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the Ancillary Facilities may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Any improvements requiring structures would be required to meet applicable fire and building codes. The indirect increase in population and the use of hazardous materials associated with Ancillary Facility development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

Program Category 3: Solar Evaporation Ponds

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the Solar Evaporation Ponds would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As the Solar Evaporation Ponds would be installed entirely within the BBARWA WWTP Site, it is not anticipated that project construction activities would have any effects on circulation, which would potentially impact emergency access and response times in the Program Area. However, during construction, because the Solar Evaporation Ponds would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed project requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, Solar Evaporation Ponds construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees that would support BBARWA's AWPF operations, which includes the operation of the Solar Evaporation Ponds. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of this Program Category is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed upgrades to BBARWA's WWTP may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the Solar Evaporation Ponds may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Furthermore, given that the BBARWA WWTP currently operates using hazardous materials in support of the undisinfected secondary treatment operations area wastewater presently undergoes, the addition of new hazardous materials in support of the full advanced treatment train proposed to be installed at the existing WWTP is not anticipated to exacerbate circumstances such that additional fire protection services would be needed. The indirect increase in population and the use of hazardous materials associated with Solar Evaporation Ponds development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

This Program Category would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, this Program Category would not result in a direct need for additional fire protection services.

Construction: Construction of the BBARWA WWTP Upgrades would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. Therefore, implementation of **MMs TRAN-1** and **WF-1** would reduce

construction impacts related to fire protection and emergency response service response times to a less than significant level. Additionally, during construction, because the BBARWA WWTP Upgrade facilities would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed project requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed BBARWA WWTP Upgrades would not significantly contribute to the need for fire protection and emergency response services. Thus, BBARWA WWTP Upgrades construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of the Program would increase resiliency and sustainability of regional water resources management within the Big Bear Valley area; however, it is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed upgrades to BBARWA's WWTP may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the BBARWA WWTP Upgrades may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Furthermore, given that the BBARWA WWTP currently operates using hazardous materials in support of the undisinfected secondary treatment operations area wastewater presently undergoes, the addition of new hazardous materials in support of the full advanced treatment train proposed to be installed at the existing WWTP is not anticipated to exacerbate circumstances such that additional fire protection services would be needed. Any Program improvements requiring structures would be required to meet applicable fire and building codes. The indirect increase in population and the use of hazardous materials associated with Program development would result in a nominal

increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

Combined Program Categories

The Program would not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Big Bear Valley area. Therefore, the Program would not result in a direct need for additional fire protection services.

Construction: Construction of the Program facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity.

As discussed in **Subchapter 4.18, Transportation**, project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, implementation of **MMs TRAN-1** and **WF-1**, which include the development and implementation of a TMP and traffic control plan, would be required to minimize impacts to fire protection and emergency service response times. Additionally, during construction, because all Program facilities would be installed in locations designated within a very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed project requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that construction of the proposed facilities would not significantly contribute to the need for fire protection and emergency response services. Thus, project construction activities would have a less than significant potential to contribute to the need for fire protection and emergency response services with the implementation of mitigation.

Operation: Operation and maintenance of the proposed infrastructure would be anticipated to be provided primarily by existing water and wastewater agency personnel, with perhaps a maximum of five new permanent employees. The number of new employees required would be minimal and the majority of new employees are expected to be drawn from existing population within the Big Bear Valley. The nominal potential increase in potential new residents within the Big Bear Valley may contribute to a minimal increased demand for fire protection services.

Implementation of the Program would increase resiliency and sustainability of regional

water resources management within the Big Bear Valley area; however, it is not forecast to change land uses or otherwise create activities that could increase demand for additional fire protection services beyond that anticipated in the General Plans of the local jurisdictions within the Big Bear Valley.

In addition, operational activities associated with the proposed upgrades to BBARWA's WWTP may require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given individual project site. However, a HMBP would be required for use of chemicals during operation (i.e., sulfuric acid, sodium hypochlorite, ammonia sulfate, hydrogen peroxide, sodium bisulfite, etc.). Additionally, BBARWA has developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all Federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Although the Program may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards and procedures would result in a nominal increase in service. Furthermore, given that the BBARWA WWTP currently operates using hazardous materials in support of the undisinfected secondary treatment operations area wastewater presently undergoes, the addition of new hazardous materials in support of the full advanced treatment train proposed to be installed at the existing WWTP is not anticipated to exacerbate circumstances such that additional fire protection services would be needed. Any Program improvements requiring structures would be required to meet applicable fire and building codes. The indirect increase in population and the use of hazardous materials associated with Program development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

TRAN-1 <u>Prepare and Implement Construction Transportation Management Plan</u>

A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:

<u>Construction Traffic Routes and Staging Locations:</u> The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.

Damage Repair: The TMP shall include the following requirements to minimize damage to the existing roadway network:

- A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.

- The roadway network along the proposed water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.

- Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.

Coordination with Emergency Services: The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.

Coordination with Active Transportation Facilities: The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.

Coordination with SBCTA: If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.

Coordination with Caltrans: If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.

Coordination with Nearby Construction Sites: The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:

- All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;

- All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and

- The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.

Transportation Control and Safety: The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.

Plan Approval: The TMP shall be submitted to SBCTA for review and approval.

WF-1: Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.

WF-2: Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.

Level of Significance After Mitigation: Less Than Significant

MMs TRAN-1 and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project construction area(s) due to lane and/or road closures during project construction. As a result, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to fire protection and emergency response service response times to a less than significant level. Furthermore, **MM WF-2** would ensure that construction of the proposed facilities would not significantly contribute for the need for fire protection and emergency response services through ensuring the fire prevention equipment is readily available in the event of an accidental fire event during construction.

2. Police Protection

Threshold: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for Sheriff Law Enforcement Services?

Finding: Less than significant with mitigation. (Draft EIR, 4-809s - 4-813)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the Conveyance Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Conveyance Facilities would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the Conveyance Facilities is not forecast to require any new

permanent employees, as the five new employees are anticipated to support BBARWA's AWPF operations. Similar to the discussion under issue (a) above, the development of the Conveyance Facilities would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Program is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Conveyance Facilities, as these facilities are located belowground, are unlikely to increase the demand for police protection services, and is not anticipated to require police department service. Thus, no impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the Ancillary Facilities would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Ancillary Facilities would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed facilities is not forecast to require any new permanent employees, as the five new employees are anticipated to support BBARWA's AWPF operations. Similar to the discussion under issue (a) above, the development of the Ancillary Facilities would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Ancillary Facilities is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above.

Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Ancillary Facilities could require police department service in the unlikely event of an emergency or trespass at a given project site. However, it is anticipated that all sites containing above ground facilities associated with this Program Category would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues. Thus, impacts would be less than significant through the implementation of mitigation.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the Solar Evaporation Ponds would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Solar Evaporation Ponds would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed Solar Evaporation Ponds is not forecast to require more than five additional permanent employees. Similar to the discussion under issue (a) above, the development of the Solar Evaporation Ponds would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Solar Evaporation Ponds is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Solar Evaporation Ponds could require police department service in the unlikely event of an emergency or trespass. However, the Solar Evaporation Ponds would be installed within an area that is already fenced, located within BBARWA's WWTP Site, and thus, it is not anticipated that the potential for trespass or for an emergency

to occur would be greater than that which exists at present. Thus, police protection impacts are anticipated to be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of the BBARWA WWTP Upgrades would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the BBARWA WWTP Upgrades would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed BBARWA WWTP Upgrades is not forecast to require more than five additional permanent employees. Similar to the discussion under issue (a) above, the development of the BBARWA WWTP Upgrades would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the BBARWA WWTP Upgrades is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the BBARWA WWTP Upgrades could require police department service in the unlikely event of an emergency or trespass. However, the BBARWA WWTP Upgrades would be installed within an area that is already fenced, located within BBARWA's WWTP Site, and thus, it is not anticipated that the potential for trespass or for an emergency to occur would be greater than that which exists at present. Thus, police protection impacts are anticipated to be less than significant.

Combined Program Categories

Construction: Construction of the Program would require temporary employment. It is unknown whether these employees would be drawn from within or outside the Big Bear Valley area; however, as discussed under **Subchapter 4.15, Population and Housing**, it

is reasonable to assume that many employment opportunities would be filled by workers drawn from the Big Bear Valley area or its close proximity. Similar to the discussion under issue (a) above, the development of the Program would not cause a substantial temporary increase in population that would substantially increase demand for police protection services. Construction of the Program is not forecast to change land uses or otherwise create activities that could increase demand, even temporarily, for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan. It is anticipated that the construction equipment and active construction areas would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed facilities is not forecast to require more than five additional permanent employees. Similar to the discussion under issue (a) above, the development of the Program would not cause a substantial increase in population that would substantially increase demand for police protection services. Implementation of the Program would increase the resiliency and sustainability of regional water resources management within the Big Bear Valley area; however, it is not forecast to change land uses or otherwise create activities that could increase demand for additional police protection services beyond that which is anticipated in the San Bernardino Countywide Plan or City of Big Bear Lake General Plan. The Big Bear Valley area is currently served by SBCSD, the service area for which covers the whole of the Big Bear Valley, as discussed under the **Subsection 4.16.2.2**, above. Overall levels of police service would be increased based upon the future population growth and demands of the local agencies within the Big Bear Valley. Operational activities associated with the Program could require police department service in the unlikely event of an emergency or trespass at a given project site. However, it is anticipated that all sites containing above ground facilities associated with the Program would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass, furthermore, many of the proposed facilities would be installed within existing facilities, which presently receive police protection services. Though a significant demand for police protection services is not anticipated, **MM PS-1** is proposed to address trespass issues, and thereby minimize the potential for increased police protection service demands. Thus, impacts would be less than significant through the implementation of mitigation.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

PS-1: The Program facilities shall be fenced or otherwise have access controlled to prevent illegal trespass to attractive nuisances during operation and construction equipment shall be fenced or otherwise have access controlled at the close of each work day. Furthermore, the Program facilities shall include security lighting to deter illegal trespass to attractive nuisances as part of both operation and

construction. The security lighting shall be shielded from adjacent sensitive receptors, such as residences per MM AES-7 and AES−8.

Level of Significance After Mitigation: Less Than Significant

Implementation of **MM PS-1** above would minimize the potential for trespass that could exacerbate police protection services. As such, impacts are less than significant.

L. TRANSPORTATION

1. Plans, Policies, and Ordinances

Threshold: Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-849 – 4-866)

Explanation:

The primary plans that address the circulation system in the Program Area are the recently adopted San Bernardino Countywide Plan and the 1999 City of Big Bear Lake General Plan. These plans address various modes of transportation, including roadway vehicle, transit, bicycle, and pedestrian, and includes objectives and policies related to these modes of transportation. However, the proposed Program generally consists of short-term activities (i.e., construction) that will not conflict with any policies, except maintenance of access to the uses adjacent to the roadways, and limited maintenance activities in the future after the facilities—primarily pipelines— have been installed and are operational.

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

This Program Category includes upgrades to the BBARWA WWTP, to construct a new 2.2 MGD AWPF to produce up to 2,200 AFY of Program Water. The upgrades include the construction of a 40,000 SF building which would provide the following upgrades and new construction in order of process flow:

- Upgrades to the Oxidation Ditches
- New Denitrification Filter
- New UF and RO filtration membranes
- New UV Disinfection
- New AOP
- New Pellet Reactor: 0.22 MGD

The BBARWA WWTP Treatment Upgrades also includes the installation of about 1,350

LF of brine pipeline anticipated to be sized between 8” to 10” from the pellet reactor to the Solar Evaporation Ponds.

Additionally, the BBARWA WWTP upgrades also includes installation of a 50 gpm brine pump station and a 1,520 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

This Program Category also accounts for the installation of installation of 2 MW of solar panels at BBARWA’s WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA’s Administration Building.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-6**, below.

For the BBARWA AWPF, construction would require 70 workers per day. A maximum of 55 truck trips would occur on a given day of construction.

The 55 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the BBARWA WWTP Upgrades Project staging areas. In contrast, it is assumed that construction employees (up to 70 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the BBARWA WWTP Upgrades should all of the construction activities occur on the same day will be about 55 large truck and an estimated 70 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the BBARWA WWTP Upgrades is estimated to be 235 passenger car equivalent trips or a total of 125 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

	JCT. SR-38:	4,900
	Lakeview Drive:	10,800
	Stanfield Cutoff:	20,500
	JCT SR-38 East:	11,200
	JCT. SR-38 West:	5,000

- Baldwin Lake Road: 3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Construction of the BBARWA WWTP Upgrades, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as BBARWA WWTP Upgrades construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the majority of the proposed facilities (pump stations, AWPF, and solar arrays) would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. BBARWA WWTP Upgrades construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sideways be completely blocked without an alternative or detour option for these modes of transport. Construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of BBARWA WWTP Upgrades implementation, and would reduce impacts to a less than significant level.

Operation: It is anticipated that operation of the BBARWA AWPF would utilize onsite employees to support the ongoing operation of the BBARWA AWPF, in addition to any necessary maintenance. However, an anticipated five new employees would be required to support Program facilities.

BBARWA WWTP Upgrades operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to **Chapter 5, Topical Issues** for a full discussion of the Program's Growth

Inducing Impacts). In addition, the proposed BBARWA AWPF would not result in a substantial addition of employees related to operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the BBARWA WWTP Upgrades, generally in support of the proposed AWPF at BBARWA's WWTP Site). As such, BBARWA WWTP Upgrades operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities. The proposed BBARWA WWTP Upgrades would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.[106] As the proposed BBARWA WWTP Upgrades Project would not generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

The Program would ultimately install a pipeline utilizing one of three alignments from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-13**, below.

For the Stanfield Marsh/Big Bear Lake Discharge Project, construction would require 20 workers per day. A maximum of 20 truck trips would occur on a given day of construction.

The 20 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Stanfield Marsh/Big Bear Lake Discharge Project staging areas. In contrast, it is assumed that construction employees (up to 20 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Stanfield Marsh/Big Bear Lake Discharge Project should all of the construction activities occur on the same day will be about 20 large truck and an estimated 20 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Stanfield Marsh/Big Bear Lake Discharge Project is estimated to be 80 passenger car equivalent trips or a total of 40 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

	JCT. SR-38:	4,900
	Lakeview Drive:	10,800
	Stanfield Cutoff:	20,500
	JCT SR-38 East:	11,200
	JCT. SR-38 West:	5,000
	Baldwin Lake Road:	3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Stanfield Marsh/Big Bear Lake Discharge Project construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Stanfield Marsh/Big Bear Lake Discharge Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where the Stanfield Marsh/Big Bear Lake Discharge Project would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sideways be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with

the Stanfield Marsh/Big Bear Lake Discharge Project could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Stanfield Marsh/Big Bear Lake Discharge Project implementation, and would reduce impacts to a less than significant level.

Operation: Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the Stanfield Marsh/Big Bear Lake Discharge Project facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Stanfield Marsh/Big Bear Lake Discharge Project facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per month. An anticipated five new employees would be required to support Program facilities, but these are generally attributable to the BBARWA AWPF operations.

Public roadway ROW and portions of Big Bear Valley's circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. The Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment would be installed underground, and no other facilities would be installed within public ROW. As a result, Stanfield Marsh/Big Bear Lake Discharge Project would not physically interfere with the transportation circulation system during operation. Impacts would be less than significant.

Replenish Big Bear Component 3: Shay Pond Discharge Project

The Program would ultimately install about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF. As such, this Replenish Big Bear Component includes the installation of up to 6,310 LF of conveyance pipeline.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-19**, below.

For the Shay Pond Discharge Project, construction would require 10 workers per day. A maximum of 10 truck trips would occur on a given day of construction.

The 10 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to

access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Stanfield Marsh/Big Bear Lake Discharge Project staging areas. In contrast, it is assumed that construction employees (up to 10 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Shay Pond Discharge Project should all of the construction activities occur on the same day will be about 10 large truck and an estimated 10 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Shay Pond Discharge Project is estimated to be 40 passenger car equivalent trips or a total of 20 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

	JCT. SR-38:	4,900
	Lakeview Drive:	10,800
	Stanfield Cutoff:	20,500
	JCT SR-38 East:	11,200
	JCT. SR-38 West:	5,000
	Baldwin Lake Road:	3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Shay Pond Discharge Project construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Shay Pond Discharge Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where the Shay Pond Discharge Project would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of

the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sideways be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the Shay Pond Discharge Project could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Shay Pond Discharge Project implementation, and would reduce impacts to a less than significant level.

Operation: Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the Shay Pond Discharge Project facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Shay Pond Discharge Project facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per month. An anticipated five new employees would be required to support Program facilities, but these are generally attributable to the BBARWA AWPF operations.

Public roadway ROW and portions of Big Bear Valley's circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. The Shay Pond Discharge Project would be installed underground, and no other facilities would be installed within public ROW. As a result, Shay Pond Discharge Project would not physically interfere with the transportation circulation system during operation. Impacts would be less than significant.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

The Program would include between 23 and 57 acres of Solar Evaporation Ponds at the BBARWA WWTP site. The ponds would be segmented into different storage basins to allow for evaporation of the brine stream in a cycle of filling with brine, allowing the brine to evaporate, and then removing remaining brine. This Replenish Big Bear Component includes the installation of up to two monitoring wells.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in **Table 4.4-25**, below.

For the Solar Evaporation Ponds Project, construction would require 10 workers per day. A maximum of 100 truck trips would occur on a given day of construction.

The 100 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Solar Evaporation Ponds Project staging areas. In contrast, it is assumed that construction employees (up to 10 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Solar Evaporation Ponds Project should all of the construction activities occur on the same day will be about 100 large truck and an estimated 10 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Solar Evaporation Ponds Project is estimated to be 310 passenger car equivalent trips or a total of 110 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

	JCT. SR-38:	4,900
	Lakeview Drive:	10,800
	Stanfield Cutoff:	20,500
	JCT SR-38 East:	11,200
	JCT. SR-38 West:	5,000
	Baldwin Lake Road:	3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Construction of the Solar Evaporation Ponds Project, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Solar Evaporation Ponds Project construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the Solar Evaporation Ponds Project would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. Solar Evaporation Ponds Project construction could result in other short-term

circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sideways be completely blocked without an alternative or detour option for these modes of transport. Construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Solar Evaporation Ponds Project implementation, and would reduce impacts to a less than significant level.

Operation: It is anticipated that operation of the Solar Evaporation Ponds Project would utilize onsite employees to support the ongoing operation of the BBARWA AWPF, inclusive of the Solar Evaporation Ponds, in addition to any necessary maintenance. However, an anticipated five new employees would be required to support Program facilities.

Solar Evaporation Ponds Project operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to **Chapter 5, Topical Issues** for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed Solar Evaporation Ponds Project would not result in a substantial addition of employees related to operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Solar Evaporation Ponds Project, generally in support of the proposed AWPF at BBARWA's WWTP Site). As such, Solar Evaporation Ponds Project operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities. The proposed Solar Evaporation Ponds Project would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.[107] As the proposed Solar Evaporation Ponds Project would generate fewer than 100 peak hour trips during any peak hour and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

The Sand Canyon Recharge Project involves extracting Program Water stored in Big Bear Lake to a temporary storage pond using existing infrastructure owned by the Resort. The Program Water will then be pumped and conveyed to the Sand Canyon Recharge Area using a new pump station and pipeline.

As part of the Program, the following will be constructed:

- A new 471 gpm pump station near the Resort Storage Pond, at the BBLDWP Sand Canyon Well site, to convey water to Sand Canyon.

- A new 8-inch pipeline that will discharge into Sand Canyon and will be approximately 7,200 feet in length.

- Two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.

- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon.

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for this Program Category is shown in Table 4.4-31, below.

To implement the Sand Canyon Recharge Project, construction would require 30 workers per day. A maximum of 25 truck trips would occur on a given day of construction.

The 25 truck round trips per day and employee vehicles would utilize SR-18 and SR-38 to access the Big Bear Valley, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the Sand Canyon Recharge Project staging areas. In contrast, it is assumed that construction employees (up to 30 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

The average total trips associated with construction of the Sand Canyon Recharge Project should all of the construction activities occur on the same day will be about 25 large truck and an estimated 30 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the Sand Canyon Recharge Project is estimated to be 105 passenger car equivalent trips or a total of 55 trips total. The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear

Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

	JCT. SR-38:	4,900
	Lakeview Drive:	10,800
	Stanfield Cutoff:	20,500
	JCT SR-38 East:	11,200
	JCT. SR-38 West:	5,000
	Baldwin Lake Road:	3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Sand Canyon Recharge Project construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the majority of the proposed facilities (pump stations, etc.) would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise locations for the Sand Canyon Monitoring Wells are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, no land use conflicts would be anticipated to occur during either construction or operation for the Sand Canyon Monitoring Wells. However, Sand Canyon Recharge Project construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where pipelines would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of

intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sideways be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the pipelines could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Sand Canyon Recharge Project implementation, and would reduce impacts to a less than significant level.

Operation: Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the various proposed facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Sand Canyon Recharge Project's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Sand Canyon Recharge Project facility per month. An anticipated five new employees would be required to support Program facilities, generally attributable to the BBARWA AWPF operations.

Public roadway ROW and portions of Big Bear Valley's circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. Sand Canyon Recharge Conveyance Pipelines would be installed underground, and no other facilities would be installed within public ROW. As a result, Sand Canyon Recharge Conveyance Pipelines would not physically interfere with the transportation circulation system during operation.

Program operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to **Chapter 5, Topical Issues** for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed Sand Canyon Recharge Project would not result in a substantial addition of employees related to operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program, generally in support of the proposed AWPF at BBARWA's WWTP Site). As such, Sand Canyon Recharge Project operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities. The proposed Sand Canyon Recharge Project would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.[108] As the proposed Sand Canyon Recharge Project would generate fewer than 100 trips per day and would contribute fewer

than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other longterm circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

Combined Program Categories

Construction: During construction of the Program, there would be a temporary increase in heavy duty truck trips and construction worker vehicle trips on the existing local roadway network in the Program Area. Construction-related trips would consist primarily of passenger cars and light-duty pickup trucks used by construction workers, haul truck trips to export soil from the construction sites, and occasional movement of heavy equipment and materials to and from the construction sites using large trucks and trailers. It is assumed that most construction materials will be delivered during the day using medium to large trucks. The construction schedule for the specific projects proposed under the Program is shown in **Table 4.18-1**, below.

The maximum number of truck trips on a given day of construction are anticipated to be 210 truck round trips per day and construction vehicles would utilize SR-18 and SR-38 to access the Program Area, coming from the Mountain Region, or otherwise coming to the Mountains from the high desert or San Bernardino Valley Region. Construction delivery vehicles would also utilize local streets in the City of Big Bear Lake and unincorporated San Bernardino County to access the BBARWA WWTP Upgrades, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment, Shay Pond Discharge Project, Solar Evaporation Ponds Project, and Sand Canyon Recharge Project staging areas. In contrast, it is assumed that construction employees (up to 140 workers total, though this may be an overestimate, given that some workers may be assigned to multiple projects, depending on the overlapping of future Program phasing) will stay locally during the work week and use SR-18 and local roads for access to facility site locations.

While the maximum number of trucks on the roadways in Big Bear Valley are expressed above, the average total trips associated with construction of the Program's facilities should all of the construction activities occur on the same day will be about 150 large truck and an estimated 140 round trips by employees. Assuming a passenger car equivalent of three trips per truck, total maximum daily trips in support of the proposed Program is estimated to be 770 passenger car equivalent trips or 350 trips. However, the average daily trips if all activities were to occur on the same day is projected to be about 500 passenger car equivalent round trips (125 truck round trips + 125 worker round trips). The most recent traffic counts are for 2017 by Caltrans for the State Highways in Big Bear Valley. The future Average Annual Daily Traffic (AADT) values for SR-18 at the following locations were:

	JCT. SR-38:	4,900
	Lakeview Drive:	10,800
	Stanfield Cutoff:	20,500
	JCT SR-38 East:	11,200

	JCT. SR-38 West:	5,000
	Baldwin Lake Road:	3,000

The future AADT values for SR-38 at the following locations were:

- Big Bear City-Big Bear Blvd. 11,800
- JCT. SR-18: 4,000
- Stanfield Cutoff: 2,700

Program construction, including construction delivery and employee trips, would not create a significant conflict with the adopted SCAG RTP/SCS, San Bernardino County LRTP, and City of Big Bear Lake General Plan policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, as Program construction would not affect regional land use and transportation patterns or transit use. Construction would be temporary in nature, and construction within roadways in particular would not hinder existing modes of transportation from utilizing the roadways within which the proposed pipeline would be installed. Furthermore, the majority of the proposed facilities (pump stations, evaporation ponds, AWPF, and solar arrays) would be installed within facilities containing water and wastewater infrastructure, and thereby the temporary duration of construction and the activities associated with construction would not conflict with the underlying land use at these sites. Land would likely need to be acquired for the Sand Canyon Monitoring Wells. Siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise locations for a few of the proposed Program facilities are presently unknown, wells may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, no land use conflicts would be anticipated to occur during either construction or operation for the Sand Canyon Monitoring Wells. However, Program construction could result in other short-term circulation effects such as temporary alteration of the movement and circulation of roadway vehicles, public transit, bicycles, and/or pedestrians within the Program Area, as lane and/or road closures could be required temporarily where Conveyance Pipelines would be installed in public roadway ROW and construction disturbance could traverse under existing transit, bicycle, and/or pedestrian thoroughfares.

Impacts would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted ROW, such as the proximity of intersections and whether the ROW is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public ROW, or more likely, adjacent to construction areas during construction, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. However, at no point during construction would transit stops, bicycle lanes, or sideways be completely blocked without an alternative or detour option for these modes of transport. Furthermore, construction activities associated with the water Conveyance Pipelines could also result in accidental damage to the existing

roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of **MM TRAN-1**, which includes development and implementation of a construction TMP, would minimize potential conflicts with all modes of transportation as a result of Program implementation, and would reduce impacts to a less than significant level.

Operation: The Program would consist of the operation of the upgraded BBARWA WWTP, monitoring wells, pump stations, and pipeline distribution network. Maintenance vehicles would continue to be utilized as needed by the Program Team agencies to access and maintain the various proposed facilities. Once infrastructure is installed, operations would not require visits to the facilities unless unforeseen circumstances arise that would require maintenance or repair of Program's facilities. These trips would occur as needed and are anticipated to require one trip per maintenance event, with an anticipated two maintenance trips per Program facility per month. An anticipated five new employees would be required to support Program facilities.

Public roadway ROW and portions of Big Bear Valley's circulation system impacted during construction would be returned to pre-construction conditions upon completion of installation of each given facility. Water Conveyance Pipelines would be installed underground, and no other facilities would be installed within public ROW. As a result, Program components would not physically interfere with the transportation circulation system during Program operation.

Program operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, as the proposed Program would protect and help maintain existing regional water supply rather than expand future water supplies to support growth (refer to Chapter 5, Topical Issues for a full discussion of the Program's Growth Inducing Impacts). In addition, the proposed Program would not result in a substantial addition of employees related to the proposed facilities operation (an anticipated five new employees would be required in support of these agencies as a result of implementation of the Program). As such, Program operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County LRTP, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, because the proposed Program would enhance Big Bear Valley water resources, and would install water and wastewater infrastructure, rather than a land use Program that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Generally, in order for noticeable circulation impact to occur, an increase of 100 operational trips or more would need to occur.109 [110] As the proposed Program would generate fewer than 100 trips per day and would contribute fewer than 50 peak hour trips to any off-site study area intersection (both actual vehicle and in passenger car equivalent, it would not result in other long-term circulation effects such as vehicle queues exceeding available storage, transit services, or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant without mitigation.

Level of Significance Before Mitigation: Potentially Significant for Construction

Mitigation Measures:

TRAN-1: Prepare and Implement Construction Transportation Management Plan

A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:

Construction Traffic Routes and Staging Locations: The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.

Damage Repair: The TMP shall include the following requirements to minimize damage to the existing roadway network:

- A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines.

- The roadway network along the proposed Program Water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.

- Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage.

Coordination with Emergency Services: The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.

Coordination with Active Transportation Facilities: The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.

Coordination with SBCTA: If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with Mountain Transit.

Coordination with Caltrans: If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.

Coordination with Nearby Construction Sites: The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:

- All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures;

- All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and

- The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.

Transportation Control and Safety: The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.

Plan Approval: The TMP shall be submitted to SBCTA for review and approval.

Level of Significance After Mitigation: Less Than Significant

MM TRAN-1 would require implementation of designated construction roadway vehicle routes, damage repair procedures, and transportation control measures to minimize potential impacts to the movement and circulation of vehicles, public transit, bicycles, and/or pedestrians within the Program Area due to construction roadway vehicle volumes and lane and/or road closures during Program construction. In addition, MM TRAN-1 would require coordination with Mountain Transit and designation of alternative bicycle and pedestrian routes during Program construction to compensate for impacts to transit stops and bicycle and pedestrian facilities. As a result, implementation of MM TRAN-1 would reduce construction transportation circulation system impacts to a less-than-significant level.

2. Design Hazards

Threshold: Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-870 – 4-873)

Explanation:

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

Construction: During construction, the BBARWA WWTP Upgrades Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. It is anticipated that the proposed BBARWA WWTP Upgrades Project would be installed entirely within the confines of the BBARWA WWTP. However, construction of the proposed facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the BBARWA WWTP Upgrades Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The BBARWA WWTP Upgrades Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The BBARWA WWTP Upgrades Project facilities may include new or improved driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for both the San Bernardino County unincorporated areas. As such, the BBARWA WWTP Upgrades Project would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the Program Area. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Construction: During construction, the Stanfield Marsh/Big Bear Lake Discharge Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. Lane and/or road detours or closures may be required where the Stanfield Marsh/Big Bear Lake Discharge Project would be installed within public ROW. Construction equipment and materials may also be staged temporarily within the public ROW. Lane detours or closures have the potential to increase conflicts between vehicles, bicyclists, and pedestrians; however, implementation of existing regulations and policies for road closures and lane detours within active construction areas would reduce

the potential for Program construction to increase hazards in the Program Area. However, although construction of the proposed Stanfield Marsh/Big Bear Lake Discharge Project could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when Stanfield Marsh/Big Bear Lake Discharge Project construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Stanfield Marsh/Big Bear Lake Discharge Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Stanfield Marsh/Big Bear Lake Discharge Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. Once the pipelines are installed belowground, it is not anticipated that any aboveground hazards would remain once the pipelines are operational. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

Replenish Big Bear Component 3: Shay Pond Discharge Project

Construction: During construction, the Shay Pond Discharge Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. Lane and/or road detours or closures may be required where the Shay Pond Discharge Project would be installed within public ROW. Construction equipment and materials may also be staged temporarily within the public ROW. Lane detours or closures have the potential to increase conflicts between vehicles, bicyclists, and pedestrians; however, implementation of existing regulations and policies for road closures and lane detours within active construction areas would reduce the potential for Program construction to increase hazards in the Program Area. However, although construction of the proposed Shay Pond Discharge Project could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when Shay Pond Discharge Project construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Shay Pond Discharge Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Shay Pond Discharge Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. Once the

pipelines are installed belowground, it is not anticipated that any aboveground hazards would remain once the pipelines are operational. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

Construction: During construction, the Solar Evaporation Ponds Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. It is anticipated that the proposed Solar Evaporation Ponds Project would be installed entirely within the confines of the BBARWA WWTP. However, construction of the proposed facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Solar Evaporation Ponds Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Solar Evaporation Ponds Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The Solar Evaporation Ponds Project facilities may include new or improved driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for both the San Bernardino County unincorporated areas. As such, the Solar Evaporation Ponds Project would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the Program Area. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

Construction: During construction, the Sand Canyon Recharge Project could temporarily change the built configuration of intersections and roadways within the Program Area as described above. Lane and/or road detours or closures may be required where water Conveyance Pipelines would be installed within public ROW. Construction equipment and materials may also be staged temporarily within the public ROW. Lane detours or closures have the potential to increase conflicts between vehicles, bicyclists, and pedestrians; however, implementation of existing regulations and policies for road closures and lane detours within active construction areas would reduce the potential for Sand Canyon Recharge Project construction to increase hazards in the Program Area. However, although construction of the proposed Sand Canyon Recharge Project facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when

Sand Canyon Recharge Project construction is completed. The potential conflicts between construction trucks and automobiles on local roadways would be considered a potentially significant impact. The implementation of **MM TRAN-1** would reduce the Sand Canyon Recharge Project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

Operation: The Sand Canyon Recharge Project would not include alterations to existing roadway alignments or intersections in the Program Area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The proposed Sand Canyon Recharge Project facilities may include new driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for both the San Bernardino County unincorporated and City of Big Bear Lake areas. As such, the Program would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the Program Area. Therefore, no operational impacts related to transportation hazards would occur. No impacts are anticipated.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: Implementation of **MM TRAN-1** is required to achieve a less than significant impact.*

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM TRAN-1** would reduce the Program's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of **MM TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

3. Emergency Access

Threshold: Would the Project result in inadequate emergency access?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-873 – 4-876)

Explanation:

Replenish Big Bear Component 1: BBARWA WWTP Upgrades Project

Construction: BBARWA WWTP Upgrades Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact

emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during BBARWA WWTP Upgrades Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the BBARWA WWTP Upgrades Project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced treatment facility, would be provided in accordance with applicable regulations, such as the California Fire Code, and submitted for review to the applicable local agencies. As such, the BBARWA WWTP Upgrades Project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 ft and a minimum turning radii of 25 ft inside and 45 ft outside. Therefore, operational impacts related to emergency access would be less than significant.

Replenish Big Bear Component 2: Stanfield Marsh/Big Bear Lake Discharge Project

Construction: Stanfield Marsh/Big Bear Lake Discharge Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Stanfield Marsh/Big Bear Lake Discharge Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the Stanfield Marsh/Big Bear Lake Discharge Project would not block roadways or driveways as the proposed pipelines would be installed belowground. Therefore, no operational impacts related to emergency access would occur.

Replenish Big Bear Component 3: Shay Pond Discharge Project

Construction: Shay Pond Discharge Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and

WF-1 would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Shay Pond Discharge Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the Shay Pond Discharge Project would not block roadways or driveways as the proposed pipelines would be installed belowground. Therefore, no operational impacts related to emergency access would occur.

Replenish Big Bear Component 4: Solar Evaporation Ponds Project

Construction: Solar Evaporation Ponds Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Solar Evaporation Ponds Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be required to reduce impacts to a less than significant level.

Operation: Operation of the Solar Evaporation Ponds Project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced treatment facility, would be provided in accordance with applicable regulations, such as the California Fire Code, and submitted for review to the applicable local agencies. As such, the Solar Evaporation Ponds Project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 ft and a minimum turning radii of 25 ft inside and 45 ft outside. Therefore, operational impacts related to emergency access would be less than significant.

Replenish Big Bear Component 5: Sand Canyon Recharge Project

Construction: Sand Canyon Recharge Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the Program Area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. **MMs TRAN-1** and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Sand Canyon Recharge Project construction. Implementation of **MMs TRAN-1** and **WF-1**, would be

required to reduce impacts to a less than significant level.

Operation: Operation of the Sand Canyon Recharge Project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced treatment facility, would be provided in accordance with applicable regulations, such as the California Fire Code, and submitted for review to the applicable local agencies. As such, the Sand Canyon Recharge Project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 ft and a minimum turning radii of 25 ft inside and 45 ft outside. Therefore, operational impacts related to emergency access would be less than significant.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: Implementation of **MM TRAN-1** and **WF-1** is required to achieve a less than significant impact. **MM WF-1** is repeated below for reference.*

WF-1: Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.

Level of Significance After Mitigation: Less Than Significant

MMs TRAN-1 and **WF-1** would require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the Program construction area(s) due to lane and/or road closures during Program construction. As a result, implementation of **MMs TRAN-1** and **WF-1** would reduce construction impacts related to emergency access to a less than significant level.

M. TRIBAL CULTURAL RESOURCES

1. Tribal Cultural Resources

Threshold: Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: (i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-882 – 4-889)

Explanation:

In response to the AB 52 consultation initiated in December of 2022, the singular tribe that was notified under AB 52 (YSMN) requested consultation. YSMN requested continued participation with this project's CEQA process and future projects implemented under the Program. Concerns expressed include the following: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; concerns over impacting the viewshed of important locations within the YSMN's place of creation; and, presence of Native American monitors during future ground disturbing activities.

As discussed under **Subsection 4.19.2.1,** above, the Big Bear Valley lies in the heart of the homeland of the Serrano people, which is centered in the San Bernardino Mountains. The Yuhavetum (or Yuhaaviatam) clan's territory stretched from the Big Bear Valley to the present-day Highland area in the San Bernardino Valley. However, the YSMN's creation story and oral history are intrinsically tied to Baldwin Lake and the surrounding area. The Serrano people who make up several tribes, focused herein on the YSMN as a result of the YSMN's request for consultation with BBARWA and other agencies that make up the Program Team, had a variety of technological skills that they used to acquire food, shelter, and clothing as well as to create ornaments and decorations. Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, grinding, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink. Much of this material cultural, elaborately decorated, does not survive in the archaeological record. However, construction activities associated with the proposed Program may result in a substantial adverse change in the significance of a TCR including impacts to a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe.

Program Category 1: Conveyance Pipelines

Construction: Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the Program APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the

fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE, including the APE for the Conveyance Pipelines, due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the APE that could be impacted. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of specific the Baldwin Lake Pipeline Alignment Option, and indeed other Conveyance Pipeline alignments under the Program could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the proposed soil-disturbing activities that could extend below the topsoil surface level when implementing the proposed Conveyance Pipelines, it is possible that the development of the Program could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, the Program could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-4** be implemented to protect tribal cultural resources. **MM TCR-1**, which would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. Through the implementation of the above mitigation measures, Conveyance Pipeline impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a tribal cultural resource exists.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE due to water movement and the presence of water historically—

as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the Program APE that could be impacted. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of Ancillary Facilities under the Program could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the Ancillary Facility's proposed soil-disturbing activities that could extend below the topsoil surface level, it is possible that the development of the Ancillary Facilities could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, the development of the Ancillary Facilities could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-4** be implemented to protect tribal cultural resources. **MM TCR-1** would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. Through the implementation of the above mitigation measures, Ancillary Facility impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, no potential to impact a tribal cultural resource exists.

Program Category 3: Solar Evaporation Ponds

Construction: Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural Resources**, most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in much of the Program APE due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the APE that could be impacted, particularly as a result of the soil export required to install the Solar Evaporation Ponds. For instance, the use of Baldwin Lake is part of the

Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of the Solar Evaporation Ponds could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the Solar Evaporation Ponds' proposed soil-disturbing activities that could extend below the topsoil surface level, it is possible that the development of the Program could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, development of the Solar Evaporation Ponds could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-5** be implemented to protect tribal cultural resources. **MM TCR-1** would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. **MM TCR-5** would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important tribal cultural resource to the YSMN, is protected. Through the implementation of the above mitigation measures, Solar Evaporation Ponds impacts would be less than significant.

Operation: The potential impacts from construction are discussed in detail above. The only operational impacts that may occur are those related to the changes to Baldwin Lake that would occur from construction and operation of the Solar Evaporation Ponds. This is because the Solar Evaporation Ponds lining could potentially impact the viewshed of Baldwin Lake. However, in the consultation with YSMN, YSMN and BBARWA agreed to enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important tribal cultural resource to the YSMN, is protected. This would be enforced through **MM TCR-5,** which the implementation of which would ensure that impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Based on the sensitivity assessment presented in **Subchapter 4.6, Cultural**

Resources, most of the APE, nearly 94 of 110 acres, lies within the lakebed of Baldwin Lake, while much of the rest is along natural drainages. This doesn't negate the fact that, in spite of the unlikelihood for tribal cultural resources to remain beneath the ground in

much of the Program APE due to water movement and the presence of water historically—as neither the lakebed of Baldwin Lake nor natural drainages would have been considered suitable for permanent villages in ancient times—tribal cultural resources may still exist within the BBARWA WWTP Upgrades APE that could be impacted. For instance, the use of Baldwin Lake is part of the Serrano people's history, and thereby is considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a tribal cultural resource. Thus, implementation of specific projects under the Program could encounter historical resources of value to California Native American Tribes and cause a significant impact on them.

Due to the BBARWA WWTP Upgrades' proposed soil-disturbing activities that could extend below the topsoil surface level, it is possible that the development of the BBARWA WWTP Upgrades could disturb native soils that may inadvertently uncover historic archaeological resources, including those of tribal heritage or otherwise may disturb the cultural landscape important to the YSMN. Thus, the BBARWA WWTP Upgrades could result in a significant impact on TCRs where the input of the YSMN intended to protect such resources is not implemented.

In consultation with the YSMN, it was requested that the following **MMs TCR-1 through TCR-4** be implemented to protect tribal cultural resources. **MM TCR-1** would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. Through the implementation of the above mitigation measures, BBARWA WWTP Upgrades impacts would be less than significant.

<u>Operation</u>: The potential impacts from construction are discussed in detail above. No operational impacts are anticipated, as once the facilities are installed, the BBARWA WWTP Site would continue to operate in a manner similar to that which occurs at present, which would minimize the potential for impacts to Baldwin Lake and other tribal cultural resources to occur. Impacts would be less than significant.

Level of Significance Before Mitigation: Potentially Significant
Mitigation Measures:

TCR-1 Tribal Monitoring

> Due to the heightened cultural sensitivity of the proposed Program Area, at the discretion of the YSMN, a tribal monitor shall be present for all ground-disturbing activities that occur within the proposed Program Area (which includes, but is not

limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). At the discretion of the YSMN, a sufficient number of tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the consultant, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

TCR-2 Treatment of Cultural Resources

If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the YSMN Cultural Resources Management Department, the archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a TCR, avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a tribal monitor representing the YSMN, unless otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the implementing agency and YSMN prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include

measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).

Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an AAM-accredited facility within San Bernardino County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project implementing agency to pay for those fees.

All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS, the Lead Agency, and YSMN.

TCR-3 Inadvertent Discoveries of Human Remains/Funerary Objects

In the event that any human remains are discovered within the Program Area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an ESA physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately who shall notify YSMN and the Lead Agency. The Lead Agency shall then immediately contact the San Bernardino County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified MLD, shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.

Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that

shall not be subject to future subsurface disturbances. The Lead Agency/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.

It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

TCR-4 Pre-construction Cultural Sensitivity Training

Due to the heightened cultural sensitivity of the proposed project area Program Area, a tribal monitor representing YSMN or a tribal representative of YSMN shall conduct a cultural sensitivity training at the start of construction for all on-site project personnel. The training may speak to, but is not limited to, the general cultural sensitivity of the area, the types of cultural resources that may be identified during construction, and the protocols for inadvertent discoveries.

TCR-5 Tribal Consultation for Aesthetics of Treatment Plant Modification

The Lead Agency and consultant shall consult with YSMN regarding the aesthetics of the WWTP modifications, specifically regarding the color palette. The consultation will address how the design elements can incorporate a natural-looking aesthetic in order to blend into the culturally significant Baldwin Lake landscape.

Level of Significance After Mitigation: Less Than Significant

To minimize future impacts on historical resources of value to California Native American Tribes, specifically the YSMN, the following MMs will be implemented. These measures have been developed by the YSMN to ensure protection of important TCRs, beginning with MM TCR-1, which would require tribal monitoring for the Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. MM TCR-2 would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. MM TCR-3 addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. MM TCR-4 would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. MM TCR-5 would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important tribal cultural resource to the YSMN, is protected. Implementation of MMs TCR-1 through TCR−5, would ensure that implementation of the Program would not result in a significant impact on historical resources of value to California Native American

Tribes.

2. Tribal Cultural Resources

Threshold: Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in Public Resources Code section 5024.1?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-890 – 4-895)

Explanation:

The YSMN were contacted by BBARWA under AB 52. The YSMN requested continued participation with the Program CEQA process and future projects implemented under the Program. Concerns expressed include the following: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; and presence of tribal monitors during future ground disturbing activities. Through the incorporation of **MMs** provided below, BBARWA concludes that the requests of the YSMN will be met under the Program umbrella.

According to the findings in the cultural resources study (**Appendix 13)** and the analysis found in **Subchapter 4.6, Cultural Resources**, the Program has a relatively low potential to impact (alter or destroy) a TCR. Physical modifications to the environment in the vicinity of Baldwin Lake (east of the Big Bear Airport) are particularly sensitive, but new facilities throughout the Big Bear Valley may encounter TCRs.

Program Category 1: Conveyance Pipelines

Construction: Based on the research results summarized above under **Subsection 4.19.2.1,** and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of the Baldwin Lake Pipeline Alignment Option, and indeed each of the Conveyance Pipeline alignments could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by the Conveyance Pipeline projects. These measures are intended to address concerns expressed by the YSMN which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from Conveyance Pipeline implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by future Conveyance Pipeline projects. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR−4** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-4,** TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations Construction: Based on the research results summarized above under **Subsection 4.19.2.1,** and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of Ancillary Facilities under the Program could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by future Ancillary Facility projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from Ancillary Facility implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed

Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by future Ancillary Facility projects. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-4** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-4,** TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Based on the research results summarized above under **Subsection 4.19.2.1,** and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of Solar Evaporation Ponds under the Program could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by future Solar Evaporation Ponds projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from Solar Evaporation Ponds implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program

infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by the Solar Evaporation Ponds. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-5** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. **MM TCR-5** would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important TCR to the YSMN, is protected. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR−1 through TCR-5,** TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

<u>Program Category 4: BBARWA WWTP Upgrades</u>

<u>Construction</u>: Based on the research results summarized above under **Subsection 4.19.2.1,** and direct experience with the YSMN, many of the Program infrastructure projects have the potential to expose subsurface resources. Furthermore, as discussed under issue (a), above, the use of Baldwin Lake is part of the Serrano people's history, and thereby may be considered a part of the YSMN cultural landscape, and that cultural landscape thereby serves as a TCR. Thus, implementation of BBARWA WWTP Upgrades under the Program could encounter TCRs of value to California Native American Tribes and cause a significant impact on them. Mitigation is identified below that will be implemented by future BBARWA WWTP Upgrades projects. These measures are intended to address concerns expressed by the YSMN, which responded to BBARWA's AB 52 consultation process. Therefore, potentially significant impacts from BBARWA WWTP Upgrades implementation may affect TCRs, but with implementation of the mitigation identified below, such potential impacts can be mitigated to a less than significant impact level.

According to the findings in the **Subchapter 4.6, Cultural Resources**, which contains the detailed findings of and serves as the cultural resources study for the Program, the proposed Program has a modest potential to impact (alter or destroy) a TCR. Based on the research results summarized above and direct experience with the YSMN, many of the Program

infrastructure projects have a potential to expose subsurface TCR. In light of the evidence presented by the YSMN in support of this and other projects in the Big Bear Valley, there is a potential for significant TCRs to be unearthed or otherwise impacted by construction. Mitigation is identified below that will be implemented by the BBARWA WWTP Upgrades. As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, **MMs TCR-1 through TCR-4** are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with **MM TCR-1**, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. **MM TCR-2** would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. **MM TCR-3** addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. **MM TCR-4** would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. These measures are intended to address concerns expressed by YSMN, which responded to BBARWA's AB 52 consultation request in December of 2022. Through implementation **MMs TCR-1 through TCR-4,** TCR impacts from implementation of the facilities proposed by this Program Category would be less than significant.

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: **MMs TCR-1** through **TCR-5** are required to minimize impacts to TCR values that have been determined by the Lead Agency to be significant.*

TCR-1 Tribal Monitoring

Due to the heightened cultural sensitivity of the proposed Program Area, at the discretion of the YSMN, a tribal monitor shall be present for all ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). At the discretion of the YSMN, a sufficient number of tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the consultant, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties

review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

TCR-2 Treatment of Cultural Resources

If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the YSMN Cultural Resources Management Department, the archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a TCR, avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a tribal monitor representing the YSMN, unless otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the implementing agency and YSMN prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).

Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an AAM-accredited facility within San Bernardino County that can accession the

materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project implementing agency to pay for those fees.

All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS, the Lead Agency, and YSMN.

TCR-3 Inadvertent Discoveries of Human Remains/Funerary Objects

In the event that any human remains are discovered within the Program Area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an ESA physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately who shall notify YSMN and the Lead Agency. The Lead Agency shall then immediately contact the San Bernardino County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified MLD, shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.

Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Lead Agency/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties.

It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

TCR-4 Pre-construction Cultural Sensitivity Training

Due to the heightened cultural sensitivity of the proposed project area Program Area, a tribal monitor representing YSMN or a tribal representative of YSMN shall conduct a cultural sensitivity training at the start of construction for all on-site project personnel. The training may speak to, but is not limited to, the general cultural sensitivity of the area, the types of cultural resources that may be identified during construction, and the protocols for inadvertent discoveries.

TCR-5 Tribal Consultation for Aesthetics of Treatment Plant Modification

The Lead Agency and consultant shall consult with YSMN regarding the aesthetics of the WWTP modifications, specifically regarding the color palette. The consultation will address how the design elements can incorporate a natural-looking aesthetic in order to blend into the culturally significant Baldwin Lake landscape.

Level of Significance After Mitigation: Less Than Significant

As stated above under issue (a), to minimize future impacts on TCRs determined to be significant by the BBARWA in light of the data and tribal history presented in confidence to BBARWA by the YSMN, MMs TCR-1 through TCR-5 are necessary to ensure that no significant impacts to such resources will be impacted as a result of implementation of the Program. These measures have been developed by the YSMN to ensure protection of important TCR, beginning with MM TCR-1, which would require tribal monitoring for Program construction in areas of heightened cultural sensitivity at the discretion of the YSMN to determine when tribal monitoring is warranted. MM TCR-2 would ensure that, in the event that TCRs are discovered during construction of future Program facilities, the treatment of such resources meets the requirements and procedures developed by the YSMN, thereby ensuring the protection and proper treatment of such resources. MM TCR-3 addresses inadvertent discoveries of human remains and/or funerary objects, which has been provided at the request of the YSMN as part of the AB 52 consultation conducted on behalf of the Program thereby ensuring the protection and proper treatment of such resources. MM TCR-4 would ensure that construction workers are made aware of the potential heightened sensitivity for tribal and cultural resources, which would further protect such resources where such resources are uncovered during construction. MM TCR-5 would enable YSMN input on the color choice for design elements at Baldwin Lake to ensure that the viewshed, which is an important TCR to the YSMN, is protected. Implementation of MMs TCR-1 through TCR-5, would ensure that implementation of the

Program would not result in a significant impact on TCRs.

N. UTILITIES AND SERVICE SYSTEMS

1. Wastewater Treatment Requirements

Threshold: Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-926 – 4-933)

Explanation:

4.20.5.1 Water and Wastewater

The Program includes the construction of the following types of facilities:

The existing BBARWA WWTP will be upgraded to produce Program Water to serve the objectives outlined in the Program Description. These upgrades would treat wastewater to full advanced treatment at a capacity of 2.2 MGD, or approximately 2,200 AFY. The AWPF upgrades that would occur within the BBARWA WWTP are as follows:

- Oxidation Ditches
- Denitrification Filter
- UF and RO
- UV/AOP
- Pellet Reactor: 0.22 MGD

- Development between 23 and 57 acres of Solar Evaporation Ponds, depending on the total system recovery rate achieved, at BBARWA's WWTP site to accommodate 22,000 gpd to 55,000 gpd of brine concentrate.

- Installation of about 1,350 LF of brine pipeline anticipated to be sized between 8" to 10" from the pellet reactor to the Solar Evaporation Ponds.

- Installation of a 20 gpm brine pump station.

- Installation of one or more monitoring wells at the evaporation pond on the WWTP Site to monitor groundwater quality, as required by the future discharge permit.

- Installation of an anticipated 1,500 to 1,600 gpm pump station at the BBARWA WWTP to pump Program Water to Shay Pond and Stanfield Marsh.

- Installation of a new 471 gpm pump station at the Resort Storage Pond to convey water to Sand Canyon.

- Installation of a new pipeline that will discharge into Sand Canyon that will be 8" in diameter, and 7,210 feet in length.

- Installation of two monitoring wells for groundwater recharge at Sand Canyon, as required by the future discharge permit.

- Installation of about 710 LF of 4" pipeline to reach Shay Pond from either an existing pipeline or a new 6" pipeline that would be 5,600 LF (**Figure 3-34**).

- Installation of a pipeline utilizing one of three alignments shown on **Figure 3-2** from the WWTP to Stanfield Marsh in the amount of about 19,940 LF sized at 12" in diameter.

- Installation of erosion control using rip rap or similar erosion control methods, at Sand Canyon, similar to that which is shown on **Exhibit 3-1.**

- Installation of an additional 2 MW of solar panels at BBARWA's WWTP, OAC, and Administration Building site, and the BBCCSD site to the south of BBARWA's

Administration Building. The solar panels will be installed east of the old sludge building at the WWTP as a solar field, and atop the OAC and Administration Building roofs. Refer to Figure 3-37.

The development of the above facilities constitutes the construction of new and expansion or modifications to existing water and wastewater infrastructure facilities.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations The environmental effects associated with the proposed Program are documented throughout this DPEIR. The proposed Program is not anticipated to result in any significant and unavoidable construction impact for nearly every issue—no significant construction related aesthetic, agriculture, forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems, and wildfire. However, as described in Subchapter 4.5, Biological Resources, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. However, none of the Ancillary Facilities would be installed within areas that would adversely affect bird-foot checkerbloom. Therefore, the construction of the proposed Ancillary Facilities would not result in a significant biological resources impact. Therefore, Ancillary Facilities impacts under this issue are considered less than significant.

Program Category 3: Solar Evaporation Ponds

The environmental effects associated with the proposed Program are documented

throughout this DPEIR. The proposed Program is not anticipated to result in any significant and unavoidable construction impact for nearly every issue—no significant construction related aesthetic, agriculture, forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems, and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. **MM BIO-1** would minimize the potential for the Solar Evaporation Ponds to impact bird-foot checkerbloom as a result of Program implementation. In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, **MM BIO-2**, which requires preconstruction clearance surveys, shall be implemented. **MM BIO-3 and BIO-4** require orange construction fencing to be installed where special status plant species are found adjacent to a given project footprint. These measures will ensure that the bird-foot checkerbloom will be protected from construction impacts at the evaporation pond site within BBARWA's WWTP site (shown on **Figure 4.5-10**). Thus, **MMs BIO-1 through BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant. Therefore, the construction of the proposed water and wastewater facilities under this Program Category is not anticipated to cause a significant biological resources impact. Therefore, Solar Evaporation Ponds impacts under this issue are considered less than significant.

Program Category 4: BBARWA WWTP Upgrades

The environmental effects associated with the proposed Program are documented throughout this DPEIR. The proposed Program is not anticipated to result in any significant and unavoidable construction impact for nearly every issue—no significant construction related aesthetic, agriculture, forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems, and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. However, the BBARWA WWTP Upgrades would not be installed within areas that would adversely affect bird-foot checkerbloom. Therefore, the construction of the proposed BBARWA WWTP Upgrades would not result in a significant biological resources impact. Therefore, BBARWA WWTP Upgrades impacts under this issue are considered less than significant.

4.20.5.2 Stormwater Drainage

Program Category 1: Conveyance Pipelines

The proposed pipelines would be underground and would not permanently alter existing site drainage patterns because once installed, the roadways or compacted dirt within which the pipeline would be installed, would be returned to original condition or better. The pipelines would not require the construction of new or expanded stormwater drainage

facilities. Because there would be no requirement for the construction of new or expanded drainage facilities to serve the proposed project, there would be no construction impacts associated with the provision of these facilities to serve the proposed pipelines. Therefore, a less than significant impact will occur under this issue.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations For the Sand Canyon pipe outlet and erosion control, no channel modifications to the channel bottom are anticipated since it is anticipated that the Program Water stored in Big Bear Lake will percolate within the defined recharge area (as discussed below). If the Program Water does not fully percolate within the defined recharge area, the surface application discharge rate will be reduced using a VFD on the Sand Canyon Booster Station until the water does percolate within the defined recharge area. Recharge to Sand Canyon would occur through a discharge via a new pipe outlet at the top of the Sand Canyon Recharge Area at the top of the channel bank that discharges down the side slope of the channel into the channel bottom. All of these concepts will need to be coordinated with SBCFCD to ensure that the capacity of the flood control channel remains sufficient to meet the primary purpose of providing flood protection. If these improvements resulted in a decrease in surface flow entering Big Bear Lake, the impact to surface water rights under the 1977 Judgment will be evaluated, which is a part of the overall Program design, and therefore, no mitigation is necessary to ensure a less than significant impact related to the relocation or construction of new or expanded stormwater drainage facilities, the construction or relocation of which could cause significant environmental effects.

The development of Ancillary Facilities would result in the addition of impervious surfaces that could increase stormwater runoff quantity. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. Implementation of the proposed Ancillary Facilities would be housed aboveground. The proposed Ancillary Facilities would be developed within sites that are anticipated to be less than one-half acre in size. Ancillary facilities development would result in the addition of impervious surfaces that would increase stormwater runoff quantity. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. As such, mitigation (**MM UTIL-1**) that would require the implementation of a drainage plan is provided below is necessary to ensure that impacts related to stormwater drainage facilities are minimized below significance thresholds. Impacts would therefore be less than significant through the implementation of mitigation.

Program Category 3: Solar Evaporation Ponds

Impacts are the same as those identified under Program Categories 1 and 2. The development of evaporation ponds would result in the addition of impervious surfaces that could increase stormwater runoff quantity; however, these facilities would be designed to capture stormwater flow, or otherwise discharge flows in a controlled manner. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. As such, mitigation (**MM UTIL-1**) that would require the implementation of a drainage plan is provided below is necessary to ensure that impacts related to stormwater

drainage facilities are minimized below significance thresholds. Impacts would therefore be less than significant through the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades

Impacts are the same as those identified under Program Categories 1, 2, and 3. The development at the BBARWA WWTP would result in some new impervious surfaces that could increase stormwater runoff quantity; however, these facilities would be designed to discharge flows in a controlled manner. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. As such, mitigation (**MM UTIL-1**) that would require the implementation of a drainage plan is provided below is necessary to ensure that impacts related to stormwater drainage facilities are minimized below significance thresholds. Impacts would therefore be less than significant through the implementation of mitigation.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

UTIL-1: Prior to issuance of permits for construction of project facilities, the implementing agency shall prepare a drainage plan that shall be incorporated into the final site design for each Program facility, that includes design features to reduce stormwater peak concentration flows exiting the above ground facility sites (consistent with MS4 requirements) so that the capacities of the existing downstream drainage facilities are not exceeded. These design features could include bio-retention, sand infiltration, return of stormwater for treatment within the treatment plant, and/or detention facilities.

Level of Significance After Mitigation: Less Than Significant

Implementation of **MM UTIL-1** would require implementation of a drainage plan(s) to reduce downstream flows, which is sufficient to reduce the potential for impacts related to construction of stormwater facilities.

Electricity

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

The Ancillary Facilities that would be located within the BBARWA WWTP Site have been accounted for under Program Category 4, as part of the overall BBARWA WWTP Upgrades Project, as described under **Subchapter 4.7**.

The Ancillary Facilities at Sand Canyon, as part of the Sand Canyon Recharge Project, would result in operational energy demands that are estimated at: 19,079 kWh/year of

electricity. Electricity would be supplied by BVES. As such, this Program Category would result in the construction of new/expansion of existing alternative electricity infrastructure to serve the new Program facilities; however, as discussed above under **Subchapter 4.7, Energy**, the proposed Program would not cause or result in the need for additional electricity producing facilities or electricity delivery systems beyond the proposed solar system described above because the operation of the proposed Program would involve energy consumption, as described above.

The Program would be designed and constructed in accordance with the City of Big Bear Lake or the San Bernardino County's latest adopted energy efficiency standards, which are based on the California Title 24 energy efficiency standards. Title 24 standards include a broad set of energy conservation requirements that apply to the structural, mechanical, electrical, and plumbing systems in a building. For example, the Title 24 Lighting Power Density requirements define the maximum wattage of lighting that can be used in a building based on its square footage. Title 24 standards are widely regarded as the most advanced energy efficiency standards, would help reduce the amount of energy required for lighting, water heating, and heating and air conditioning in buildings and promote energy conservation. Given that connection to electricity is a minor component of the overall construction of Program facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall Program would not cause a significant environmental effect. Impacts would be less than significant.

For the Sand Canyon Monitoring Wells, given that the locations are unknown, it is possible that a given facility that would not have access electricity due to its location and the electricity services available at this location, and would require either extension of infrastructure or creation of new infrastructure to meet electricity needs at a Program facility site, mitigation (**MM UTIL-2**) will be required to examine the environmental impacts thereof. Impacts would therefore be less than significant through the implementation of mitigation.

Mitigation Measures:

UTIL-2: For future Replenish Big Bear Program projects that do not have access to electrical or natural gas connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet electricity needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical infrastructure.

Level of Significance After Mitigation: Less Than Significant

Because it is not known exactly where the Sand Canyon Monitoring Wells will be installed, there may be locations in which electricity services are not available within the immediate vicinity of a given Program site. As such, **MM UTIL-2** would ensure that a subsequent CEQA documentation is prepared for projects that require extension or development of

such infrastructure, which will ensure that any impacts are appropriately assessed and mitigated.

Telecommunications

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations The types of Ancillary Facilities proposed as part of the Program typically would not require extension of telecommunication services. However, given that the Sand Canyon Monitoring Wells that are proposed as part the Program have not been fully designed, and further the locations for which have not yet been selected, there is a potential for Sand Canyon Monitoring Wells to require extension of telecommunication infrastructure as part of operation, which could result in a potentially significant impact. As such, **MM UTIL-3** would be required to ensure that impacts related to extension of infrastructure are minimized for the proposed Sand Canyon Monitoring Wells that may require telecommunication services by requiring project-specific subsequent CEQA documentation for the Sand Canyon Monitoring Wells that may be installed within sites without immediate access to telecommunication connections. Existing telecommunication facility infrastructure is available to support the remaining Ancillary Facility sites, if needed. Given that telecommunication facility connections, where a connection is required at future facilities, are minor components of the overall construction of the Ancillary Facility, the provision of these facilities as part of the Ancillary Facility would not cause a significant environmental effect. Impacts would be less than significant through the implementation of mitigation.

Combined Program Categories

The types of facilities proposed as part of the Program typically would not require extension of telecommunication services. However, given that the facilities proposed as part the Program have not been fully designed, there is a potential for certain facilities to require extension of telecommunication infrastructure as part of operation. As such, **MM UTIL-3** would be required to ensure that impacts related to extension of infrastructure are minimized for the proposed Program projects that would require telecommunication services by requiring project-specific subsequent CEQA documentation for projects proposed at sites without immediate access to telecommunication connections.

Level of Significance Before Mitigation: Potentially Significant
Mitigation Measures:

UTIL-3: For future Replenish Big Bear Program projects that do not have access to tele-communication connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet telecommunication needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.

Level of Significance After Mitigation: Less Than Significant

Because it is not known where the Sand Canyon Monitoring Wells will be installed, there may be locations in which telecommunication services, which may be necessary to operate the monitoring wells, are not available within the immediate vicinity the Sand Canyon monitoring well sites. As such, **MM UTIL-3** would ensure that subsequent CEQA documentation is prepared for projects that require extension or development of such infrastructure, which will ensure that any impacts are appropriately assessed and mitigated.

2. Water Supplies

Threshold: Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-936 – 4-941)

Explanation:

Big Bear Valley Overall Impacts

The Program would contribute to long-term sustainability of local water supplies for the whole of the Big Bear Valley. Replenish Big Bear is a multi-benefit recycled water project that will utilize a water resource currently discharged outside of the Bear Valley Basin to secure a new drought proof local water supply that will support continued groundwater sustainability, among other benefits.

The 2020 UWMPs state the following regarding water supply reliability:

BBCCSD: *"The BBCCSD's 2020 UWMP water service reliability assessment and DRA[123] results indicate that no water shortages are anticipated within the next 25-years under normal, single dry water years, and multiple dry water years."*

BBLDWP: *"BBLDWP is projected to have sufficient supply available to meet water demands through the year 2045 for multiple-dry year conditions, which is within BBLDWP's operating safe yield of 3,100 AFY."*

As stated in **Chapter 3, Program Description**, drought conditions and a long-term decline in precipitation trends have led the local water management agencies to investigate opportunities for supplemental water supplies, which are extremely limited due to its isolated location at the top of the Santa Ana River watershed (**Figure 3-18**). As such, the Program has been designed to retain local water in Big Bear Valley to increase the sustainability of water supplies. The proposed Program is uniquely designed to deliver public benefits including a highly reliable, dedicated environmental water supply to benefit Big Bear Lake, as well as enhance water supply reliability and availability in the Big Bear Valley.

The Program would increase additional available groundwater supplies in the Bear Valley Basin through upgrades to BBARWA's WWTP to full advanced treatment, enabling for

the Program Water to be discharged to Big Bear Lake by way of Stanfield Marsh. The Program would produce 2,200 AFY of Program Water, the majority of which would be discharged to Big Bear Lake via Stanfield Marsh. The Program Water would both enhance the amount of water in Big Bear Lake, but would also enable groundwater recharge at Sand Canyon by way of a new pipeline from the Bear Mountain Resort to a discharge point at Sand Canyon (refer to **Exhibit 3-2**), which will supply up to 380 AFY of Program Water stored in Big Bear Lake for groundwater recharge. Additionally, up to 80 AFY of Program Water may be discharged to Shay Pond to replace potable water currently being utilized to support the Stickleback species. The Sand Canyon Recharge Area proposed as part of this Program would increase groundwater recharge.

The BVBGSA, which includes the same Program Team as the Program, identified two projects in the GSP to support efforts to maintain long-term groundwater sustainability. The Program was one of the identified projects.

Sustainable groundwater management was evaluated in the context of the sustainability goal for the Bear Valley Basin and the absence of undesirable results. The GSP identified Sustainable Management Criteria, which are the conditions that constitute sustainable groundwater management for the Bear Valley Basin, which included:

1. Chronic Lowering of Groundwater Levels,
2. Reductions of Groundwater in Storage,
3. Degraded Groundwater Quality,
4. Land Subsidence, and
5. Depletion of Interconnected Surface Water.

Of the above Sustainable Management Criteria—which are intended to ensure water supply reliability for the water purveyors utilizing groundwater from the Bear Valley Basin—the Program would address the chronic lowering of groundwater levels and reductions of groundwater in storage criteria.

The Program proposes the implementation of a variety of projects, as outlined in the Program Description, and listed above under question (a), Water. The Program's proposed upgrades to the BBARWA WWTP, Conveyance Facilities, and pump stations, etc. would allow more optimal management of local water supplies. The Sand Canyon Recharge Area would increase adaptive management opportunities by providing additional water that can be pumped out by BBLDWP and transferred to BBCCSD using existing interconnections and would also help achieve the Measurable Objective of groundwater level for various Management Areas. It would, according to the GSP, effectively increases Sustainable Yield by approximately 380 AFY.

Furthermore, groundwater is the only potable water supply in the Bear Valley Basin. In the past decade, BBLDWP and BBCCSD have maintained a decreasing trend in per capita demands through conservation efforts. However, while past conservation efforts have been

very effective, the agencies expect that additional demand reduction will become slower and more difficult or costly to achieve in the future. As more and more customers take advantage of water efficient fixture upgrades, low water use landscaping and adopt more efficient water use behaviors, additional opportunities for customers to further reduce water demand will become more limited. According to the GSP, if Sustainable Yield declines over time, growth in the Big Bear Valley continues and water users have limited ability for further conservation, additional supply will likely be needed in the future to maintain supply reliability. The drought proof supply provided by the Program will become more critical to maintain water reliability in times of extended drought and provide insurance against climate change uncertainty.

The water agencies in the Bear Valley Basin rely solely on groundwater to supply municipal potable water demand. Absent this Program, surface water in Big Bear Lake is not available for municipal water supply in the Big Bear Valley as Big Bear Lake is adjudicated and the natural inflows are reserved for other uses. Imported water, such as from the SWP, is not financially feasible due to the lack of infrastructure to Big Bear Valley's high elevation and isolated location. Also, there is a concern that the reliability of SWP imported supplies will continue to decrease due to multiple factors including increased demands for environmental uses and municipal demand increases with growing populations.

As described above, and within **Subchapter 4.11, Hydrology and Water Quality**, implementation of the Program requires mitigation to ensure adequate management of the Bear Valley Basin as the Program becomes fully operational. The following are operation strategies for the Sand Canyon Recharge Project, which is the only Program component that involves groundwater recharge to the Bear Valley Basin; these components shall be adhered to as part of Program implementation:

- Recharge will occur within the defined Sand Canyon Recharge Area.
- Recharge will not occur during periods where natural surface flows occur in the channel.
- Recharge will occur over a 6-month dry weather period (April-October).
- Flows will be reduced or stopped if Program Water does not fully percolate within the defined recharged area. This shall be reinforced through the implementation of **MM HYD-2** provided below.
- BBLDWP will monitor the discharge and percolation performance as needed to comply with permit requirements for the Sand Canyon Recharge Project operation. This shall be reinforced through the implementation of **MM HYD-3** provided below.

Through the above operational scenario, the Sand Canyon Recharge Project can be implemented without significantly impacting the groundwater in the Bear Valley Basin. Based on the analysis presented in the "Sand Canyon Recharge Evaluation" (**Appendix 4**), the Sand Canyon Recharge Project would enhance groundwater recharge, and increase

groundwater supplies. Furthermore, through the implementation of **MMs HYD-2 and HYD-3**, sustainable groundwater management of the Bear Valley Basin will be maintained. With the implementation of mitigation that would ensure sustainable management of the Bear Valley Basin, thereby protecting and sustaining the necessary water supply to accommodate area demands, impacts under this issue would be less than significant.

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed pipelines would require minimal water usage for dust control and concrete washout activities. Pipeline construction would occur in phases and is expected to be relatively short, lasting from several months to a year, depending on the alignment proposed under this Program Category. Therefore, water demand during construction would not be substantial. Six water trucks handling about 5,000 gallons would operate during grading and other ground moving activities to minimize fugitive dust; this is a standard construction practice, and as it is only necessary for the short duration of grading and other ground moving activities, the amount of water in support of construction would be standard and within the context of available water resources within the Big Bear Valley, and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The proposed pipelines would distribute water generated by the upgraded BBARWA WWTP to Big Bear Lake and to Shay Pond, and would distribute Program Water from Big Bear Lake to the Bear Mountain Resort pump station (through an existing pipeline) to Sand Canyon for recharge (through a new pipeline). These facilities would not require additional water for operation. Conveyance and distribution of water and brine through the proposed pipelines and Ancillary Facilities would facilitate the creation of a reliable source of water supply within the Bear Valley Basin, specifically through discharging Program Water to Big Bear Lake, recharge through the Sand Canyon Recharge Project, and through direct reuse. Therefore, impacts related to new or expanded water supply resources or entitlements would be less than significant beyond those created by the implementation of Program facilities as discussed above.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: The development of wells and Ancillary Facilities would require minimal water usage for dust control activities should grading be required to install the wells. The installation of wells may require up to 60 days of construction to complete. Therefore, given the short period of construction, water demand during construction would not be substantial and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The development of the proposed wells would not require expanded supply to operate beyond those created by the implementation of Program facilities as discussed above. Therefore, impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Impacts would be the same as those discussed under Program Categories 1 and 2 above. The development of the Solar Evaporation Ponds would require minimal water usage for dust control activities should grading be required to install the wells. The installation of the Solar Evaporation Ponds may require up to 370 days of construction to complete. Given the short period of construction, water demand during construction would not be substantial and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The development of the proposed Solar Evaporation Ponds would not require expanded supply to operate beyond those created by the implementation of Program facilities as discussed above. Therefore, impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Impacts would be the same as those discussed under Program Categories 1, 2, and 3 above. The development of the BBARWA WWTP Upgrades would require minimal water usage for dust control activities, primarily because the majority of construction would occur within developed spaces. The installation of the BBARWA WWTP Upgrades may require up to 515 days of construction to complete. Given the short period of construction, water demand during construction would not be substantial and would not require new or expanded water supply resources. Therefore, impacts would be less than significant.

Operation: The development of the proposed BBARWA WWTP Upgrades would not require expanded supply to operate beyond those created by the implementation of Program facilities as discussed above. Therefore, impacts would be less than significant.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: **MMs HYD-3** through **HYD-3** would ensure that sustainable groundwater management of the Big Bear Valley Basin will be maintained.*

HYD-2: The Sand Canyon Recharge Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall not occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.

HYD-3: BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and the California State

Water Resources Control Board Division of Drinking Water (DDW).

Level of Significance After Mitigation: Significant and Unavoidable

MMs are required to reduce impacts from the Sand Canyon Recharge Project operations on the underlying groundwater basin. **MM HYD-2** would ensure that the Sand Canyon Recharge Project operations occur within the defined area on **Figure 3-32**, and that operations would be modified if the recharge was not to fully percolate. **MM HYD-3** would require BBLDWP to monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Project operation. When combined with **MM HYD-2**, monitoring the discharge and percolation performance would ensure that operations of the Sand Canyon Recharge Project Program would continue to enable the Bear Valley Basin to operate sustainably. With the implementation of mitigation that would ensure sustainable management of the Bear Valley Basin, thereby protecting and sustaining the necessary water supply to accommodate area demands, impacts under this issue for the Bear Valley Basin would be less than significant.

3. Solid Waste

Threshold: Would the Project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-944 – 4-946)

Explanation:

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the Solar Evaporation Ponds is anticipated to result in generation of substantial construction waste, that, without mitigation, could be in excess of the capacities of local infrastructure. Given the size of the proposed 6 to 10 ponds (400 feet to 800 feet wide x 400 feet to 800 feet long x 10 feet in depth), it is anticipated that a cut amount from 1 to 2-feet of the existing grade will provide enough fill dirt to create the earthen berms of the ponds. However, it is anticipated that no more than a total of 175,000 CY of materials would be hauled off site by 15 to 30 CY trucks, as an estimated one half of the cut material will be used as fill material to enhance flood control from installation of the Solar Evaporation Ponds. An average of 50 round trips per day at a 100-mile round-trip distance would be required to accomplish the effort to remove excess materials off-site over a period of approximately six months. Therefore, a maximum of about 1,500 CY of material is anticipated to be disposed of per day, which would result in the equivalent of about 1,750 tons per day of soil being removed and hauled off-site per day, assuming that one cubic yard of soil weighs approximately 1 ton. As such, given the large amount of material that could be required to be hauled off site in support of the installation of the Solar Evaporation Ponds, generation of solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or impairment of the attainment of solid waste reduction goals could occur. As such, mitigation (**MMs UTIL-5** and **UTIL-6**) to

ensure that the soil disposed of as part of the evaporation pond installation is recycled beyond the minimum of at least 65 percent of the nonhazardous construction and demolition waste be recycled and/or salvaged for reuse per the 2022 CalGreen Code, is necessary to reduce potential impacts to a level of less than significant.

Operation: Operation of the proposed Solar Evaporation Ponds would generate dried brine. Solar Evaporation Pond maintenance is expected to occur approximately 2-3 times a year, consisting of removal of the brine, maintenance of liners and grading, removal of vegetation, and vector management. As the brine evaporates, the minerals in the concentrate are precipitated in salt crystals, which are removed periodically and disposed off-site at a disposal facility licensed to receive and dispose of such material. Since it is not known whether the brine will contain wastes (salts) that may require special disposal, the disposal location will be identified once this information becomes available. The precipitated crystal will be hauled off to an appropriate disposal facility. The amount of waste generated during the maintenance of the Solar Evaporation Ponds is not anticipated to be greater than five tons per maintenance event. The operational waste would comply with mandatory source reduction laws thereby reducing the amount of waste generated by operational activities, and therefore, implementation of the Solar Evaporation Ponds would have a less than significant potential to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Operational impacts would be less than significant.

Combined Program Categories

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

UTIL-4: The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This includes but is not limited to wood, metals, concrete, road base, soil and asphalt. The contractors for a given Replenish Big Bear Program project shall submit a recycling plan to the implementing agency for review and approval prior to issuance of permits for the construction of demoli-tion/construction activities.

UTIL-5: The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all soils that are planned to be exported from the site that can be recycled shall be recycled for re-use; alternatively, soils shall be reused on site to balance soil import/export.

Level of Significance After Mitigation: Less Than Significant

Implementation of **MM UTIL-4** will ensure that construction and demolition materials

that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities. Similarly, **MM UTIL-5** will ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycled and ultimately reuse, thereby diverting this waste stream from the local landfill. This too will minimize the potential for Program projects to generate waste in excess of local landfill capacities.

4. Solid Waste Laws

Threshold: Will the Project comply with federal, state, and local statutes and regulations related to solid waste?

Finding: Less than significant. (Draft EIR, pp. 4-948 – 4-950)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Construction of the proposed Conveyance Facilities would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., nonhazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the Conveyance Facilities would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Operation of the proposed Conveyance Pipelines would not result in the generation of solid waste. Therefore, the proposed Conveyance Pipelines would result in no impacts under this issue.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Construction of the proposed Ancillary Facilities would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste

facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., nonhazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the Ancillary Facilities would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Impacts are the same as those identified under Program Category 1. Operation of the proposed Ancillary Facilities would comply all Federal, State, and local statues related to solid waste disposal. Big Bear Lake and San Bernardino County are required to comply with AB 939, which requires diversion of solid waste from landfills through reuse and recycling. Ancillary Facilities would be required to recycle as part of the projects' operational activities. Additionally, any hazardous materials collected on the project site during either operation of future development within the Program would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, operation of the proposed Program facilities would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Operational impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Construction of the proposed Solar Evaporation Ponds would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., nonhazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the Solar Evaporation Ponds would be required, through the implementation of **MM UTIL−4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Impacts are the same as those identified under Program Categories 1 and 2. Operation of the proposed Solar Evaporation Ponds would comply all Federal, State, and local statues related to solid waste disposal. San Bernardino County, where this facility is located is required to comply with AB 939, requires diversion of solid waste from landfills through reuse and recycling. The Solar Evaporation Ponds would be required to recycle as part of the projects' operational activities. Additionally, any hazardous materials collected on the project site during operation of future development within the Solar Evaporation Ponds would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, operation of the proposed Solar Evaporation Ponds would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Operational impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Construction of the proposed BBARWA WWTP Upgrades would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities as described above in the regulatory setting. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Furthermore, other solid waste would be disposed of at an appropriately permitted solid waste facility. The daily amount of solid waste to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., nonhazardous and hazardous). Any hazardous materials collected during construction would be transported and disposed of by a permitted and licensed hazardous materials service provider. In order to ensure full compliance above and beyond Federal, State, and local management and reduction statutes and regulations related to solid waste, and avoid a potentially significant impact thereof, the BBARWA WWTP Upgrades would be required, through the implementation of **MM UTIL-4** to recycle construction and demolition materials beyond the mandated 65 percent diversion required by the 2022 CalGreen Code. Furthermore, **MM UTIL-5** would require further diversion through the recycling of soils where possible. Thus, construction impacts would be less than significant through the implementation of mitigation.

Operation: Impacts are the same as those identified under Program Categories 1 through 3. Operation of the proposed BBARWA WWTP Upgrades would comply all Federal, State, and local statues related to solid waste disposal. San Bernardino County, where this facility is located is required to comply with AB 939, requiring diversion of solid waste from landfills through reuse and recycling. The BBARWA WWTP Upgrades would be required to recycle as part of the project's operational activities. Additionally, any hazardous materials collected on the project site during operation of the BBARWA WWTP Upgrades would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, operation of the BBARWA WWTP Upgrades would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste. Operational impacts would be less than significant.

Other Physical Changes to the Environment

The proposed Program would also result in other physical changes to the environment, including future release of advanced treated water into Big Bear Lake by way of Stanfield Marsh, and possible utilization of Program Water in place of the existing water source—groundwater—in support of the Stickleback at Shay Pond, and a decrease of up to 2,200 AFY less discharge to the LV Site, for a total estimated annual discharge to Lucerne Valley averaging about 340 AFY.

No waste would be generated by the above-described other physical changes to the environment. While the reduced discharge to the LV Site does include a potential for continued and enhanced site maintenance, these activities would fall within the existing operations of the site by BBARWA, and therefore is not anticipated to result in additional waste generation. Therefore, other physical changes to the environment would comply with Federal, State, and local management and reduction statutes and regulations related to solid waste.

Combined Project Facilities

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: ***MMs UTIL-4 and UTIL-5*** *outlined under issue 4.20(a) above are required.*

Level of Significance After Mitigation: Less Than Significant

As stated above under issue 4.20(d), implementation of **MMs UTIL-4 and UTIL-5** will ensure that recyclable waste streams are diverted from the local landfill, thereby ensuring compliance above and beyond the required 65 percent waste diversion mandated by the 2022 CalGreen Code.

O. WILDFIRE

1. Response Plans

Threshold: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-961 – 4-967)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Conveyance Facilities will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Conveyance Facility construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. To minimize potential conflicts between construction deliveries and potential emergency evacuation periods, and thereby avoid a potentially significant impact, BBARWA shall establish access protocols with its construction contractors that will require deliveries to be postponed during a declared fire emergency. Thus, through the implementation of **MM WF-1** potential conflicts between Conveyance Facility construction traffic and a potential fire emergency can be avoided. Once in operation, the pipelines will be placed belowground, and therefore operation of the pipelines would not substantially impair an adopted emergency response plan or emergency evacuation plan as they would be located underground, and the roadways and ROW within which the pipelines would be installed would be returned to their original condition or better once constructed.

The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the San Bernardino County Operational Area Emergency Response Plan (SBCOAE), as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Impacts would therefore be less than significant with the implementation of **MM WF-1.**

Operation: As shown on **Figure 3-29**, none of the proposed Conveyance Facilities will operate within any of the three identified evacuation routes. Following construction, the operation of the pipelines would not substantially impair an adopted emergency response plan or emergency evacuation plan as they would be located underground. Therefore, the potential for significant impairment of any emergency response or evacuation plans is minimal, or less than significant.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Ancillary Facilities will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant

direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Program's construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. To minimize potential conflicts between construction deliveries and potential emergency evacuation periods, BBARWA shall establish access protocols with its construction contractors that will require deliveries to be postponed during a declared fire emergency. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, through the implementation of **MM WF-1** potential conflicts between Ancillary Facility-related construction traffic and a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1.**

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Ancillary Facilities will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

The Ancillary Facilities would be contained within the boundaries of their specific sites which would not include any roadways. Ancillary Facility-related vehicles would not block existing street access or use. Therefore, impacts related to emergency evacuation plans would not occur from the operation of proposed Ancillary Facilities. Operation of the proposed Ancillary Facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during Ancillary Facilities operation.

The proposed Ancillary Facilities include facilities to be developed at the BBARWA WWTP at Baldwin Lake, which includes the only facilities that will be occupied by humans (the AWPF), and would not be located within a very high FHSZ due to lack of fuel load; and the surface facilities (monitoring wells, blow off valves, and pump stations) located within very high FHSZs will have minor susceptibility to wildland fires as a result of the fact that the facilities will be cleared of all native vegetation once installed (some large

trees may be kept in place, but only those that fall outside of the mandatory setbacks for structures per the California Fire Code), and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once these Ancillary Facilities are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley. Impacts would be less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Solar Evaporation Ponds will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Solar Evaporation Ponds' construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF-1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, through the implementation of **MM WF-1** potential conflicts between Solar Evaporation Ponds-related construction traffic and a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF−1.**

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Solar Evaporation Ponds will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

The Solar Evaporation Ponds would be contained the boundaries of the BBARWA WWTP Site which would not include any roadways. Solar Evaporation Ponds-related vehicles would not block existing street access or use. Therefore, impacts related to emergency evacuation plans would occur from the installation and operation of proposed Solar Evaporation Ponds. Operation of the proposed Solar Evaporation Ponds would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during Solar Evaporation Ponds operation.

The proposed Solar Evaporation Ponds include facilities to be developed at the BBARWA WWTP at Baldwin Lake, which includes the only facilities that will be occupied by humans (the AWPF), and would not be located within a very high FHSZ due to lack of fuel load. The Solar Evaporation Ponds will have minor susceptibility to wildland fires as a result of the fact that the facilities will be cleared of all native vegetation once installed (some large trees may be kept in place, but only those that fall outside of the mandatory setbacks for structures per the California Fire Code), and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once the Solar Evaporation Ponds are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley. Impacts would be less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed BBARWA WWTP Upgrades will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the BBARWA WWTP Upgrades construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, through the implementation of **MM WF-1** potential conflicts between BBARWA WWTP Upgrades-related construction traffic and

a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1.**

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed BBARWA WWTP Upgrades will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

The BBARWA WWTP Upgrades would be contained the boundaries of the BBARWA WWTP Site which would not include any roadways. BBARWA WWTP Upgrades-related vehicles would not block existing street access or use. Therefore, impacts related to emergency evacuation plans would occur from the operation of proposed BBARWA WWTP Upgrades. Operation of the proposed BBARWA WWTP Upgrades would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during BBARWA WWTP Upgrades operation.

The proposed BBARWA WWTP Upgrades include facilities to be developed at the BBARWA WWTP at Baldwin Lake, which includes the only facilities that will be occupied by humans (the AWPF), and would not be located within a very high FHSZ due to lack of fuel load. The BBARWA WWTP Upgrades will have minor susceptibility to wildland fires as a result of the fact that the facilities will be installed within a developed site, and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once the BBARWA WWTP Upgrades are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley.

Combined Program Categories

Construction: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Program facilities will be constructed within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant.

Indirectly, construction traffic during the Program's construction window, could potentially impact traffic, primarily during large truck deliveries of material to construction sites. The construction-related impacts, although temporary, could potentially impair the implementation of or physically interfere with an adopted emergency response plan and/or emergency evacuation plan. **MM WF−1**, which requires consistency with the SBCOAE, as well as review and approval by the local agency with authority over construction within the public ROW, would be required to reduce these potential temporary significant impacts to a less than significant level. The SBCOAE provides wildfire mitigation efforts that include the goal of continuing to reduce fire hazards in San Bernardino County, and generally coordinates evacuation in the event of an area emergency, which includes area wildfires. Thus, to minimize potential conflicts between construction deliveries and potential emergency evacuation periods, BBARWA shall establish access protocols with its construction contractors that will require deliveries to be postponed during a declared fire emergency. Thus, through the implementation of **MM WF-1** potential conflicts between Program-related construction traffic and a potential fire emergency can be avoided. Impacts would therefore be less than significant with the implementation of **MM WF-1.**

Operation: Big Bear Valley has identified three primary evacuation routes to address fire emergency evacuation plans. Within the North Shore area of the Big Bear Valley, North Shore Drive (SR-38/18) is the primary evacuation route. On the south side of Big Bear Lake, SR-18 and SR-38 serve as the primary evacuation route. SR-18, west of Big Bear Dam, is a primary evacuation route from the Big Bear Valley, and SR-38, south of the Big Bear Valley, serves as the final evacuation route. See **Figure 4.10-16**.

As shown on **Figure 3-29**, none of the proposed Program facilities will operate within any of the three identified evacuation routes. Therefore, the potential for significant direct impairment of any emergency response or evacuation plans is minimal, or less than significant. Once in operation, the pipelines will be placed belowground, and therefore operation of the pipelines would not substantially impair an adopted emergency response plan or emergency evacuation plan as they would be located underground, and the roadways and ROW within which the pipelines would be installed would be returned to their original condition or better once constructed.

With the exception of Conveyance Facilities (pipelines), all proposed Program facilities (AWPF, monitoring wells, pump stations, solar, and evaporation ponds) would be contained within the boundaries of their specific sites which would not include any roadways. Program-related vehicles would not block existing street access or use. Therefore, with the exception of Conveyance Facilities (pipelines), no impacts related to emergency evacuation plans would occur from the operation of proposed Program infrastructure facilities. Operation of the proposed facilities would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts related to an adopted emergency plan would be considered less than significant during Program operation.

The proposed Program facilities include facilities on Baldwin Lake, pipelines to convey the Program Water to points of use (Stanfield Marsh, Big Bear Lake, and possibly Shay Pond) and to convey blended Lake and Program Water to the Sand Canyon Recharge Area.

The facilities to be developed at the BBARWA WWTP at Baldwin Lake includes the only facilities that will be occupied by humans (the AWPF) are not within a very high FHSZ due to lack of fuel load; the pipelines will be placed underground and will not be exposed damage during a major wildland fire; and the surface facilities (monitoring wells, blow off valves, and pump stations) located within very high FHSZs will have minor susceptibility to wildland fires as a result of the fact that the facilities will be cleared of all native vegetation once installed (some large trees may be kept in place, but only those that fall outside of the mandatory setbacks for structures per the California Fire Code), and will comply with the mandatory setbacks from any landscaping or existing trees per the California Fire Code, and that the facilities are generally not flammable, and can be replaced at modest cost if damaged. Thus, once these facilities are in place that have a less than significant potential to conflict with an emergency or evacuation plan for the Big Bear Valley. Impacts would be less than significant.

Other Physical Changes to the Environment

The additional water discharged to Big Bear Lake, change in recycled water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Thus, no impacts related to the impairment of an adopted emergency response plan or emergency evacuation plan would be anticipated to occur.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, no greater potential to impair an adopted emergency response plan or emergency evacuation plan than that which presently exists would occur as a result of implementation of the proposed Program.

Level of Significance Before Mitigation: Potentially Significant
Mitigation Measures:

WF-1: Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM WF-1** would require the preparation of a traffic control plan with comprehensive strategies to reduce disruption to traffic in general, but particularly to maintain emergency access or evacuation capabilities. Therefore, potential significant impacts to emergency access would be reduced to a less than significant level.

2. Pollutant Concentrations

Threshold: Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-968 – 4-972)

Explanation:

Program Category 1: Conveyance Pipelines

Operation: The Conveyance Pipelines would be installed in areas that are either flat or have shallow slopes. Implementation of the proposed Conveyance Pipelines would not substantially exacerbate wildfire risks, as once construction is completed, the pipelines would be located belowground.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, workers in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Conveyance Pipelines will not contribute to any substantial increase in this exposure. Due to the character of the facilities (belowground), the proposed Conveyance Pipelines would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because some Conveyance Pipelines may be installed in locations designated as high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Conveyance Pipelines require the implementation of **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Operation: The Program Area and the sites where proposed Ancillary Facilities would be

installed are either flat or have shallow slopes. The only facilities that would be located within very high FHSZs are the Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station. Implementation of the proposed Ancillary Facilities would not substantially exacerbate wildfire risks, as once construction is completed, none of the Ancillary Facilities that may be occupied will be exposed to greater high fire hazard risk than that which exists at present. The pump station at Sand Canyon would be housed within a structure that would enable maintenance workers to access the pump station, as would the monitoring wells, but no long-term occupancy by workers would occur at any facility within a very high FHSZ. This would ensure that fire risks at these facilities are not substantially exacerbated. Furthermore, for the improvements at BBARWA's WWTP, these improvements would occur within an existing developed hardscaped site, in an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley. The new structure that would be installed to house the pump station would conform to the ignition-resistant building codes codified in Chapter 7A of the CBC, and would be ignition-resistant, defensible and designed to require minimal firefighting resources for protection. Note that this would also be the case for the Sand Canyon Booster Station and Monitoring Wells.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Ancillary Facilities will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Ancillary Facilities infrastructure.

Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, generally outside of the very high FHSZ), the proposed Ancillary Facilities would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because some Ancillary Facilities may be installed in locations designated as high or very high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Ancillary Facilities require the implementation of **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

Program Category 3: Solar Evaporation Ponds

Operation: The Program Area and Solar Evaporation Ponds site would be installed within

a flat area. Implementation of the Solar Evaporation Ponds would not substantially exacerbate wildfire risks, as once construction is completed. The Solar Evaporation Ponds improvements would occur within an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed Solar Evaporation Ponds will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Solar Evaporation Ponds. Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, outside of the very high FHSZ), the proposed Solar Evaporation Ponds would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because the Solar Evaporation Ponds may be installed in locations designated as high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Solar Evaporation Ponds requires the implementation of **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

Program Category 4: BBARWA WWTP Upgrades

Operation: The Program Area and the area where proposed BBARWA WWTP Upgrades would be installed is flat. Implementation of the proposed BBARWA WWTP Upgrades would not substantially exacerbate wildfire risks, as once construction is completed, none of the Program above ground facilities that may be occupied will be exposed to greater high fire hazard risk than that which exists at present. For the improvements at BBARWA's WWTP, these improvements would occur within an existing developed hardscaped site, in an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley. The new structure that would be installed to house the AWPF and associated appurtenances would conform to the ignition-resistant building codes codified in Chapter 7A of the CBC, and would be ignition-resistant, defensible and designed to require minimal firefighting resources for protection.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley, but the proposed BBARWA WWTP Upgrades will not contribute to any substantial

increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Program infrastructure.

Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, generally outside of the very high FHSZ), the proposed BBARWA WWTP Upgrades would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because the BBARWA WWTP Upgrades may be installed in a high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed BBARWA WWTP Upgrades requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

Combined Program Categories

Operation: The Program Area and the sites where proposed facilities would be installed are either flat or have shallow slopes. The only facilities that would be located within very high FHSZs are the Sand Canyon Booster Station, pipeline, discharge and erosion control, and monitoring wells, in addition to portions of Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment. Implementation of the proposed Program would not substantially exacerbate wildfire risks, as once construction is completed, none of the Program above ground facilities that may be occupied will be exposed to greater high fire hazard risk than that which exists at present. The pump station at Sand Canyon would be housed within a structure that would enable maintenance workers to access the pump station, as would the monitoring wells, but no long-term occupancy by workers would occur at any facility within a very high FHSZ. This would ensure that fire risks at these facilities are not substantially exacerbated. Furthermore, for the improvements at BBARWA's WWTP, these improvements would occur within an existing developed hardscaped site, in an area containing very little fuel load when compared to the surrounding forested areas within the Big Bear Valley. The new structure that would be installed to house the AWPF and associated appurtenances would conform to the ignition-resistant building codes codified in Chapter 7A of the CBC, and would be ignition-resistant, defensible and designed to require minimal firefighting resources for protection. Note that this would also be the case for the Sand Canyon Booster Station and monitoring wells.

Smoke from wildfires that may occur in the severe wildland fire hazard areas surrounding Big Bear Lake may generally impact air quality throughout the Big Bear Valley region during a fire. Thus, employees in the Program Area could be exposed to the plume of smoke from a wildfire in the San Bernardino Mountains in or surrounding the Big Bear Valley,

but the proposed Program will not contribute to any substantial increase in this exposure. Due to the short-term exposure of the Program Area to a wildfire plume, no significant adverse exposure is forecast to occur for future employees that would support the proposed Program infrastructure.

Finally, due to the character of the facilities (low potential to cause ignition of a wildland fire and their location, generally outside of the very high FHSZ), the proposed Program would not contribute substantially to the uncontrolled spread of a wildfire. Thus, impacts would be less than significant.

Construction: During construction, because some Program components may be installed in locations designated as high FHSZ, construction may exacerbate fire risk temporarily as a result of accidental sparks generated by spark-producing equipment. As such, the proposed Program requires the **MM WF-2**, which would minimize fire risk during activities that would utilize spark-producing equipment by requiring spark arrestors for construction equipment that could create a spark, and requiring construction crews and vehicles to have access to functional fire extinguishers and fire prevention equipment at all times during construction. Implementation of **MM WF-2** is required to ensure that the exposure of future Program infrastructure that may be located within high or very high FHSZs would not be exposed to severe damage or loss. Impacts would be less than significant with mitigation incorporated.

Other Physical Changes to the Environment

The additional water discharged to Big Bear Lake, change in recycled water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. However, the provision of additional water resources available for use in the Big Bear Valley, which is almost entirely located within high and very high FHSZs would be beneficial to wildfire protections, as the provision of additional water would provide redundancies in the water resources available for fire flow and fire protection in the event of a wildfire.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, it is not anticipated that, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of wildfire. The continuation and enhancement of site maintenance at the LV Site would ensure that vegetation that could create greater wildfire hazard is removed and stabilized within the LV Site. This is anticipated to ensure that, even though less effluent will be discharged to the LV Site, the proposed Program would not contribute to greater wildfire risk at the LV Site than that which exists at present. Furthermore, given the high desert location of the LV Site, the area is only considered to be moderately susceptible to wildfire risk as shown on **Figure 4.10-11**.

Level of Significance Before Mitigation: Potentially Significant Mitigation Measures:

WF-2: Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.

Level of Significance After Mitigation: Less Than Significant

The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce the potential to exacerbate wildfire risks or cause a wildfire to occur, and thereby expose project occupants (there would be minimal occupants of the proposed AWPF) to pollutant concentrations from a wildfire or contribute to the uncontrolled spread of wildfire. Therefore, potential significant impacts to the spread of wildfires would be reduced to a less than significant level.

3. Infrastructure Risks

Threshold: Would the Project require the installation or maintenance of associated infrastructure (such a roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Finding: Less than significant with mitigation. (Draft EIR, p. 4-973 – 4-976)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: At this time, some Conveyance Pipelines are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure**

4.10-5. The pipeline alignments will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverse through some delineated very high FHSZ areas. The potential that such facilities can exacerbate fire risk or cause short- or long-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the pipelines and Sand Canyon Recharge Area is periodically maintained under existing conditions. Installation of those facilities in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any Conveyance Pipeline contribution to greater fire risk to a less than significant impact level. Additionally, over the long-term, the pipelines will be essentially passive and will not contribute to increased access or other activities that could contribute to greater fire risk in the future. Thus, the proposed Conveyance Pipeline would not result in any significant adverse short- or long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: The pipelines would be installed belowground. The potential for operational wildfire impacts would be negligible given that these facilities would convey water belowground, and as such, would operate in a passive manner. Therefore, no operational impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations

Construction: At this time, some Ancillary Facilities are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. The potential that such facilities can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the Sand Canyon Recharge Project is periodically maintained under existing conditions. Construction of those facilities in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Thus, the Ancillary Facilities would not result in any significant adverse short-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: At this time, some Ancillary Facilities are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake.

The potential that such facilities can exacerbate fire risk or cause short- or long-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the Sand Canyon Recharge Project is periodically maintained under existing conditions. Thus, the Ancillary Facilities would not result in any significant adverse long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Program Category 3: Solar Evaporation Ponds

Construction: At this time, Solar Evaporation Ponds are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the Solar Evaporation Ponds can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Construction of the Solar Evaporation Ponds in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Thus, the proposed Solar Evaporation Ponds would not result in any significant adverse short- term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: At this time, Solar Evaporation Ponds are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the Solar Evaporation Ponds can exacerbate fire risk or cause short- or longterm impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Thus, the proposed Solar Evaporation Ponds would not result in any significant adverse long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Program Category 4: BBARWA WWTP Upgrades

Construction: At this time, BBARWA WWTP Upgrades are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the BBARWA WWTP Upgrades can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Construction of the BBARWA WWTP Upgrades in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Thus, the proposed BBARWA WWTP Upgrades would not result in any significant adverse short-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Operation: At this time, BBARWA WWTP Upgrades are proposed to be installed within an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The potential that the BBARWA WWTP Upgrades can exacerbate fire risk or cause long-term impacts to the environment related to this hazard is minimal because site is currently, and would continue to be maintained under existing and future conditions. Thus, the proposed BBARWA WWTP Upgrades would not result in any significant adverse long-term wildfire impacts. Impacts would be less than significant with the implementation of mitigation.

Combined Program Categories

Construction: At this time, some Program infrastructure components are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments and installation of the Sand Canyon Monitoring Wells, pump station, and discharge and erosion control facilities will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment traverses through some delineated very high FHSZ areas. The potential that such facilities can exacerbate fire risk or cause short-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the pipelines and Sand Canyon Recharge Area is periodically maintained under existing conditions. Construction of those facilities in these locations could exacerbate fire risk in these areas as a result of spark-producing equipment use during operations and construction, and could therefore result in both temporary and ongoing impacts on the environment. However, the implementation of **MM WF-2** under such circumstances would be available to reduce any contribution to greater fire risk to a less than significant impact level. Therefore, potential significant impacts due to the construction of Program infrastructure would be reduced to less than significant level.

Operation: At this time, some Program infrastructure components are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments and installation of the Sand Canyon Monitoring Wells, pump station, and discharge and erosion control facilities will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment traverses through some delineated very high FHSZ areas. The potential that such facilities can exacerbate fire risk or cause long-term impacts to the environment related to this hazard is minimal because existing paved roadways will be used for the pipelines and Sand Canyon Recharge Area is periodically maintained under existing conditions. Additionally, over the long-term, the pipelines and other recharge facilities will be essentially passive and will not contribute to increased access or other activities that could contribute to greater fire risk in the future. Thus, the operation of the proposed Program would not result in any significant adverse long-term wildfire impacts with the implementation of mitigation.

Other Physical Changes to the Environment

The additional water discharged to Big Bear Lake, change in recycled water source at Shay Pond, and reduced discharge to the LV Site as a result of the proposed Program operations

would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Therefore, no further potential to exacerbate fire risk from the installation of infrastructure exists than that which has been identified under Combined Program Categories, above.

*Level of Significance Before Mitigation: Potentially Significant Mitigation Measures: Implementation of **MM WF-2** is required*

WF-2: Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.

Level of Significance After Mitigation: Less Than Significant

The implementation of MM WF-2 would require the preparation of a fire management plan/fuel modification plan for Program infrastructure proposed within very high FHSZs, and it would identify comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential significant impacts due to the installation of Program infrastructure would be reduced to less than significant level

4. Runoff Risks

Threshold: Would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Finding: Less than significant with mitigation. (Draft EIR, pp. 4-976 – 4-981)

Explanation:

Program Category 1: Conveyance Pipelines

Construction: At this time, some Conveyance Pipeline alignments are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverses through some delineated very high FHSZ areas.

While the proposed pipelines have a small surface footprint that can be constructed within existing paved roadways to minimize potential fire hazards, the installation could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Thus, implementation of **MM WF−2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Conveyance Pipelines can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Conveyance Pipelines to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: The pipelines would be installed belowground. The potential for operational wildfire impacts would be negligible given that these facilities would convey water belowground, and as such, would operate in a passive manner. Therefore, no operational impacts are anticipated.

Program Category 2: Ancillary Facilities including Monitoring Wells and Pump Stations Construction: At this time, some of the Ancillary Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The installation of the Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. No construction, other than that which would occur as part of the Sand Canyon Recharge Project, may occur at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant construction related drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Ancillary Facilities can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the

potential for development of the Ancillary Facilities to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, some of the Ancillary Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The installation of the Sand Canyon Booster Station, Sand Canyon Recharge Conveyance Pipeline, Sand Canyon Conveyance Pipeline Discharge Outlet, and Sand Canyon Booster Station will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. The Ancillary Facilities could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Ancillary Facilities locations outside of very high FHSZs, i.e., urban areas. Additionally, no facilities, other than that which would occur as part of the Sand Canyon Recharge Project, would operate at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant operational drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire. However, as the Ancillary Facilities would be constructed within a very high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur during construction. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Ancillary Facilities can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Ancillary Facilities to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Program Category 3: Solar Evaporation Ponds

Construction: At this time, the Solar Evaporation Ponds are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Solar Evaporation Ponds would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. However, as the Solar Evaporation Ponds would be constructed within a high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur during construction. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Solar Evaporation Ponds can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Solar Evaporation Ponds to expose people or structures to

significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, the Solar Evaporation Ponds are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Solar Evaporation Ponds could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. However, as the Solar Evaporation Ponds would be constructed within a high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Solar Evaporation Ponds to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Program Category 4: BBARWA WWTP Upgrades

Construction: At this time, the BBARWA WWTP Upgrades are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The BBARWA WWTP Upgrades would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas.

However, as the BBARWA WWTP Upgrades would be constructed within a high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur during construction. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the BBARWA WWTP Upgrades can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the BBARWA WWTP Upgrades to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, the BBARWA WWTP Upgrades are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The BBARWA WWTP Upgrades could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for

development of the BBARWA WWTP Upgrades to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Combined Program Categories

Construction: At this time, some of the Program Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options traverses through some delineated very high FHSZ areas. The BBARWA WWTP Upgrades are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. Some of the Ancillary Facilities are proposed for areas designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The Solar Evaporation Ponds are proposed for an area designated as high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**.

No construction, other than that which would occur as part of the Sand Canyon Recharge Project, may occur at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant construction related drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire.

The installation of Program facilities could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction. Based on this evaluation, the construction of the Program infrastructure can be accomplished without causing potentially significant impacts through the implementation of **MM WF-2**. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Program to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Operation: At this time, some Program infrastructure components are proposed for an area designated as high or very high FHSZs on the Fire Hazard Severity Zone maps provided on **Figure 4.10-5**. The pipeline alignments and installation of the Sand Canyon Monitoring Wells, pump station, and discharge and erosion control facilities will be installed within a very high FHSZ in the southeastern portion of the City of Big Bear Lake. Furthermore, Big Bear Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment traverses through some delineated very high FHSZ areas, which could result in potentially significant potential to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire

management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Program to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Additionally, no facilities, other than that which would occur as part of the Sand Canyon Recharge Project, would operate at any of the existing stream channels that flow northward from Big Bear Valley's southern ridge. The pipe outlet and erosion control at Sand Canyon would be installed pursuant to the regulatory requirements, such that risk from runoff, post-fire slope instability, or drainage changes would not be significantly altered from that which could occur at present. Thus, no significant operational drainage changes would occur within the Program Area that may be exposed to indirect impacts from wildfire.

The Program could expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes, due to Program infrastructure locations outside of very high FHSZs, i.e., urban areas. However, as many Program facilities would be constructed within a high and very high FHSZ, it is possible that a potentially significant wildfire related drainage alteration could occur. Thus, implementation of **MM WF-2** is required; it would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during operation. Based on the above discussion, implementation of **MM WF-2** is required to minimize the potential for development of the Program to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes to a level of less than significant.

Other Physical Changes to the Environment

The additional water discharged to Big Bear Lake and change in recycled water source at Shay Pond, as a result of the Program operations would not result in any above ground impacts beyond those facilities designed to support the Program as discussed herein. Therefore, no further potential to expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes exists than that which has been identified under Combined Program Categories, above.

As the LV Site does not propose any new operations beyond those that already occur at the Site in support of the existing farming operation, continuation and enhancement of maintaining the site, and discharge of effluent to the onsite recharge basins, it is not anticipated that this change in operation at the LV Site would expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. The continuation and enhancement of site maintenance at the LV Site would ensure that vegetation that could create greater wildfire hazard is removed and stabilized within the LV Site. This is anticipated to ensure that, even though less effluent will be discharged to the LV Site, the proposed Program would not contribute to greater wildfire risk at the LV Site than that

which exists at present. Furthermore, given the high desert location of the LV Site, the area is only considered to be moderately susceptible to wildfire risk as shown on **Figure 4.10-11**.

*Level of Significance Before Mitigation: Potentially Significant Mitigation Measures: Implementation of **MM WF-2** is required.*

WF-2: Prior to construction of facilities located in areas designated as High or Very High FFHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.

The implementation of **MM WF-2** would require the preparation of a fire management plan/fuel modification plan with comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential impacts due to exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes would be less than significant.

SECTION IV.
IMPACTS THAN CANNOT BE FULLY MITIGATED TO A LESS THAN SIGNIFICANT LEVEL

The Agency hereby finds that, pursuant to State CEQA Guidelines section 15091(a)(3), despite the incorporation of Mitigation Measures or Program Alternatives identified in the EIR and in these Findings, the following environmental impacts cannot be fully mitigated to a less than significant level and a Statement of Overriding Considerations is therefore included herein:

A. AGRICULTURE AND FORESTRY RESOURCES

1. Farmland Conversion

Threshold: Would the Project convert Primate Farmland, Unique Farmland, or Farmland of Statewide significance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Finding: Significant and Unavoidable. (Draft EIR, pp. 4-53 – 4-54)

Explanation:

Other Physical Changes

The situation in Lucerne Valley is different because there are substantial agricultural resources— Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. As described under the existing conditions, the San Bernardino Countywide Plan (**Figure 4.3-3**) and the California Important Farmland Finder (**Figure 4.3-4**) identify the LV Site as being Prime Farmland and Farmland of Statewide Importance. These designations indicate that under present circumstances (water available for irrigation and active farming), the LV Site is considered to be important farmland. BBARWA currently discharges approximately up to 2,200 AFY of undisinfected secondarily treated wastewater to the 480-acre property it owns in Lucerne Valley as shown on **Figure 4.2-1**. The proposed Program will substantially reduce the volume of treated effluent discharged at BBARWA's LV Site. Once fully operational, in dry a dry year, BBARWA could send no water to the LV Site, and in a wet year like 2011, it could send up to 1,050 AFY, which could be used to irrigate grain or other alternative use/disposal. BBARWA anticipates discharging an average of about 340 AFY of undisinfected secondarily treated effluent during winter months from December through May. Discussions with the contract farmer indicate that during the winter months, it may be possible to grow grain(s) on approximately 40 acres of the LV Site. If the continuation of farming at the LV Site is infeasible due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, BBARWA would either use the LV Site unlined discharge basins (**Figure 3-35**) to handle the 340 AFY of undisinfected secondarily treated effluent or could make the treated effluent available to another party for an alternative use.

At present, a 190-acre portion of the LV Site is farmed at present within the 480-acre LV Site. Under the Program, and scenario described above, 40 acres of land would continue to be farmed, removing about 150 acres of utilized designated Prime Farmland or Farmland of Statewide Importance (refer to **Figures 4.3-2, 4.3-3** and **4.3-4**) from production. If the LV site cannot continue to be farmed due to lack of sufficient water, lack of sufficient demand for the crop, or is infeasible due to cost of continuing the farming operation by the farmer, or, if BBARWA ultimately pursues alternative uses for the treated effluent, an estimated total of 190-acres of Farmland, about 40% of the site, would be removed from production. Further, since the purpose of farming at the site to date has been to reuse the water until recycling in Big Bear Valley would be feasible, BBARWA does not anticipate

continuing any crop production at the site using groundwater because of the limited water rights available in the Lucerne Valley Basin. The Lucerne Valley Basin was adjudicated as a result of the MBA Judgment in 1996. Thus, the probable loss of 190 acres or more of existing agricultural production due to the Program is considered a significant impact to Prime Farmland and Farmland of Statewide Importance.

Under the proposed Program, no feasible mitigation is available to account for this loss of Prime Farmland and Farmland of Statewide Importance. The removal of the source of water to support agricultural production at the BBARWA site is an unavoidable consequence of the proposed Program. Additionally, BBARWA has considered utilizing agricultural conservation easements to mitigate the significant loss of farmland identified in the DPEIR. Since there are no other feasible mitigation measures, utilization of an agricultural easement would not be able to fully mitigate the impact to a level of less than significant. Thus, this concept was deemed infeasible because it would neither fully reduce the significant impact to a level of less than significant, nor would it be logical to consider payment towards or creation of offsite agricultural conservation easements in this instance. This is because the Program would not eliminate the future potential for this land to return to agricultural production, but based on water availability at the LV Site, the continuation of farming 190-acres would likely be infeasible. As stated above, BBARWA's removal of the undisinfected secondary treated effluent would effectively remove the available water supply enabling the LV Site to remain Prime Farmland and Farmland of Statewide Importance, as an irrigated water source is needed to retain this designated based on the soils underlying the site. BBARWA does not hold any water rights in the MBA, or more specifically in the Lucerne Valley Basin, and therefore, the use of groundwater to continue agricultural production within this site is infeasible. The water availability in Lucerne Valley is discussed further in detail under **Subchapter 4.11**, Hydrology and Water Quality. Ultimately, with implementation of the Program, the 190 acres of Prime Farmland and Farmland of Statewide Importance under agricultural production at the LV Site will be allowed to lie fallow in the future. The potential for this fallow land to function as a source of fugitive dust in the future is addressed in the Air Quality section, **Subchapter 4.4**. (Final EIR, pp. 4-53 – 4-54.)

Level of Significance Before Mitigation: Potentially Significant

*Mitigation Measures: No feasible **MMs** exist to avoid this significant impact.*

Level of Significance After Mitigation: Significant and Unavoidable

B. BIOLOGICAL RESOURCES

1. Sensitive Species

Threshold: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Finding: Significant and Unavoidable. (Draft EIR, 4-204)

Explanation:

Stanfield Marsh/Big Bear Lake Discharge Project

Bird-foot Checkerbloom – Endangered (Federal/State)

Findings: Bird-foot checkerbloom was observed within and adjacent the proposed Program Area footprint during the floristic botanical field surveys conducted by Jacobs in June-July of 2022 and July of 2023. Approximately 100+ individual bird-foot checkerbloom were observed within and adjacent the Baldwin Lake Pipeline Alignment Option and the proposed Solar Evaporation Ponds footprint at the BBARWA WWTP (**Figure 4.5-11**). According to the CNDDB, bird-foot checkerbloom was also documented within the proposed Baldwin Lake Pipeline Alignment Option in 2019, near the west end of the alignment, as well as near the southeast corner of the BBARWA WWTP (2009). Given that bird-foot checkerbloom is present within the proposed Program Area footprint, the Program may affect this species and construction of the Baldwin Lake Pipeline Alignment Option, as currently described, is likely to adversely affect this species. If the species cannot be avoided due to the design or other engineering constraints, impacts to this species from implementation of the Baldwin Lake Pipeline Alignment Option would be significant and unavoidable. In implementing the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option, no impacts would occur and no mitigation would be required, as this species does not occur within these Alignment Options.

In order to identify the extent of the bird-foot checkerbloom, and other special status species plants within a given Program component, **MM BIO-2**, which requires preconstruction clearance surveys, shall be implemented.

The Baldwin Lake Pipeline Alignment Option is being considered by BBARWA, as it would avoid a large portion of construction within residential roadways that would otherwise occur under other Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options. If the Baldwin Lake Pipeline Alignment Option is selected, **MM BIO-5** would be necessary to minimize impacts to the bird-foot checkerbloom species to the greatest extent feasible without avoiding this Alignment Option completely, but it would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, even with the implementation of the above mitigation measures, impacts to this species cannot be fully avoided due to its presence within the Baldwin Lake Pipeline Alignment Option.

While impacts to this species cannot be fully avoided, additional mitigation shall be implemented to further minimize impacts to this species to the greatest extent feasible. Thus, **MM BIO-13** would ensure that the protective **MMs** provided herein are successfully implemented for the duration of construction and operation of future Program facilities through the implementation of a Biological Resources Management Plan, which would ensure direct and indirect impacts to this species are minimized to the extent feasible.

Implementation of the following **MMs BIO-14 through BIO-25** will ensure that Program-related construction impacts, both direct, and indirect, to this species are reduced to the greatest extent feasible. However, as stated above, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. No impacts would occur to this species from implementation of the Meadow Lane Pipeline Alignment Option, West Neighborhoods Pipeline Alignment Option, and/or the East Neighborhoods Pipeline Alignment Option.

C. HYDROLOGY AND WATER QUALITY

1. Water Quality Standards

Threshold: Would the Project violate any water quality standards or waste discharge requirements?

Finding: Significant and Unavoidable. (Draft EIR, pp. 4-637 – 4-667)

Explanation:

LV Site – Impacts on Lucerne Valley Basin Groundwater Quality

With the implementation of the Program, only the flows in excess of the 2.2 MGD treatment capacity will be sent to the LV Site. The wastewater flows sent to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year, a significant volume could be sent to the LV Site, such as in a year like 2011, where approximately 1,050 AFY could have been sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future flow to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site, assuming similar hydrology occurs in the future. This volume was estimated by evaluating and averaging daily flows between 2005-2023 that exceeded the 2.2 MGD capacity. The projected average monthly discharge volumes to the LV Site, which would primarily occur in the winter and spring months, are shown in Error! Reference source not found.. The future flows discharged to the LV Site would continue to receive the same or better level of treatment under the Program so the discharge water quality would be similar to the current operation, but may have slightly lower concentrations of nitrate as N due to planned upgrades to the existing oxidation ditch process. On average, the current BBARWA effluent contains a nitrate as N and TDS concentrations of about 4 mg/L and 432 mg/L, respectively (TH&Co, 2023).

The LV Site is located within the Lucerne Hydrologic Unit, and the Colorado Basin Plan designates this groundwater basin as MUN, Industrial Supply (IND), and AGR. Per the Colorado Basin Plan, the establishment of numerical objectives for groundwater involves complex considerations since the quality of groundwater varies significantly with the depth of well perforations, existing water levels, geology, hydrology and several other factors. Until the Colorado Regional Board can complete investigations for the establishment of specific groundwater quality objectives and management practices, the objective will be to

maintain the existing water quality where feasible. The Colorado Basin Plan also specifies that groundwaters designated as MUN shall not contain concentrations of chemical constituents in excess of the MCLs specified in Title 22 of the California Code of Regulations, unless more stringent limits are applied by the Colorado Regional Board.

BBARWA's current WDR permit sets average monthly effluent limits for TN and TDS of 10 mg/L and 500 mg/L, respectively, which are the recommended MCLs. Through this permit, the Colorado Regional Board is protecting the water quality of the Lucerne Valley Basin.

As part of the WDR requirements, BBARWA installed three (3) groundwater monitoring wells upgradient and downgradient of the LV Site in 1991 and routinely samples effluent discharge quality and groundwater quality for TDS and nitrate as N to monitor for changes in the groundwater quality as a result of the discharge. As discussed under **Subsection 4.11.6.3** above, and outlined in the Groundwater Quality Evaluation at the Lucerne Valley Land Discharge Location prepared by Thomas Harder & Co (**Appendix 6**), TDS and nitrate concentrations in BBARWA effluent sent to the LV Site have historically been lower than the TDS and nitrate concentrations detected in samples from the downgradient monitoring wells at the LV Site (MW-2 and MW-3) and the upgradient monitoring well (MW-1). The average concentrations measured in the discharge as well as the upgradient and downgradient monitoring wells are shown in **Table 4.11-14**, along with the MCLs for these constituents.

Based on the review of historical data BBARWA effluent water quality, it was concluded that although the downgradient concentrations of TDS and nitrate as N are higher than the upgradient concentrations, the BBARWA discharge is not the source of the high TDS and nitrate. TDS concentrations in BBARWA effluent since 2017 show a slightly decreasing trend, while TDS concentrations in the groundwater from downgradient Monitoring Wells MW-2 and MW-3 show an increasing trend (see Error! Reference source not found.), which suggests that the two are not correlated. Furthermore, the downgradient concentrations are higher than the BBARWA effluent concentrations, therefore, from a mass balance standpoint, the recharge of BBARWA effluent cannot be the source of the higher groundwater TDS concentrations. Potential sources of high TDS in the groundwater basin could include historical farming operations by farmers in the Lucerne Valley Basin and evaporative concentration of salts beneath the Lucerne Dry Lake

Nitrate as N concentrations in groundwater from upstream and downstream monitoring wells are higher than concentrations in the BBARWA effluent (see Error! Reference source not found. and **Table 4.11-14**). Thus, while the detection of low concentrations of nitrate in the BBARWA effluent contributes to nitrate in groundwater and there is minimal fertilizer application at the site, the significantly higher nitrate concentrations detected in groundwater beneath the site indicates the BBARWA effluent is only a minor contributor and not the primary source of degradation. This trend is similar to that observed for TDS and suggests that there are upgradient sources of the nitrate that are contributing to the concentrations observed.

As the BBARWA effluent is of better quality for nitrate and TDS than the downgradient groundwater, the continued discharge would not degrade the water quality of the Lucerne

Valley Basin. However, because the BBARWA effluent is of better quality than the downgradient groundwater for nitrate and TDS, it may be currently acting as a minor source of dilution.

The Program will result in reduced recharge of higher quality water (for TDS and N) than that which exists in the underlying groundwater basin downgradient of the site, which has a potential to result in less dilution of the existing groundwater, so the Lucerne Valley Basin may continue to an increasing trend for TDS and N over time, due to other contributors outside BBARWA's control.

Based on the above discussion, the continued, but reduced, discharge of BBARWA's secondary effluent to the LV Site under the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source, but is not the direct cause of degradation because BBARWA effluent is only a minor contributor and not the primary source of degradation. The Lucerne Valley Basin currently exceeds the MCLs for TDS (recommended) and nitrate at the downgradient monitoring wells, so the reduced flows would not cause the Basin to violate a water quality standard, WDRs or otherwise substantially degrade surface or groundwater quality, but may result in a further exceedance of TDS and Nitrate, which is a potentially significant and unavoidable impact.

Summary of Impacts to Water Quality from Program Operations

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures:

HYD-1BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AAMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following;

- Conduct a monitoring plan to:
  - Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented);
  - Monitor the dissolved oxygen and pH of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond;
  - Continuously monitor temperature of the Program Water, Stanfield

Marsh, and Shay Pond (when implemented); and

- Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin.

- Collect nutrient (I.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit.

- Implement a TP Offset Program, expected to be stipulated in BBARWA's future NPDES permit;

- Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program.

If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following:

- Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen.

- Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented).

- Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented).

If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met.

The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.

Level of Significance After Mitigation: Significant and Unavoidable

The proposed Stanfield Marsh/Big Bear Lake and Shay Pond Discharges would have a less than significant potential to violate any water quality standards or WDRs or otherwise

substantially degrade surface or groundwater quality as BBARWA is investing in the best available technologies to produce Program Water that meets State and Federal limits and thereby a less than signific impact under this issue. The use of Program Water stored in Big Bear Lake for groundwater recharge has the potential to violate the chloride WQO of the Bear Valley Basin, as the Program Water stored in Big Bear Lake may exceed the chloride WQO. However, the Program Water stored in Big Bear Lake is estimated to be better quality than ambient so it would help improve or maintain ambient water quality conditions. In addition, the use of Program Water for recharge would help improve the water quality of TDS, nitrate as N, sulfate, and hardness, and maintain sodium concentrations. The benefit that the Program Water stored in Big Bear Lake will bring to the Bear Valley Basin exceeds the slight chloride WQO exceedance. However, **MM HYD-1** is intended to ensure that monitoring and adaptive management and mitigation are implemented to protect to beneficial uses of Stanfield Marsh, Big Bear Lake, and the Bear Valley Basin.

The reduced discharge to the LV Site under as a result of the Program will have the potential to contribute to the degradation of water quality in the Lucerne Valley Basin by removing a dilution source. The Lucerne Valley Basin currently exceeds the MCLs, so the reduced flows would have a significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Thus, as no mitigation is available to minimize the degradation of water quality in the Lucerne Valley Basin, a significant and unavoidable impact to the water quality of the Lucerne Valley Basin is projected to occur.

2. Water Quality Control Plan

Threshold: Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Finding: Significant and Unavoidable. (Draft EIR, pp. 4-703 – 4-707)

Explanation:

Big Bear Valley Basin – Program Components

As part of the Program, BBARWA will discharge up to 2,200 AFY of Program Water to the east end of Stanfield Marsh, which then flow into Big Bear Lake, and to up to 80 AFY of Program Water to Shay Pond a separate discharge location. Please note that the Shay Pond Discharge Program Component is not planned for the near future, so for the near future, all the Program Water will be sent to Stanfield Marsh. After the Program Water enters Big Bear Lake, up to 380 AFY of Program Water stored in Big Bear Lake will be used for groundwater recharge at the Sand Canyon Recharge Area over a six-month dry weather period. In addition, Program Water stored in Big Bear Lake can also be extracted to irrigate Bear Mountain Golf Course and for dust control of the Snow Summit Bike Park. It is estimated that about 120 AFY of Program Water stored in Big Bear Lake could be utilized at each location under the Program. All these dischargers and water uses will occur within the Big Bear Valley. Therefore, water quality is protected by the WQCP for the Santa Ana Basin Plan. The Santa Ana Basin Plan Region includes the upper and lower

Santa Ana River watersheds, the San Jacinto River watershed, and several other small drainage areas. The Santa Ana Region covers parts of southwestern San Bernardino County, western Riverside County, and northwestern Orange County. The Santa Ana Basin Plan establishes water quality standards for the ground and surface waters of the region. The Santa Ana Basin Plan includes an implementation plan describing the actions by the Santa Ana Regional Board and others that are necessary to achieve and maintain the water quality standards.

The Santa Ana Basin Plan contains the Santa Ana Regional Board's policies for managing the Santa Ana region's water quality. The Santa Ana Basin Plan includes the water quality standards (WQO, beneficial uses, and anti-degradation policy) for the Santa Ana Region, regionally important water quality management and improvement initiatives, policies and practices for implementing water quality standards, and implementation plans. The CWA requires review of WQMPs every three years, and the California Water Code, basin plans are reviewed periodically for areas where improvements or updates are needed.

The proposed Stanfield Marsh/Big Bear Lake and Shay Pond Dischargers will be regulated under an NPDES permit, which will be issued by the Santa Ana Regional Board to protect the water quality of these receiving surface waters. The proposed use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Project will be regulated by a WDR permit to protect the Bear Valley Basin water quality. The proposed use of Program Water stored in Big Bear Lake to irrigate Bear Mountain Golf Course and for dust control of Snow Summit Bike Park will be regulated under Order WQ 2016-0068-DDW, which regulates the use and application of recycled water. The Stanfield Marsh/Big Bear Lake and Shay Pond Dischargers and use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area Project and possible use for landscape irrigation do not conflict or obstruct the implementation of the Santa Ana Basin Plan because these dischargers will comply with their respective permit limits. In addition, as discussed in issue (a), the proposed discharge of Program Water to Stanfield Marsh/Big Bear Lake and Shay Pond and subsequent Program Water stored in Big Bear Lake would have a less than significant potential to violate any water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Thus, impacts would be less than significant.

The Program would be implemented within the Bear Valley Basin, which has been designated very low priority by the SGMA. The SGMA empowers local agencies to form GSAs to manage basins and requires GSAs to adopt GSPs for crucial groundwater basins in California.[26] The SGMA "requires governments and water agencies of high and medium priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. For critically over-drafted basins, that will be 2040. For the remaining high and medium priority basins, 2042 is the deadline."[27] Even though the Bear Valley Basin is considered very low priority, the Bear Valley Basin GSP has been prepared, and is provided as **Appendix 8** to this DPEIR. The GSP provides the geographical and managerial context of the Bear Valley Basin, summarizes the

[26] Big Bear Area Regional Wastewater Agency, Bear Valley Basin Groundwater Sustainability Agency. https://www.bbarwa.org/bear-valley-basin-groundwater-sustainability-agency/ (accessed 04/06/23).
[27] California Department of Water Resources, Sustainability Groundwater Management Act (SGMA). https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management (accessed 04/06/23).

groundwater basin setting (including groundwater conditions, water budget, and management areas), describes the criteria used to measure and demonstrate sustainability, reviews the existing groundwater monitoring and management programs, and defines how those actions will be incorporated into the Bear Valley Basin GSP to achieve and maintain sustainability in the future.

The Bear Valley Basin GSA Stakeholders (BVBGSA Stakeholders)[28] identified two projects or types of projects for inclusion in the GSP because they support efforts to maintain long term groundwater sustainability. The Program was included in the GSP as one of these projects, in addition to any projects that provide new or maintain existing groundwater pumping facilities. In terms of groundwater sustainability, the Shay Pond Discharge proposed use of Program Water stored in Big Bear Lake for the Sand Canyon Recharge Area Project and possible landscape irrigation would have a less than significant impact to substantially decrease groundwater supplies or interfere/impede with sustainable groundwater management, as these proposed uses will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in Bear Valley Basin. The use of Program Water stored in Big Bear Lake for dust control would have no impact since it would not add or remove water from the Bear Valley Basin.

Sustainable groundwater management was evaluated in the context of the sustainability goal for the Bear Valley Basin and the absence of undesirable results. The GSP identified Sustainable Management Criteria, which are the conditions that constitute sustainable groundwater management for the Bear Valley Basin, which included:

1. Chronic Lowering of Groundwater Levels
2. Reductions of Groundwater in Storage
3. Degraded Groundwater Quality
4. Land Subsidence
5. Depletion of Interconnected Surface Water

Of the above Sustainable Management Criteria, the Program would address the chronic lowering of groundwater levels and reductions of groundwater in storage criteria. As such, as an identified project within the Bear Valley Basin GSP, the Program would not obstruct the implementation of the GSP, and in fact it would aid in its implementation. Therefore, there is no potential to conflict with or obstruct implementation of sustainable groundwater management plan in the Bear Valley Basin, and therefore no impacts would occur.

Furthermore, by controlling water quality during construction and operations through implementation of both short-term (SWPPP) and long-term (WQMP) BMPs at the site, no potential for conflict or obstruction of the Santa Ana Regional Board's WQCP has been identified as a part of implementation of the proposed project facilities. However, in order to discharge Program Water to the proposed locations (Big Bear Lake, Stanfield Marsh,

[28] BBCCSD, BBMWD, BBARWA, and BBLDWP are the BVBGSA Stakeholders who make up the Bear Valley Basin Groundwater Sustainability Agency

and Shay Pond), the treated effluent must meet the WQOs set by the Santa Ana Basin Plan. The nutrient limits for an NPDES permit to Stanfield Marsh/Big Bear Lake and Shay Pond are expected to align with the Santa Ana Basin Plan WQOs and the TMDL numeric targets to protect the beneficial uses of Big Bear Lake and Shay Pond, respectively, as described and analyzed under issue (a), above. The Program Team is will continue to work with the Santa Ana Regional Board and DDW to protect the MUN beneficial use of Big Bear Lake. As a reflection of that commitment, the Program Team is proposing to implement full advanced treatment and will conduct additional monitoring to ensure that the proposed NPDES discharge is protective of the MUN beneficial use. Based on the fact that the Program is not anticipated to violate any provisions of the Santa Ana Basin Plan, and as a matter of operating under the Santa Ana Regional Board, the Program must adhere to the WDR that is ultimately issued to operate the Program as proposed, the Program is anticipated to adhere to the Santa Ana Basin Plan, and therefore, the proposed project would not conflict with or obstruct implementation of a WQCP in the Bear Valley Basin.

Based on the above discussion, the Program Components in the Big Bear Valley would have a less than significant impact to conflict with or obstruct with the implementation Santa Ana Basin Plan or sustainable groundwater management plan.

Lucerne Valley Basin – LV Site Discharge

BBARWA plans to maintain the existing Lucerne Valley discharge location (**Figure 3-35**). All WWTP process water in excess of the new treatment train's 2.2 MGD capacity will continue to be treated to undisinfected secondary levels and conveyed to the existing LV Site, consistent with the current permitted discharge requirements of the existing BBARWA WWTP. The LV Site discharge occurs within the Lucerne Valley. Therefore, water quality is protected by the WQCP in the Colorado Basin Plan. The Colorado River Basin Region covers approximately 13 million acres (20,000 square miles) in the southeastern portion of California. It includes all of Imperial County and portions of San Bernardino, Riverside, and San Diego Counties. Geographically, the Colorado region represents only a small portion of the total Colorado River drainage area, which includes portions of Arizona, Nevada, Utah, Wyoming, Colorado, New Mexico, and Mexico. The Colorado Basin Plan establishes water quality standards for the ground and surface waters of the region. The Colorado Basin Plan includes an implementation plan describing the actions by the Colorado Regional Board and others that are necessary to achieve and maintain the water quality standards.

The Colorado Basin Plan contains the Colorado Regional Board's policies for managing the Colorado River region's water quality. The Colorado Basin Plan includes the water quality standards (WQO, beneficial uses, and anti-degradation policy) for the Colorado River region, regionally important water quality management and improvement initiatives, policies and practices for implementing water quality standards, and implementation plans. The CWA requires review of water quality management plans every three years, and the California Water Code, basin plans are reviewed periodically for areas where improvements or updates are needed.

However, the MCLs for TDS and nitrate (as N) are 500 and 10 mg/L, respectively under the Colorado Regional Board. As described in the Regulatory Setting, the Colorado Basin

Plan Objective for TDS and nitrate is to maintain the water quality to existing historical conditions where possible and to keep the chemical and physical groundwater quality close to or otherwise below the MCLs (RWQCB, 2006). Specific concentration limits for TDS and nitrate have not been established. Based on the evaluation presented under issue (a), above, the potential for the Program to result in reduced recharge of higher quality water (for TDS and N) than that which exists in the underlying groundwater basin, has a potential to result in less dilution of the existing groundwater, so the Lucerne Valley Basin will likely see an increasing trend for TDS and N over time. This action has a potential to result in a significant and unavoidable conflict with or obstruction of the implementation of the Colorado Basin Plan as a result of the Program's potential to indirectly cause an increase in TDS and nitrate in the Lucerne Valley Basin, by which the present water quality already exceeds the MCLs for each contaminant.

The Mojave River Basin is under very low priority and is not required to implement or form a GSA or GSP. The Mojave River Basin is exempt from this requirement due to the adjudication. As the Mojave River Basin is under very low priority, it is currently not required to prepare a sustainable groundwater management plan because it is adjudicated and is therefore exempt from the requirement. The MBA Watermaster must still report to DWR as required by the SGMA, which includes submitting groundwater elevation, groundwater extraction, surface water supply, total water use, change in groundwater storage, and the annual report submitted to the Court that administered the Judgement.[29] As discussed under issue (b), above, the Program would result in a decrease in discharge to the LV Site, which in turn, would have a potential to reduce recharge of disinfected secondary effluent to the underlying Lucerne Valley Basin. The Mojave River Basin has several sub-basins that have experienced overdraft in the last 10 years[30], and the MBA Watermaster replaces overdrafts through fees collected from water users that is used to purchase additional water supplied through the SWP. The users in the Lucerne Valley Basin do not presently have access to the SWP, and therefore, the use of the underlying groundwater is the main source of water for users in the area. As such, while the Program would reduce the overall recharge to the Lucerne Valley Basin, this would not conflict with the implementation of sustainable groundwater management plan, as none are applicable to the Lucerne Valley Basin/Mojave River Basin area. The MBA Watermaster would formulate a response to address management of the Lucerne Valley Basin as a result of the reduction in recharge to the Lucerne Valley Basin. As this is the MBA Watermaster's responsibility, the Program would not result in a significant impact in this regard.

D. UTILITIES AND SERVICE SYSTEMS

1. Wastewater Treatment Requirements

Threshold: Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric

[29] Mojave Water Agency, 2023. Sustainable Groundwater Management Act. https://www.mojavewater.org/basin-management/regional-planning/sgma/ (accessed 07/06/23)

[30] Mojave Water Agency, May 1, 2023. Watermaster Annual Report for Water Year 2021-22. https://www.mojavewater.org/wp-content/uploads/2023/03/29AR2122.pdf (accessed 06/07/23)

power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Finding: Significant and Unavoidable. (Draft EIR, p. 4-927)

Explanation:

Program Category 1: Conveyance Pipelines

The environmental effects associated with the proposed Program, specifically the installation of Conveyance Pipelines, are documented throughout this DPEIR. The installation of the proposed Conveyance Pipelines is not anticipated to result in significant and unavoidable construction impacts for nearly every issue evaluated in this DPEIR—no significant construction related aesthetic, agriculture,[120] forestry, air quality, cultural resource, energy, geology and soils, GHG, hazards, hydrology and water quality,[121] land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, TCRs, utilities and service systems,[122] and wildfire. However, as described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may adversely affect bird-foot checkerbloom, as it is present within the proposed Baldwin Lake Pipeline Alignment Option footprint. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species from installation of the Baldwin Lake Pipeline Alignment Option, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable.

2. Water Supplies

Threshold: Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Finding: Signficant and Unavoidable (Draft DEIR, p. 4-938 – 4-939)

Explanation:

Lucerne Valley Overall Impacts

The topic at hand asks whether the Program would have sufficient water supplies available to serve the Program and reasonably foreseeable future development during normal, dry

and multiple dry years. As discussed above, the proposed Program is intended to enhance water supplies in the Bear Valley Basin to serve existing and reasonably foreseeable future development during normal, dry and multiple dry years within the Big Bear Valley. However, as discussed under **Subchapter 4.11, Hydrology and Water Quality, Section 4.11.9, issue (b)**, the proposed Program would indirectly have a potential interfere with groundwater recharge of the Lucerne Valley Basin due to the reduction in discharge to the LV Site.

Based on the Water Balance conducted by WSC utilizing data from actual BBARWA discharge operations to the LV Site, it is assumed that the actual amount of water recharged to the Lucerne Valley Basin is less than the amount assumed by the MBA Watermaster, at 1,610 AFY. The proposed Program intends to retain the water supply generated in the Big Bear Valley rather than continuing to send secondary effluent generated at the BBARWA WWTP to the LV Site. With the implementation of the Program, the flows BBARWA will send to the LV Site will vary based on the hydrologic conditions. For example, in a dry year, no water would be sent to the LV Site, and in a wet year, like in 2011, up to 1,050 AFY could be sent to the LV Site. The 2012-2022 period that was used to characterize current conditions was very dry and did not include wet years like 2005, 2011, and 2023. Therefore, a longer period (2005-2023) was used to estimate the average future monthly and annual flows to the LV Site to account for wet years. Based on this period, an average of about 340 AFY of secondary effluent discharge could be sent to the LV Site. This volume was estimated by evaluating and averaging daily flows between 2005-2023 that exceeded the 2.2 MGD capacity.

The proposed Program intends to retain the water supply generated in the Big Bear Valley rather than continuing to send secondary effluent generated at the BBARWA WWTP to the LV Site. The Program would create a new and sustainable water supply that can be utilized in the Big Bear Valley through the full advanced treatment facility upgrades at the existing BBARWA WWTP that would result in a Program Water supply. The effect of retaining this water supply in the Big Bear Valley is that the water that the MBA Watermaster and Stakeholders of the Este Subbasin/Lucerne Valley Basin would no longer be able to rely on the recharge of the average of 1,610 AFY from BBARWA operations. Instead, the Program has a potential to result in a decrease in recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to 340 AFY under future BBARWA operations. This has a potential to impact the MBA Watermaster's calculation of PSY of the Lucerne Valley Basin based on the reduction in recharge from BBARWA reaching the Lucerne Valley Basin, for which the MBA Watermaster presently assumes that the BBARWA discharge of undisinfected secondary effluent to the LV Site contributes 2,000 AFY to the Este Subbasin (which encompasses the Lucerne Valley Basin) water supply. As stated above, WSC conducted the Water Balance utilizing data from actual BBARWA discharge operations to the LV Site, which estimates that only 1,610 AFY is recharged to the Lucerne Valley Basin. This may result in a further reduction in Free Production Allowance, which impacts Stakeholders of the Este Subbasin/Lucerne Valley Basin's pumpage allowance, thereby further reducing the available water supply to Stakeholders of the Lucerne Valley Basin.

It is outside of the purview of this DPEIR to determine the actions of the MBA Watermaster in response to the anticipated reduction in supply of the Este Subbasin/Lucerne Valley

Basin, as the Program Team has no authority to make such a determination. Only the MBA Watermaster has such authority. Regardless, the decrease in recharge to the Este Subbasin/Lucerne Valley Basin would result in a potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result in the reduction in recharge to the Lucerne Valley Basin. Therefore, the proposed Program is concluded to have a significant and unavoidable impact under this issue. No mitigation is available to reduce the potential for this significant and unavoidable impact to occur; however, BBARWA and the Program Team are open to working with the MBA Watermaster and MWA to find an alternative use for any excess secondary effluent discharged to the LV Site, should there be a desire to do so.

As discussed above, no mitigation is available to reduce the potential for a significant and unavoidable impact to occur to water supplies in the Lucerne Valley Basin as a result of Program Implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has a potential to impact the amount of water that could be expected to be recharged to the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would have a significant and unavoidable potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result in the reduction in recharge to the Lucerne Valley Basin.

SECTION V.
CUMULATIVE IMPACTS

Regarding the Program's potential to result in cumulative impacts, the Agency hereby finds as follows:

A. AESTHETICS

Construction of the new facilities could alter existing views and contribute to significant cumulative aesthetic impacts in combination with other projects in the Program Area. The implementation of MMs AES-1 through AES-7, in addition to MM AGF-1 would ensure that the proposed facilities' contribution to cumulative aesthetic impacts would be reduced to less than cumulatively considerable by: ensuring that facilities and landscaping comply with local design standards and are integrated with local surroundings; ensuring that impacts to scenic resources from the implementation of future Program facilities will be avoided or assessed further in future CEQA documentation; ensuring that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a level of less than significant; ensuring that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof ensuring compliance with the applicable zoning code; ensuring that future facilities will conform with design requirements established by local jurisdictions; and, ensuring that light and glare impacts from future structures associated with the Program are minimized. Thus, the proposed Program would not cause cumulatively considerable contributions to cumulative aesthetics impact. (Draft EIR, p. 4-40)

B. AGRICULTURE AND FORESTRY RESOURCES

The proposed Program will not cause any adverse impacts to agricultural land in Big Bear Valley

and very minimal impact to forest land (a few acres at most). Based on the minimal impacts to these resources from implementing the proposed Program, the cumulative impacts of the proposed Program are determined to not result in a considerable contribution to cumulative impacts to agricultural and forestry resources within the Big Bear Valley following implementation of the single MM.

However, the conversion of up to 190 acres of designated agricultural land at BBARWA's LV Site is a necessary in order to implement the Program, and thereby utilize the majority of the wastewater generated in Big Bear Valley locally as Program Water, rather than exporting the whole of the secondary effluent generated by the BBARWA WWTP process to Lucerne Valley. Thus, the conversion of up to 190 acres of designated agricultural land at BBARWA's LV Site is considered sufficient to contribute to Statewide cumulative loss of agricultural land. Therefore, the proposed Program has potential to result in a cumulatively considerable adverse contribution to any cumulative agricultural resource impacts. Thus, cumulative adverse impacts to agricultural resources are significant and unavoidable. However, with implementation of mitigation impacts to forestry resources are considered less than cumulatively considerable, and therefore are less than significant. (Draft EIR, p. 4-59)

C. <u>AIR QUALITY</u>

As previously shown in Table 4.4-3, the CAAQS designate the Program Area as nonattainment for O3 PM10, and PM2.5 while the NAAQS designates the Program Area as nonattainment for O3 and PM2.5.

AQMD has published a report on how to address cumulative impacts from air pollution: White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution. In this report the AQMD clearly states (Page D-3):

"...the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or Environmental Impact Report (EIR). The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for TAC emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the South Coast Air Basin is in nonattainment, and, therefore, would not be

considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

Construction Impacts

The Program-specific evaluation of emissions presented in the preceding analysis demonstrates that Program construction-source air pollutant emissions would not result in exceedances of regional thresholds after implementation of MM AQ-1 and MM AQ-3. Therefore, Program construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

Operational Impacts

The Program-specific evaluation of emissions presented in the preceding analysis demonstrates that Program operation-source air pollutant emissions would not result in exceedances of regional thresholds after implementation of MM AQ-2. Therefore, Program operation-source emissions would be considered less than significant on a project-specific and cumulative basis. (Draft EIR, p. 4-162)

D. BIOLOGICAL RESOURCES

Cumulative development within the Big Bear Valley includes conversion of open undeveloped land to urban and rural development. This future cumulative development has the potential to reduce the availability of suitable habitat for special-status species. To mitigate the effects of the cumulative impacts on special status species and habitat values from implementation of the proposed Program, MMs identified above would ensure that Program related impacts on all special status species would be minimized to a level of less than significant, except for the Program impacts on the bird-foot checkerbloom.

There are other areas within the overall Program Area of potential impact where the resource impacts from constructing new infrastructure may cause unavoidable significant adverse impacts on biological resources. These areas are highly dependent upon the final design of each Program facility, i.e., individual project, and if those actions cannot be reasonably or feasibly offset, the ultimate design of these Program improvements must be based on sound engineering. In each case where most environmental impacts cannot be fully avoided, it may be possible to avoid certain impacts by designs that avoid such impacts through sound mitigation-based planning at each step. Given the speculative nature of the locations of proposed Program facilities, there is a potential that an individual Program facility may be developed and have operations within an area containing biological resources that cannot be avoided, even at the design level. This is anticipated to be the case for the bird-foot checkerbloom.

The loss of potentially suitable habitat for special-status species as a result of cumulative development would primarily result from the total conversion of undeveloped land to urban and rural development. This potential conversion by cumulative development is considered a potentially significant impact on special-status species. Since the Program would also result in potentially significant impacts on special-status species, the Program's contribution is considered cumulatively considerable, however, for all species identified in Table 4.5-3, except the bird-foot

checkerbloom, the Program's contributions to cumulatively considerable significant impacts under this issue, can be mitigated to a level of less than cumulatively considerable. Regardless, impacts to the bird-foot checkerbloom are forecast to potentially experience an unavoidable cumulatively significant impact if the Baldwin Lake Pipeline Alignment Option is selected as the preferred Lake Discharge Alignment. Thus, a cumulatively significant impact may result.

Cumulative Measures: MMs BIO-1 through BIO-25 are required to minimize cumulative impacts on special status species to the greatest extent feasible.

Level of Significance After Mitigation: Cumulatively Significant (Draft EIR, pp. 4-258 – 4-259)

The conversion of undeveloped areas to cumulative development, within the Big Bear Valley may increase effects on protected wetland habitats. Cumulative development that encroaches into wetland habitat areas or indirectly impacts wetland habitat through the increase of upstream urban runoff could result in a cumulatively significant impact. Other cumulative impacts may include direct impacts such as the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. Potential indirect impacts on jurisdictional waters include a number of water-quality-related impacts: erosion and transport of fine sediments or fill downstream of construction to unintentional release of contaminants into jurisdictional waters that are outside of the project footprint. Temporary impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. Temporary fill could be placed during the construction of access roads and staging/equipment storage areas. The temporary fill would result in a temporary loss of jurisdictional waters and could potentially increase erosion and sediment transport into adjacent areas.

Since the Program could potentially benefit wetlands and habitats at Stanfield Marsh and Big Bear Lake, and because the proposed Program would not significantly impact wetlands elsewhere in the Big Bear Valley as a result of development of Program facilities, the Program's contribution to potential impacts on wetland habitat would be less than cumulatively considerable with the implementation of mitigation. Implementation of MMs BIO-14 through BIO-27 would reduce the future facilities under the Program's contribution to cumulative wetland impacts to less than cumulatively considerable through compensation and implementation of construction and operational BMPs to control stormwater pollutants from exiting a proposed facility site and compliance with regulatory requirements.

Cumulative Measures: MMs BIO-14 through BIO-27 are required to minimize direct and indirect cumulative effects to riparian habitat or other sensitive natural communities.

Level of Significance After Mitigation: Less Than Significant

Implementation of cumulative development within the Big Bear Valley could result in potential impacts to riparian habitat and special status natural communities. Cumulative development could encroach into areas adjacent to existing drainages and creeks that could contain riparian habitat. In addition, cumulative development could result in potential impacts on riparian habitat. Certain areas within the Big Bear Valley that contain critical habitat for species may not be fully mitigable, and an unavoidable significant adverse biological resource impact may occur. Even with mitigation, the significant project-specific impacts to critical habitat, riparian habitat or other sensitive natural communities could be substantial enough to contribute cumulatively considerable

contributions to significant adverse impacts thereof. Thus, the Program's contribution to cumulative impacts could be considerable and would represent a significant cumulative impact.

Cumulative Measures: MMs BIO-16, BIO-26, BIO-27, BIO-28, BIO-29, and HYD-1 are required to minimize the cumulative potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Level of Significance After Mitigation: Less Than Significant

Implementation of cumulative development within the Big Bear Valley could be located in areas that are currently protected by local policies or ordinances within the City of Big Bear Lake and San Bernardino County within which Program projects may be implemented. Therefore, cumulative development could result in potentially significant cumulative impacts on biological resources protected by local policies or ordinances. Since development in accordance with the Program could result in potential impacts to biological resources protected by local policies or ordinances, the Program's contribution to cumulative impacts could be considerable without the implementation of mitigation. Implementation of MMs AES-3 and AGF-1 would reduce the proposed Program's contribution to cumulative biological resources impacts to less than cumulatively considerable through compliance with the local regulations that protect biological resources.

Cumulative Measures: MMs AES-3 and AGF-1 are required.

Level of Significance After Mitigation: Less Than Significant

Implementation of cumulative development within the Big Bear Valley could be located in areas with existing Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, cumulative development within these areas would conflict with the provisions of the plans and would represent a potentially significant impact. Since development in accordance with the Program could result in potential impacts to existing CAL FIRE regulations, the Program's contribution to cumulative impacts could be considerable without the implementation of mitigation. The implementation of MM AGF-1 would reduce some contribution to cumulative impacts through either compliance with CAL FIRE regulations. Therefore, based on the discussion above, the Program's contribution under this issue is considered less than cumulatively considerable, and would not result in a significant or cumulatively considerable adverse impact.

Cumulative Measures: MM AFR-1 is required to minimize the potential for cumulatively considerable conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Level of Significance After Mitigation: Less Than Significant

E. CULTURAL RESOURCES

As Big Bear Valley continues to develop with projected growth, new developments would occur.

The project vicinity contains many historical and archaeological resources that, in many cases, have not been well documented or recorded. Thus, there is the potential for ongoing and future development projects in the vicinity to destroy known or unknown historical and archaeological resource sites resulting in a significant cumulative impact.

The potential construction impacts of the Program, in combination with other projects as a result of growth in the area, could contribute to a cumulatively significant impact to specific historical and archaeological resources if encountered during project construction. However, implementation of **MMs CUL-1 through CUL-5** would minimize the contributions of Program infrastructure projects to this significant cumulative impact, and the project's contribution would not be cumulatively considerable. (Draft EIR, p. 4-429)

Big Bear Valley contains urbanized and rural areas, with many areas that have not historically been disturbed at depth. As the area continues to develop, it is possible, but unlikely, that construction activities could impact unknown human remains. However, since the treatment of human resources is governed by California Public Resources Code Section 5097.98 and California Health and Safety Code Section 7050.5, the cumulative potential to impact human remains would be less than significant. Therefore, the implementation of the project would not result in a considerable contribution to cumulative impacts on human remains. (Draft EIR, p. 4-429)

F. <u>ENERGY</u>

Cumulative growth in the BVES service area would affect regional energy demand. BVES energy demand planning is based on future growth predictions from the General Plans of local jurisdictions. For this reason, development consistent with the applicable General Plan would also be consistent with BVES demand planning. Cumulative development within the BVES service area is not anticipated to result in a significant impact in terms of impacting energy supplies because the majority of cumulative projects would be consistent with their respective General Plans and the growth anticipated by BVES. The Program would ensure the management of the Bear Valley Basin water supply, and implementing agencies would serve water supply needs for existing and planned water demand and would not result in or accommodate unplanned growth. Therefore, as the Program would not result in or accommodate unplanned growth outside of the limits of applicable General Plans and regional plans, the Program would not result in significant cumulative energy impacts, and therefore, would be less than cumulatively considerable. Cumulative impacts are less than significant. (Draft EIR, p. 4-428))

G. <u>GEOLOGY AND SOILS</u>

Future cumulative development in Big Bear Valley may experience significant impacts associated with geotechnical constraints within Big Bear Valley, including impacting resources such as paleontological resources, which occur below ground. Similarly, development of the Program would be affected by limited geotechnical constraints that occur within Big Bear Valley. None of the future on-site or off-site project-related activities are forecast to cause cumulatively considerable changes in geology or soils or the constraints affecting the Program Area that cannot be fully mitigated. Therefore, with the implementation of **MMs GEO-1** through **GEO-4**, and adherence to the relevant regulatory requirements, the Program would have a less than significant contribution to cumulatively considerable geology or soils impacts within Big Bear Valley. (Draft EIR, p. 4-480)

H. GREENHOUSE GAS EMISSIONS

Impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. Because the effects of climate change are currently occurring, the cumulative worldwide and statewide effects of GHG emissions are significant. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. As discussed previously, construction-related GHG emissions would not exceed the SCAQMD's Interim GHG Threshold. Based upon the 2022 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO2e per year (MMTCO2e/yr) or 369,200 Gg CO2e (6.17% of the total U.S. GHG emissions). The proposed project will generate approximately 1,499.63 metric tons of CO2e per year, or about 0.0004062% of this amount. An individual project such as the proposed Program cannot generate enough GHG emissions to effect a discernible change in global climate. Therefore, the contribution of the Program to cumulative impacts related to generation of GHG emissions, either directly or indirectly, that may have a significant impact on the environment would not be cumulatively considerable. (Draft EIR, p. 4-510)

As discussed under threshold (a), impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. Because the effects of climate change are currently occurring, the cumulative worldwide and statewide effects of GHG emissions are significant. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. The Program would be consistent with many of the goals of applicable State and local plans and programs, which are designed to reduce the cumulative impact of GHG emissions. Therefore, the contribution of the Program to cumulative impacts related to consistency with applicable plan, policy or regulation adopted for the purpose of reducing the GHG emissions would not be cumulatively considerable. (Draft EIR, p. 4-533)

As discussed under the cumulative impact analysis presented under issues (a) and (b), above, impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. For the analysis of impacts related to GHG emissions, CEQA focuses on whether the incremental contribution of a proposed project is cumulatively considerable and thus significant in and of itself. The Program would be consistent with many of the goals of applicable State and local plans and programs, which are designed to reduce the cumulative impact of GHG emissions. Furthermore, based upon the 2022 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2020 GHG emissions period, California emitted an average 369.2 million metric tons of CO_2e per year (MMTCO_2e/yr) or 369,200 Gg CO_2e (6.17% of the total U.S. GHG emissions).[31] The proposed project will generate approximately 1,499.63 metric tons of CO_2e per year, or about 0.0004062% of this amount. An individual Program, such as the proposed Program, cannot generate enough GHG emissions to effect a discernible change in global climate. Therefore, the proposed Program would not contribute to global climate change through an incremental contribution of GHGs because the GHG emissions are well below the SCAQMD thresholds. As such, the Program would not result

[31] CARB, 2023. 2000-2020 GHG Inventory (2022 Edition). https://ww2.arb.ca.gov/ghg-inventory-data (accessed 09/05/23)

in a cumulatively considerable or significant adverse GHG impact. (Draft EIR, p. 4-533- 4-534)

I. HAZARDOUS AND HAZARDOUS MATERIALS

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of more development could impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by constructing facilities within public ROW. Since a majority of the proposed Program Conveyance Pipelines would be constructed within public ROW, the proposed project's contribution to the cumulative impact related to area construction would be considerable. The implementation of MMs TRAN-1 and WF-1 would ensure that the proposed facilities' contribution to cumulative emergency access and evacuation impacts would be reduced to less than cumulatively considerable by requiring the preparation of a TMP with comprehensive strategies to reduce disruption to emergency access and evacuation. (Draft EIR, p. 4-588)

The Big Bear Valley area is somewhat urbanized with residential, commercial, and a limited number of industrial uses, though rural residential uses are scattered throughout the Big Bear Valley. As the Program Area continues to develop, the addition of more development could expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Since there would be potential for Program projects to be located within or adjacent to areas with high wildland fire risks, impacts from the Program projects would be cumulatively considerable and therefore, would result in a potentially significant cumulative impact. The implementation of **MM WF-2** would ensure that the proposed facilities' contribution to cumulative impacts related to wildfires would not be cumulatively considerable by implementing fire hazard reduction measures during construction and operations in areas designated as high and very high FHSZs to reduce the potential for wildfire impacts on people or structures. (Draft EIR, p. 5-592)

The cumulative analysis of each Hazards and Hazardous Materials issue evaluated in this **Subchapter (4.10)** of the DPEIR determined that the proposed project would not result in a cumulatively considerable contribution to cumulative hazards and hazardous materials impacts within the Big Bear Valley or Lucerne Valley as a result of implementation of MMs. While cumulative development within the region may result in significant cumulative impacts related to exposure to hazards, the potential for the proposed Program to result in a cumulatively considerable contribution to such impacts has been minimized to a level of less than significant through the implementation of MMs. (Draft EIR, p. 5-593)

J. HYDROLOGY AND WATER QUALITY

For the Big Bear Valley, the Program would enhance Bear Valley Basin groundwater supplies through the recharge component of the Program proposed at the Sand Canyon Recharge Area. The proposed groundwater recharge is being considered as part of the Program in response to the potential for cumulative demand on groundwater supplies. The Sand Canyon Recharge Area Project would require MMs HYD-2 and HYD-3 to ensure that the operation of the Sand Canyon Recharge Area Project is regulated. As such, with implementation of the above mitigation, the Program Team would be able to minimize impacts on the Bear Valley Basin, thereby reducing any potential for the Program to contribute cumulatively considerable impacts on the Bear Valley Basin.

Cumulative development within the Lucerne Valley area could result in a decrease in groundwater supplies or interference with groundwater recharge, thereby impeding sustainable groundwater management. For the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the Program would result in a cumulatively considerable impact on sustainable management of the Lucerne Valley Basin.

However, it is important to note that BBARWA's wastewater flow to the LV Site is not considered an adjudication water right or claim to the LV Basin, but only considered to be an accounting for that supply (Appendix 23). Since BBARWA's wastewater is not included in the LV Basin's annual yield calculation or claim to that supply, BBARWA is not bound by the LV Basin's adjudication and its wastewater can be diverted to be reused in Big Bear Valley at BBARWA's discretion (Appendix 24). (Draft EIR, pp. 4-675 – 4-676)

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in erosion or siltation, flooding, or insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns that result in erosion or siltation. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts under this issue to a level of less than significant. (Draft EIR, p. 4-681)

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in erosion or siltation, flooding, or insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could experience significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns that result in flooding on- or off-site. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing cumulative impacts under this issue to a level of

less than significant. (Draft EIR, p. 4-686)

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and the San Bernardino Counties MS4 Permit. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program projects could result in potentially significant impacts associated with the alteration of drainage patterns that result in substantial contribution of runoff to area drainage systems. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts to a level of less than significant. (Draft EIR, p. 4-692)

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in erosion or siltation, flooding, or insufficient capacity of drainage systems. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and the San Bernardino County MS4 Permit. Therefore, cumulative development would not result in significant impacts related to drainage during construction.

However, cumulative projects could result in significant impacts to local drainage systems after rapid development of structures. The Program could result in potentially significant impacts associated with the alteration of drainage patterns that result in flooding that may be impeded or redirected by future projects. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing cumulative impacts under this issue to a level of less than significant. (Draft EIR, p. 4-697)

Concurrent construction of cumulative development within the Big Bear Valley could result in temporary impacts to drainage patterns that may result in flooding. All related projects within the service area would be subject to the same Federal, State, and local regulations regarding implementation of BMPs under the CGP, SWPPP, and San Bernardino County MS4 Permits. Therefore, cumulative development would not result in significant impacts related to flooding or inundation.

However, cumulative projects could experience significant impacts related to release of pollutants due to flooding and inundation. Since the project could result in potential significant impacts, the project's contribution to cumulative impacts is considered cumulatively considerable, and therefore, would require mitigation as identified above, which would reduce the project's contribution to less than cumulatively considerable, therefore reducing the project's contribution to cumulative impacts under this issue to a level of less than significant. (Draft EIR, 4-703)

Cumulative impacts that would conflict with or obstruct implementation of a WQCP or sustainable groundwater management plan would result from cumulative development and water management in Big Bear Valley. In regards to the potential to cumulatively impact the Bear Valley Basin, which, as stated above, the Program would aid in GSP implementation, the impacts discussion under this issue are inherently cumulative. Therefore, by implementing the Program, the Program Team (BBARWA, BBCCSD, BBLDWP, and BBMWD) will ensure that the Program will not contribute to cumulatively considerable impacts on the Bear Valley Basin resulting in the obstruction of implementation of the GSP.

However, cumulative development in the Lucerne Valley Basin could result in greater demands for groundwater or greater contributions of higher TDS or nitrate water sources, such that the Colorado Basin Plan would be further obstructed. Given that the Program would result in a significant and unavoidable impact on the water quality of the Lucerne Valley Basin, thereby conflicting with the Colorado Basin Plan, the Programs would result in a cumulatively considerable contribution to cumulative impacts under this issue in the Lucerne Valley Basin. (Draft EIR, 4-707)

K. LAND USE AND PLANNING

The project would not divide an established community and would not contribute to cumulative impacts related to the physical division of an established community. Implementation of the proposed Program would increase the resiliency and sustainability of water resources management within the Big Bear Valley area. The Program would help support water supply needs of future development within City of Big Bear Lake and unincorporated areas of San Bernardino County as envisioned in the applicable General Plans. With implementation of mitigation to ensure land use conflicts are minimized upon implementation of the Program, the Program would not conflict with any land use plan, policy, or regulation in a manner that could result in a considerable contribution to a cumulative land use impact, significant or otherwise. (Draft EIR, 4-725-726)

L. MINERAL RESOURCES

The Program has a minimal potential to result in the loss of availability of mineral resources. Future cumulative development could be located in areas known to contain locally important mineral resources. However, given that the Program would not preclude future mining activities, and the overall lack of mineral resources in the Big Bear Valley, implementation of the proposed Program will not contribute to cumulative loss of mineral resources or mineral resource values. As such, the Program's contribution to cumulative impacts would be less than cumulatively considerable. Therefore, the proposed Program's cumulative impact on mineral resources is less than significant. (Draft EIR 4-738)

M. NOISE

The geographic scope for cumulative noise impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed Program. This geographic scope is appropriate for noise because the proposed program's noise impacts are localized and site-specific. Beyond this distance, typical construction and operational noise would be indistinguishable from the background noise level due to distance attenuation and interference from environmental conditions (e.g., topography and air disturbance).

Construction Noise

The Program specific noise impact analysis presented above assumed that concurrent construction activities would occur, but it was determined that the combined construction noise would not have the potential to impact the same sensitive receivers and result in cumulative construction noise levels that exceed the applicable thresholds of significance. The severity of the impacts would vary depending upon the intensity of construction activities for cumulative projects and the proximities of residential, commercial, and industrial land uses to each construction site. Therefore, cumulative construction noise impacts may be potentially significant. Nevertheless, per MM NOI-1, the monitoring well drilling and related construction activities with the potential to generate construction noise in proximity to sensitive receivers and other concurrent construction activities would be required to incorporate noise reduction measures to reduce noise levels to the FTA daytime and nighttime construction noise standards. As a result, regardless of whether a significant cumulative construction noise impact is occurring, the proposed Program's noise contribution would not be cumulatively consider¬able with incorporation of MM NOI-1.

Operational Noise

Cumulative operational noise impacts may be potentially significant if, when combined with regional operational noise, Program facility contributions to noise levels in the area exceed the established noise regulations of the jurisdiction within which the facility(s) are located. Based on the anticipated reduction of noise that would result from enclosure of the noisiest equipment proposed to be installed as part of the Program—pumps, AWPF equipment—operational noise sources would be well controlled and are not anticipated to result in substantial noise level increases. As a result, the proposed Program's noise contribution would not be cumulatively considerable.

Off-site Traffic Noise

Cumulative growth in the Big Bear Valley would result in increased traffic volumes on local and regional roadways during construction, with minor contributions during operations. However, as discussed above, due to the relatively low number of anticipated operation and maintenance trips associated with individual Replenish Big Bear Program projects, impacts related to off-site roadway noise would be incremental and likely imperceptible when compared to the surrounding background traffic noise; therefore, the proposed Program would not have a cumulatively considerable contribution to this potential cumulative impact, significant or otherwise. (Draft EIR, 4-770)

The geographic scope for cumulative vibration impacts is generally within 0.5 mile of the locations of individual projects that may be implemented under the proposed Program. This geographic scope is appropriate for vibration because the proposed Program's vibration impacts are localized and site-specific. Beyond this distance, typical construction and operational vibration would be indistinguishable from the background vibration level due to distance attenuation and interference from environmental conditions. If concurrent construction activities occur in close proximity to proposed Program activities, combined construction vibration would have the potential to impact the same sensitive receivers and result in cumulative construction vibration levels that exceed the applicable thresholds of significance. However, given that the proposed Program would not contribute to a significant vibration impact at nearby sensitive receptors, it is anticipated that the

proposed Program's vibration contribution would be less than cumulatively considerable, and therefore less than significant. (Draft EIR, p. 4-775)

As discussed above, there is only one airport located within Big Bear Valley: Big Bear Airport. Individual projects and cumulative projects would be required to comply with the applicable airport land use plan, Federal and State OSHA regulations, and applicable CBC standards related to the protection of residents and workers from exposure to excessive aircraft noise. As a result, regardless of whether a significant cumulative noise impact related to airport operations exists, the proposed program would not have a cumulatively considerable contribution to this potential cumulative impact, significant or otherwise, and no mitigation is required. (Draft EIR, p. 4-777)

N. POPULATION AND HOUSING

As previously described, the Program would not result in a cumulatively considerable contribution to population growth within the Big Bear Valley. The Program is not forecast to cause significant growth inducement in the community or to cause the elimination of a substantial number of homes with the subsequent relocation of a substantial population. Thus, the Program would have a less than cumulatively considerable potential to impact the local population or housing and would therefore not result in a considerable contribution to cumulative impacts to population and housing. (Draft EIR, p. 4-791)

O. PUBLIC SERVICES

As previously discussed, the Program would not result in a cumulatively considerable contribution to population growth within the region, and as such, the Program would not substantially increase demand for public services. The Program is not anticipated to create a significant new demand for fire protection services beyond that which existing facilities presently demand, and as such, it is not anticipated that the Program implementation would result in a cumulatively considerable impact to fire protection services through the implementation of MMs TRAN-1, WF-1, and WF-2. With the implementation of MMs TRAN-1, WF-1, and WF-2, fire protection and emergency response impacts would be reduced to a level of less than cumulatively considerable, and therefore would not contribute to significant cumulative impacts thereof. The Program is not anticipated to decrease parkland within the region, and as such would not impact the cumulatively available parkland within the region, thus reducing the impacts to parks to less than cumulatively considerable. Similarly, the Program is not anticipated to create a significant new demand for fire protection services beyond that which existing facilities presently demand, and as such would not impact the cumulatively available library services within the region, thus reducing the impacts to library services to less than cumulatively considerable. However, the Program has a potential to result in greater demand for police protection without MM PS-1, which requires all Program project sites to be fenced, to avoid attracting trespass. With the implementation of MM PS-1, police protection impacts would be reduced to a level of less that cumulatively considerable, and therefore would not contribute to significant cumulative impacts thereof. While cumulative development within the region may result in significant cumulative impacts related to demand for public services, the potential for the Program to contribute a cumulatively considerable contribution to such impacts has been minimized to a level of less than significant through the implementation of MMs. (Draft EIR, p. 4-824)

P. RECREATION

As discussed above in Subchapter 4.15, the proposed project would not result in a cumulatively considerable contribution to population growth within the region, and as such, the project would not substantially increase demand for recreation facilities. The Big Bear Valley, within which the Program would be implemented, is expected to experience growth over the next few decades. Big Bear Lake is anticipated to grow by about 35% between 2020 and 2045, according to the SCAG Connect SoCal Demographics and Growth Forecast105, resulting in development of commercial, industrial, and residential land uses. Similarly, the growth anticipated as part of the Mountain Region of unincorporated San Bernardino County, within which the Program would also be implemented, is anticipated to grow by about 4% between 2016 and 2040, according to the San Bernardino Countywide Plan EIR. As cumulative development occurs, the Big Bear Valley may experience substantial increases in the demand for additional parks to maintain a ratio of 2.5 acres per 1,000 residents in unincorporated San Bernardino County in Big Bear Valley (San Bernardino County Standard), and three acres per 1,000 residents in Big Bear Lake (Big Bear Lake Standard). Depending on the location of the new park and recreation facilities, there could be significant impacts, such as significant air quality and GHG emissions, or significant trip generation or VMTs, from the construction and operation of new facilities. Because the proposed Program would result in minimal direct increase in demand for park and recreation facilities, and that the Program does not propose to construct or expand any recreation facilities through implementation of the Program directly, the project's contribution to cumulative environmental effects associated with the construction of any new facilities would be less than cumulatively considerable.

However, as discussed under Subsection 4.17.5, above, while the proposed Program would not install any recreational facilities, it would result in other physical changes to the environment, including releasing Program Water into Big Bear Lake by way of Stanfield Marsh. Objectives of the Program itself are to "provide new inflow to Big Bear Lake to increase inflows and Lake level, enhance recreational opportunities and aquatic habitat," and to provide "a consistent water source to sustain habitat and increase education opportunities for the community and visitors" at Stanfield Marsh. Cumulative recreational use of Big Bear Lake is limited to Big Bear Lake capacity as a result of the dam, and is accommodated through the requirement that Lake users contribute permit fees for registered and nonregistered vessels to BBMWD, which can be further directed toward addressing any potential deterioration of existing recreational facilities on Big Bear Lake. Thus, as the proposed Program would not result in a significant potential deterioration of existing recreational facilities on Big Bear Lake, the Program's contribution thereof would be less than cumulatively considerable. Furthermore, in regards to the enhanced setting at Stanfield Marsh that may result from the additional provisions of water at Stanfield Marsh, a purpose of the proposed Program is to draw visitors to the Stanfield Marsh Wildlife and Waterfowl Preserve, which has existing facilities that can accommodate existing and new visitors that may utilize the walking paths and boardwalks as a result of the provision of greater water, and possibly enhanced habitat, at Stanfield Marsh. Thus, as the proposed Program would not result in a significant potential deterioration of existing recreational facilities at Stanfield Marsh, the Program's contribution thereof would be less than cumulatively considerable. Thus, the Program's contribution to cumulative environmental effects on recreational facilities would be less than cumulatively considerable. Therefore, the project would not result in a considerable contribution to cumulative impacts to recreation. (Draft EIR, pp. 4-838-4-839)

Q. <u>TRANSPORTATION</u>

The Big Bear Valley circulation system is managed by four agencies (City of Big Bear Lake, San Bernardino County, Caltrans, and USFS) with primarily residential, and some commercial and industrial development. As Big Bear Valley continues to develop, the addition of more residential and commercial development is expected to slowly increase traffic volumes on roadways within the Program Area. This increase from cumulative development is not expected to result in significant cumulative impacts on the existing transportation systems based on the rate of growth identified in Chapter 4.15, Population and Housing Section. Because the construction activities associated with the Program would increase construction traffic on the area roadways and potentially cause significant impacts, the Projects' contribution to cumulative impacts on roadways would be less than significant with mitigation. However, the implementation of MM TRAN-1 would reduce the Program's contribution to potential construction traffic impacts to less than significant. The above measure would require all construction activities to be conducted in accordance with an approved construction TMP, which would serve to reduce the construction-related traffic impacts to the maximum extent feasible. Thus, the Program would not contribute cumulatively considerable contributions to cumulative transportation circulation system impacts. (Draft EIR, p. 4-866)

As Big Bear Valley continues to develop the population is expected to grow slowly with a commensurate slow growth in traffic volumes on roadways within the Program Area. As described above, the Program's contribution to cumulative VMTs would be less than cumulatively considerable considering the operation of the of the Program screens out of the designated VMT threshold, and therefore a less than significant cumulative impact would occur under this issue. (Draft EIR, pp. 4-869 – 4-870)

As the service area continues to develop, the addition of more residential, commercial, and industrial development is expected to occur slowly in Big Bear Valley (refer to **Chapter 4.15**). This slow increase in cumulative traffic volumes is not forecast to result in significant hazard impacts. Because the proposed construction activities associated with the Program could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, potential conflicts between construction trucks and automobiles could result in significant traffic hazard impacts. The implementation of **MM TRAN-1** would reduce the Program's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction Traffic Control Plan. Thus, the Program would not contribute cumulatively considerable contributions to cumulative traffic related hazards and incompatible use impacts. (Draft EIR, p. 4-873)

As Big Bear Valley continues to develop, the addition of more residential, commercial, and industrial development is expected to slowly increase traffic volumes on roadways within the Program Area. Cumulative construction activities are expected to increase construction vehicles travelling on the roadways. While individual emergency vehicles could be slowed if travelling behind a slow-moving truck, per vehicle code requirements, vehicles must yield to emergency vehicles using a siren and red lights. Cumulative construction vehicles travelling along the roadways are expected to result in a less than significant impact on emergency access.

Lane closures due to cumulative construction activities could result in potential access impacts to emergency vehicles. As such, implementation of **MMs TRAN-1 and WF-1** would reduce the Program's cumulative contribution to potential construction impacts on emergency access to a less

than significant impact. The above measure would reduce impacts on emergency access by requiring all construction activities to be conducted in accordance with an approved construction Traffic Control Plan and require coordination of timing, location, and duration of construction activities with emergency services such as police and fire. (Draft EIR, p. 4-876)

Overlapping cumulative construction activities, simultaneous lane/road closures, and simultaneous staging of construction equipment and materials in public ROW could result in cumulative construction impacts related to transportation circulation patterns in the Program Area, transit stops, bicycle and pedestrian facilities, and/or emergency access. Cumulative construction activities are expected to increase construction vehicles traveling on the roadways. While individual emergency vehicles could be slowed if traveling behind a slow-moving truck, vehicle codes require vehicles to yield to emergency vehicles using a siren and red lights. As such, cumulative impacts related to construction transportation circulation and emergency access within Big Bear Valley would be potentially significant. However, the Program would be required to implement **MM TRAN-1**, which requires coordination with other active construction projects within 0.25 mile of Program construction sites to minimize simultaneous lane and/or road closures, major deliveries, and haul truck trips. **MM TRAN-1** also requires designating alternate detour routes and construction transportation routes that avoid these projects to the maximum extent practicable.

Similarly, **MM WF-1** would require the preparation of a traffic control plan with comprehensive strategies to reduce disruption to traffic in general, but particularly to maintain emergency access or evacuation capabilities. Therefore, with mitigation incorporated, the Program would not have a cumulatively considerable contribution to the significant cumulative impact related to construction transportation circulation and emergency access.

Operations related to buildout of cumulative development within the Program Area, including the projects assumed under buildout of the two land use jurisdictions within Big Bear Valley, would gradually increase cumulative operational roadway vehicle volumes on local roadways. The cumulative increase in roadway vehicle volumes would have the potential to increase cumulative operational VMT in the Program Area. As such, cumulative impacts related to operational transportation circulation and VMT within Big Bear Valley could be potentially significant. However, Program-related VMT would be negligible in comparison to the high volumes of VMT generated by the types of residential, commercial, and industrial projects assumed under buildout of the two general plans controlling land use in Big Bear Valley. Therefore, the Program would not have a cumulatively considerable contribution to the significant cumulative impact related to operational transportation circulation and VMT. (Draft EIR, pp. 4-876 – 4-877)

R. <u>TRIBAL CULTURAL RESOURCES</u>

As determined above, Program implementation can proceed without causing any unavoidable significant adverse impacts to TCRs. Implementation of the Program is not forecast to cause any direct, significant adverse impact to any site specific TCRs following implementation of identified **MMs**, and as a result the Program has no potential to make a cumulatively considerable contribution to TCR impacts in the Program Area, i.e., the Big Bear Valley. This is because impacts to individual TCRs at specific sites would be mitigated and site specific as such, the Program's contribution to cumulative impacts, whether significant or mitigated below significance thresholds, would not be cumulatively considerable. Any TCRs discovered on a project site that

would be adversely impacted by proposed future projects would be mitigated by implementing one or more of the three **MMs** listed above. With implementation of the appropriate measures, future Program site-specific projects are not forecast to cause or contribute to cumulatively considerable tribal cultural resource impacts. (Draft EIR, pp. 4-895 – 4896)

S. UTILITIES AND SERVICE SYSTEMS

Cumulative water and wastewater infrastructure development in the region may be significant as the region continues to be developed with uses that require such facilities. The cumulative impact of the water and wastewater infrastructure required to implement the Program would be cumulatively considerable, as, even though the implementation of mitigation to minimize impacts to bird-foot checkerbloom, a significant and unavoidable construction-related biological resources impact related to the construction of the Baldwin Lake Pipeline Alignment Option is anticipated to occur if this alignment is selected. As such, the Program's extension of such infrastructure would be cumulatively considerable level even with the implementation of mitigation. Thus, the contribution of the Program to future water and wastewater infrastructure would be cumulatively considerable, thus preventing a cumulatively considerable contribution to significant cumulative water and wastewater infrastructure. (Draft EIR, p. 4-929)

Cumulative stormwater and drainage infrastructure development in the region may be significant as the region continues to be developed with uses that require such facilities. The cumulative impact of the stormwater infrastructure required to implement the proposed Program would not be cumulatively considerable given that mitigation would ensure that the Program facilities would implement proper onsite detention to reduce drainage and to reduce downstream flows. This would minimize the Program's demand for extension of such infrastructure to a less than cumulatively considerable level through implementation of mitigation. Thus, the contribution of the Program to future stormwater infrastructure would not be cumulatively considerable, thus preventing a cumulatively considerable contribution to significant cumulative stormwater infrastructure. (Draft EIR, p. 4-931)

Cumulative electricity infrastructure development in the region may be significant as the region continues to be developed with uses that require such connections. The cumulative impact of the connection to electricity required to implement the proposed Program would not be cumulatively considerable given that mitigation would ensure that the program's demand for extension of such infrastructure would be minimized through implementation of mitigation identified for specific projects that undergo subsequent CEQA documentation. Furthermore, the proposed Program would generate a majority of the electricity needs for the operation of the proposed facilities onsite, which would further reduce the Program's contribution to cumulative electricity infrastructure construction. (Draft EIR, p. 4-933)

Cumulative natural gas infrastructure development in the region may be significant as the region continues to be developed with uses that require such connections. The cumulative impact of the connection to natural gas required to implement the proposed Program would not be cumulatively considerable given that the program's demand for extension of such infrastructure would be less than significant, as existing natural gas connections can be utilized in support of the Program. (Draft EIR, p. 4-934)

Cumulative telecommunication infrastructure development in the region may be significant as the

region continues to be developed with uses that require such connections. The cumulative impact of the connection to telecommunication required to implement the proposed Program would be less than significant given that mitigation would ensure that the program's demand for extension of such infrastructure would be minimized to less than cumulatively considerable through implementation of mitigation identified for specific projects that undergo subsequent CEQA documentation. The contribution of the Program to future telecommunication infrastructure is considered a benefit to the overall Big Bear Valley as it may enable expanded supply for other uses surrounding future Program facilities. (Draft EIR, p. 4-936)

Cumulative development within the Big Bear Valley and Lucerne Valley areas could result in an increase in demand for water. For the Big Bear Valley, the Program would enhance Bear Valley Basin water supplies through the Sand Canyon Recharge Project, and for the Program Water to be utilized in support of the Stickleback. These activities are being considered as part of the Program in response to the potential for cumulative demand on area water supplies. The Sand Canyon Recharge Project would require **MMs HYD-2 and HYD-3** to ensure that the operation of the Sand Canyon Recharge Project is regulated. As such, with implementation of the above mitigation, the Program Team would be able to minimize impacts on the Bear Valley Basin, thereby reducing any potential for the Program to contribute cumulatively considerable impacts on water supply availability. However, for the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the proposed Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the proposed Program would result in a cumulatively considerable impact on water supply availability within the Lucerne Valley Basin. (Draft EIR, p. 4-942)

Future cumulative development within the Big Bear Valley is expected to demand additional capacity from BBARWA. In general, BBARWA has available capacity to accommodate the anticipated population growth and subsequent demand for its services in the future, and has developed long-term plans that address growth through the expansion or upgrades to its facility. In fact, the Program is one of the projects that would accommodate growth within the region, though not through an expansion of capacity, it would increase the availability of alternative water resources for beneficial reuse within the Big Bear Valley, thereby accommodating the potential increased water demand that comes with regional growth. BBARWA is the only wastewater treatment provider in the Big Bear Valley, and therefore, as it has adequate capacity to accommodate both population and tourism growth, and based on the ability to meet future cumulative contribution to wastewater treatment from area growth, impacts would be less than cumulatively considerable.

As discussed in the previous analysis, the proposed Program would require brine disposal, but this would not require a discharge offsite, as occurs in some areas through a brine disposal line. Instead, due to the remote nature of the Big Bear Valley in the San Bernardino Mountains, evaporation ponds will be utilized to enable the brine to dry and be hauled off site. Therefore, no discharge to a wastewater/brine treatment provider will be necessary to support to Program. Because the project would result in a less than significant impact related to wastewater capacities, the project's contribution to cumulative impacts is not considered cumulatively considerable, and therefore,

would not contribute to a significant cumulative impact on the availability of wastewater treatment. (Draft EIR, p. 4-944)

Future cumulative development within the Big Bear Valley would cumulatively contribute to the generation of solid waste and disposal of solid waste at the Big Bear Transfer Station, San Timoteo Canyon Sanitary Landfill, and Mid-Valley Sanitary Landfill. Based on growth projections, these two landfills have approximately 16 to 22 more years of capacity. Future cumulative development could eventually exceed the capacities of these landfills. Therefore, cumulative development could result in significant impacts to landfills. Because the proposed Program would not substantially increase the generation of solid waste, particularly with the implementation of **MMs UTIL-4** and **UTIL-5**, the project's contribution to cumulative effects on landfills would be less than cumulatively considerable, and therefore, would result in a less than significant contribution to cumulative impacts. (Draft EIR, 4-947-948)

Potential cumulative impacts related to solid waste facilities and solid waste disposal would occur if projects within the Big Bear Valley would be served by a facility without sufficient permitted capacity to accommodate solid waste disposal needs, or if cumulative projects do not comply with Federal, State, and local statutes and regulations related to solid waste. Specifically, projects producing solid waste during project implementation, including cleanup, residential and commercial projects, could produce a waste stream that could together not be accommodated by current solid waste facilities within regional solid waste disposal areas, resulting in a cumulatively considerable impact to solid waste facilities.

The proposed Program projects would comply with all Federal, State, and local statues and regulations related to solid waste and would not result in potential significant impacts. When added to cumulative projects, the effects of the proposed Program projects would contribute incrementally to the cumulative impacts on solid waste facilities.

Cumulative projects would generally be served by the local municipal solid waste disposal facilities and hazardous waste disposal facilities, resulting in potential cumulative impacts to solid waste facilities. However, new cumulative development projects would participate in local programs designed to divert up to 50 percent of waste from landfills (AB 939), and divert up to 75% of organic waste from landfills by 2025 (SB 1383), and divert 65 percent of construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse (2022 CalGreen Code). In addition, all cumulative projects implemented in the area would also be required to comply with Federal, State, and local solid waste regulations and statutes. Therefore, when considered in addition to the anticipated impacts of other cumulative projects, and when considering that **MMs UTIL-4** and **UTIL-5** would minimize the Program's individual potential to contribute to cumulative violations of solid waste regulations, the proposed project's incremental contribution to solid waste facility capacity impacts would not be cumulatively considerable, and therefore, would result in a less than significant contribution to cumulative impacts.

The cumulative analysis of each Utilities and Service System issue evaluated in this **Subchapter 4.20** determined that the proposed Program would result in a cumulatively considerable contribution to cumulative utilities and service system impacts within the Big Bear Valley. Additionally, the Program would contribute a cumulatively considerable contribution to utilities and service systems impacts as the potential for the proposed Program in the Lucerne Valley Basin.

For the Lucerne Valley Basin, the Program would have a potential to reduce groundwater recharge to the Lucerne Valley Basin from 1,610 AFY under current BBARWA operations, to an average of 340 AFY under future BBARWA operations. Cumulative development in the Lucerne Valley could result in greater demand for water supplies, thereby further contributing to the need for water supplies that are currently being utilized at a higher rate than the Lucerne Valley Basin is being replenished. As the proposed Program would contribute to impairing groundwater recharge in the Lucerne Valley Basin, the proposed Program would result in a cumulatively considerable impact on utilities and service systems, specifically water supply, within the Lucerne Valley Basin. Furthermore, as construction of the proposed water and wastewater facilities would result in significant biological resources impacts to the bird-foot checkerbloom if the Baldwin Lake Pipeline Alignment Option, the Program would contribute a cumulatively considerable contribution to utilities and service systems impacts in the Big Bear Valley.

As determined in the preceding evaluation, the proposed Program would result in significant and unavoidable impacts under Utilities and Service Systems, which pertains both to the Big Bear Valley and to the reduction in discharge of undisinfected secondary effluent to the LV Site. As described in **Subchapter 4.5, Biological Resources**, construction of the Baldwin Lake Pipeline Alignment Option may affect bird-foot checkerbloom, as it is present within the proposed Program Area footprint for this pipeline alignment. While **MMs BIO-1** through **BIO-4** would minimize impacts to bird-foot checkerbloom from construction of the Solar Evaporation Ponds to a level of less than significant, **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species, and as such, a significant impact on this species may occur as a result of selecting the Baldwin Lake Pipeline Alignment Option. Therefore, the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact if the Baldwin Lake Pipeline Alignment Option is the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option. If BBARWA does not select the Baldwin Lake Pipeline Alignment Option, a significant impact under this issue would be avoided. Regardless, as the Baldwin Lake Pipeline Alignment Option may be the selected Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option, impacts under this issue are considered significant and unavoidable.

No mitigation is available to reduce the potential for a significant and unavoidable impact to occur on water supplies in the Lucerne Valley Basin as a result of Program implementation. This is because the Program would reduce the amount of water that would be discharged to the Lucerne Valley Basin, which has the potential to impact the amount of water that could be expected to be recharged in the Lucerne Valley Basin on an annual basis, thereby impacting water supplies. Therefore, the proposed Program would have a significant and unavoidable potential for the implementation of the project to substantially impair the availability of water supplies in the Lucerne Valley Basin as a result of the reduction in recharge to the Lucerne Valley Basin. All other utilities and service system impacts are considered less than significant. (Draft EIR, p. 4-951 – 4-952)

T. <u>WILDFIRE</u>

The Big Bear Valley is moderately urbanized with residential and commercial development. As the area continues to develop, the addition of more development could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan by constructing facilities within public ROW. Since the proposed Program pipelines would be

constructed within public ROW, the proposed Program's contribution to the cumulative impact would be considerable requiring implementation of **MM WF-1** to reduce the Program's contribution to this significant cumulative impact. The implementation of **MM WF-1** would ensure that the proposed Program's contribution to cumulative emergency access and evacuation impacts would not be cumulatively considerable by requiring the preparation and implementation of a project specific traffic control plan with comprehensive strategies to reduce/control disruption to emerency access and evacuation plans. (Draft EIR, p. 4-967)

The floor of the Big Bear Valley is largely urbanized with residential and commercial development. As the area continues to develop, the addition of more development could expose future residents to pollutant concentrations from a wildfire or contribute to the uncontrolled spread of wildfire resulting in a significant cumulative fire hazard impact. The Program infrastructure would primarily be constructed within the Big Bear Valley's urban areas or outside of very high FHSZs (Baldwin Lake) or, if a facility must be located within a very high FHSZ, **MM WF-2** would be implemented, reducing the project specific impacts to a level of less than significant. The implementation of **MM WF-2** would ensure that the proposed Program facilities' contribution to cumulative wildfire hazard impacts would be reduced to less than cumulatively considerable impact by requiring the preparation and implementation of a project specific fire management plans with comprehensive strategies to reduce/control contribution to the spread of wildfire in high FHSZs. BBARWA would review and approve such fire management plans with an opportunity for review and comment by CAL FIRE and local fire departments to ensure their implementation during construction and operation on the proposed Program. (Draft EIR, p. 4-972)

The floor of the Big Bear Valley is largely urbanized with residential and commercial development. As the area continues to develop, the addition of more development could exacerbate fire risk or may result in temporary or ongoing impacts to the environment as a result of development located within adjacent very high FHSZs. Since the Program infrastructure would primarily be constructed within urban areas or non-very high FHSZs or, if a facility must be located within a FHSZ, **MM WF-2** would be implemented, proposed Program impacts would not be cumulatively considerable. The implementation of **MM WF-2** would ensure that the proposed facilities' contribution to cumulative wildfire hazard impacts would not be cumulatively considerable by requiring the preparation and implementation of a project specific fire management plan with comprehensive strategies to reduce/control contribution to the spread of wildfire. BBARWA would review and approve such fire management plans with an opportunity for review and comment by CAL FIRE, Big Bear Fire Department, and SBCFD to ensure their implementation during construction and operation on the proposed Program. As such, while installation or maintenance of the proposed Program may exacerbate fire risk in the region as a result of cumulative development within very high FHSZs, with the implementation of **MM WF-2**, the proposed Program would not result in a cumulatively considerable contribution to cumulative impacts from such occurrences. (Draft EIR, p. 4-976)

The floor of the Big Bear Valley is largely urbanized with residential and commercial development. As the area continues to develop, the addition of more urban development could exacerbate fire risk or may result in temporary or ongoing impacts to the environment, resulting in a significant cumulative impact. Since the Program infrastructure would primarily be constructed within urban areas or outside of very high FHSZs, if the Program infrastructure project must be located within a severe wildfire hazard area, **MM WF-2** would be implemented. As such, while exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes may be exacerbated by cumulative development in within very high FHSZs, with the implementation of **MM WF-2**, the Program would not result in a cumulatively considerable contribution to cumulative impacts from such occurrences. The implementation of **MM WF-2** would ensure that the proposed facilities'

contribution to cumulative wildfire hazard impacts would not be cumulatively considerable by requiring the preparation and implementation of a project-specific fire hazard mitigation plan with comprehensive strategies to reduce/control exposing people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. BBARWA would review and approve such fire management plans with an opportunity for review and comment by CAL FIRE and local fire departments to ensure their implementation during the construction and operation of the proposed Program.

The cumulative analysis off each wildfire issue evaluated in this **Subchapter (4.21)** of the DPEIR determined that the proposed Program would not make a cumulatively considerable contribution to cumulative wildfire hazards for two primary reasons: 1) most, if not all, of the Program infrastructure are proposed to be located within urban areas or outside of very high FHSZs or, 2) if a facility must be located within a severe wildfire hazard area, **MMs WF-1** and **WF-2** would be implemented. As such, while overall wildfire risk may be exacerbated by other cumulative development within very high FHSZs, with the implementation of **MMs WF-1** and **WF-2**, the Program would not result in a cumulatively considerable contribution to wildfire impacts from such occurrences. (Draft EIR, pp. 4-997)

SECTION VI.
FINDINGS REGARDING SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

Sections 15126(c) and 15126.2(c) of the CEQA Guidelines, require that an EIR address any significant irreversible environmental changes that would occur should the Program be implemented. Generally, a Program would result in significant irreversible environmental changes if any of the following would occur:

- The Program would involve a large commitment of non-renewable resources;
- The primary and secondary impacts of the Program would generally commit future generations to similar uses;
- The Program involves uses in which irreversible damage could result from any potential environmental accidents; or
- The proposed consumption of resources is not justified.

SECTION VII.
GROWTH-INDUCING IMPACTS

Section 15126.2(e) of the State CEQA Guidelines requires a Draft EIR to discuss the ways the Program could foster economic or population growth or the construction of additional housing, directly or indirectly, in the surrounding environment. In accordance with State CEQA Guidelines Section 15126.2(e), a Program would be considered to have a growth-inducing effect if it would:

- Directly or indirectly foster economic or population growth, or the construction of additional housing in the surrounding environment;
- Remove obstacles to population growth (e.g., construction of an infrastructure expansion to allow for more construction in service areas);
- Tax existing community service facilities, requiring the construction of new facilities that could cause significant environmental effects; or
- Encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.

In addition, CEQA Guidelines that that growth inducement must not be assumed.

SECTION VIII.
ALTERNATIVES

A. BACKGROUND

The Draft EIR analyzed three alternatives to the Program as proposed and evaluated these alternatives for their ability to avoid or reduce the Program's significant environmental effects while also meeting the majority of the Program's objectives. The Agency finds that it has

considered and rejected as infeasible the alternatives identified in the EIR and described below. This section sets forth the potential alternatives to the Program analyzed in the EIR and evaluates them in light of the Program objectives, as required by CEQA.

Where significant impacts are identified, section 15126.6 of the State CEQA Guidelines requires EIRs to consider and discuss alternatives to the proposed actions. Subsection (a) states:

> (a) An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason.

Subsection 15126.6(b) states the purpose of the alternatives analysis:

> (b) Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

In subsection 15126.6(c), the State CEQA Guidelines describe the selection process for a range of reasonable alternatives:

> (c) The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the Project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

The range of alternatives required is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed Program. Alternatives are limited to ones that would avoid or substantially lessen any of the significant effects of the Program. Of those alternatives, the EIR

need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the Program.

B. PROJECT OBJECTIVES

The following objectives have been established for the Program (Draft EIR) :

- Augments natural recharge for water supply sustainability;
- Protects the rare and diverse habitat and species in the Big Bear Valley;
- Promotes a thriving community through enhanced recreation;
- Creates a new and sustainable water supply;
- Educates the community about the water cycle, recycled water treatment process, and water quality to gain public support;
- Creates a Program that benefits the Program Team, and thereby benefits the community served by the members of the Program Team;
- Develops a cost-effective project to offset potable water demands; and
- Takes advantage of current outside funding opportunities.

C. ALTERNATIVES CONSIDERED BUT REJECTED FROM DETAILED ANALYSIS

Section 15126.6(c) of the State CEQA Guidelines specifies that an EIR should (1) identify alternatives that were considered by the lead agency but were eliminated from detailed consideration because they were determined to be infeasible during the scoping process; and (2) briefly explain the reasons underlying the lead agency's determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic Program objectives; (ii) infeasibility; and/or (iii) inability to avoid significant environmental impacts.

The following alternatives were considered but rejected as part of the environmental analysis for the Program:

- Alternate Location
- Imported Water
- Landscape Irrigation

Finding: The Agency rejects the above alternatives, on the following grounds, each of which individually provides sufficient justification for rejection of this alternative: (1) the alternatives do not avoid any significant and unavoidable impacts, (2) the alternatives would likely not further reduce any of the proposed Program's significant impacts; and (3) the alternatives are technically, financially, and legally infeasible. Therefore, these alternatives are eliminated from further consideration.

D. EVALUATION OF ALTERNATIVES SELECTED FOR ANALYSIS

The alternatives selected for further detailed review within the EIR focus on alternatives that could the Program's significant environmental impacts, while still meeting most of the basic Program objectives. Those alternatives include:

- **Alternative 1: No Program (Draft EIR)**
- **Alternative 2: Groundwater Recharge at Grenspot Alternative (Draft EIR)**
- **Alternative 3: Groundwater Rechage at Sand Canyon and Greenspot (Draft EIR)**

1. Alternative 1: No Program Alternative

Description:

One of the alternatives that must be evaluated in an EIR is the (NPA, regardless of whether it is a feasible alternative to the proposed Program (i.e., would meet the project objectives or requirements). Under this alternative, the environmental impacts that would occur if the proposed Program is not approved and implemented are identified. The NPA is required under CEQA to evaluate the environmental effects associated with no action on the part of the Lead Agency. The NPA would not require any upgrades to the BBARWA WWTP and the secondary effluent would continue to be discharged outside of Big Bear Valley for crop irrigation at the LV Site. The NPA would not provide any benefits to the Big Bear Valley. This alternative evaluates the environmental impacts resulting from a hypothetical continuation of the existing land use and circumstances. The NPA would not result in the Program Team securing a reliable, renewable source of water that could be retained in Big Bear Valley, which would essentially provide security for the future during potential droughts and dry years.

Impacts:

Aesthetics: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels in the Rathbone Management Area of the Bear Valley Basin (where the proposed Sand Canyon Recharge would be located under the Program) could drop below the minimum threshold established in the GSP for that Management Area by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future hydrologic variations and growth. With no specific facilities required under the NPA, the NPA would have no potential to impact a scenic vista; substantially damage scenic resources; conflict with applicable zoning and other regulations governing scenic quality; or create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. Contrastingly, under the Program, aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in MMs

AES-1, AES-5, and **AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation mm **AES-2.** Additionally, under the Program implementation of mm **AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and mm **AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. mm **AES-7** and **AES-8** would minimize light and glare conflicts from future facility construction and operation. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any significant aesthetic impacts. Under this evaluation and set of assumptions, the NPA would result in less overall aesthetic impacts; however, neither would result in any significant and unavoidable impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Agricultural and Forestry Resources: The NPA would not result in any new facilities. The Program would have no potential to impact agricultural resources in Lucerne Valley and forestry resources located within Big Bear Valley, mitigation is available to minimize impacts to forestry resources to a level of less than significant. However, no feasible **MMs** exist to avoid a significant impact from the conversion of agricultural lands at the LV Site in Lucerne Valley as a result of Program implementation. It should be noted that the farmer who leases the LV Site from BBARWA could, at any time, with or without the proposed Program, terminate their lease with BBARWA. As the farmer is presently under a lease agreement with BBARWA, it is assumed that the farming operations will continue for the foreseeable future. Thus, based on the current conditions, the NPA would have no known potential to result in the loss of Prime Farmland or Farmland of Statewide Importance, and as the NPA would have no known potential to involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use. The NPA would have no potential to impact forestry resources, and furthermore, where the Program would have a potential to result in any impacts to forestry as a result of the Sand Canyon pipeline, mitigation to ensure compliance with CAL FIRE regulations would minimize impacts to a level of less than significant. Thus, the NPA would have no potential to impact forestry resources, and the Program would require mitigation to minimize impacts to such resources. Under this evaluation and set of assumptions, the NPA would avoid a significant agricultural resources impact, though impacts to forestry resources under both the Program and the NPA would be less than significant.

Air Quality: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant air quality impacts. As with the Program, this alternative would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the SCAQMD's AQMP. Because no upgrades to existing recycled

water systems or groundwater recharge by the Program Team under the NPA, it is unlikely that maximum daily emissions during construction and operation of the NPA would exceed SCAQMD regional or localized significance thresholds, however, mitigation is required to minimize operational NO_x emissions, and as such **MM AQ-1** would be required to minimize potentially significant impacts below significance thresholds (see **Subchapter 4.3, Air Quality**). The NPA also does not include any reduction in discharge to the LV Site, and therefore would avoid the need for a fugitive dust response program to address the potential for fugitive dust to occur as a result of the LV Site agricultural fields becoming fallow. However, **MM AQ-2** would minimize this potential impact under the proposed Program. The NPA also would not include new facilities with the potential to generate substantial odorous emissions, though nor would the Program through the implementation of **MM AQ-3**. As such, under this evaluation and set of assumptions, the NPA would have substantially less potential to result in significant air quality impacts; however, the level of significance of air quality impacts of the Program would not be significant, and therefore impacts to air quality under both the Program and the NPA would be less than significant.

Biological Resources: The NPA will have no general biological resource impacts as it would not require any construction through Baldwin Lake. The NPA would eliminate the impacts of the construction of the Baldwin Lake Pipeline Alignment Option through Baldwin Lake, which, under the Program, would potentially adversely impact bird-foot checkerbloom, a State and Federal endangered species. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed Program approaches the level of significance regarding biological resource to those that would result from the NPA's impacts, but a potential still exists for significant impacts under the Program as a result of the construction of the Baldwin Lake Pipeline Alignment Option thus impacting the bird-foot checkerbloom as **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species. While the NPA would avoid the significant Biological Resources impact, it would not provide the anticipated habitat and recreational benefits, which are objectives of the Program, and that would result from the Program's discharge to Stanfield Marsh and Big Bear Lake. Regardless, under this evaluation and set of assumptions, the Program's effects on biological resources are considered to be greater than the NPA, and the NPA would avoid a potentially significant impact on biological resources that would otherwise result from implementation of the Program.

Cultural Resources: Simply because the Program will disturb a greater amount of area, its potential for encountering cultural resources is greater than for the NPA. The NPA does not require the development of any kind, other than the business-as-usual approach by which BBARWA manages its operations. As such, the NPA would have no cultural resources impacts. When mitigation is implemented—primarily avoidance of culturally sensitive areas, further site-specific study of the Sand Canyon Monitoring Wells, archaeological monitoring in sensitive areas, and specific treatment requirements for buried cultural materials that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to cultural resources. Under this evaluation and set of assumptions the NPA would have less impacts on cultural resources when compared to the proposed Program, but neither the NPA nor the Program

would result in significant cultural resource impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Energy: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant energy impacts. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team, including the addition of an AWPF in conjunction with Conveyance Pipelines, pump stations, monitoring wells, and evaporation ponds as proposed by the Program, energy consumption under the NPA would be less than that which would occur under the proposed Program. However, as with the proposed Program, the potential for wasteful, inefficient, or unnecessary energy consumption during construction activities would be minimized by compliance with existing applicable regulations. Furthermore, operational energy usage under the NPA would not be wasteful, inefficient, or unnecessary because it would continue to contribute to the provision of wastewater collection, recycled water generation, and water delivery within Big Bear Valley and would be conducted in accordance with existing applicable regulations related to energy efficiency and vehicle fuel economy. However, operational energy usage for the proposed Program would not be wasteful, inefficient, or unnecessary because it would include the installation of a 2 MW solar array. As such, under this evaluation and set of assumptions, the NPA would result in less overall energy consumption; however, the level of significance of the energy impacts of this alternative would be similar to that which would occur under the proposed Program and would be less than significant.

Geology and Soils: The Big Bear Valley contains substantial geological and soils constraints. Due to these substantial constraints and the installation of future Program related facilities in locations where such constraints may occur, a potential for significant geology and soils resources impacts from implementation of the Program were identified in **Subchapter 4.8**. The NPA does not require development of any kind, other than the business-as-usual approach by which the Program Team manage each agency's individual operations. As such, the NPA would not result in exposure of persons or structures to new sources of geology and soils related constraints including seismic constructions such as, liquefaction, ground shaking, landslide, and ground rupture as well as soil constraints such as erosion, subsidence, and soil stability. Several **MMs** were identified to minimize geology and soils impacts under the Program, while the NPA would not require mitigation to ensure that geology and soils impacts are less than significant. As such, under this evaluation and set of assumptions, the NPA would have less potential to result in significant geology and soils impacts compared to the Program; however, the level of significance of geology and soils impacts of this alternative would be similar, if less than, that which would occur under the proposed Program since both would be less than significant with the implementation of mitigation.

Greenhouse Gas: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a

business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant greenhouse impacts. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team, including the addition of an AWPF in conjunction Conveyance Pipelines, pump stations, monitoring wells, and evaporation ponds as proposed by the Program, GHG emissions under the NPA would likely be less than those of the proposed Program. Given that the NPA represents an alternative with no new construction or operational activities outside of the scope of a business-as-usual scenario (i.e., continuation of practices that have already been evaluated and approved under CEQA or that fall outside of the scope of CEQA), the NPA would have no potential to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. The proposed Program would not exceed SCAQMD thresholds for GHG, nor would it conflict with a plan, policy, or regulation adopted for the purpose of reducing the emissions of GHG. As such, under this evaluation and set of assumptions, the NPA would result in fewer overall construction and operational GHG emissions compared to the proposed Program. Under this evaluation and set of assumptions the NPA would result in less overall GHG emissions; however, the level of significance of the GHG impacts of this alternative would be similar to that which would occur under the proposed Program and would be less than significant.

Hazards and Hazardous Materials: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant hazards and hazardous materials impacts. The NPA would operate in accordance with existing Program Team agency policies related to the handling of hazardous materials and, as with the Program, would be subject to mandatory regulations pertaining to the handling and transport of hazardous materials. Given that no new facilities would be developed under the NPA, no mitigation would be required to minimize potential hazards and hazardous materials impacts. Several MMs were identified to minimize hazards and hazardous materials impacts under the Program. Therefore, though there will be some adverse impacts as a result of implementing the Program, specific MMs would reduce its potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. As such, under this evaluation and set of assumptions, the NPA would likely have less potential to result in significant hazard and hazardous materials impacts; however, the level of significance of the hazard and hazardous materials impacts that would result from this alternative would be similar, if less than, that which would occur under the proposed Program since both would be less than significant with the implementation of mitigation.

Hydrology and Water Quality: The Program will provide a local, new water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Program Water stored in Big Bear Lake to serve the Bear Mountain Golf Course, Resort bike park, and other uses. Under the NPA, however, there are other challenges with managing the Bear Valley Basin, including that, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. The consequences of taking no action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that would be addressed by the Program or by the other alternatives—the Greenspot Recharge Alternative and Greenspot and Sand Canyon Alternative—would be impairment of the Bear Valley Basin, and noncompliance with the Bear Valley Basin GSP. Consequently, going forward with management of the Basin in a business-as-usual approach, without addressing the need for new facilities needed to tackle the above challenges, would have a potential to result in a major significant impact to the Bear Valley Basin's hydrology resources and water quality characteristics. (Final EIR, p. 5-11)

However, by continuing the discharge of secondary effluent to the LV Site, the NPA would avoid a significant water quality impact and groundwater impact on the Lucerne Valley Basin.

Regarding flood hazards and contribution thereof, the NPA, with no proposed facilities, would have no potential flood hazard impacts beyond those that have been identified to occur at existing facilities by previously adopted or certified CEQA documentation. Regardless, both of these alternatives are forecast to have less than significant adverse impact under this environmental topic.

The NPA, which assumes no facilities would be installed and business-as-usual would continue, would result in significant groundwater supply challenges, impairment of the Bear Valley Basin, and noncompliance with the Bear Valley Basin GSP, with no mitigation available to minimize this significant impact. Due to Big Bear Valley's unique position at the top of the Santa Ana Watershed, the only water available to Big Bear Valley is groundwater, which is replenished by precipitation, and while the Program would result in a significant impact on the Lucerne Valley Basin as a result of reducing the discharge to the LV Site, and thereby reducing the amount of recharge to the Lucerne Valley Basin, the Program is necessary to meet supply needs and protect the groundwater basin from impairment. Ultimately, under this evaluation and set of assumptions the Program's effects on hydrology and water quality are considered to be equal to the NPA, with both the NPA and Program resulting in significant hydrology and water quality impacts, only for different reasons and within different watersheds. The NPA would ultimately lead to new significant impacts under hydrology and water quality that would not otherwise result from implementation of the Program. Impacts under both the Program and the NPA would be significant.

Land Use and Planning: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the

Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. While no specific facilities would be installed under the NPA, the GSP itself could be considered a planning document, and by taking no action to address groundwater management, the NPA could result in a conflict thereof, thereby resulting in a significant impact under land use and planning. With no specific facilities required under the NPA, the NPA would have no potential to conflict with the majority of goals and policies of the applicable General Plans or physically divide an established community. However, there are a number of goals and policies pertaining to water resources in the San Bernardino Countywide Plan and Big Bear Lake General Plan that the NPA may conflict with through lack of action to manage water supplies in Big Bear Valley. Namely, the NPA would directly conflict with the following goals, policies, and programs put forth in the Big Bear Lake General Plan.

Goal ER 3: A dependable long-term supply of clean and healthful domestic water to meet the needs to all segments of the community.

Goal PS 3: Sewer Facilities. A sewer system adequate to serve the long-term needs of the community, including an upgraded sewage collection system and adequate treatment plant capacity.

Policy PS 3.1: Cooperate with the Big Bear Area Regional Wastewater Agency (BBARWA) in determining future needs and developing plans for wastewater facilities.

Program PS 3.1.5: Actively encourage and support BBARWA in any future requests to change its point of discharge, as determined by the California Regional Water Quality Control Board, from Lucerne Valley to the Big Bear Valley, for local use of reclaimed water at the appropriate time.

As such, given that the NPA would conflict with the Bear Valley Basin GSP, San Bernardino Countywide Plan and Big Bear Lake General Plan, a significant land use and planning impact would result from the NPA. Mitigation is required to reduce impacts to a level of less than significant under the Program, and these measures would ensure that the Sand Canyon Monitoring Wells facilities associated with the Program are developed in appropriate areas and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. As such, while the Program would require mitigation to reduce potential impacts to a level of less than significant, the NPA would result in significant and unavoidable land use and planning impacts. Under this evaluation and set of assumptions, the NPA would result in greater overall land use impacts than the Program, and would result in a new significant and unavoidable impact when compared to the less than significant land use and planning determination made in this DPEIR for the Program.

<u>Mineral Resources:</u> The NPA would not result in any new facilities that have been proposed to operate under the Program. With no specific facilities required under the NPA, the NPA would have no potential to result in a direct adverse impact on mineral resources, or result in the loss of availability of a known valuable mineral resource or result in the loss of availability of a locally important mineral resource recovery site. Similarly, no mineral resource impacts were projected to occur as a result of the implementation of the proposed Program. Under this evaluation and set of assumptions, the NPA would result in

comparable impacts to mineral resources to that which would occur under the proposed Program and neither the NPA nor the Program would result in significant mineral resource impacts. Impacts under both the Program and the NPA would be less than significant.

Noise: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant noise impacts. Because no upgrades to existing recycled water systems or groundwater recharge by the Program Team would occur, including the addition of an AWPF in conjunction Conveyance Pipelines, pump stations, monitoring wells, and evaporation ponds as proposed by the Program, continuation of the business-as-usual approach would have no potential generate temporary or permanent increases in ambient noise levels and excessive groundborne vibration levels in excess of the applicable thresholds. Therefore, while the proposed Program would result in noise and vibration impacts, only the drilling of the monitoring wells would rise to the level of significant, but even then, mitigation would reduce this impact to a level of less than significant. In contrast, the NPA would not require mitigation to reduce noise impacts below significance thresholds, as the continued operations at Program Team facilities systems would continue to apply with existing noise standards and regulations as they do at present. Under this evaluation and set of assumptions, the NPA would result in less overall noise impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program and neither the NPA nor the Program would result in significant noise impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Population and Housing: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would not include construction of new homes or businesses and would therefore not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley. Furthermore, the NPA would not result in displacement of housing or persons because no specific facilities are proposed under this alternative. The same would be the case for the Program, which is not anticipated to result in any significant impacts to population and housing. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any population and housing impacts. Under this evaluation and set of assumptions, the NPA would result in comparable overall impacts related to population and housing than that which would occur under the proposed Program since neither the NPA nor the Program would result in

significant population and housing impacts. Impacts under both the Program and the NPA would be less than significant.

Public Services: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, schools, fire protection facilities, parks, or other public services, or the need for new or physically altered police protection facilities, schools, fire protection facilities, parks, or other public services, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives. Mitigation is required to reduce impacts to a level of less than significant under the Program to minimize the potential for trespass during both construction and operation that could exacerbate demand for police protection services. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any public services impacts. Under this evaluation and set of assumptions, the NPA would result in less overall public service impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program since neither the NPA nor the Program would result in significant public services impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Recreation: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. The proposed Program impacts would also be less than significant without the need for added mitigation. As such, the neither the NPA nor the Program would not result in any significant recreation impacts. Under this evaluation and set of assumptions, the NPA would result in comparable overall recreation impacts than that which would occur under the proposed Program since neither the NPA nor the Program would result in significant recreation impacts. Impacts under both the Program and the NPA would be less than significant.

Transportation: The NPA would not result in any new facilities that have been proposed to operate the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the

minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities; conflict or be inconsistent with State CEQA Guidelines Section 15064.3, subdivision (b); substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); or result in inadequate emergency access. Mitigation is required to minimize impacts to transportation that would reduce the Program's potential construction traffic impacts by requiring all construction activities to be conducted in accordance with an approved construction TMP. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any transportation impacts. Under this evaluation and set of assumptions, the NPA would result in less overall transportation impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program since neither the NPA nor the Program would result in significant transportation impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Tribal Cultural Resources: Simply because the Program will disturb a greater amount of area, the potential for encountering TCRs is greater under the Program. The NPA does not require development of any kind, other than the business-as-usual approach by which the Program Team agencies manage individual agency operations. As such, the NPA would have no TCR impacts. When mitigation is implemented—primarily avoidance of tribally sensitive areas, tribal and archaeological monitoring, and specific treatment requirements for buried TCRs that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to TCRs. As such, while the Program would require mitigation to reduce impacts to a level of less than significant, the NPA would not result in any TCR impacts. Under this evaluation and set of assumptions, the NPA would be less likely to cause impacts on TCRs than would the proposed Program, but neither the NPA nor the Program would result in significant tribal cultural resource impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

Utilities and Service Systems: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. Under the Program, significant impacts to stormwater drainage, energy, natural gas telecommunications, and solid waste were determined to be less than significant with the implementation of mitigation, and under the NPA, specifically Is it relates to utilities infrastructure, it is anticipated that no impact to these utility systems would occur. Under the Program mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects; this would be not required to implement the NPA, as BBARWA would continue operating

its existing facilities in the same manner as it would at present. The Program would generate solid waste during operation and construction and mitigation is required to address potential impacts related to solid waste to a level of less than significant. In contrast, under the NPA, the Program Team would not cause any new impacts to solid waste as it would be required to continue to comply with mandatory regulations pertaining to solid waste, and would not generate any new sources of solid waste requiring additional analysis.

The construction of infrastructure related to energy and natural gas under the Program was analyzed and determined to be less than significant with the implementation of mitigation that would ensure that Program projects are not located in an area containing adjacent access to electricity and natural gas infrastructure, and if that is not possible, then subsequent CEQA documentation would be required. This mitigation would not be required to reduce impacts under the NPA, as existing facilities are currently served by adequate electricity and natural gas service systems. Under the Program, the construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation; this mitigation would not be required to reduce impacts under the NPA, as existing facilities are currently service by adequate telecommunication systems. As such, for the issues of solid waste and stormwater drainage, electricity, natural gas, and telecommunications, the Program would require mitigation to minimize impacts to a level of less than significant, while the NPA would not require mitigation to achieve this level of impact, but neither would result in significant impacts in these areas.

The extension of water and wastewater related infrastructure was determined to be significant under the Program, because the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact. As no facilities would be installed under the NPA, no significant water or wastewater construction impacts occur.

Under both the NPA and the Program, sufficient capacities are anticipated to be available at BBARWA. However, as described under Hydrology and Water Quality, the consequences of taking no action towards addressing groundwater supply challenges, given Big Bear Valley's remote location and that groundwater is the only local source of water available in the Big Bear Valley, that would be addressed by the Program or by the other alternatives—the Greenspot Recharge Alternative and Greenspot and Sand Canyon Alternative—would result in insufficient supply in the Big Bear Valley. This is because without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. Consequently, going forward with management of the Bear Valley Basin in a business-as-usual approach, without addressing the need for new facilities needed to tackle potential future water supply challenges, would have a potential to result in a significant impact to the water supply in the Big Bear Valley. Whereas, for the Program, the reduction in discharge of secondary effluent to the Lucerne Valley Basin would result in a significant impact on Lucerne Valley Basin water supply. As a result, while the area in which significant impacts would result are different, both the NPA and the Program would result in significant and unavoidable water supply impacts. As such, under this evaluation and set of assumptions the proposed Program effects on utilities and service systems would be significant, and as would the NPA, therefore the NPA would not eliminate the significant impact that is anticipated to occur under the

Program. Impacts from both the Program and the NPA would be significant and unavoidable under this issue.

Wildfire: The NPA would not result in any new facilities that have been proposed to operate under the Program. BBARWA and the Program Team would instead continue in a business-as-usual manner, and according to the Bear Valley Basin GSP, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. There are no other water sources available in the Bear Valley Basin to prevent groundwater levels from dropping as a result of future growth. With no specific facilities required under the NPA, the NPA would have no potential to result in new impacts at existing facilities located in a very high FHSZ that have not been identified previously. However, the Program would contribute a new water supply that could be used in aid of firefighting. The Program would require mitigation to minimize impacts to wildfire that would: reduce the project's potential traffic conflicts that could be exacerbating in high FHSZs by requiring all construction activities to be conducted in accordance with an approved construction Traffic Control Plan; and ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. As such, while the Program would require mitigation to reduce wildfire impacts to a level of less than significant, the NPA would not result in any wildfire impacts. Under this evaluation and set of assumptions, the NPA would result in less overall wildfire impacts; however, the level of significance would be similar, if less than, that which would occur under the proposed Program since neither the NPA nor the Program would result in significant transportation impacts. Impacts under both the Program and the NPA would be less than significant through the implementation of mitigation.

(Draft EIR, pp. 5-3 – 5-17.)

Attainment of Program Objectives:

While the NPA would reduce impacts related to Agriculture and Forestry Resources and Biological Resources, it would not avoid significant Hydrology and Water Quality or Utilities and Service Systems impacts, and furthermore, it would create a new significant impact under Land Use and Planning. As the NPA would hinder sustainable management of the Bear Valley Basin per the GSP, the NPA is not considered to be the environmentally superior alternative. (Draft EIR, p. 5-17.)

Finding: The Agency rejects Alternative 1: No Program/No Build Alternative, on the following grounds, each of which individually provides sufficient justification for rejection of this alternative: (1) the alternative fails to meet most of the Project objectives; (2) the alternative fails to avoid or reduce the Program's significant and unavoidable impacts relating to aesthetics and agriculture; (3) the alternative would result in increased impacts relating to Land Use and Planning; and (4) the alternative is infeasible.

2. Alternative 2: Groundwater Recharge at Greenspot Alternative

Description:

The Groundwater Recharge at Greenspot Alternative (Greenspot Alternative) was developed as part of the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study (**Appendix 20**) prepared by WSC in December of 2016. The Greenspot Alternative analyzes the impacts from a scenario in which the Alternative utilizes the similar AWPF upgrades at the BBARWA WWTP as identified under the Program to send blended tertiary and advanced treated water to the Greenspot Recharge Site (**Figure 5-1**). Because this Alternative would not discharge to Big Bear Lake, both tertiary and advanced treatment systems would be utilized. It is assumed that 22% of the recharge water would receive tertiary treatment, and 78% would receive advanced treatment.

Analysis of the drilling and pilot recharge testing at the Greenspot site resulted in the following conclusions:

- The Greenspot site is located on recent alluvial deposits of permeable sand and gravel and no soil layers were observed beneath the site that would inhibit the downward percolation of recharge water to the ground water table.

- Groundwater levels start at approximately 100 ft bgs, which allows adequate space for mounding and storage of recharge water.

- A one-month pilot recharge test resulted in recharge rates of 3.1 to 3.7 ft/day. For planning purposes, the recharge rate is assumed to be one half of the observed rate to be conservative.

- At the seepage velocities estimated from the artificial recharge test data, ground water recharged at the Greenspot Recharge Site would reach the nearest production wells (BBLDWP's Lakewood well field) in 8.5 to 17.5 months.

- No fatal flaws were identified during the pilot recharge test.

- The property necessary to support a full-scale program at this site should include more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.

In a subsequent study, a calibrated groundwater flow model was used to simulate and evaluate a full-scale artificial recharge spreading basin facility at this site. The study evaluated potential changes in groundwater levels that would result from the artificial recharge of 500, 1,000, 1,500 or 2,000 AFY of water, with and without additional groundwater pumping. The study concluded that:

- An additional extraction well field downgradient of the recharge site would be needed to effectively intercept the water that is artificially recharged at the Greenspot Recharge Site. The study assumed six extraction wells at a rate of 100 gpm each.

- Groundwater levels can be maintained below approximately 30 ft bgs with as much as 1,000 AFY of artificial recharge during periods of below normal

precipitation, provided that an equivalent amount of water is extracted at the down gradient well field.

- During wet periods, further pumping from the extraction well field and Lakewood Wells is required to artificially lower the ground water levels to maintain storage space within the aquifer in order to continue artificial recharge.

- DWR records suggest that some existing private wells are located in the vicinity of the proposed recharge basins and would be within 6-months travel time from the proposed basins. However, the exact locations of these wells will have to be verified.

Thus, the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study anticipated that the recharge capacity at the Greenspot site would be 1,000 AFY.

It is assumed that, at a general level, the Greenspot Alternative would require the following infrastructure components to achieve recharge of 1,000 AFY of blended tertiary and advanced treated water:

- 6 extraction wells with a 100 gpm capacity at each well

- 2 monitoring wells

- Upgrades to the BBARWA WWTP, to include 1.0 MGD of full advanced treatment, producing up to 1,000 AFY of blended tertiary and advanced treated water. The secondary effluent from the existing WWTP would be fed to the advanced treatment process train consisting of:

    - Microfiltration/ultrafiltration (MF/UF)

    - Reverse Osmosis (RO)

    - Ultraviolet Advanced Oxidation (UV/AOP)

    - Brine Disposal

- Approximately 16,200 LF of 12-in pipeline

- 2 MW Solar Array

- The Greenspot Recharge Site is assumed to be a 7-acre site to allow more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.

- Solar evaporation ponds (Vibratory Shear-Enhanced Processing (VSEP) would be used to reduce the volume of concentrate. The reduced concentrate would then be conveyed to new, lined evaporation ponds on the LV Site).

The location of the facilities required for the Greenspot Alternative are shown in **Figure 5-1**.

Impacts:

Aesthetics: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, as described in the description of the Greenspot Alternative, above, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Like the Program, the presence of construction equipment and related construction materials could be visible from public vantage points such as open space areas and public ROW such as roadways and sidewalks. However, construction impacts related to aesthetics would be temporary and short-term in nature and would not substantially affect scenic vistas or resources in the area. Construction would primarily occur in the daytime and would not result additional sources of light and glare. Overall, aesthetic impacts during construction would be slightly less intensive than the Program due to the smaller scale of potential construction; however, the level of significance of construction-related aesthetic impacts is similar to that which would occur under the proposed Program and both would be less than significant with the implementation of mitigation.

Landscape disturbance from the development of new facilities and structures has the highest potential to result in potentially significant permanent effects to scenic vistas and resources from conflict with local agency design guidelines. Most of the facilities would likely be underground, small, and/or similar to nearby existing facilities. Once constructed certain facilities could conflict with the existing views of any nearby scenic resources. Aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in **MM AES-1, AES-5,** and **AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation **MM AES-2.** Additionally, implementation of **MM AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and **MM AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. **MMs AES-7** and **AES-8** would minimize light and glare conflicts from future facility construction and operation. As such, under this evaluation and set of assumptions, the Greenspot Alternative would result in comparable, if slightly less overall aesthetic impacts; however, the level of significance of aesthetic impacts to scenic vistas and scenic resources from this alternative would be similar to that which would occur under the proposed Program and both would be less than significant with implementation of mitigation.

Like the Program, facilities construction under the Greenspot Alternative may include nighttime security lighting which could result in spill over lighting onto adjacent land uses. Also similar to the Program some new facilities could be a source of glare depending on reflectivity of the materials used. Given that roughly the same type and number of above ground facilities would be developed under the Greenspot Alternative, measures to reduce impacts related to light and glare, as specified in **MMs AES-5** and **AES-6**, would be required to reduce light and glare impacts to less than significant. As such, under this evaluation and set of assumptions, the level of significance of aesthetics impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Agricultural and Forestry Resources: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Within the Big Bear Valley, there are no agricultural resources, but as BBARWA discharges its secondary effluent to the LV Site, which contains substantial agricultural resources, any reduction in secondary effluent would result in a commensurate reduction in land that can be farmed at the LV Site. The Program would have a potential to impact agricultural and forestry resources located within Big Bear Valley, mitigation is available to minimize impacts to Forestry Resources to a level of less than significant, and this same mitigation may be necessary should any forest trees require removal as part of construction of the Greenspot Alternative facilities. However, no feasible MMs exist to avoid a significant impact from the conversion of agricultural lands as a result of Program implementation. As the Greenspot Alternative would also result in a reduction in discharge to the LV Site, in order to retain the blended tertiary and advanced treated water in Big Bear Valley and Watershed, it also would result in a significant loss of important farmland. As such, under this evaluation and set of assumptions, the level of significance of agricultural and forestry resource impacts of this alternative would be similar to that which would occur under the Program and both would be significant and unavoidable.

Air Quality: As with the proposed Program, operation of the Greenspot Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Therefore, as with the Program, this alternative would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the SCAQMD's AQMP. The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the proposed Program, construction and operation of these components would generate criteria air pollutant emissions. Modestly fewer facilities would be constructed under the Greenspot Alternative as compared to the proposed Program. Therefore, construction and operational criteria air pollutant emissions would likely be modestly lower than, but comparable to, those of the proposed Program. The intensity of daily construction activities under the Greenspot Alternative would

potentially be similar to that which would occur under the proposed Program. As such, similar to the Program, maximum daily emissions during construction of the Greenspot Alternative may exceed SCAQMD regional significance thresholds. Therefore, implementation of **MM AQ-1** would be required for the Greenspot Alternative to address the exceedance(s) and would likely reduce impacts to a less than significant level, as with the proposed Program. Furthermore, similar to that which would occur under the Program, the relatively small scale of construction projects and operation and maintenance activities under the Greenspot Alternative would minimize the potential for the exposure of sensitive receptors to substantial concentrations of carbon monoxide and toxic air contaminants. This alternative also would not likely include new facilities with the potential to generate substantial odorous emissions. Therefore, the level of impact of this alternative and the proposed Program is equivalent with implementation of **MM AQ-1**. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely have similar or fewer overall construction and operational emissions as the proposed Program, and the level of significance of the air quality impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Biological Resources: Development of the Greenspot Alternative would not result in a pipeline that would traverse Baldwin Lake, and as a result would avoid the significant and unavoidable impact to bird-foot checkerbloom, a State and Federal endangered species. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed Program approaches the level of significance regarding biological resource to those that would result from the Greenspot Alternative's impacts, but a potential still exists for significant impacts under the Program as a result of the construction of the Baldwin Lake Pipeline Alignment Option thus impacting the bird-foot checkerbloom as **MM BIO-5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species. While this alternative would avoid the significant Biological Resources impact, it would not provide the anticipated habitat and recreational benefits, which are objectives of the Program, and that would result from the Program's discharge to Stanfield Marsh and Big Bear Lake. Regardless, under this evaluation and set of assumptions, the Program's effects on biological resources are considered to be greater than the Greenspot Alternative, and the Greenspot Alternative would avoid a significant impact on biological resources that would otherwise result from implementation of the Program.

Cultural Resources: As with the proposed Program, operations of the Greenspot Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. The Big Bear Valley is a large expanse of area that contains known historical, archaeological, or paleontological resources. As such, future Program projects may be developed within sites that contain such resources which, due to the similar scope of the Greenspot Alternative, may also occur under the Greenspot Alternative. Mitigation imposed to minimize impacts to cultural resources at future Program facilities that would also apply to the Greenspot Alternative. As such, when mitigation is implemented—primarily avoidance of culturally sensitive areas, further site-specific study the Sand Canyon Monitoring Wells, archaeological monitoring in sensitive areas, and specific treatment requirements for buried cultural materials that may be

uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to cultural resources. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely have a potential to impact cultural resources comparable to the Program, and the level of significance of the cultural impacts that would result from the Greenspot Alternative would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Energy: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the proposed Program, construction and operation of these components would consume energy. Modestly fewer facilities would be constructed under the Greenspot Alternative as compared to the proposed Program. Therefore, construction and operational energy consumption would likely be somewhat lower than that which would occur under the Program. However, as with the Program, the potential for wasteful, inefficient, or unnecessary energy consumption during construction activities would be minimized by compliance with existing applicable regulations. Furthermore, operational energy usage under the Greenspot Alternative would not be wasteful, inefficient, or unnecessary because it would be in furtherance of increasing local water supply reliability, providing a new local water supply for the Big Bear Valley, and additionally would install solar to accommodate energy use by the upgrades to the WWTP at BBARWA. In addition, construction and operation of the Greenspot Alternative would be conducted in accordance with existing applicable regulations related to energy efficiency and vehicle fuel economy. As such, under this evaluation and set of assumptions, the Greenspot Alternative would result in similar or less overall construction and operational energy consumption, and the level of significance of its energy impacts would be comparable to that which would occur under the Program and both would be less than significant.

Geology and Soils: As with the proposed Program, operations of the Greenspot Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Similar to the proposed Program, construction and operation of these components would be subject to geologic and soils-related constraints. Because comparable facilities would be constructed under the Greenspot Alternative as compared to the proposed Program, there would be comparable overall potential for the Greenspot Alternative to expose persons or structures to geologic hazards. Due to the substantial geologic and soils-related constraints, installation of future Program and the Greenspot Alternative related facilities in locations where such constraints may occur could result in a potential for significant geology and soils impacts. However, several **MMs** were identified to minimize geology and soils impacts would be applicable to both the Program and the Greenspot Alternative, including those **MMs** that would: reduce potential impacts from geological hazards through a design level geotechnical investigation with implementation of specific design recommendations, relocation of the site, or subsequent CEQA documentation; minimize impacts to paleontological resources through requiring site-specific studies, where necessary. Under this evaluation and set of assumptions, the

Greenspot Alternative would result in comparable overall geology and soils impacts to the Program. Given that site-specific geotechnical investigations have not yet been performed for most of the components of either the Program or the Greenspot Alternative, the same mitigation that will apply to future Program facilities would also apply to facilities proposed under the Greenspot Alternative. As such, the level of significance of the geology and soils impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Greenhouse Gas: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the proposed Program, construction and operation of these components would generate GHG emissions. Modestly fewer facilities would be constructed under the Greenspot Alternative as compared to the proposed Program. Therefore, construction and operational GHG emissions would likely be somewhat lower than those of the proposed Program. Construction-related GHG emissions associated with the Program would fall below the SCAQMD thresholds. Given the comparable levels of construction required to develop the facilities proposed under the Greenspot Alternative, construction related GHG impacts would be the same as those projected for the Program, and thereby would be considered less than significant. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely result in similar or potentially less overall construction and operational GHG emissions, and the level of significance of the GHG emissions impacts of the Greenspot Alternative would be similar to that which would occur under the Program and both would be less than significant.

Hazards and Hazardous Materials: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Similar to the Program, construction and operation of these components would be subject to hazards. Because comparable facilities would be constructed under the Greenspot Alternative as compared to the Program, there would be comparable overall potential for the Greenspot Alternative to expose a site or persons to hazards and hazardous materials. Due to substantial hazard-related constraints, the installation of future Program and the Greenspot Alternative facilities may occur at locations where such constraints may exist. As such, a potential for significant hazards and hazardous materials issue impacts from implementation of both the Program and the Greenspot Alternative exists. However, several **MMs** were identified to minimize hazards and hazardous materials impacts, which would apply to both the Program and the Greenspot Alternative. Those **MMs** include those that would: ensure that applicable facilities Business Plans incorporate BMPs designed to minimize the potential for accidental release of such chemicals; ensure that applicable facilities Business Plans identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material; ensure sensitive receptors will not be exposed to significant health threat by modeling the

pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials; ensure hazardous materials are disposed of and delivered to licensed facilities; ensure establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials; ensure the preparation of and adherence to vector management plans; ensure remediation of an accidental spill or discharge of hazardous material in compliance with State and local regulations; ensure that sites for future facilities obtain a Phase I Environmental Site Assessment and either avoid or remediate a site that is contaminated; ensure that any unknown contamination is remediated and handled according to the local CUPA; ensure that construction traffic is managed safely; and ensure that fire hazard reduction measures are enforced. Therefore, though there will be some adverse impacts as a result of implementing either the Program or the Greenspot Alternative, specific **MMs** would reduce potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. As such, under this evaluation and set of assumptions, the Greenspot Alternative would likely have comparable potential to result in significant hazard and hazardous materials impacts; the level of significance of the hazard and hazardous materials impacts that would result from this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Hydrology and Water Quality: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to Figure 5-1), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. As the intent of the Greenspot Alternative is to address long-term groundwater supply vulnerabilities, it is anticipated that the Greenspot Alternative would not result in any new water quality or water supply-related issues beyond those addressed and mitigated as part of the Program. The Program will provide a local, new water supply with up to 380 AFY used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Lake water to serve the Bear Mountain Golf Course, Resort, Snow Summit Bike Park, and other uses. Comparatively, the Greenspot Alternative would, address the challenges with managing the Bear Valley Basin, including that, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. The Greenspot Alternative would provide up to 1,000 AFY to sustain groundwater levels and storage in the Bear Valley Basin, which has been determined to be greater than what is needed to address long term supply deficiencies. Therefore, the Greenspot Alternative is anticipated to result in the same or similar hydrology and water quality impacts in the Big Bear Valley as that which were identified under the Program.

The Program would result in a significant water quality impact and groundwater impact on the Lucerne Valley Basin. This is as a result of the reduced discharge to the LV Site that would result from the proposed Program. The Greenspot Alternative would also result in a reduction in discharge to the LV Site, but as the Greenspot Alternative does not require as large of a capacity AWPF upgrade, it is anticipated that it would continue to discharge a greater volume of water to the LV Site than the Program. Due to the volume of water that

the BBARWA discharge to the LV Site represents in terms of recharge to the Lucerne Valley Basin, it is anticipated that a significant water quality, groundwater volume, and Colorado Basin Plan impact would occur in the Lucerne Valley Basin from both the Program and the Greenspot Alternative.

Both the Program and the Greenspot Alternative would require implementation of mitigation that would: ensure that drainage is managed through either runoff collection or development of a drainage plan for a given Program project; require all disturbed areas that are not covered in hardscape or vegetation to be revegetated or landscaped at future Program facility sites; and monitor percolation performance at the recharge site. However, the Greenspot Alternative would not require mitigation specific to the Sand Canyon Recharge Project, or specific to the AMMP required for the proposed discharge to Stanfield Marsh. As such, under this evaluation and set of assumptions, the Greenspot Alternative and the Program would have equal hydrology and water quality impacts; the level of significance of the hydrology and water quality impacts that would result from this alternative would be comparable to that which would occur under the Program and both would be significant and unavoidable as a result of the reduced discharge to the LV Site.

Land Use and Planning: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Like the Program, the facilities that could be constructed for the Greenspot Alternative would not be anticipated to have features that would create a barrier or physically divide an established community. Land would need to be purchased for some of the proposed facilities, where not co-located at existing agency facilities, such as the BBARWA WWTP. It can be reasonably assumed that siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise location for some of the future facilities is presently unknown, the facilities may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any facilities constructed under the Greenspot Alternative that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment. In addition, the City of Big Bear Lake and San Bernardino County within the Big Bear Valley area have adopted General Plans that support the provision of adequate water supply, and also support retaining water in Big Bear Valley and discontinuing the discharge from the LV Site; therefore, facilities constructed under the Greenspot Alternative would not conflict with the goals and policies of the applicable General Plans. As with the Program, new facilities may conflict with adjacent land uses and as such **MM LU-1** would be required to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As such, under this evaluation and set of assumptions, the Greenspot Alternative would result in comparable overall land use impacts; the level of significance would be similar to that which would occur under the Program and both would be less than significant with mitigation.

Mineral Resources: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Like the Program, construction of the facilities for the Greenspot Alternative are unlikely to interfere with mining of mineral resources. Much of the Big Bear Valley is forested and therefore does not lend itself to mining activities, as no mineral extraction land uses exist in Big Bear Valley. Installation and operation of the Greenspot Alternative facilities would have little potential to result in a direct adverse impact on mineral resources, and as the Program is not anticipated to impact mineral resources, nor would the Greenspot Alternative. There would be comparable potential for impacts to mineral resources under both the Program and the Greenspot Alternative; as such, both would result in less than significant impacts.

Noise: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Construction activities, particularly production wells, under the Greenspot Alternative may generate temporary increases in ambient noise levels and excessive groundborne vibration levels in excess of FTA and CalTrans daytime and nighttime construction thresholds at the nearest sensitive receivers. In addition, facilities constructed under the Greenspot Alternative may include noise-generating components that could result in a substantial permanent increase in ambient noise levels at nearby sensitive receptors, if present, depending on the equipment type, whether equipment is enclosed in a structure, the distance between equipment and nearby sensitive receivers, and the local jurisdiction's noise standards. Therefore, as with the Program, construction and vibration impacts for the Greenspot Alternative would be potentially significant, and implementation of mitigation would be required. As with the Program, implementation of **MMs** to minimize noise impacts from well drilling would likely reduce the Greenspot Alternative's impacts to less than significant levels. Accordingly, under this evaluation and set of assumptions, the level of noise and vibration impacts of the Greenspot Alternative and the Program is equivalent and both would be less than significant with the implementation of mitigation.

Population and Housing: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. As with the Program, BBARWA operations of the Greenspot Alternative would be intended to serve existing customers as well as future customers associated with planned growth in the Big Bear Valley. The Greenspot Alternative would not include construction of new homes or businesses and would therefore not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley. Like the Program, any facilities constructed under the Greenspot Alternative

would be growth accommodating but would not induce population growth. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. Furthermore, comparable construction and operation and maintenance staff would be required. As such, under this evaluation and set of assumptions, the level of significance of the population and housing impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant.

Public Services: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Facilities constructed under the Greenspot Alternative would not include construction of new homes or businesses that would result in a direct increase in population or new jobs that would increase demand for public services. Operation of the new facilities could require fire and police services in the unlikely event of an emergency; however, any increase in demand would be nominal. Similar to the Program, a HMBP would be required for use of chemicals at any of the new facilities, which would minimize the potential need for emergency services. Any new facilities would be fenced or access controlled to prevent illegal trespass, as required by **MM PS-1**. In addition, the majority of any new employees for operation and maintenance of new facilities would likely come from the existing population with the Big Bear Valley, and any increase in demand for schools, parks, or other public services would be nominal. As such, under this evaluation and set of assumptions, the level of significance of the public service impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Recreation: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. The Greenspot Alternative would not require construction or expansion of recreational facilities. The Greenspot Alternative would also not include construction of new homes or businesses. Therefore, there would not be a direct increase in population or a substantial number of new jobs that would result in increased demand for parks and recreational facilities within the Big Bear Valley. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. The proposed Program may result in enhanced settings at Stanfield Marsh and Big Bear Lake, which is an objective of the Program and thereby may increase recreational opportunities therein. However, recreational infrastructure and fee mechanisms are in place to accommodate any increase in recreation at these locations. The Greenspot Alternative would not result in any enhancements of the Marsh or Big Bear Lake. Under this evaluation and set of assumptions, the level of significance of the recreational impacts of this alternative would

be similar to that which would occur under the proposed Program and both would be less than significant.

Transportation: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Construction activities associated with these new facilities may generate temporary increases in heavy truck and construction worker trips that could affect roadway, transit, bicycle, and pedestrian circulation as well as emergency access. This could be due to construction equipment staged within a public ROW affecting transit stops, bicycle, and/or pedestrian facilities, construction disturbance under existing transit, bicycle, and/or pedestrian thoroughfares, potential lane or road closures, construction vehicles affecting roadway movement and circulation, and/or blockage of emergency vehicle roadway and driveway access during construction. Therefore, the construction-related circulation and emergency access impacts of the Greenspot Alternative would be potentially significant. However, with implementation of mitigation, specifically **MM TRA-1**, which requires preparation and implementation of a construction TMP, construction-related circulation and emergency access impacts under the Greenspot Alternative would be reduced to a less-than-significant level with the implementation of mitigation.

There would be slightly fewer facilities constructed under the Greenspot Alternative as compared to the Program, because the Greenspot Alternative would not include the pipeline to Big Bear Lake, nor the pipeline to Sand Canyon. As such, operational VMTs and potential operational impacts related to transportation circulation, design safety, and emergency access under the Greenspot Alternative would be slightly less than under the Program. Therefore, compared to the proposed Program, the Greenspot Alternative would result in slightly lesser impacts related to transportation. However, the level of significance would be comparable to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Tribal Cultural Resources: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1)**, if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Simply because the Program and the Greenspot Alternative would disturb a similar amount of area, the potential for encountering TCRs is comparable under both alternatives. However, this alternative would avoid the impact from the pipeline through Baldwin Lake. When mitigation is implemented—primarily avoidance of tribally sensitive areas, tribal and archaeological monitoring, and specific treatment requirements for buried TCRs that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to TCRs. Under this evaluation and set of assumptions the Greenspot Alternative would have comparable impacts on TCRs to the Program; however, the level of significance would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Utilities and Service Systems: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-1**), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. Under the Program, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and as with the Program, specifically as it relates to utilities infrastructure, it is anticipated that the Greenspot Alternative would have comparable potential to impact these utility systems than the Program. Under the Program mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects; this would be required to minimize impacts from the facilities that would be developed under the Greenspot Alternative. As the Greenspot Alternative and Program would both generate solid waste during operation and construction, mitigation is required to address potential impacts related to solid waste including those that would: ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities; and, ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycled and ultimately reuse, thereby diverting this waste stream from the local landfill. The construction of infrastructure related to energy and natural gas under the Program was analyzed and determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to electricity and natural gas infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot Alternative as this alternative would be installed within locations that have not yet been selected. Under the Program, the construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to telecommunication infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot Alternative as this alternative would be installed within locations that have not yet been selected. However, for the issues of solid waste, stormwater drainage, electricity, natural gas, and telecommunications, mitigation would be required to minimize impacts to a level of less than significant for both the Program and the Greenspot Alternative.

The extension of water and wastewater related infrastructure was determined to be significant under the Program, because the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact. As the Greenspot Alternative would avoid a significant biological resources impact, as discussed under Biological Resources, above, the Greenspot Alternative would also avoid a significant Utilities and Service Systems impact from construction of water and wastewater facilities.

As with the Program, the Greenspot Alternative would contribute to the provision of sufficient wastewater treatment capacity at BBARWA's WWTP, as the Program is not anticipated to require an increase in overall capacity at the WWTP. Furthermore, as described under hydrology and water quality, the action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that would be addressed by the Program and the Greenspot Recharge Alternative would ensure sufficient supply in the Big Bear Valley. However, the reduction in discharge of secondary effluent to the Lucerne Valley Basin would result in a significant impact on Lucerne Valley Basin water supply. As the Greenspot Alternative would also contribute to reducing discharge to the LV Site, it too would result in a significant impact to the Lucerne Valley Basin water supply. Given that the Greenspot Alternative does not eliminate the potential for significant water supply impacts, it could likewise result in comparable impacts; thus, under both alternatives, utilities and service systems impacts are significant and unavoidable.

Wildfire: The Greenspot Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to Figure 5-1), if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh. The locations of Program facilities were determined to be located in designated high and very high fire hazard severity zones. Comparatively, since the proposed the Greenspot Alternative would be developed within the Big Bear Valley, it is likely that these facilities would have a potential to be located within a very high FHSZ. The Program, and by extension, the Greenspot Alternative, would require mitigation to minimize impacts to wildfire that would: reduce the project's potential traffic conflicts that could be exacerbating in high FHSZs by requiring all construction activities to be conducted in accordance with an approved construction traffic control plan; and, ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. As such, the Program would achieve a level of less than significant with mitigation. Thus, with implementation of mitigation to minimize wildfire impacts, neither the Program nor the Greenspot Alternative would cause significant unavoidable adverse wildfire impacts. Under this evaluation and set of assumptions the Greenspot Alternative would have comparable impacts on Wildfire when compared to the Program both would be less than significant with the implementation of mitigation.

(Draft EIR, pp. 5-20 – 5-30)

Attainment of Program Objectives:

The Greenspot Alternative is comparable to the Program in terms of environmental impacts. Because the Greenspot Alternative would result in the development of some of the same types of facilities proposed by the Program, if smaller in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site, and with no pipeline installed through Baldwin Lake to Stanfield Marsh, most of the impacts related to this alternative are the same as those identified under the Program. Of the significant impacts that would result from the proposed Program, the only impact category that the Greenspot Alternative would eliminate is the Biological Resources impact. This is because this alternative would

eliminate the Baldwin Lake Alignment Alternative. While the water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWPF at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant Agricultural and Forestry, Hydrology and Water Quality, and Utilities and Services Systems impacts.

Furthermore, while the Greenspot Alternative would meet nearly all of the Program's objectives, it would not meet some of the BBARWA's basic objectives, which are to develop promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. The discharge to Big Bear Lake via Stanfield Marsh is paramount to enhancing the recreational opportunities outlined in the Program objectives, as the provision of additional water in Big Bear Lake is anticipated to enhance the setting within Big Bear Lake and Stanfield Marsh, making recreation therein more appealing to those living and visiting the area. Additionally, the provision of additional water within Big Bear Lake and Stanfield Marsh would benefit the habitat supported by these water bodies. Therefore, as the Greenspot Alternative would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective.

(Draft EIR, p. 5-30)

Finding: The Agency rejects Alternative 2: Greenspot Alternative, on the following grounds, each of which individually provides sufficient justification for rejection of this alternative: (1) the alternative fails to meet most of the Program objectives; (2) the alternative fails to avoid or reduce the Program's significant and unavoidable impacts relating to aesthetics and agriculture. and (3) the alternative is infeasible.

3. Alternative 3: Groundwater Rechage at Sand Canyon and Greenspot

Description:

The Groundwater Recharge at Greenspot and Sand Canyon Alternative (Greenspot & Sand Canyon Alternative) was developed as part of the Bear Valley Water Sustainability Project Recycled Water Facilities Planning Study (**Appendix 20**) prepared by WSC in December of 2016. The Greenspot & Sand Canyon Alternative analyzes the impacts from a scenario in which the Alternative utilizes the similar AWPF upgrades at the BBARWA WWTP as identified under the Program to send blended tertiary and advanced treated water to both the Greenspot Recharge Site and Sand Canyon Recharge area (**Figure 5-2**). Because this Alternative would not discharge to Big Bear Lake, both tertiary and advanced treatment systems would be utilized. It is assumed that 22% of the recharge water would receive tertiary treatment, and 78% would receive advanced treatment.

The considerations for the feasibility of groundwater recharge at the Greenspot site are detailed under **Subsection 5.4**, under the Greenspot Alternative. The feasibility of recharge at the Sand Canyon Recharge area has been detailed in **Chapter 3,** Program **Description,** as this option is considered under the Program. The Bear Valley Water Sustainability

Project Recycled Water Facilities Planning Study anticipated that the recharge capacity at the Greenspot site would be 1,000 AFY, and that the recharge capacity at Sand Canyon would be 750 AFY. Given that further study of the Sand Canyon Recharge Project has been analyzed in **Appendix 4**, the 2017 Sand Canyon Recharge Evaluation prepared by Thomas Harder & Co., and found that the recharge potential at Sand Canyon is approximately 380 AFY over a 6-month period, based on a recharge area of approximately 4.2 acres and a recharge rate of 2.1 ft/day, this Alternative assumes that the Sand Canyon Recharge Project potential is approximately 380 AFY. Thus, the Greenspot & Sand Canyon Alternative assumes that up to 1,380 AFY could be recharged to the Bear Valley Basin for reuse, and that the upgraded portion of the BBARWA WWTP would be capable of handling at least 1.38 MGD, thereby producing the requisite 1,380 AFY of blended tertiary and advanced treated water.

It is assumed that, at a general level, the Greenspot & Sand Canyon Alternative would require the following infrastructure components:

- 6 extraction wells with a 100 gpm capacity at each well
- 2 monitoring wells
- Upgrades to the BBARWA WWTP, to include 1.38 MGD of full advanced treatment, producing up to 1,380 AFY of blended tertiary and advanced treated water. The secondary effluent from the existing WWTP would be fed to the advanced treatment process train consisting of:
    - Microfiltration/ultrafiltration (MF/UF)
    - Reverse Osmosis (RO)
    - Ultraviolet Advanced Oxidation (UV/AOP)
    - Brine Disposal
- Approximately 50,200 LF of 12-in pipeline (approximately 16,200 LF to Greenspot and 34,000 LF to Sand Canyon)
- 2 MW Solar Array
- The Greenspot Recharge Site is assumed to be a 7-acre site to allow more than five acres of area for surface water spreading, plus the necessary additional land for berms and maintenance access.
- The Sand Canyon Recharge area is assumed to be the same as that which has been incorporated as part of the proposed Program.
- Solar evaporation ponds (Vibratory Shear-Enhanced Processing (VSEP) would be used to reduce the volume of concentrate. The reduced concentrate would then be conveyed to new, lined evaporation ponds on the LV Site).

The location of the facilities required for the Greenspot & Sand Canyon Alternative are shown in **Figure 5-2**.

Impacts:

Aesthetics: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to Figure 5-2), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Like the Program, the presence of construction equipment and related construction materials could be visible from public vantage points such as open space areas and public ROW such as roadways and sidewalks. However, construction impacts related to aesthetics would be temporary and short-term in nature and would not substantially affect scenic vistas or resources in the area. Construction would primarily occur in the daytime and would not result additional sources of light and glare. Overall, aesthetic impacts during construction would be comparably intensive when compared to the Program as a result of the larger amount of pipeline that would need to be installed to accomplish this alternative; however, the level of significance of construction-related aesthetic impacts is similar to that which would occur under the proposed Program and both would be less than significant with the implementation of mitigation.

Landscape disturbance from the development of new facilities and structures has the highest potential to result in potentially significant permanent effects to scenic vistas and resources from conflict with local agency design guidelines. Most of the facilities would likely be underground, small, and/or similar to nearby existing facilities. Once constructed certain facilities could conflict with the existing views of any nearby scenic resources. Aesthetic impacts to scenic vistas and resources from disturbance would be potentially significant, but can be reduced to less than significant by shielding facilities and landscaping or revegetating disturbed areas either with landscaping that is consistent with local design guidelines or with native vegetation consistent with that which occurs naturally in the area, as specified in **MMs AES-1, AES-5,** and **AES-6**. Program facilities shall be located outside of scenic viewsheds or otherwise undergo subsequent CEQA documentation **MM AES-2.** Additionally, implementation of **MM AES-3** is required to ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a less than significant level, and **MM AES-4** is required to ensure that future facilities are either not located within sites containing scenic resources or undergo subsequent CEQA documentation to fully analyze the impacts thereof. **MMs AES-7** and **AES-8** would minimize light and glare conflicts from future facility construction and operation. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in comparable overall aesthetic impacts; however, the level of significance of aesthetic impacts to scenic vistas and scenic resources from this alternative would be similar to that which would occur under the proposed Program and both would be less than significant with implementation of mitigation.

Like the Program, facilities construction under the Greenspot & Sand Canyon Alternative may include nighttime security lighting which could result in spill over lighting onto adjacent land uses. Also similar to the Program some new facilities could be a source of

glare depending on reflectivity of the materials used. Given that roughly the same type and number of above ground facilities would be developed under the Greenspot & Sand Canyon Alternative, measures to reduce impacts related to light and glare, as specified in **MMs AES-5** and **AES-6**, would be required to reduce light and glare impacts to less than significant. As such, under this evaluation and set of assumptions, the level of significance of aesthetics impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Agricultural and Forestry Resources: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. There are no agricultural resources within the Big Bear Valley, but as BBARWA discharges its secondary effluent to the LV Site, which contains substantial agricultural resources, any reduction in secondary effluent would result in a commensurate reduction in land that can be farmed at the LV Site. The Program would have a potential to impact agricultural and forestry resources located within Big Bear Valley, mitigation is available to minimize impacts to Forestry Resources to a level of less than significant, and this same mitigation would be necessary should any forest trees require removal as part of construction of the Greenspot & Sand Canyon Alternative facilities. However, no feasible **MMs** exist to avoid a significant impact from the conversion of agricultural lands as a result of Program implementation. As the Greenspot & Sand Canyon Alternative would also result in a reduction in discharge to the LV Site, in order to retain the blended tertiary and advanced treated water in Big Bear Valley and Watershed, it also would result in a significant loss of important farmland. As such, under this evaluation and set of assumptions, the level of significance of agricultural and forestry resource impacts of this alternative would be similar to that which would occur under the Program and both would be significant and unavoidable.

Air Quality: As with the proposed Program, operations of the Greenspot & Sand Canyon Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Therefore, as with the Program, this alternative would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the SCAQMD's AQMP. The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the proposed Program, construction and operation of these components would generate criteria air pollutant emissions. Comparable or an even greater intensity of facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program. Therefore, construction and operational criteria air pollutant emissions would likely be modestly comparable if slightly greater than those of the proposed Program. The intensity of daily construction activities under the Greenspot & Sand Canyon Alternative would potentially be similar to that which would occur under the proposed Program. As such, similar to the Program, maximum daily emissions during construction of the Greenspot & Sand Canyon Alternative may exceed SCAQMD regional significance thresholds.

Therefore, implementation of **MM AQ-1** would be required for the Greenspot & Sand Canyon Alternative to address the exceedance(s) and would likely reduce impacts to a less than significant level, as with the proposed Program. Furthermore, similar to that which would occur under the Program, the relatively small scale of construction projects and operation and maintenance activities under the Greenspot & Sand Canyon Alternative would minimize the potential for the exposure of sensitive receptors to substantial concentrations of carbon monoxide and toxic air contaminants. This alternative also would not likely include new facilities with the potential to generate substantial odorous emissions. Therefore, the level of impact of this alternative and the proposed Program is equivalent with implementation of **MM AQ-1**. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely have similar or slightly greater overall construction and operational emissions as the proposed Program, and the level of significance of the air quality impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Biological Resources: Development of the Greenspot & Sand Canyon Alternative would result in a pipeline that would traverse Baldwin Lake, and as a result would have a potential to result in a significant and unavoidable impact to bird-foot checkerbloom, a State and Federal endangered species. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed Program and Greenspot & Sand Canyon Alternative would be expected to approach a level of less than significant regarding biological resource, but a potential still exists for significant impacts under the Program and Greenspot & Sand Canyon Alternative as a result of the construction of the Baldwin Lake Pipeline Alignment Option thus impacting the bird-foot checkerbloom as **MM BIO−5** would not fully mitigate adverse impacts to the bird-foot checkerbloom species. This alternative would not provide the anticipated habitat and recreational benefits, which are objectives of the Program, and that would result from the Program's discharge to Stanfield Marsh and Big Bear Lake. Regardless, under this evaluation and set of assumptions, the Program's effects on biological resources are considered to be comparable to the Greenspot & Sand Canyon Alternative, and both would result in a significant impact on biological resources.

Cultural Resources: As with the proposed Program, operations of the Greenspot & Sand Canyon Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. The Big Bear Valley is a large expanse of area that contains known historical, archaeological, or paleontological resources. As such, future Program projects may be developed within sites that contain such resources which, due to the similar scope of the Greenspot & Sand Canyon Alternative, may also occur under the Greenspot & Sand Canyon Alternative. Mitigation imposed to minimize impacts to cultural resources at future Program facilities that would also apply to the Greenspot & Sand Canyon Alternative. As such, when mitigation is implemented—primarily avoidance of culturally sensitive areas, further site-specific study the Sand Canyon Monitoring Wells, archaeological monitoring in sensitive areas, and specific treatment requirements for buried cultural materials that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to cultural resources. As such, under this evaluation and set of assumptions, the

Greenspot & Sand Canyon Alternative would likely have a potential to impact cultural resources comparable to the Program, and the level of significance of the cultural impacts that would result from the Greenspot & Sand Canyon Alternative would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Energy: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the proposed Program, construction and operation of these components would consume energy. Modestly greater facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program, as a result of the increased length in pipeline necessary to reach Sand Canyon. Therefore, construction and operational energy consumption would likely be somewhat greater than that which would occur under the Program. However, as with the Program, the potential for wasteful, inefficient, or unnecessary energy consumption during construction activities would be minimized by compliance with existing applicable regulations. Furthermore, operational energy usage under the Greenspot & Sand Canyon Alternative would not be wasteful, inefficient, or unnecessary because it would be in furtherance of increasing local water supply reliability, providing a new local water supply for the Big Bear Valley, and additionally would install solar to accommodate energy use by the upgrades to the BBARWA WWTP. In addition, construction and operation of the Greenspot & Sand Canyon Alternative would be conducted in accordance with existing applicable regulations related to energy efficiency and vehicle fuel economy. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in similar overall construction and operational energy consumption, and the level of significance of its energy impacts would be comparable to that which would occur under the Program and both would be less than significant.

Geology and Soils: As with the proposed Program, operations of the Greenspot & Sand Canyon Alternative would be intended to serve existing and future water supply needs associated with planned growth in the Big Bear Valley. Similar to the proposed Program, construction and operation of these components would be subject to geologic and soils-related constraints. Because comparable facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program, there would be comparable overall potential for the Greenspot & Sand Canyon Alternative to expose persons or structures to geologic hazards. Due to the substantial geologic and soils-related constraints, installation of future Program and the Greenspot & Sand Canyon Alternative related facilities in locations where such constraints may occur could result in a potential for significant geology and soils impacts. However, several **MMs** were identified to minimize geology and soils impacts would be applicable to both the Program and the Greenspot & Sand Canyon Alternative, including those **MMs** that would: reduce potential impacts from geological hazards through a design level geotechnical investigation with implementation of specific design recommendations, relocation of the site, or subsequent CEQA documentation; minimize impacts to paleontological resources through requiring site-specific studies, where necessary. Under this evaluation and set of assumptions, the

Greenspot & Sand Canyon Alternative would result in comparable overall geology and soils impacts to the Program. Given that site-specific geotechnical investigations have not yet been performed for most of the components of either the Program or the Greenspot & Sand Canyon Alternative, the same mitigation that will apply to future Program facilities would also apply to facilities proposed under the Greenspot & Sand Canyon Alternative. As such, the level of significance of the geology and soils impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Greenhouse Gas: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the proposed Program, construction and operation of these components would generate GHG emissions. Modestly greater facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the proposed Program. Therefore, construction and operational GHG emissions would likely be somewhat greater than those of the proposed Program. Construction-related GHG emissions associated with the Program would fall below the SCAQMD thresholds. Given the comparable levels of construction required to develop the facilities proposed under the Greenspot & Sand Canyon Alternative, construction related GHG impacts would be comparable to those projected for the Program, and thereby would be considered less than significant. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely result in similar or potentially cumulatively greater overall construction and operational GHG emissions, and the level of significance of the GHG emissions impacts of the Greenspot & Sand Canyon Alternative would be similar to that which would occur under the Program and both would be less than significant.

Hazards and Hazardous Materials: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Similar to the Program, construction and operation of these components would be subject to hazards. Because comparable facilities would be constructed under the Greenspot & Sand Canyon Alternative as compared to the Program, there would be comparable overall potential for the Greenspot & Sand Canyon Alternative to expose a site or persons to hazards and hazardous materials. Due to substantial hazard-related constraints, the installation of future Program and the Greenspot & Sand Canyon Alternative facilities may occur at locations where such constraints may exist. As such, a potential for significant hazards and hazardous materials issue impacts from implementation of both the Program and the Greenspot & Sand Canyon Alternative exists. However, several **MMs** were identified to minimize hazards and hazardous materials impacts, which would apply to both the Program and the Greenspot & Sand Canyon Alternative. Those **MMs** include those that would: ensure that applicable facilities Business Plans incorporate BMPs designed to minimize the potential for accidental release of such chemicals; ensure that applicable facilities Business Plans identify the equipment and response capabilities required to provide immediate containment, control and

collection of any released material; ensure sensitive receptors will not be exposed to significant health threat by modeling the pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials; ensure hazardous materials are disposed of and delivered to licensed facilities; ensure establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials; ensure the preparation of and adherence to vector management plans; ensure remediation of an accidental spill or discharge of hazardous material in compliance with State and local regulations; ensure that sites for future facilities obtain a Phase I Environmental Site Assessment and either avoid or remediate a site that is contaminated; ensure that any unknown contamination is remediated and handled according to the local CUPA; ensure that construction traffic is managed safely; and ensure that fire hazard reduction measures are enforced. Therefore, though there will be some adverse impacts as a result of implementing either the Program or the Greenspot & Sand Canyon Alternative, specific **MMs** would reduce potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would likely have comparable potential to result in significant hazard and hazardous materials impacts; the level of significance of the hazard and hazardous materials impacts that would result from this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Hydrology and Water Quality: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. As the intent of the Greenspot & Sand Canyon Alternative to address long-term groundwater supply vulnerabilities, it is anticipated that the Greenspot & Sand Canyon Alternative would not result in any new water quality or water supply related issues beyond those addressed and mitigated as part of the Program. The Program will provide up to 380 AFY of new water used to sustain groundwater levels and storage in the Bear Valley Basin, with even greater potential for water savings through use of Lake water to serve the Bear Mountain Golf Course, Snow Summit Bike Park, and other uses. The Greenspot & Sand Canyon Alternative would, similar to the Program, address the challenges with managing the Bear Valley Basin, including that, without a change in groundwater management in the area, groundwater levels could drop below the minimum threshold by 2042. The Greenspot Alternative would provide up to 1,380 AFY to sustain groundwater levels and storage in the Bear Valley Basin, which has been determined to be greater than what is needed to address long term supply deficiencies. Therefore, the Greenspot & Sand Canyon Alternative is anticipated to result in the same or similar hydrology and water quality impacts in the Big Bear Valley as that which were identified under the Program.

The Program would result in a significant water quality impact and groundwater impact on the Lucerne Valley Basin. This is as a result of the reduced discharge to the LV Site that would result from the proposed Program. The Greenspot & Sand Canyon Alternative would also result in a reduction in discharge to the LV Site, but as the Greenspot & Sand

Canyon Alternative does not require as large of a capacity AWPF upgrade, it is anticipated that it would continue to discharge a modestly larger volume of water to the LV Site than the Program. Due to the volume of water that the BBARWA discharge to the LV Site represents in terms of recharge to the Lucerne Valley Basin, it is anticipated that a significant water quality, groundwater volume, and Colorado Basin Plan impact would occur in the Lucerne Valley Basin from both the Program and the Greenspot & Sand Canyon Alternative.

Both the Program and the Greenspot & Sand Canyon Alternative would require implementation of mitigation that would: ensure that drainage is managed through either runoff collection or development of a drainage plan for a given Program project; require all disturbed areas that are not covered in hardscape or vegetation to be revegetated or landscaped at future Program facility sites; ensure that the Sand Canyon Recharge occurs within the appropriate area at Sand Canyon and only during the appropriate times of the year; and, monitor percolation performance at the recharge site. However, the Greenspot & Sand Canyon Alternative would not require mitigation specific to the Sand Canyon Recharge Project, or specific to the AMMP required for the proposed discharge to Stanfield Marsh. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative and the Program would have equal hydrology and water quality impacts; the level of significance of the hydrology and water quality impacts that would result from this alternative would be comparable to that which would occur under the Program and both would be significant and unavoidable as a result of the reduced discharge to the LV Site.

Land Use and Planning: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Like the Program, the facilities that could be constructed for the Greenspot & Sand Canyon Alternative would not be anticipated to have features that would create a barrier or physically divide an established community. Land would need to be purchased for some of the proposed facilities, where no co-located at existing agency facilities, such as the BBARWA WWTP. It can be reasonably assumed that siting of the facilities would include determination of the most suitable locations to place facilities, taking into consideration surrounding land uses. However, because the precise location for some of the future facilities is presently unknown, the facilities may be developed across other designated land uses. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any facilities constructed under the Greenspot & Sand Canyon Alternative that could potentially conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment. In addition, the City of Big Bear Lake and San Bernardino County that are within the Big Bear Valley have adopted General Plans that support the provision of adequate water supply, and also support retaining water in the Big Bear Valley and discontinuing the discharge from the LV Site; therefore, facilities constructed under the Greenspot & Sand Canyon Alternative would not conflict with the goals and policies of the applicable General Plans. As with the Program, new facilities may

conflict with adjacent land uses and as such **MM LU-1** would be required to minimize land use incompatibilities (such as lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses. As such, under this evaluation and set of assumptions, the Greenspot & Sand Canyon Alternative would result in comparable overall land use impacts; the level of significance would be similar to that which would occur under the Program and both would be less than significant with mitigation.

Mineral Resources: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Like the Program, construction of the facilities for the Greenspot & Sand Canyon Alternative are unlikely to interfere with mining of mineral resources. Much of the Big Bear Valley is forested and therefore does not lend itself to mining activities, as no mineral extraction land uses exist in Big Bear Valley. Installation and operation of the Greenspot & Sand Canyon Alternative facilities would have little potential to result in a direct adverse impact on mineral resources, and as the Program is not anticipated to impact mineral resources, nor would the Greenspot & Sand Canyon Alternative. There would be comparable potential for impacts to mineral resources under both the Program and the Greenspot & Sand Canyon Alternative; as such, both would result in less than significant impacts.

Noise: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Construction activities under the Greenspot & Sand Canyon Alternative may generate temporary increases in ambient noise levels and excessive groundborne vibration levels in excess of FTA and the Caltrans daytime and nighttime construction thresholds at the nearest sensitive receivers. In addition, facilities constructed under the Greenspot & Sand Canyon Alternative may include noise-generating components that could result in a substantial permanent increase in ambient noise levels at nearby sensitive receptors, if present, depending on the equipment type, whether equipment is enclosed in a structure, the distance between equipment and nearby sensitive receivers, and the local jurisdiction's noise standards. Therefore, as with the Program, construction and vibration impacts for the Greenspot & Sand Canyon Alternative would be potentially significant, and implementation of mitigation to minimize noise from well drilling activities would be required. As with the Program, implementation of this **MM** would reduce the Greenspot & Sand Canyon Alternative's impacts to less than significant levels. Accordingly, under this evaluation and set of assumptions, the level of noise and vibration impacts of the Greenspot & Sand Canyon Alternative and the Program is equivalent and both would be less than significant with the implementation of mitigation.

Population and Housing: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. As with the Program, BBARWA operations of the Greenspot & Sand Canyon Alternative would be intended to existing customers as well as future customers associated with

planned growth in the Big Bear Valley. The Greenspot & Sand Canyon Alternative would not include construction of new homes or businesses and would therefore not result in a direct increase in population or create a substantial number of new jobs that would result in new residents within the Big Bear Valley area. Like the Program, any facilities constructed under the Greenspot & Sand Canyon Alternative would be growth accommodating but would not induce population growth. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. Furthermore, comparable construction and operation and maintenance staff would be required. As such, under this evaluation and set of assumptions, the level of significance of the population and housing impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant.

Public Services: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Facilities constructed under the Greenspot & Sand Canyon Alternative would not include construction of new homes or businesses that would result in a direct increase in population or new jobs that would increase demand for public services. Operation of the new facilities could require fire and police services in the unlikely event of an emergency; however, any increase in demand would be nominal. Similar to the Program, a HMBP would be required for use of chemicals at any of the new facilities, which would minimize the potential need for emergency services. Any new facilities would be fenced or access controlled to prevent illegal trespass, as required by **MM PS-1**. In addition, the majority of any new employees for operation and maintenance of new facilities would likely come from the existing population with the Big Bear Valley, and any increase in demand for schools, parks, or other public services would be nominal. As such, under this evaluation and set of assumptions, the level of significance of the public service impacts of this alternative would be similar to that which would occur under the Program and both would be less than significant with the implementation of mitigation.

Recreation: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. The Greenspot & Sand Canyon Alternative would not require construction or expansion of recreational facilities. the Greenspot & Sand Canyon Alternative would also not include construction of new homes or businesses. Therefore, there would not be a direct increase in population or a substantial number of new jobs that would result in increased demand for parks and recreational facilities within the Big Bear Valley area. Also similar to the Program, the majority of construction and operations and maintenance staff for any new facilities can be expected to be drawn from the existing population within the Big Bear Valley. The proposed Program may result in enhanced settings at Stanfield Marsh and Big Bear Lake, which is an objective of the Program and thereby may increase recreational opportunities therein. However, recreational infrastructure and fee mechanisms are in place to accommodate any increase in recreation at these locations. The Greenspot & Sand Canyon

Alternative would not result in any enhancements of the Stanfield Marsh or Big Bear Lake. Under this evaluation and set of assumptions, the level of significance of the recreational impacts of this alternative would be similar to that which would occur under the proposed Program and both would be less than significant.

Transportation: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Construction activities associated with these new facilities may generate temporary increases in heavy truck and construction worker trips that could affect roadway, transit, bicycle, and pedestrian circulation as well as emergency access. This could be due to construction equipment staged within a public ROW affecting transit stops, bicycle, and/or pedestrian facilities, construction disturbance under existing transit, bicycle, and/or pedestrian thoroughfares, potential lane or road closures, construction vehicles affecting roadway movement and circulation, and/or blockage of emergency vehicle roadway and driveway access during construction. Therefore, the construction-related circulation and emergency access impacts of the Greenspot & Sand Canyon Alternative would be potentially significant. However, with implementation of mitigation, specifically **MM TRA-1**, which requires preparation and implementation of a construction TMP, construction-related circulation and emergency access impacts under the Greenspot & Sand Canyon Alternative would be reduced to a less-than-significant level with the implementation of mitigation.

There would be slightly greater facilities constructed under the Greenspot & Sand Canyon Alternative as compared to the Program, because the Greenspot & Sand Canyon Alternative would include a longer pipeline to Sand Canyon. As such, operational VMT and potential operational impacts related to transportation circulation, design safety, and emergency access under the Greenspot & Sand Canyon Alternative would be slightly less than under the Program. Therefore, compared to the proposed Program, the Greenspot & Sand Canyon Alternative would result in slightly greater impacts related to transportation. However, the level of significance would be comparable to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Tribal Cultural Resources: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Simply because the Program and the Greenspot & Sand Canyon Alternative would disturb a similar amount of area, the potential for encountering TCRs is comparable under both alternatives. When mitigation is implemented—primarily avoidance of tribally sensitive areas, tribal and archaeological monitoring, and specific treatment requirements for buried TCRs that may be uncovered during construction of future projects—both alternatives are forecast to cause less than significant impacts to tribal cultural resources. Under this evaluation and set of assumptions the Greenspot & Sand Canyon Alternative would have comparable impacts on TCRs to the Program; however, the level of significance would be similar to that which would occur under the Program and would be less than significant with the implementation of mitigation.

Utilities and Service Systems: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. Under the Program, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and as with the Program, specifically as it relates to utilities infrastructure, it is anticipated that the Greenspot & Sand Canyon Alternative would have comparable potential to impact these utility systems than the Program. Under the Program mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future Program projects; this would be required to minimize impacts from the facilities that would be developed under the Greenspot & Sand Canyon Alternative. As the Greenspot & Sand Canyon Alternative and Program would both generate solid waste during operation and construction, mitigation is required to address potential impacts related to solid waste including those that would: ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for Program projects to generate waste in excess of local landfill capacities; and, ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycled and ultimately reuse, thereby diverting this waste stream from the local landfill. The construction of infrastructure related to energy and natural gas under the Program was analyzed and determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to electricity and natural gas infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot & Sand Canyon Alternative as this alternative would be installed within locations that have not yet been selected. Under the Program, the construction of infrastructure related to telecommunications was determined to be less than significant with the implementation of mitigation that would ensure that Program projects not located in an area containing adjacent access to telecommunication infrastructure would require subsequent CEQA documentation. This mitigation would also be required to reduce those same impacts under the Greenspot & Sand Canyon Alternative as this alternative would be installed within locations that have not yet been selected. However, for the issues of solid waste, stormwater drainage, electricity, natural gas, and telecommunications, mitigation would be required to minimize impacts to a level of less than significant for both the Program and the Greenspot & Sand Canyon Alternative.

The extension of water and wastewater related infrastructure was determined to be significant under the Program, because the construction of the proposed water and wastewater facilities associated with the Program is anticipated to cause a significant biological resources impact, which would also be anticipated for the Greenspot & Sand Canyon Alternative as it too would potentially involve construction of a pipeline through Baldwin Lake. As with the Program, the Greenspot & Sand Canyon Alternative would contribute to the provision of sufficient wastewater treatment capacity at BBARWA's WWTP, as the Program is not anticipated to require an increase in overall capacity at the WWTP. Furthermore, as described under hydrology and water quality, the action towards addressing groundwater supply challenges, given Big Bear Valley's remote location, that

would be addressed by the Program and the Greenspot Recharge Alternative would ensure sufficient supply in the Big Bear Valley. However, the reduction in discharge of secondary effluent to the Lucerne Valley Basin would result in a significant impact on Lucerne Valley Basin water supply. As the Greenspot & Sand Canyon Alternative would also contribute to reducing discharge to the LV Site, it too would result in a significant impact to the Lucerne Valley Basin water supply. Given that the Greenspot & Sand Canyon Alternative does not eliminate the potential for significant water supply impacts, it could likewise result in comparable impacts; thus, under both alternatives, utilities and service systems impacts are significant and unavoidable.

Wildfire: The Greenspot & Sand Canyon Alternative would include some of the same types of facilities proposed by the Program, as described in the description of the Greenspot Alternative, above (refer to **Figure 5-2**), with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site. The locations of Program facilities were determined to be located in designated high and very high FHSZs. Comparatively, since the proposed the Greenspot & Sand Canyon Alternative would be developed within the Big Bear Valley, it is likely that these facilities would have a potential to be located within a very high FHSZ. The Program, and by extension, the Greenspot & Sand Canyon Alternative, would require mitigation to minimize impacts to wildfire that would: reduce the project's potential traffic conflicts that could be exacerbating in high FHSZs by requiring all construction activities to be conducted in accordance with an approved construction traffic control plan; and, ensure fire hazard reduction measures are incorporated into a fire management plan/fuel modification plan for the proposed facility. As such, the Program would achieve a level of less than significant with mitigation. Thus, with implementation of mitigation to minimize wildfire impacts, neither the Program nor the Greenspot & Sand Canyon Alternative would cause significant unavoidable adverse wildfire impacts. Under this evaluation and set of assumptions the Greenspot & Sand Canyon Alternative would have comparable impacts on Wildfire when compared to the Program both would be less than significant with the implementation of mitigation.

(Draft EIR, pp. 5-32 – 5-43)

Attainment of Program Objectives:

The Greenspot & Sand Canyon Alternative is comparable to the Program in terms of environmental impacts. Because the Greenspot & Sand Canyon Alternative would result in the development of some of the same types of facilities proposed by the Program, it is comparable in number and scale, with the addition of six extraction wells and the constructed recharge basin(s) associated with the Greenspot Recharge Site and greater lineal feet of conveyance pipeline, and therefore, all of the impacts related to this alternative are the same as those identified under the Program. Of the significant impacts that would result from the proposed Program, no significant impacts would be eliminated by the Greenspot & Sand Canyon Alternative, though the severity of the impact to the Lucerne Valley Basin would likely be reduced. The water supply and water quality impacts at the LV Site as a result of the Program would be reduced slightly due to a smaller volume AWPF at the BBARWA WWTP, thereby discharging a larger volume of water to the LV Site than is anticipated under the Program, it would still contribute to significant

Agricultural and Forestry, Biological Resources, Hydrology and Water Quality, and Utilities and Services Systems impacts.

Furthermore, while the Greenspot & Sand Canyon Alternative would meet nearly all of the Program's objectives, it would not meet one of the BBARWA's basic objectives, which is to develop promote a thriving community through enhanced recreation and protecting diverse habitats in Big Bear Valley. This is because it would not include discharge to Stanfield Marsh or Big Bear Lake, thus failing to meet this project objective.

(Draft EIR, p. 5-43)

Finding: The Agency rejects Alternative 3 Groundwater Rechage at Sand Canyon and Greenspot, on the following grounds, each of which individually provides sufficient justification for rejection of this alternative: (1) the alternative fails to meet most of the Program objectives; (2) the alternative fails to avoid or reduce the Program's significant and unavoidable impacts relating to aesthetics and agriculture; and (3) the alternative is infeasible.

E. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Section 15126.6(e)(2) of the State CEQA Guidelines indicates that an analysis of alternatives to a proposed Program shall identify an environmentally superior alternative among the alternatives evaluated in an EIR. Based on the alternatives analysis contained within the Draft EIR) the Greenspot Alternative alternative is identified as the Environmentally Superior Alternative.

SECTION IX.
ADOPTION OF STATEMENT OF OVERRIDING CONSIDERATIONS

Pursuant to State CEQA Guidelines Section 15093(a), the Agency must balance, as applicable, the economic, legal, social, technological, or other benefits of the Program against its unavoidable environmental risks in determining whether to approve the Program. If the specific benefits of the project outweigh the unavoidable adverse environmental effects, those environmental effects may be considered acceptable.

Having reduced the adverse significant environmental effects of the Program to the extent feasible by adopting the mitigation measures; having considered the entire administrative record on the Program; the Agency has weighed the benefits of the Program against its unavoidable adverse impacts after mitigation in regards to aesthetics resources, agriculture and forestry resources, air quality – operations, and transportation/traffic. While recognizing that the unavoidable adverse impacts are significant under CEQA thresholds, the Agency nonetheless finds that the unavoidable adverse impacts that will result from the Program are acceptable and outweighed by specific social, economic and other benefits of the Program.

In making this determination, the factors and public benefits specified below were considered. Any one of these reasons is sufficient to justify approval of the Program. Thus, even if a court were to conclude that not every reason is supported by substantial evidence, the Agency would be able to stand by its determination that each individual reason is sufficient. The substantial

evidence supporting the various benefits can be found in the preceding findings, which are incorporated by reference into this section, and in the documents found in the Records of Proceeding.

The Agency therefore finds that for each of the significant impacts which are subject to a finding under CEQA Section 21081(a)(3), that each of the following social, economic, and environmental benefits of the Program, individually outweigh all the potential significant unavoidable adverse impacts and render acceptable each and every one of these unavoidable adverse environmental impacts:

1. **Keep Water in Big Bear Valley for Multiple Beneficial Uses**: The Program would recover a local water resource that is currently being discharged out of Big Bear Valley to Lucerne Valley and close the water loop to keep the water in Big Bear Valley for multiple beneficial uses including groundwater recharge, habitat, and recreation. By recovering this water source, the Program will help increase drought resiliency for the approximately 20,000 full-time Big Bear Valley residents, in addition to the approximately 8.3 million annual visitors. The Program is estimated to produce approximately 1,950 acre-feet per year (AFY) of purified water and may produce up to 2,200 AFY by 2040 through utilization of a high-recovery brine minimization technology and increased flows from growth.

2. **Enhance Local Groundwater Supplies**: When groundwater conditions are favorable for recharge, up to 380 AFY of Program Water could be pumped from Big Bear Lake and discharged into the Sand Canyon channel to recharge the groundwater basin and improve the sustainability of the groundwater basin. Once recharged, the water can later be pumped out using existing BBLDWP wells, and a portion can be transferred into BBCCSD's water system through existing interconnections, thereby providing Program water benefits to both agencies. BBLDWP and BBDCSD will implement the Sand Canyon recharge component of the Program directly because BBARWA does not have the legal authority to fund or perform groundwater recharge activities.

3. **Consistent Water in Stanfield Marsh**: The discharge of Program Water to the Stanfield Marsh Wildlife and Waterfowl Preserve (Stanfield Marsh), will provide a new consistent water source which will improve sustainability of the marshland habitat that supports diverse birds and native plants. The Program Water will flow through Stanfield Marsh then flow into Big Bear Lake through culverts that cross under Stanfield Cutoff. Due to the elevation of the culverts, at least half of the marsh will remain wetted at all times, even if Lake levels drop below the culverts. Maintaining consistent water in Stanfield Marsh will enhance the community benefits of the existing open space, boardwalk and well as wildlife viewing and educational opportunities.

4. **Enhance Big Bear Lake Levels, Particularly During Drought:** The Program Water would flow through Stanfield Marsh and provide a new consistent inflow to Big Bear Lake, resulting in an incremental increase in lake levels during periods when Big Bear Lake is below full to provide the most benefits during droughts. Increased Lake levels will also increase the wetted habitat around the

Lake and improve recreational access to the Lake during dry periods when the Lake levels would have been lower without the Program. Through the planned use of a high-recovery brine minimization technology, the Program is estimated to produce approximately 1,950 AFY of purified water and may produce up to 2,200 AFY by 2040 through utilization of a high-recovery brine minimization technology and increased flows from growth, which would increase the Lake level benefits. Once the recovery rate is confirmed, the lake Level benefit estimate will be updated.

5. **Option to Sustain Unarmored Threespine Stickleback Fish with Program Water**: The Program Water could be used in the future as an alternate water supply to sustain the habitat for the Federally listed Unarmored Threespine Stickleback (Stickleback) fish in Shay Pond. If this use is pursued in the future, it would replace the use of groundwater that currently sustains flow through Shay Pond, thereby preserving that supply in the Basin for potable use. While this part of the Program is included in this DPEIR for analysis purposes, this Program component is not planned to be completed in the near term.

6. **Beneficial Use Enhancement**: The Program Water would support the RARE and WILD beneficial uses of Stanfield Mash and Big Bear Lake that are identified in the Santa Ana River Basin Water Quality Control Plan (Basin Plan) as follows:

   (a) Variable rainfall results in unpredictable environments within Stanfield Marsh and Big Bear Lake, which limit the ability of certain species to utilize the area. By reducing the degree of disturbance promoted by episodic drying, more species can utilize these areas.

   (b) Maintaining water levels in Stanfield Marsh may also increase lakeshore fringe habitat, which is currently limited due to water level fluctuations. This habitat type is utilized by rare birds (American Bald Eagle Haliaeetus leucocephalus, Southwestern Willow Flycatcher Empidonax trailii extimus), rare mammals (San Bernardino Flying Squirrel Glaucomys sarinus), and rare plants (Slender-petaled Thelypodium stenopetalum). Other more common species would benefit from the presence of lakeshore fringe and open water habitat as well. These include amphibians, ducks/wading birds, and bats that forage over open water.

7. **Economic Benefits through Tourism:** The Program will increase inflows to Big Bear Lake, thereby increasing the lake level, which could result in greater recreational use of Big Bear Lake during dry periods when the lake levels would otherwise be lower. Increased visitors to Big Bear Lake for recreational purposes would result in economic benefits through tourism that may otherwise be impacted by lower lake levels during drought.

8. **Downstream Watershed Benefits**: Additional inflow into the Lake is expected to result in additional releases from Big Bear Lake when it is less than 6 feet below full, and more flood control releases during wet periods when the Lake is near

full. Some of the additional releases can be captured by San Bernardino Valley Municipal Water District downstream of the Seven Oaks Dam and recharged into the San Bernardino Basin, resulting in additional water supply benefits for the Santa Ana Watershed.

9. **Enhance Groundwater Sustainability**: The Replenish Big Bear will help the Bear Valley Basin by adding a new source of water and offsetting the potable use, resulting in more water staying in Bear Valley Basin.

Exhibit B

BBARWA, BBCCSD, BBLDWP, AND BBMWD
REPLENISH BIG BEAR PROGRAM
MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Implementation Schedule	Verification
Aesthetics AES-1: Proposed facilities shall be designed in accordance with local design standards and integrated with local surroundings. Landscaping shall be installed in conformance with local landscaping design guidelines as appropriate to screen views of new facilities and to integrate facilities with surrounding areas.	The measure shall be incorporated into individual project design specifications, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this aesthetic mitigation measure shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency.[1] Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Aesthetics AES-2: Future Replenish Big Bear Program facilities at unknown locations shall either (1) be located outside of scenic viewsheds identified in the General Plan or Municipal Code corresponding to a proposed location for a future facility; (2) be unobtrusive to scenic vistas due to height or blending the facility into the natural environment confirmed by a visual simulation that demonstrates this; or (3) where (1) or (2) are not possible, undergo subsequent CEQA documentation to assess potential aesthetic impacts a future Replenish Big Bear Program facility may have upon contain scenic resources.	When proposed facilities defined within the Replenish Big Bear Program (Program) are being considered, the agency implementing the facility shall conduct the required evaluation of interference with locally identified scenic viewsheds before final site selection and design. Where scenic viewsheds cannot be avoided, any subsequent CEQA evaluation shall be prepared and processed prior to final site selection by the Implementing Agency.	The scenic viewshed evaluation shall be retained in the project file. Where a CEQA document is prepared and processed, a copy of the environmental document shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

[1] "Implementing Agency" as used throughout this Mitigation Monitoring and Reporting Program refers to the lead agency implementing a project under the Replenish Big Bear Program (e.g., BBARWA, BBCCSD, BBLDWP, and BBMWD).

Mitigation Measure	Implementation Schedule	Verification
Aesthetics		
AES-3: Should the removal of trees be required for a specific Program Component, the implementing agency shall comply with the applicable local jurisdiction's municipal code or development code pertaining to the removal of trees. For Program Components within the City of Big Bear Lake, the implementing agency shall comply with the City's Municipal Code Chapter 17.10, Tree Conservation and Defensible Spaces, where applicable. For Program Components within San Bernardino County, the implementing agency shall comply with the San Bernardino County Development Code Plant Protection and Management (88.01), where applicable.	The measure shall be incorporated into individual project design specifications during project design, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction. Where required, the subsequent CEQA documentation shall be prepared prior to initiation of construction.	Where a CEQA document is prepared and processed, a copy of the environmental document shall be retained in the project file. A copy of the construction contract including this aesthetics mitigation measure shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Aesthetics		
AES-4: Future proposed facilities defined within the Replenish Big Bear Program at unknown locations shall either (1) be located within sites that avoid rock outcroppings and other scenic resources as defined in State CEQA Guidelines Appendix G, or (2) undergo subsequent CEQA documentation to assess potential impacts from locating a future facility in an area that may contain scenic resources.	When sites for Program facilities are being considered, the agency implementing the facility shall conduct the required evaluation of conflict with locally identified scenic resources prior to final site selection. Where scenic resources cannot be avoided, any subsequent CEQA evaluation shall be prepared and processed prior to final site selection by the Implementing Agency.	The scenic resources evaluation shall be retained in the project file. Where a CEQA document is prepared and processed, a copy of the environmental document shall be retained in the project file. Field notes documenting the scenic resources evaluation shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Aesthetics AES-5: When Replenish Big Bear Program above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility and except where such compliance is not required by California law.	The measure shall be incorporated into individual project design specifications during project design, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this aesthetic mitigation measure shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Aesthetics AES-6: Future Replenish Big Bear Program projects shall implement at least the following measures, unless they conflict with the local jurisdiction's light requirements, in which case the local jurisdiction's requirements shall be enforced: • Use of low-pressure sodium lights where security needs require such lighting to minimize impacts of glare. • The height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination. • Directing light and shielding shall be used to minimize off-site illumination during both construction or operation of any Program facility. • No light shall be allowed to intrude into sensitive light receptor areas during both construction or operation of any Program facility. • Non-reflective materials and/or coatings shall be used on the exterior of all facilities if constructed in a publicly visible location (such as from a roadway or public facility).	The measure shall be incorporated into individual project design specifications during project design, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this aesthetics mitigation measure shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Aesthetics		
AES-7: A Facility lighting plan that shall apply to construction and operation shall be prepared for each Replenish Big Bear Program component and shall demonstrate that glare from construction, operation and safety night lights that may create light and glare affecting adjacent occupied property are sufficiently shielded to prevent light and glare from spilling into occupied structures. This plan shall specifically verity that the lighting doesn't exceed 1.0 lumen at the nearest residence to any lighting site within the project footprint. This plan shall be implemented by the implementing agency to minimize light or glare intrusion onto adjacent properties. During Program construction and operation, the Implementing Agency shall eliminate all nonessential lighting throughout each individual Program area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. BBARWA shall ensure that lighting for Program activities is shielded, cast downward, and does not spill over onto other properties or upward into the night sky, except where essential to perform Program operations (see the International Dark-Sky Association standards at http://darksky.org/). BBARWA shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less.	The measure shall be incorporated into individual project design specifications during project design, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this aesthetics mitigation measure shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Agriculture and Forestry Resources		
AGF-1 Should the removal of clusters of trees subject to CAL FIRE timberland conversation regulations be required for a specific Program Component, the implementing agency shall comply with CAL FIRE regulations, specifically, prior to the removal of any trees subject to CAL FIRE regulations for a given Program Component, the implementing agency shall obtain an exemption, a "Public Agency, Public and Private Utility Right of Way Exemption" (1104.1(b)(c)) or a "Less Than 3 Acre Conversion Exemption" (1104.1(a)). Should an exemption for the removal of trees subject to CAL FIRE timberland conversation regulations be unavailable due to the limitations set forth by CAL FIRE of one exemption per agency per five years, the implementing agency shall prepare and submit a TCP pursuant to California Public Resources Code 4621(a) and a THP pursuant to California Public Resources Code 4581 to CAL FIRE utilizing the services of a Registered Professional Forester approved by CAL FIRE.	The CAL FIRE Exemption, or TCP and THP, depending on the applicability of the above, shall be prepared prior to construction. The provisions of these documents shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the exemption, or TCP and THP shall be retained in the project file. Verification of implementation shall be based on field inspections by County or CAL FIRE inspection personnel that verify the aesthetics measure has been implemented as required in this measure. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Air Quality		
AQ-1 When using construction equipment greater than 150 horsepower (>150 hp), the Construction Contractor shall ensure that off-road diesel construction equipment complies with the EPA/CARB Tier 4 emissions standards or equivalent and shall ensure that all construction equipment is tuned and maintained in accordance with the manufacturer's specifications.	This measure shall be implemented during construction of future Program facilities, and shall be included in the construction contract as a contract specification.	A copy of the construction contract including this mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

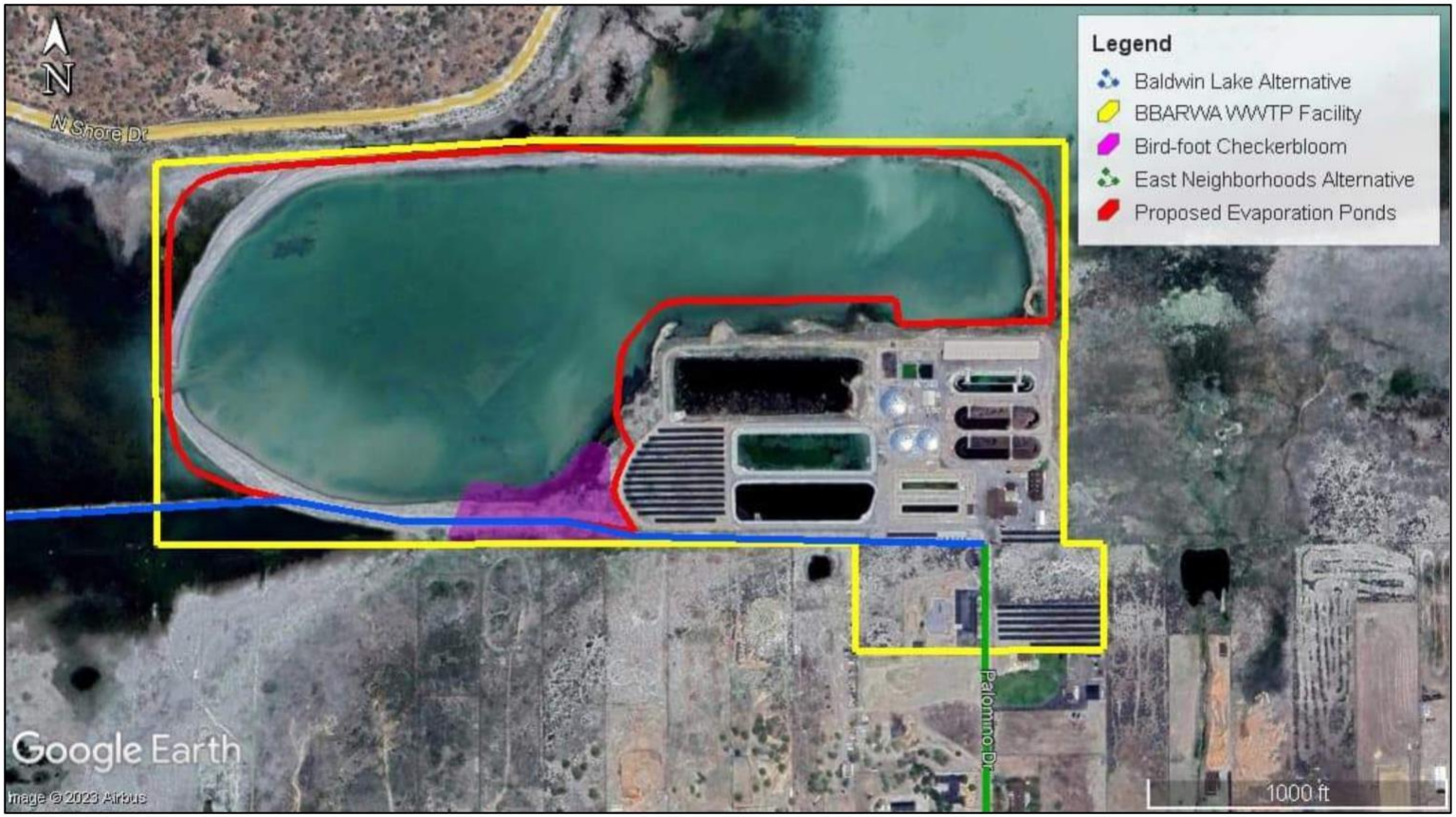
Mitigation Measure	Implementation Schedule	Verification
Air Quality		
AQ-2 BBARWA shall implement a fugitive dust response plan at the LV Site. This plan shall begin with signage at the LV Site (one along Camp Rock Road and one along Old Woman Springs Road [Highway 247]) notifying the public of a phone number and email address that can be reached if fugitive dust is observed migrating from the site. This same notification and information shall retain a place on BBARWA's website. In response to any notifications from the public that fugitive dust is observed migrating from the LV Site, BBARWA shall implement a plan of response to minimize fugitive dust. This plan can range from short-term in nature (i.e. utilization of chemical stabilization or water to spray on the surfaces from which dust originates at the LV Site) to long-term in nature (i.e. utilization of gravel or like natural materials to stabilized the LV Site surface over the long-term or planting native plants or cover crop to stabilize the soils). The end result of implementation of the fugitive dust response plan shall be to diminish visible dust at the LV Site.	This measure shall be implemented during operation of the Program once the discharge to the LV Site is reduced. It shall be implementing as an ongoing measure of operational procedures.	During operations, site inspections by BBARWA shall be performed to ensure adherence to this measure. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Air Quality		
AQ-3: BBARWA will establish an odor complaint/response program and will respond to any odor complaints received for this Program by odor levels at the affected receptor following the methodology specified in the American Society for Testing and Materials (ASTM) Recommended Practice E679-04. If the odor levels exceed the odor intensity value of 3.0 or greater on the 8-point n-butanol intensity scale, an odor response plan will be developed and initiated to minimize the potential for odor complaints as a result of the solar brine evaporation pond operations. Odor response shall include, but not be limited to, more frequent precipitated crystal removal from the solar brine evaporation pond shall, and application of odor neutralizing materials. This odor response/complaint program shall begin once the Solar Evaporation Ponds are operational for at least one year thereafter. If no complaints are received within the first year of operations, the program shall conclude. If one or more complaints are received within the first year of operations, the program shall continue on for the duration of Program operations.	The odor response program shall be developed prior to operation of the Solar Evaporation Ponds and shall be implemented during operation of the Program, as an ongoing measure of operational procedures. Odor response shall include, but not be limited to, more frequent precipitated crystal removal from the solar brine evaporation pond shall, and application of odor neutralizing materials. This odor response/complaint program shall begin once the Solar Evaporation Ponds are operational for at least one year thereafter. If no complaints are received within the first year of operations, the program shall conclude.	A copy of the odor response program shall be retained in the project file. During operations, site inspections by BBARWA shall be performed to ensure adherence to this measure. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-1 The Solar Evaporation Ponds shall be designed to avoid areas where bird-foot checkerbloom is known to occur (shown on Figure 4.5-10). Orange construction fencing, or similarly visible material should be installed around the area where bird-foot checkerbloom is located, and this area should be completely avoided.	This measure shall be implemented during Solar Evaporation Ponds design, and avoidance shall be implemented during construction of the Solar Evaporation Ponds, and shall be included in the construction contract as a contract specification.	A copy of the construction contract including this mitigation measure shall be retained in the project file. A copy of the Solar Evaporation Ponds design that demonstrates avoidance of bird-foot checkerbloom shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

2023 Tom Dodson & Associates
Big Bear Valley Partner Agencies
Replenish Big Bear Project
BRA/JWA

Jacobs



SOURCE: Google Earth

FIGURE 11

Jacobs

Bird-foot Checkerbloom (*Sidalcea pedata*) Observations
Replenish Big Bear Project

FIGURE 4.5-10

Tom Dodson & Associates
Environmental Consultants

Bird-Foot Checkerbloom Observations

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-2: Preconstruction clearance surveys shall be conducted by a qualified biologist who is familiar with the local flora, to determine if any special status plant species are present within the proposed disturbance area prior to construction of any individual Program component. Botanical surveys shall be conducted during the appropriate time of year, when target species are both evident and identifiable. Should any special status plants be located within the area of potential effect (APE) during the preconstruction survey (excluding the Baldwin Lake Pipeline Option), the Implementing Agency shall fully avoid the plant(s) in accordance with the provisions of MM BIO-3 or due to the federal involvement in the Project, Section 7 Consultation with the USFWS shall be conducted, if the species is federally listed, or an Incidental Take Permit (ITP) from CDFW shall be obtained. Subject to CDFW and/or USFWS concurrence, the Implementing Agency shall mitigate the loss of the plant(s) through the purchase of mitigation credits from a CDFW-approved bank, or the acquisition and conservation of land approved by CDFW at a minimum 1:1 (replacement-to-impact) ratio.	The survey(s) shall be conducted prior to construction. All actions pertaining to the discovery of local flora, including special status species, shall occur prior to or during construction at the appropriate time of year as stipulated by this measure.	A copy of the survey(s) shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-3: If any listed bird-foot checkerbloom is found by the onsite biological monitor, or by construction personnel who are educated in species avoidance pursuant to MM BIO-16, within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure applies to the Solar Evaporation Ponds Project, as shown on Figure 4.5-10. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected Alignment Option. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to MM BIO-5.	This measure shall be implemented during the construction, and shall be included in the construction contract as a contract specification.	A copy of the construction contract including this mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-4: If any other listed special status species are found within the proposed disturbance area(s), then orange construction fencing, or similarly visible material should be installed around the area where they are located, and this area shall be completely avoided. This measure does not apply to the Baldwin Lake Pipeline Alignment Option, should this alignment be the selected alternative. If the Baldwin Lake Pipeline Alignment Option is selected, the bird-foot checkerbloom plants shall be handled pursuant to **MM** BIO-5.	This measure shall be implemented during the construction, and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-5 Where feasible, the Baldwin Lake Pipeline Alignment Option shall be designed to avoid the areas within BBARWA's property where bird-foot checkerbloom is known to occur (shown on Figure 4.5-10). Otherwise, should BBARWA choose to install the Baldwin Lake Pipeline Alignment Option as it is currently proposed, BBARWA shall proceed as follows: • ~~At least 20 days prior to construction within areas containing the bird-foot checkerbloom, or sooner, BBARWA shall notify USFWS and CDFW of the construction plan, and potential impacts to the bird-foot checkerbloom. BBARWA shall offer USFWS and CDFW a window of 20 days to opt to collect plants and/or plant seeds prior to construction.~~ Due to the federal involvement in the Project, Section 7 Consultation with the USFWS shall be conducted, and an Incidental Take Permit (ITP) from CDFW shall be obtained. • ~~If neither CDFW nor USFWS opt to collect plants and/or plant seeds~~ Subject to CDFW and USFWS concurrence, with the ultimate mitigation strategy to be approved by CDFW and USFWS prior to implementation, BBARWA shall proceed with the following approach to mitigate impacts to this species: ○ BBARWA shall ~~transplant the plants~~ implement a translocation program in which the plants shall be moved out of the way during construction, and shall be watered and maintained in a holding area and then either: ▪ (a) replanted over the ~~to a location where the plants can be conserved and protected outside of the~~ Baldwin Lake Pipeline Alignment Option APE. BBARWA shall establish at a minimum, an informal, but in preference, a formal conservation easement over the Baldwin Lake Pipeline Alignment Option APE to ensure protection of the species in perpetuity; or, ▪ (b) replanted in BBARWA's established conservation area to protect the species in perpetuity.	Section 7 Consultation shall occur in parallel with the NEPA Compliance for the Program, and shall be carried out for the duration deemed appropriate by the USFWS. The ITP application shall be prepared and submitted prior to construction and after the CEQA process has concluded. The design of the Baldwin Lake Pipeline Alignment Option reflecting the stipulations in this measure shall be solidified prior to the commencement of construction. Transplantation of the plants, if applicable, shall occur prior to the commencement of construction.	A copy of the correspondence between BBARWA and CDFW and USFWS shall be retained in the project file. A copy of the Baldwin Lake Pipeline Alignment Option shall be retained in the project file. A copy of the Section 7 Consultation and ITP shall be retained in the project file. Documentation of transplantation or any other actions pertaining to the correspondence with CDFW, USFWS, and BBARWA shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-6: In order to change the water source at Shay Pond, an adaptive management and mitigation plan (AMMP) shall be developed by BBARWA. The implementing agency—BBARWA, in association with BBCCSD—shall coordinate with USFWS and CDFW to obtain verbal agreement on the approach to forecast impacts to the Stickleback. Then, the implementing agency or biologist familiar with the Stickleback contracted to the implementing agency shall draft a memorandum of understanding (MOU) (that would be between BBARWA and/or BBCCSD and USFWS and/or CDFW) to the lay a solid framework for the development of an AMMP. The MOU will determine if additional permitting will be required from both the State and Federal government for the take of an endangered species. The AMMP shall identify a sampling and monitoring program for the lifespan of the Program. This will include any triggers or adaptive management strategies that could be implemented to improve conditions for the Stickleback, including alterations to water temperature, inclusion of bubblers to increase dissolved oxygen or other techniques to be identified. The AMMP must be approved by USFWS and CDFW in order to carry out a pilot study in which it will be determined whether the change in water source for the Stickleback is feasible. As part of the MOU and AMMP implementation process, BBARWA, in association with BBCCSD shall obtain the following data to be provided to CDFW and/or USFWS: • Data on the chemical characteristics of the Program Water to be used for the Project; • Data on the physical characteristics of the Program Water that are likely to impact fish species, such as water temperature, dissolved oxygen, and pH; • A comparison of water quality for the Program Water versus the groundwater currently being used to discharge to Shay Pond to ascertain if the change in water source would introduce contaminants that may impact the reproduction and survival of the stickleback.	The AMMP, MOU, and coordination with USFWS and CDFW shall be developed prior to the commencement of construction and as part of the planning process for the change in water source at Shay Pond.	A copy of the AMMP, MOU, and coordination with USFWS and CDFW shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA and/or BBCCSD. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA and/or BBCCSD	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-7 Prior to implementation of the Sand Canyon Monitoring Wells (once the final locations have been selected), and prior to the replacement pipeline from the BBARWA WWTP to the Shay Pond Conveyance Pipeline and the new Shay Pond Conveyance Pipeline (Figures 4.5-7 through 4.5-8), a site-specific biological resources assessment shall be conducted by a qualified biologist familiar with Big Bear Valley flora and fauna. This survey shall be conducted in accordance with appropriate standards by a qualified biologist/ ecologist. If sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the California Natural Diversity Database (CNDDB) will be notified and the following subsequent mitigation actions will be taken: a. ~~BBARWA~~ The Implementing Agency shall provide compensation for sensitive habitat acreage lost by acquiring and protecting in perpetuity (through property or mitigation bank credit acquisition) habitat for the sensitive species at a ratio of not less than 1:1 for habitat lost, with the ultimate compensatory mitigation ratio being determined through negotiation with USFWS and/or CDFW, and never less than 1:1. The property acquisition shall include the presence of at least one animal or plant per animal or plant lost at the development site to compensate for the loss of individual sensitive species. b. The final mitigation may differ from the above values based on negotiations between the project proponent and USFWS and CDFW for any incidental take permits for listed species. BBARWA and/or the implementing agency shall retain a copy of the incidental take permit as verification that the mitigation of significant biological resource impacts at a project site with sensitive biological resources has been accomplished. c. Preconstruction botanical surveys for special-status plant communities and special- status plant species will be conducted in areas that were not previously surveyed because of access or timing issues or project design changes; pre-construction surveys for special-status plant communities and special-status plant species will be conducted before the start of ground-disturbing activities during the appropriate blooming period(s) for the species. If special-status plants or plant communities are identified, the following hierarchy of actions shall be taken: a) find an alternative site; b) avoid the plants and maintain them onsite after completing the project; or c) provide compensatory mitigation offsite.	The survey(s) shall be conducted prior to construction with sufficient time to allow for consultation where sensitive species are most anticipated to be encountered, if anticipated to be encountered at all. Where applicable, compensatory habitat shall be acquired prior to operation of the facility.	A copy of the survey(s) and any acquisition paperwork pertaining to compensatory habitat shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency, as well as by retaining the Incidental Take Permit (ITP). Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-8: Appropriate BMPs (e.g., silt fence) should be implemented during construction of the Shay Pond Conveyance Pipeline to ensure that no sediment or pollutants enter Shay Pond/Shay Creek, such that construction does not impact the Stickleback and/or its habitat.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-9: All construction activities associated with the proposed Solar Evaporation Ponds shall be conducted when the portion of Baldwin Lake where this Program component will occur is dry.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-10: 1. Preconstruction rubber boa surveys are recommended for each Program component that would provide 100% visual coverage of any undeveloped areas within the proposed Program Area footprint and would consist of a systematic ground search that would focus on moveable surface materials such as rocks, logs, duff, and man-made debris that may provide shelter for rubber boa. 2. Rubber boa exclusion fence (e.g., silt fence) shall be installed around the perimeter of the Sand Canyon Recharge Pipe Outlet construction site prior to commencement of any Program related ground disturbing activities in this area. All construction activities shall be restricted to within the fenced disturbance limits to avoid potential harm to rubber boa that may be present in nearby habitat. 3. A qualified biologist who is familiar with southern rubber boa and its habits shall be present on site during initial ground disturbing activities within or adjacent any potential rubber boa habitat to monitor the clearing/removal of any surface objects that could potentially provide rubber boa refugia or hibernacula (e.g., rotting	The surveys shall be implemented prior to initiation of construction by a biologist who has the appropriate scientific collection permit and memorandum of understanding (MOU) with CDFW. If rubber boa is found during surveys, CDFW shall be contacted prior to the commencement of constructed pursuant to this measure. Once the surveys have been conducted, the remaining stipulations in this measure shall be implemented during construction and shall be included in the construction contract as a contract specification. Provision 3 of this measure applies to the Baldwin Lake Pipeline Alignment Option,	A copy of the survey a shall be documented and retained in the project file. Documentation of compliance with any mitigation measures identified in the survey, as well as any further actions taken should this species be found within the project site shall be retained in the project file.

Mitigation Measure	Implementation Schedule	Verification
logs/stumps, duff layer). The biological monitor shall visually inspect under any surface cover objects prior to their removal to ensure no rubber boa are harmed or killed. 4. All open trenches shall be backfilled or covered at the end of the day and ramped to allow rubber boa and other wildlife to escape. 5. If a rubber boa is found during preconstruction presence/absence surveys or during construction activities, all site-specific project activities shall be halted, CDFW shall be contacted, and a California Endangered Species Act (CESA) Incidental Take Permit shall be obtained from CDFW prior to reinitiating project activities.	Shay Pond Replacement Pipeline, Sand Canyon Recharge Pipeline, and Sand Canyon Pipe Outlet.	
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-11: 1. To ensure the Program does not impact flying squirrel, preconstruction surveys for each Program Component (except those occurring at the BBARWA WWTP) shall be conducted to identify potentially suitable cavity nesting sites and foraging habitat, prior to the removal of any trees or downed woody debris. 2. If suitable flying squirrel cavity nesting sites are detected within the proposed Program Area footprint, then coordination with the CDFW would be necessary to determine appropriate minimization and **MMs** to offset Program related impacts to this species prior to the commencement of construction within the area within which the suitable flying squirrel cavity nesting sites are located.	The surveys shall be implemented prior to initiation of construction. If flying squirrel cavity nesting sites are detected during surveys, CDFW shall be contacted prior to the commencement of constructed pursuant to this measure. Any minimizing mitigation measures identified as a result of the consultation with CDFW shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the survey a shall be documented and retained in the project file. A copy of the construction contract shall be retained in the project file. Documentation of compliance with any mitigation measures identified in the survey, as well as any further actions taken should this species be found within the project site shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-12: To avoid potential impacts to nocturnal species such as the California Spotted Owl (SPOW) and flying squirrel, due to light pollution, project related night lighting (both temporary and permanent) shall be directed away from adjacent areas to protect nocturnal species from direct night lighting. Shielding shall be incorporated in project designs to ensure ambient lighting in adjacent areas is not increased.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification. This measure shall be implemented during operation of the Program, as an ongoing measure of operational procedures.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file. During operations, the Implementing Agency shall verify that the requirements in this measure have been and are being implemented. Field notes from inspections shall be retained in the project file
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-13: During final design and prior to issuance of construction permits each specific infrastructure improvement project, a BRMP shall be prepared to: • Assemble the biological resources **MMs** to be applied for each specific infrastructure improvement in the future; • Specify the terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility; • Discuss habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts; and • The parameters of the BRMP will be formed with the **MMs** from subsequent CEQA documentation (if required), including terms and conditions as applicable from the USFWS, USACE, SWRCB/Regional Water Quality Control Board (RWQCB), and CDFW.	The Biological Resources Management Plan (BRMP) shall be developed during final design of a given project site. The measures developed in the BRMP shall be implemented during construction of future Program facilities, and shall be included in the construction contract as a contract specification.	A copy of the BRMP shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-14 Prior to the commencement of construction within or adjacent to any natural area and during the appropriate periods (e.g., seasons, weather conditions, times of day), a biologist/botanist shall survey the APE to identify native species (alliances, variety, and/or subspecies) within the natural areas that would be appropriate for revegetation. As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site as identified by the site biologist/botanist pre-construction survey, which shall be implemented in cooperation with regulatory agencies and with oversight from a biologist. The seeds mix shall be verified to contain ~~the minimum amount of~~ no invasive plant species seeds. If a seed mix without potential invasive species does not exist for the native species to the APE, the seed mix shall contain the absolute minimum amount of invasive species reasonably available for the Program Area.	A biologist/botanist shall survey the APE to identify native species prior to the commencement of construction. Verification of the seed mix shall occur prior to revegetation. The revegetation requirements shall be established during the construction, and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-15 During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-16 Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws. The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by the implementing agency.	The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. The measure shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on the contractor to submit training attendance lists to the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-17 Biological monitor to be present during construction activities in areas where impacts to Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources. A biological monitor (biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the Contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and the Lake and Streambed Alteration (LSA) Agreement. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections and from the biological monitor activities shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-18 All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-19 Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special–status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification. Additionally, this measure shall be implemented ongoing during operation.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file. During operations, site inspections by the Implementing Agency shall be performed to ensure adherence to this measure.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-20 Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-21 Prior to the commencement of construction, the implementing agency shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-22 Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-23 During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged; traffic outside of the designated areas will be prohibited. Furthermore, the use of motorized vehicles within sensitive habitat areas and linkages shall be prohibited except for crucial maintenance and/or construction activities.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources BIO-24 All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-25 Prior to the commencement of construction, a Weed Control Plan will be developed for the implementing agency by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed: • A Schedule for noxious weed surveys shall be addressed; • Weed control treatments shall be addressed and ultimately implemented by the implementing agency, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist); • The timing of the weed control treatment for each plant species shall be addressed and • Fire prevention measures shall be addressed. The implementing agency shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by the implementing agency upon request.	The Weed Control Plan should be developed prior to construction commencement. The Weed Control Plan shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the Weed Control Plan and the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-26 Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensating habitat to meet regulatory agency requirements. ~~Typically, regulatory agencies require mitigation for~~ Impacts to jurisdictional waters ~~without any riparian or wetland habitat~~ shall ~~to~~ be mitigated at a minimum 1:1 ratio, with the ultimate compensatory mitigation ratio being determined through negotiation with regulatory agency, and never at a rate of less than 1:1. ~~For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1, and t~~ The ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. This increase in ratio will be determined by the regulatory agency, and must be deemed sufficient by the regulatory agency issuing the permit to compensate for/offset the impacts to the jurisdictional waters and supported species and habitats therein. A Habitat Mitigation and Monitoring Proposal shall be prepared by a biologist or regulatory specialist and reviewed and approved by the appropriate regulatory agencies. These agencies (USACE, RWQCB, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) can impose greater mitigation requirements in their permits, but the implementing agency will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.	If necessary, the regulatory permits shall be obtained prior to ground disturbance within the jurisdictional area and the conditions of the regulatory permits shall be implemented as defined in the regulatory permits.	A copy of the regulatory permits shall be retained in the project file(s), and verification that all conditions have been implemented shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-27 A federal and state jurisdictional water preconstruction survey shall be conducted by a biologist or regulatory specialist at least six months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters as defined by state and federal law are within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values in accordance with MM BIO-26.	The survey(s) shall be conducted at least six months prior to construction during the spring, where possible.	A copy of the survey(s) shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-28 To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal will be conducted outside of the state identified nesting season for applicable bird species (nesting season is approximately from February 15 through September 15 of a given calendar year, depending on the species). ~~Alternatively~~ Additionally, at the discretion of a qualified avian biologist, nesting bird surveys shall be required, where appropriate, regardless of the time of year ~~shall be conducted by a qualified avian biologist~~ no more than three (3) days prior to vegetation clearing or ground disturbance activities. • Preconstruction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If no active nests are found, no further action would be required. If an active nest is found, the biologist shall set appropriate no-work buffers around the nest which would be based upon the nesting species, its sensitivity to disturbance, nesting stage and expected types, intensity, and duration of disturbance. There are no standard nest buffers specified in the Migratory Bird Treaty Act (MBTA) or within the California Fish and Game Code (FGC). Disturbance factors including nest location, human activity, activity duration, and noise level may influence nesting behavior and reproductive success, shall be	Construction shall occur outside of the nesting season or a copy of the field survey documenting no nesting birds shall be completed prior to initiating construction within the nesting season.	The Implementing Agency shall document the dates of construction. If construction is proposed to occur within the nesting season, a copy of the field survey documenting the absence of nesting birds shall be retained in the project file. Any coordination with CDFW pertaining to nesting birds shall also be retained in the project file.

Mitigation Measure	Implementation Schedule	Verification
considered by the project biologist in coordination with CDFW and USFWS (as appropriate) in establishing standard buffer distances for individual species on a project- and site-specific basis. The nest(s) and buffer zones shall be field checked weekly by a qualified biological monitor. The approved no-work buffer zone shall be clearly marked in the field, within which no disturbance activity should commence until the qualified biologist has determined the young birds have successfully fledged and the nest is inactive; • Preconstruction nesting bird surveys shall include a nighttime component to address the potential for presence of nocturnal species. The nesting bird surveys shall consist of a minimum of five (5) consecutive survey days and shall include an additional three (3) consecutive nights of survey for nocturnal species. Nocturnal surveys shall be conducted between the hours of 9:00 pm. and midnight, during appropriate weather conditions (e.g., no rain or winds); and • Vegetation removal, including any tree removal or pruning, and structure demolition shall be conducted outside the typical nesting season (i.e., between September 1st and January 31st), to the maximum extent feasible. Otherwise, the provisions of the preconstruction nesting bird surveys, above, shall suffice to ensure impacts to nesting birds are minimized.		
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Biological Resources		
BIO-29 To avoid any harm to waterfowl that may utilize the Solar Evaporation Ponds, BBARWA shall install bird deterrents at the Solar Evaporation Ponds to discourage waterfowl use of the ponds. The deterrent shall encompass access control through tarps or screens limiting bird access to the surface of the Solar Evaporation Ponds.	This measure shall be implemented during the design stage of the Solar Evaporation Ponds, and shall be included in the construction contract as a contract specification. Bird deterrents shall be implemented ongoing during operation.	A copy of the design of the Solar Evaporation Ponds demonstrating compliance with this measure shall be retained in the project file. The construction contract and final design for each project shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file. During operations, site inspections BBARWA shall be performed to ensure adherence to this measure.
	Responsible Party	**Status / Date / Initials**
	BBARWA	

Mitigation Measure	Implementation Schedule	Verification
Cultural Resources		
CUL-1: If the Sand Canyon Monitoring Wells are proposed within existing facilities that has been totally disturbed due to it undergoing past engineered site preparation (such as a well site), the agency implementing the project will not be required to complete a follow on cultural resources report (Phase I Cultural Resources Investigation) unless the implementing agency is seeking additional State or Federal funding, in which case the implementing agency shall prepare a Phase I Cultural Resources Investigation to satisfy State CEQA-plus or Federal agency requirements.	This measure shall be implemented prior to the commencement of constriction.	A copy of the report shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBLDWP and/or BBCCSD	

Mitigation Measure	Implementation Schedule	Verification
Cultural Resources CUL-2: Where a Phase I Cultural Resources Investigation is not required or has already been completed (for all Program components except the Sand Canyon Monitoring Wells), the following shall be required to minimize impacts to any accidentally exposed cultural resource materials: • Should any subsurface cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist meeting the Secretary of Interior Standards for Archaeology. Responsibility for making this determination shall be with the implementing agency's trained onsite inspector. An archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate MMs in accordance with the State CEQA Guidelines.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Cultural Resources CUL-3: If the Sand Canyon Monitoring Wells are proposed within undisturbed sites <u>and/or</u> a site that will require substantial earthmoving activities and/or excavation, <u>and/or</u> the implementing agency is seeking state or federal funding, the Implementing Agency shall complete a follow-on cultural resources report (Phase I Cultural Resources Investigation) regardless of whether implementing agency is seeking state or federal funding. Where a Phase I Cultural Resources Investigation is required, the following phases of identification, evaluation, mitigation, and monitoring shall be followed for the Sand Canyon Monitoring Wells: 1. <u>Phase I (Identification)</u>: A Phase I Investigation to identify historical, archaeological, or paleontological resources in a project site shall include the following research procedures, as appropriate: • Focused historical/archaeological resources records searches at SCCIC and/or EIC, depending on the project location, and paleontological resources records searches by NHMLAC, SBCM, and/or the Western Science Center in Hemet;	This measure shall be implemented prior to the construction of the Sand Canyon Monitoring Wells, and any ongoing monitoring shall occur during the corresponding period of construction. Where required, monitoring and any other measures recommended shall be included as part of the construction contract, and shall be carried out during construction.	A copy of all cultural resource reports and of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by BBLDWP and/or BBCCSD. Field notes from inspections shall be retained in the project file.

Mitigation Measure	Implementation Schedule	Verification
• Historical background research, geoarchaeological profile analysis, and paleontological literature review; • Consultation with the State of California Native American Heritage Commission, Native American tribes in the surrounding area in accordance with Assembly Bill 52 (AB 52), the Native American Historic Resource Protection Act, pertinent local government agencies, and local historic preservation groups; • Field survey of the Program Area by qualified professionals of the pertinent discipline and at the appropriate level of intensity as determined on the basis of sensitivity assessment and site conditions; and • Field recordation of any cultural resources encountered during the survey and proper documentation of the resources for incorporation into the appropriate inventories or databases. 2. Phase II (Evaluation): If cultural resources are encountered in a project site and cannot be avoided, a Phase II investigation shall be required to evaluate the potential significance of the resources in accordance with the statutory/regulatory framework outlined above. A typical Phase II study consists of the following research procedures: • Preparation of a research design to discuss the specific goals and objectives of the study in the context of important scientific questions that may be addressed with the findings and the significance criteria to be used for the evaluation, and to formulate the proper methodology to accomplish such goals; • In-depth exploration of historical, archaeological, or paleontological literature, archival records, as well as oral historical accounts for information pertaining to the cultural resources under evaluation; • Fieldwork to ascertain the nature and extent of the archaeological/paleontological remains or resource-sensitive sediments identified during the Phase I study, such as surface collection of artifacts, controlled excavation of units, trenches, and/or shovel test pits, and collection of soil samples; and • Laboratory processing and analyses of the cultural artifacts, fossil specimens, and/or soil samples for the proper recovery, identification, recordation, and cataloguing of the materials collected during the fieldwork and to prepare the assemblage for permanent curation, if warranted. 3. Phase III (Mitigation/Data Recovery): For resources that prove to be significant under the appropriate criteria, mitigation of potential project impact is required. The first option is avoidance		

Mitigation Measure	Implementation Schedule	Verification
by selecting and implementing the Sand Canyon Monitoring Wells at an alternative site ~~or selecting an alternative Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Option~~. Depending on the characteristics of each resource type and the unique aspects of significance for each individual resource, mitigation may be accomplished through a variety of different methods, which shall be determined by a qualified archaeologist, paleontologist, historian, or other applicable professional in the "cultural resources" field. Typical mitigation for historical, archaeological, or paleontological resources, however, may focus on the following procedures, aimed mainly at the preservation of physical and/or archival data about a significant cultural resource that would be impacted by the project: • Data recovery through further excavation at an archaeological site or a paleontological locality to collect a representative sample of the identified remains, followed by laboratory processing and analysis as well as preparation for permanent curation; • Comprehensive documentation of architectural and historical data about a significant building, structure, or object using methods comparable to the appropriate level of the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) for permanent curation at a repository or repositories that provides access to the public; and • Adjustments to project plans to minimize potential impact on the significance and integrity of the resource(s) in question. 4. Phase IV (Monitoring): At locations that are considered sensitive for subsurface deposits of undetected archaeological or paleontological remains, all earth-moving operations shall be monitored continuously or periodically, as warranted, by qualified professional practitioners. Archaeological monitoring programs shall be coordinated with the nearest Native American groups, who may wish to participate, as put forth in **MMs TCR-1 through TCR-3**.		
	Responsible Party	**Status / Date / Initials**
	BBLDWP and/or BBCCSD	

Mitigation Measure	Implementation Schedule	Verification
Cultural Resources CUL-4: After each phase of the studies required by **MM CUL-3** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures shall be prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM, as appropriate and in addition to the implementing agency for the project, for permanent documentation and easy references by future researchers.	The reports shall be completed after the corresponding study has been completed.	A copy of all cultural resource reports and of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Any correspondence with SCCIC, EIC, NHMLAC, and/or SBCM shall be retained in the project file, including verification of receipt of applicable reports. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Cultural Resources CUL-5: <u>Archaeological Monitoring</u> Due to the heightened cultural sensitivity of the proposed Program Area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work), for individual Replenish Big Bear Program components that are deemed by YSMN to be located within culturally sensitive areas of the Big Bear Valley. A sufficient number of archaeological monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeological consultant and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and approve the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the Program. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.	The Monitoring and Treatment Plan shall be developed prior to the commencement of construction. The agreement(s) with the archaeological monitor shall be in place prior to the commencement of construction, and the archaeological monitor shall be present throughout the ground disturbing activities associated with construction. Any response to exposed resources shall occur during construction. Any reports documenting management and findings for accidentally exposed resources shall be completed within one year of the discovery.	A copy of the Monitoring and Treatment Plan, archaeological monitoring agreement, and documentation of findings and any reports thereof shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency that verify the archaeological monitoring program is being implemented by the contractor as required in this measure. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agencies	

Mitigation Measure	Implementation Schedule	Verification
Geology and Soils GEO-1: Prior to the construction of each Program-related improvement, a design-level geotechnical investigation, including the collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including ground shaking hazard, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential as appropriate relative to the type of facility and risk to human life. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible, a second tier CEQA evaluation shall be completed.	The geotechnical evaluation shall be completed during design. The measures generated in the geotechnical investigation shall be incorporated into individual project design specifications, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the geotechnical evaluation shall be retained in the project file(s). A copy of the construction contract including this geology/soils mitigation measure shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Geology and Soils GEO-2: For the Sand Canyon Recharge Area, the Program will develop and implement a recharge monitoring and management plan that will control recharge to ensure that potential liquefaction-ground failure hazards will be controlled to prevent/eliminate the potential for this type of hazard to be created at the recharge location. This may include pumping groundwater to lower the groundwater table within the recharge impact area. This plan shall be reviewed and approved by the Program managers based on its ability to meet this criterion.	The recharge monitoring and management plan shall be developed prior to operation of the Sand Canyon Recharge Project. The Plan shall be reviewed and approved by the Program Team and regulators prior to operation of the Project.	A copy of the recharge monitoring and management plan shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the BBCCSD and/or BBLDWP. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBCCSD and/or BBLDWP	

Mitigation Measure	Implementation Schedule	Verification
Geology and Soils		
GEO-3: For each site-specific project that is less than one acre in size requiring ground disturbing activities such as grading, the implementing agencies shall identify and implement BMPs to minimize soil erosion and loss of topsoil comparable to that which would be required under a SWPPP (BMPs may include, but are not limited to hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from the construction site does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.	The BMPs identified pursuant to this measure, and the requirement that substantial erosion or sedimentation be restored to pre-discharge conditions shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this geology/soils mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Geology and Soils		
GEO-4: For project-level development involving ground disturbance in alluvial deposits, a qualified paleontologist shall be retained to determine the necessity of conducting a study of the Program Area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resource records search to be conducted at the SBCM and/or other appropriate facilities; a field survey or monitoring where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. Treatment of any discovered paleontological resources shall follow current professional standards.	Review by a qualified paleontologist shall occur prior to the commencement of construction, and if necessary, the report shall be drafted prior to construction. Any response to exposed resources shall occur during construction. Any reports documenting management and findings for accidentally exposed resources shall be completed within one year of the discovery.	The Implementing Agency shall be notified within 24-hours of accidental exposure of any paleontological resources. A copy of correspondence with the qualified paleontologist, and if applicable, the paleontology report, as well as any initial findings shall be provided to the Implementing Agency and retained in the project file. A copy of the final report shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials		
HAZ-1: For Program facilities that handle hazardous materials or generate hazardous waste, the Hazardous Materials Business Plan (HMBP) prepared and submitted to the CUPA shall incorporate BMPs designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for HMBPs. The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The HMBP shall be approved prior to operation of the given facility.	The HMBP shall be completed prior to operation of an individual facility. The facility managers shall implement the measures identified in the HMBP to reduce the potential for accidental releases of hazardous materials or wastes and shall be implemented ongoing during operation.	A copy of the HMBP shall be retained in the project file and shall be submitted to the City or County for their records. This Plan shall be retained at the project site and made available to employees working at the facility. Site inspections shall be performed by the Implementing Agency to ensure compliance with the best management practices outlined in the Business Plan.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials		
HAZ-2: The HMBP shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.	The HMBP shall be completed prior to operation of an individual facility.	A copy of the HMBP shall be retained in the project file. The HMBP shall be retained at the project site and made available to employees working at the facility. Site inspections shall be performed to ensure adequate equipment has been provided and personnel have been adequately trained in accordance with the HMBP.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials		
HAZ-3: Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.	The modeling shall be completed prior to operation of a given proposed facility and measures to protect sensitive receptors implemented during construction.	A copy of the results of the modeling and any measures developed to minimize accidental exposure to hazardous materials shall be retained in the project file. Site inspections shall be performed to ensure the proper procedures pertaining to storage and handling of acutely hazard waste are adhered to.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials HAZ-4: All hazardous materials during both operation and construction of Program facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and Federal law.	This measure shall be included in the construction contract as a contract specification, and shall be implemented ongoing during operation.	A copy of the construction contract shall be retained in the project file Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file. During operations, site inspections BBARWA shall be performed to ensure adherence to this measure. Documentation of hazardous materials disposal shall be retained in the project file for both operation and construction.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials HAZ-5: Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and Federal law.	This measure shall be implemented following an accidental spill of any hazardous material at a Program facility.	A copy of the specific threshold used for a spill shall be retained in the project file, and a copy of the sample test data verifying clean-up of the site shall also be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials HAZ-6: Vector management plans shall be prepared and use of pesticides shall be reviewed and coordinated with the San Bernardino Vector Control Program for approval prior to implementing vector control at any of the new or expanded storage basins. All pesticides shall be applied in accordance with State and label requirements to minimize potential for residual concentrations that may be considered adverse to public health and water quality.	The Vector Management Plans shall be completed prior to operation of an individual facility. This measure shall be implemented by during vector control activities as part of operation.	A copy of the Vector Management Plans shall be retained in the project file(s). The Implementing Agency shall retain copies of correspondence with vector control agencies. Site inspections by the Implementing Agency shall be performed to ensure adherence to this measure.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials HAZ-7: All accidental spills or discharge of hazardous material during construction activities shall be reported to the local CUPA and shall be remediated in compliance with applicable Federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into SWPPP prepared for each future facility developed under the Program, or where an SWPPP is not required due Project size, shall be incorporated as a BMP. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction, and shall be included as a measure in the SWPPP.	A copy of the SWPPP and construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials HAZ-8: Should an unknown contaminated site be encountered during construction of Program facilities, all work in the immediate area shall cease; the type of contamination and its extent shall be determined by a hazardous materials specialist, such as an Environmental Scientist; and the local CUPA or other regulatory agencies (such as the California Department of Toxic Substances Control or Santa Ana Regional Board) shall be notified. Based on investigations of the contamination, the site may be closed and avoided or the contaminant(s) shall be remediated to a threshold acceptable to the CUPA or other regulatory agency threshold and any contaminated soil or other material shall be delivered to an authorized treatment or disposal site.	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Documentation of remediation shall be retained in the project file. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hazards and Hazardous Materials		
HAZ-9: For projects within airport safety zones, facility design shall follow the guidelines of the appropriate airport land use compatibility plan (ALUCP). If a potential conflict with an ALUCP is identified as a result of implementation of the Stanfield Marsh/Big Bear Lake Discharge Pipeline Alignment Options, the implementing agency shall relocate the facility outside the area of conflict, or if the site is deemed essential, the implementing agency shall propose an alternative design that reduces any conflict to a less than significant impact, with no conflicts with the ALUCP.	This measure shall be implemented as part of site selection and site design, prior to construction. The ultimate design shall be implemented as part of the construction contract during construction.	A copy of the project design demonstrating compliance with this measure shall be retained in the project file. The construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hydrology and Water Quality		
HYD-1: BBARWA, in collaboration with BBMWD and BBCCSD, will collect samples at the pertaining locations. That is BBARWA will monitor the Program Water, BBMWD will collect samples in the Stanfield Marsh and Big Bear Lake, and BBCCSD will collect samples in Shay Pond. BBARWA will develop the AMMP and will coordinate with BBMWD and BBCCSD to implement the AMMP for the proposed discharges to Stanfield Marsh/Big Bear Lake and Shay Pond (when implemented). The AMMP will consist of the following; • Conduct a monitoring plan to: ○ Collect quarterly boron samples of Program Water (i.e., purified water before it is discharged to Stanfield Marsh or Shay Pond (when implemented)), at the existing total maximum daily load (TMDL) Sampling Station MWDL9, and at Shay Pond (when implemented); ○ Monitor the dissolved oxygen and potential of hydrogen (pH) of the Program Water, in Stanfield Marsh (if permitted), at the existing TMDL Sampling Station MWDL9, and at Shay Pond (when implemented) during and after re-wetting of Stanfield Marsh or Shay Pond; ○ Continuously monitor temperature of the Program Water, Stanfield Marsh, and Shay Pond (when implemented); and ○ Collect quarterly chloride samples of Program Water stored in Big Bear Lake at the existing TMDL Sampling Station MWDL9 to assess the impacts on the Bear Valley Basin. ○ Collect nutrient (I.e., TIN, TP, TN, ammonia, nitrate as N, nitrite as N) samples of the Program Water at the frequency stated in the NPDES permit. • Implement a TP Offset Program, expected to be stipulated in	The AMMP shall be developed prior to the operation of the proposed Program. Monitoring and other actions identified in the AMMP shall be implemented during operation of the proposed Program.	A copy of the AMMP shall be retained in the project file. Documentation of the monitoring and other findings from the implementation of the AMMP shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.

Mitigation Measure	Implementation Schedule	Verification
BBARWA's future NPDES permit; • Monitor the presence of invasive plants and aquatic animals within Stanfield Marsh and Big Bear Lake on at least a bi-yearly basis. If observed, mitigative actions, such as invasive plant removal, introduction of native species known to eradicate invasive species, or other mitigative actions shall be undertaken to remove the invasive species present as a result of introduction of the Program Water. An account of invasive species within Stanfield Marsh and Big Bear Lake shall be undertaken prior to discharge into Stanfield Marsh to set a baseline for what invasive species exist prior to operation of the Program. If temperature, dissolved oxygen, boron, or pH levels exceed the NPDES permit requirements, BBARWA shall pursue mitigation actions which may include, but are not limited to the following: • Introduction of chemical or mechanical intervention to stabilize pH levels and dissolved oxygen. • Introduction of native plants to absorb boron at Stanfield Marsh or Shay Pond (when implemented). • Introduction of a temperature cooling mechanism to lower the temperature of the Program Water before being introduced to the Stanfield Marsh or Shay Pond (when implemented). If recharging Program Water stored in Big Bear Lake would result in exceedance of any of the limits set in the future Sand Canyon Recharge Area WDR permit, the discharge of Program Water to the Sand Canyon Recharge Area would be paused until permit conditions are met. The AMMP shall be aligned with the future requirements of the NPDES and WDR permits.		
	Responsible Party	**Status / Date / Initials**
	BBARWA, in collaboration with BBMWD and BBCCSD	

Mitigation Measure	Implementation Schedule	Verification
Hydrology and Water Quality HYD-2: The Sand Canyon Recharge Project shall occur within the defined Sand Canyon Recharge Area shown on Figure 3-32, and shall not occur during periods where natural surface flows occur in the channel (i.e. the channel is completely dry). If the water discharged into Sand Canyon as a result of Program implementation does not fully percolate within the defined Sand Canyon Recharge Area, discharge to Sand Canyon will be modified (reduced or stopped) to a point at which full percolation occurs within the limits of the defined Sand Canyon Recharge Area.	This measure shall be implemented during operation of the Sand Canyon Recharge Project.	Any modification to the operation of the Sand Canyon Recharge Project shall be documented and retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hydrology and Water Quality HYD-3: BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation. The terms of the permit will be defined by the Santa Ana Regional Board and the DDW.	The monitoring will start prior to the operation of the proposed Program. BBLDWP shall monitor the discharge and percolation performance in compliance with the terms of the WDR permit for the Sand Canyon Recharge Area Project operation during operation of the proposed Program.	Monitoring reports pertaining to the Sand Canyon Recharge Project shall be created and retained in the project file. Verification of implementation shall be based on field inspections by the BBLDWP. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	BBLDWP	

Mitigation Measure	Implementation Schedule	Verification
Hydrology and Water Quality		
HYD-4: Prior to the commencement of construction of any Program project that will disturb less than one acre (i.e., that is not subject to the CGP), the implementing agency shall require implementation of and construction contractor(s) shall select BMPs to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each Program facility, and to control urban runoff after each Program facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to: • The use of silt fences or coir rolls; • The use of temporary stormwater desilting or retention basins; • The use of water bars to reduce the velocity of stormwater runoff; • The use of wheel washers on construction equipment leaving the site; • The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads; • The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and • Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.	This measure shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hydrology and Water Quality HYD-5: Prior to commencement of construction of project facilities, the implementing agency shall be required to either: (1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the implementing agency shall: (2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, BMPs, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.	The No Net Discharge Report or Grading Plan and Drainage Plan shall be developed prior to construction, and the measures called for shall be implemented during construction and shall be included in the construction contract as a contract specification.	A copy of the No Net Discharge Report or Grading Plan and, Drainage Plan and construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Hydrology and Water Quality		
HYD-6: For long-term mitigation of site disturbances at Program facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.	This measure shall be implemented both during project specific design and during construction, and shall be included in the construction contract as a contract specification.	A copy of the construction contract and final design for each project shall be retained in the project file. Verification of implementation shall be based on field inspections by Implementing Agency inspection personnel that verify that the requirements in this measure have been completed. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Land Use / Planning		
LU-1: Following selection of sites for future Replenish Big Bear Program related facilities, each site and associated facility shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where future facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or subsequent CEQA documentation shall be prepared that identifies the specific project design features or MMs that will be utilized to reduce potential incompatible activities or effects to below significance thresholds established in the general plan for the jurisdiction where the facility will be located.	Site evaluation should be completed by the Implementing Agency during site selection, prior to construction. Where applicable, subsequent CEQA documentation shall be completed prior to initiation of construction, during site design. The measures generated in the subsequent CEQA documentation shall be incorporated into individual project design specifications, which shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	Correspondence related to site selection shall be retained in the project file(s). Where applicable, a copy of the subsequent CEQA documentation for the individual project shall be retained in the project file. A copy of the construction contract including any land use related measures generated by the subsequent CEQA documentation (where applicable) shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Noise NOI-1: To comply with the day- and nighttime noise level limit during the whole of well drilling activities, noise barriers with a minimum height of 14 ft shall be erected surrounding the drilling rig monitoring well locations such that the pumps, compressors, and the drilling rig are completely shielded from nearby residential areas. An effective barrier requires a weight of at least 2 pounds per square foot (sf) of face area with no decorative cutouts, perforations, or line-of-sight openings between shielded areas and the source. Examples of temporary barrier material includes 5/8 inch plywood, 5/8 inch oriented-strand board, or sound blankets capable of providing a minimum sound transmission loss (STC) of 27 or a noise reduction coefficient (NRC) of 0.85.	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this noise mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by Watermaster and/or the Implementing Agency. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Public Services PS-1: The Program facilities shall be fenced or otherwise have access controlled to prevent illegal trespass to attractive nuisances during operation and construction equipment shall be fenced or otherwise have access controlled at the close of each work day. Furthermore, the Program facilities shall include security lighting to deter illegal trespass to attractive nuisances as part of both operation and construction. The security lighting shall be shielded from adjacent sensitive receptors, such as residences per **MM AES-6~~7~~ and AES-7~~8~~**.	This measure shall be incorporated into the final site design, and shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Transportation TRAN-1: Prepare and Implement Construction Transportation Management Plan (TMP) A construction TMP shall be developed and implemented by the implementing agency, in coordination with the respective jurisdictions, the San Bernardino County Transportation Authority (SBCTA), and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction. The TMP shall be developed prior to initiation of construction.	A copy of the TMP and construction contract shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Additionally, correspondence with Caltrans, and/or the corresponding County or City traffic management division shall be retained in the project file.

Mitigation Measure	Implementation Schedule	Verification
Construction Traffic Routes and Staging Locations: The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable. Damage Repair: The TMP shall include the following requirements to minimize damage to the existing roadway network: • A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water Conveyance Pipelines. • The roadway network along the proposed Program Water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report. • Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and the implementing agency or its contractors shall repair all damage. Coordination with Emergency Services: The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public ROW if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized. Coordination with Active Transportation Facilities: The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points. Coordination with SBCTA: If the proposed project affects access to existing transit stops, the TMP shall also include temporary,		

Mitigation Measure	Implementation Schedule	Verification
alternative transit stops and directional signage, as determined in coordination with Mountain Transit. Coordination with Caltrans: If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines. Coordination with Nearby Construction Sites: The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following: • All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures; • All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips; and • The implementing agency, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles. Transportation Control and Safety: The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders. Plan Approval: The TMP shall be submitted to SBCTA for review and approval.		
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Tribal Cultural Resources		
TCR-1 <u>Tribal Monitoring</u> Due to the heightened cultural sensitivity of the proposed Program Area in Big Bear Valley, at the discretion of the Tribe, a Tribal monitor shall be present for all ground-disturbing activities that occur within the proposed Program Area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). At the discretion of the Tribe, a sufficient number of Tribal monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation (“Cultural Resources” and “Tribal Cultural Resources”) shall be completed by the consultant, as detailed within CUL-1, and submitted to the Lead Agency for dissemination to the YSMN Cultural Resources Management Department. Once all parties review and agree to the plan, it shall be adopted by the Lead Agency – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.	Any response to exposed resources shall occur during construction. The Monitoring and Treatment Plan (MTP) shall be developed prior to the commencement of construction. Tribal monitoring shall occur during construction, and shall be included as a requirement in the construction contract, as shall the stipulations of the MTP. Reports documenting management and findings for accidentally exposed resources shall be completed within one year of the discovery.	A copy of the contract with the Tribal Monitor(s) and documentation of their presence during construction shall be retained in the project file. A copy of the MTP shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency that verify the archaeological monitoring program is being implemented by the contractor as required in this measure. Field notes documenting verification shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Tribal Cultural Resources		
TCR-2 <u>Treatment of Cultural Resources</u> If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the YSMN Cultural Resources Management Department, the archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a TCR, avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a Tribal monitor representing the Tribe, unless otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the implementing agency and YSMN prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, California Historical Resources Information System (CHRIS), and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.). Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with	Any response to exposed resources shall occur during construction. The stipulations set forth by this measure shall be included in the construction contract. Reports documenting management and findings for accidentally exposed resources shall be completed within one year of the discovery.	A copy of the reports of any findings as well as the construction contract shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency that verify the archaeological monitoring program is being implemented by the contractor as required in this measure. Field notes documenting verification shall be retained in the project file.

Mitigation Measure	Implementation Schedule	Verification
YSMN to identify an American Association of Museums (AAM)-accredited facility within San Bernardino County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 California (CA) Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Project implementing agency to pay for those fees. All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS Information Center, the Lead Agency, and YSMN.		
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Tribal Cultural Resources TCR-3 <u>Inadvertent Discoveries of Human Remains/Funerary Objects</u> In the event that any human remains are discovered within the Program Area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an Environmentally Sensitive Area physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately ~~who shall~~ notify YSMN and the Lead Agency. The Lead Agency shall then immediately contact the County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the Native American Heritage Commission (NAHC) within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified Most Likely Descendant (MLD), shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, Lead Agency, and landowner agree to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD shall complete its inspection and make	This measure shall be implemented during construction if human remains or funerary objects are exposed during construction. The stipulations set forth by this measure shall be included in the construction contract.	A copy of the construction contract shall be retained in the project file. The Implementing Agency shall retain all records of the discovery and management actions taken in regard to human remains or funerary objects in the project file.

Mitigation Measure	Implementation Schedule	Verification
recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98. Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The Lead Agency/landowner should accommodate on-site reburial in a location mutually agreed upon by the Parties. It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and Lead Agencies, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r)..		
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Tribal Cultural Resources TCR-4: <u>Pre-construction Cultural Sensitivity Training</u> Due to the heightened cultural sensitivity of the proposed Program Area in Big Bear Valley, a Tribal monitor representing YSMN or a Tribal representative of YSMN shall conduct a cultural sensitivity training at the start of construction for all on-site project personnel. The training may speak to, but is not limited to, the general cultural sensitivity of the area, the types of cultural resources that may be identified during construction, and the protocols for inadvertent discoveries.	The cultural sensitivity training sessions shall be conducted prior to the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits throughout the duration of ground disturbing activities. The measure shall be included in the construction contract as a contract specification.	A copy of the construction contract shall be retained in the project file. Verification of implementation shall be based on the contractor to submit training attendance lists to the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Tribal Cultural Resources TCR-5: Tribal Consultation for Aesthetics of Treatment Plant Modification The Lead Agency and consultant shall consult with YSMN regarding the aesthetics of the water treatment plant modifications, specifically regarding the color palette. The consultation will address how the design elements can incorporate a natural-looking aesthetic in order to blend into the culturally significant Baldwin Lake landscape	This measure shall be implemented by BBARWA during the design phase of projects occurring within the BBARWA WWTP site. The meeting with YSMN shall occur during the design phase for projects occurring within the BBARWA WWTP site. Once the color scheme is finalized, it shall be included in the construction contract as a contract specifi-cation and implemented by the contractor during construction.	A copy of the correspondence between the tribe and BBARWA shall be retained in the project file. The final site design selection for projects occurring within the BBARWA WWTP as well as the construction contract site shall be retained in the project file. Verification of implementation shall be based on field inspections by BBARWA. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Utilities and Service Systems UTIL-1: Prior to issuance of permits for construction of project facilities, the implementing agency shall prepare a drainage plan that shall be incorporated into the final site design for each Program facility, that includes design features to reduce stormwater peak concentration flows exiting the above ground facility sites (consistent with MS4 requirements) so that the capacities of the existing downstream drainage facilities are not exceeded. These design features could include bio-retention, sand infiltration, return of stormwater for treatment within the treatment plant, and/or detention facilities.	The Drainage Plan shall be developed during design so the recommendations can be incorporated into the final site design for each Program facility. This measure shall be included in the site design and construction contract as a contract specification and implemented by the contractor during construction.	A copy of the Drainage Plan and construction contract shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes from inspections shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Utilities and Service Systems UTIL-2: For future Replenish Big Bear Program projects that do not have access to electrical or natural gas connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet electricity needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical infrastructure.	The subsequent CEQA documentation shall be completed prior to the commencement of construction, during the design of the applicable Program facility.	A copy of the subsequent CEQA documentation shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Utilities and Service Systems UTIL-3: For future Replenish Big Bear Program projects that do not have access to telecommunication connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet telecommunication needs at a future Replenish Big Bear Program facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.	The subsequent CEQA documentation shall be completed prior to commencement of construction, during the design of the applicable Program facility.	A copy of the subsequent CEQA documentation shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Utilities and Service Systems UTIL-4: The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This includes but is not limited to wood, metals, concrete, road base, soil and asphalt. The contractors for a given Replenish Big Bear Program project shall submit a recycling plan to the implementing agency for review and approval prior to issuance of permits for the construction of demolition/construction activities.	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Documentation of recycling shall be completed by the contractor and retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Utilities and Service Systems UTIL-5: The contract with demolition and construction contractors for a given Replenish Big Bear Program project shall include the requirement that all soils that are planned to be exported from the site that can be recycled shall be recycled for re-use; alternatively, soils shall be reused on site to balance soil import/export.	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the construction contract including this mitigation measure shall be retained in the project file. Verification of implementation shall be based on field inspections by the Implementing Agency. Documentation of soils recycling shall be completed by the contractor and retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Wildfire		
WF-1: Prior to initiating construction of proposed Conveyance Pipelines or other Program facilities within public ROW, BBARWA or the implementing agency shall prepare and implement a traffic control plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. The implementing agency shall ensure that the traffic control plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.	This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction. The TMP shall be developed prior to initiation of construction.	A copy of the TMP and construction contract shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Additionally, correspondence with Caltrans, and/or the corresponding County or City traffic management division shall be retained in the project file.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Mitigation Measure	Implementation Schedule	Verification
Wildfire		
WF-2: Prior to construction of facilities located in areas designated as High or Very High FHSZs by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the implementing agency and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the implementing agency over the long-term.	The input from CAL FIRE shall be obtained and the Fire Management Plan developed prior to initiating construction. This measure shall be included in the construction contract as a contract specification and implemented by the contractor during construction.	A copy of the fire management plan/fuel modification plan shall be retained in the project file(s). Verification of implementation shall be based on field inspections by the Implementing Agency. Field notes documenting verification shall be retained in the project file. During operations, records shall be kept documenting compliance with this measure; site inspections by the Implementing Agency inspection personnel shall be performed to ensure adherence to this measure.
	Responsible Party	**Status / Date / Initials**
	Implementing Agency	

Big Bear Area Regional
Wastewater Agency

Jim Miller – Chair
Rick Herrick – Vice-Chair
John Russo – Director
Kendi Segovia – Director
Larry Walsh – Director

AGENDA ITEM: 10.A.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

PREPARED BY: Christine Bennett, Finance Manager

SUBJECT: Award Contracts for Municipal Advisory and Placement Agent Services and Retain Bond Counsel for Replenish Big Bear Final Design Funding

BACKGROUND & DISCUSSION:

During the May 22, 2024 regular meeting, the Governing Board directed staff to explore options for funding the final design of BBARWA's Wastewater Treatment Upgrades Project (Project), one of the multiple projects included in the Replenish Big Bear Program (Program). Completion of the final design will assist the Agency and the Governing Board with its evaluation of the feasibility and desirability of the Program. It is anticipated that grant funding specific to planning and design will be sufficient to cover the cost of the final design; however, there is an approximately 120 day lag on grant reimbursement funding. Due to the timing of grant reimbursements, the Agency will need to obtain additional funding to meet its obligations in a timely manner.

In preliminary conversations with NHA Advisors (NHA), the Agency's current municipal advisor for the Project funding plan, NHA recommended that the Agency seek private placement funding (loan) versus a public offering due to the size of the loan, approximately $3.5 million that will go towards the 20% non-federal match required by the grants. The estimated costs of issuance for a private placement are as follows:

Estimated Costs of Issuance		
Firm	**Service**	**Private Placement**
NHA Advisors	Municipal Advisor	$ 37,500
Oppenheimer & Co. Inc.	Placement Agent	20,000
Best Best & Krieger LLP	Bond Counsel	30,000
To Be Determined	Trustee/Paying Agent/Fiscal Agent	5,000
To Be Determined	Bank Counsel	10,000
California State Treasurer	California Debt and Investment Advisory Commission (CDIAC)	750
	Contingency	1,750
	Total Estimated Cost of Issuance	**$ 105,000**

The Agency has received a Regulatory Disclosure Letter (attached) from NHA detailing the scope of municipal advisory activities to be performed and costs associated with those activities for the issuance of a loan. NHA's knowledge of the overall Program and the Agency's financial capabilities positions them to be effective in their advisory capacity for a loan.

Oppenheimer & Co. Inc. represented the Agency as the placement agent for the recent short-term financing ($3.4 million short-term financing issued in February of 2023) and understands the complexity of the funding plan.

Additionally, Best Best and Krieger LLP (BB&K) is the current legal counsel for the Agency and has represented the Agency as bond counsel in prior loan issuances.

The trustee/paying agent/fiscal agent and bank counsel will be determined during the loan process. The CDIAC is the State of California's clearinghouse for public debt issuance information and assists State and local agencies with the monitoring, issuance, and management of public debt.

FINANCIAL IMPACT:

There is no additional financial impact. Costs related to the funding for the Project have been included in the Agency's FY 2024 budget and were unspent during the fiscal year. Appropriations for the funding of the Project will be carried over to FY 2025.

RECOMMENDATION:

1. Award a contract to NHA Advisors in the amount of $39,250 (proposal of $37,500 plus a contingency of $1,750) with a contract term expiring June 30, 2025, for municipal advisory services for the issuance of a private placement loan for the final design of the Project; and
2. Award a contract to Oppenheimer & Co. Inc. in the amount of $20,000 with a contract term expiring June 30, 2025, as the placement agent for the issuance of a private placement loan for the final design of the Project; and
3. Authorize the General Manager to negotiate and execute the contract documents; and
4. Authorize the General Manager to retain Best Best and Krieger LLP for bond counsel for the issuance of a private placement loan for the final design of the Project.

ATTACHMENTS:

1. NHA Advisors Regulatory Disclosure Letter
2. Oppenheimer & Co Inc. Fee Proposal
3. Best Best & Krieger LLP Fee Proposal

NHA | ADVISORS

4040 Civic Center Drive, Suite 200
San Rafael, CA 94903

Office: 415.785.2025
www.NHAadvisors.com

May 13, 2024

David Lawrence
General Manager
Big Bear Area Regional Wastewater Agency
121 Palomino Drive,
Big Bear, CA 92314

RE: Big Bear Area Regional Wastewater Agency 2024 Loan (Replenish Big Bear Design Funding) – Regulatory Disclosure Letter

Dear David,

NHA Advisors, LLC ("NHA Advisors") is required to send this Regulatory Disclosure Letter per Municipal Securities Rulemaking Board ("MSRB") rules. This letter specifies the terms and details of the work that NHA Advisors will perform for the Big Bear Area Regional Wastewater Agency (the "Agency") relating to the above referenced project (the "Project"). Additionally, this letter provides certain duties and disclosures that municipal advisors must present to all clients prior to beginning work on a municipal transaction.

Scope of Municipal Advisory Activities to be Performed

A detailed Scope of Services can be found in Exhibit A.

Independent Registered Municipal Advisor ("IRMA")

If acting in the capacity of an Independent Registered Municipal Advisor ("IRMA"), with regard to the IRMA exemption of the U. S. Securities and Exchange Commission ("SEC") Rule, NHA Advisors will review all third-party recommendations submitted to NHA Advisors in writing by the Agency.

Term of the Project

The Project will commence on May 10, 2024, and end on the earlier of either June 30, 2025, or upon closing of the transaction, unless the term of the Project is otherwise terminated or extended. Any extensions must be mutually agreed upon by all parties in writing.

Termination of NHA Advisors' Role on Project

The Agency may terminate NHA Advisors' role on the Project at any time and without cause upon written notification to NHA Advisors.

In the event of termination, NHA Advisors shall be entitled to compensation for services performed to the effective date of termination. The Agency, however, may condition payment of such compensation upon NHA Advisors delivering to the Agency any or all documents, photographs, computer software, video and

audio tapes, and other materials provided to NHA Advisors or prepared by or for NHA Advisors or the Agency in connection with NHA Advisors' work on the Project.

NHA Advisors may terminate upon 45 days' written notice to the Agency and shall include in such notice the reasons for termination.

Compensation and Out-of-Pocket Expenses

A detailed proposal for compensation and expenses can be found in Exhibit B.

Fiduciary Duty

NHA Advisors is registered as a Municipal Advisor with the SEC and MSRB. As such, NHA Advisors has a fiduciary duty to the Agency and must provide both a Duty of Care and a Duty of Loyalty that entail the following.

Duty of Care:

a) exercise due care in performing its municipal advisory activities;
b) possess the degree of knowledge and expertise needed to provide the Agency with informed advice;
c) make a reasonable inquiry as to the facts that are relevant to the Agency's determination as to whether to proceed with a course of action or that form the basis for any advice provided to the Agency; and
d) undertake a reasonable investigation to determine that NHA Advisors is not forming any recommendation on materially inaccurate or incomplete information; NHA Advisors must have a reasonable basis for:
    i. any advice provided to or on behalf of the Agency;
    ii. any representations made in a certificate that it signs that will be reasonably foreseeably relied upon by the Agency, any other party involved in the municipal securities transaction or municipal financial product, or investors in the Agency securities; and
    iii. any information provided to the Agency or other parties involved in the municipal securities transaction in connection with the preparation of an official statement.

Duty of Loyalty:

NHA Advisors must deal honestly and with the utmost good faith with the Agency and act in the Agency's best interests without regard to the financial or other interests of NHA Advisors. NHA Advisors will eliminate or provide full and fair disclosure (included herein) to the Agency about each material conflict of interest (as applicable). NHA Advisors will not engage in municipal advisory activities with the Agency as a municipal entity, if it cannot manage or mitigate its conflicts in a manner that will permit it to act in the Agency's best interest.

Conflicts of Interest and Other Matters Requiring Disclosures

As of the commencement date of the Project, there are no actual or potential material conflicts of interest, other than those potential conflicts noted below, that NHA Advisors is aware of that might impair its ability to render unbiased and competent advice or to fulfill its fiduciary duty. If NHA Advisors becomes aware

of any material potential conflict of interest that arises after this disclosure, NHA Advisors will disclose the detailed information in writing to the Agency in a timely manner.

Pursuant to MSRB Rule G-42, on Duties of Non-Solicitor Municipal Advisors, Municipal Advisors are required to make certain written disclosures to clients which include, amongst other things, Conflicts of Interest and any Legal or Disciplinary events of NHA Advisors and its associated persons.

The following are potential conflicts of interest to be considered.

- NHA Advisors represents that in connection with the issuance of municipal securities, NHA Advisors may receive compensation from the Agency for services rendered, which compensation is contingent upon the successful closing of a transaction and/or is based on the size of a transaction. Consistent with the requirements of MSRB Rule G-42, NHA Advisors hereby discloses that such contingent and/or transactional compensation may present a potential conflict of interest regarding NHA Advisors' ability to provide unbiased advice to enter into such transaction. The contingent fee arrangement creates an incentive for NHA Advisors to recommend unnecessary financings or financings that are disadvantageous to the Agency, or to advise the Agency to increase the size of the issue. This potential conflict of interest will not impair NHA Advisors' ability to render unbiased and competent advice or to fulfill its fiduciary duty to the Agency.
- NHA Advisors' fees under this potential agreement may be based on hourly fees of NHA Advisors' personnel, with the aggregate amount equaling the number of hours worked by such personnel times an agreed-upon hourly billing rate. This form of compensation presents a potential conflict of interest because it could create an incentive for NHA Advisors to recommend alternatives that would result in more hours worked. This conflict of interest will not impair NHA Advisors' ability to render unbiased and competent advice or to fulfill its fiduciary duty to the Agency.
- NHA Advisors' fees under this potential agreement may be a fixed amount established at the outset of this potential agreement. The amount is usually based upon an analysis by the Agency and NHA Advisors of, among other things, the expected duration and complexity of the transaction and the scope of services to be performed by NHA Advisors. This form of compensation presents a potential conflict of interest because, if the transaction requires more work than originally contemplated, NHA Advisors may suffer a loss. Thus, NHA Advisors may recommend less time-consuming alternatives, or fail to do a thorough analysis of alternatives. This conflict of interest will not impair NHA Advisors' ability to render unbiased and competent advice or to fulfill its fiduciary duty to the Agency.
- The fee paid to NHA Advisors increases the cost of investment to the Agency. The increased cost occurs from compensating NHA Advisors for municipal advisory services provided.
- NHA Advisors serves a wide variety of other clients that may, from time to time, have interests that could have a direct or indirect impact on the interests of another NHA Advisors client. For example, NHA Advisors serves as municipal advisor to other municipal advisory clients and, in such cases, owes a regulatory duty to such other clients just as it does to the Agency. These other clients may, from time to time and depending on the specific circumstances, have competing interests. In acting in the interests of its various clients, NHA Advisors could potentially face a conflict of interest arising from these competing client interests. NHA Advisors fulfills its regulatory duty and mitigates such conflicts through dealing honestly and with the utmost good faith with the Agency.
- Gerald Craig Hill, the Managing Principal of NHA Advisors is currently serving as an outside director for the HdL Companies based in Diamond Bar, CA. HdL Companies is a software and professional

services consulting company providing revenue data and collections information to local governments, potentially including NHA Advisors' clients. HdL Companies have affiliates including, but not limited to, HdL Coren & Cone. From time to time, NHA Advisors utilizes the services of HdL Coren & Cone for its clients. NHA Advisors is mindful of this conflict of interest and fulfills its regulatory duty and mitigates such conflicts through dealing honestly and with the utmost good faith when this situation arises.

- NHA Advisors does not have any affiliate that provides any advice, service, or product to or on behalf of the Agency that is directly or indirectly related to the municipal advisory activities to be performed by NHA Advisors.
- NHA Advisors has not made any payments directly or indirectly to obtain or retain NHA Advisors' municipal advisory business.
- NHA Advisors has not received any payments from third parties to enlist NHA Advisors' recommendation to the Agency of its services, any municipal securities transaction, or any municipal finance product.
- NHA Advisors has not engaged in any fee-splitting arrangements involving NHA Advisors and any provider of investments or services to the Agency.
- NHA Advisors does not have any legal or disciplinary event that is material to the Agency's evaluation of the municipal advisory or the integrity of its management or advisory personnel.
- NHA Advisors does not act as principal in any of the transaction(s) related to this potential agreement.

Legal Events and Disciplinary History

NHA Advisors does not have any legal events and disciplinary history on its Form MA and Form MA-I, which includes information about any criminal actions, regulatory actions, investigations, terminations, judgments, liens, civil judicial actions, customer complaints, arbitrations and civil litigation. The Agency may electronically access NHA Advisors' most recent Form MA and each most recent Form MA-I filed with the Commission at the following website:

www.sec.gov/edgar/searchedgar/companysearch.html

There have been no material changes to a legal or disciplinary event disclosure on any Form MA or Form MA-I filed with the SEC.

Recommendations

If NHA Advisors makes a recommendation of a municipal securities transaction or municipal financial product or if the review of a recommendation of another party is requested in writing by the Agency and is within the scope of the engagement, NHA Advisors will determine, based on the information obtained through reasonable diligence of NHA Advisors whether a municipal securities transaction or municipal financial product is suitable for the Agency. In addition, NHA Advisors will inform the Agency of:

- the evaluation of the material risks, potential benefits, structure, and other characteristics of the recommendation;
- the basis upon which NHA Advisors reasonably believes that the recommended municipal securities transaction or municipal financial product is, or is not, suitable for the Agency; and
- whether NHA Advisors has investigated or considered other reasonably feasible alternatives to the recommendation that might also or alternatively serve the Agency objectives.

If the Agency elects a course of action that is independent of or contrary to the advice provided by NHA Advisors, NHA Advisors is not required on that basis to disengage from the Agency.

Municipal Securities Rulemaking Board Rule G-10 Disclosure

Pursuant to MSRB Rule G-10, on Investor and Municipal Advisory Client Education and Protection, Municipal Advisors are required to provide certain written information to their municipal entity and obligated person clients which include the following:

- NHA Advisors is currently registered as a Municipal Advisor with the SEC and MSRB.
- Within the MSRB website at www.msrb.org, the Agency may obtain the Municipal Advisory client brochure that is posted on the MSRB website. The brochure describes the protections that may be provided by the MSRB Rules along with how to file a complaint with financial regulatory authorities.

Record Retention

Pursuant to the SEC record retention regulations, NHA Advisors is required to maintain, in writing, all communication and created documents between NHA Advisors and the Agency for five (5) years.

If there are any questions regarding the above, please do not hesitate to contact NHA Advisors.

Sincerely,

Craig Hill, Managing Principal
NHA Advisors, LLC

EXHIBIT A

SCOPE OF SERVICES
MUNICIPAL ADVISORY SERVICES

The scope of work will generally include, but may not be limited to, the following services:

- **Project Management**
  - Manage financing process, including assembly of the financing team and assignment of tasks for all parties involved in the financing.
  - Provide information and advice on the timing of the financing process and develop timeline (schedule) of tasks.
  - Upon request, work with Agency staff to solicit and select a registered broker-dealer (underwriter or placement agent), bond/disclosure counsel, trustee, or other consultants that are required as part of financing process. Provide recommendation(s) and negotiate preferred terms and fees for said consultant(s).
- **Quantitative Analysis and Financial Structuring**
  - Evaluate and advise the Agency on the financing structure and method of sale, including the financing terms, call provisions, and covenants.
  - Analyze credit enhancement options (bond insurance and reserve surety bond policies).
  - Meetings or conference calls with credit enhancement or insurance companies to discuss the transaction, as necessary.
- **Project Implementation**
  - Coordinate the efforts of bond counsel, disclosure counsel, and/or any other legal counsel to prepare the financing documents for approval by the Agency Board.
  - Review and provide comments to financing documents to ensure consistency with the financing plan.
  - Upon request, make presentations or attend meetings with the Agency Board or stakeholders to answer questions about the financing and process.
  - Work with selected financing partner or funding source to determine optimal bond structure, including serial/term bonds, premium/discount bonds, and redemption provisions.
  - If a public offering method of sale is utilized:
    - Coordinate preparation of a comprehensive credit presentation to the rating services and bond insurance companies, if applicable.

- Work with disclosure counsel to prepare, review, provide comments, and print the preliminary and final official statements.
- If completed as a negotiated sale, monitor the underwriter's sales effort and assist the Agency with the negotiation of underwriting spreads and interest rates for the proposed financing.
- If completed as a negotiated sale, monitor the underwriter's sales effort and assist the Agency with pricing negotiations.
- If completed as a competitive sale, engage a nationally recognized firm to widely distribute the offering documents to potential investors and establish a bidding platform.
- Assist with the solicitation of an investment advisor to coordinate investment of bond proceeds and/or accounts, as necessary.

- If a private placement method of sale is utilized:
  - Assist with the preparation of a credit package for potential investors.
  - If a placement agent has been engaged, oversee placement agent's solicitation process, assist with the selection of the financing provider, and assist with the negotiation of terms, as necessary .
  - Manage bond or loan pricing and final financing structure (debt service and bond terms).
- Work with bond counsel to finalize documents for execution by the Agency.
- Prepare or coordinate preparation of a closing memorandum outlining a detailed flow of funds at the time of closing.

EXHIBIT B

COMPENSATION SCHEDULE

For work described in the Scope of Services, compensation will be contingent on completion of the financing and is expected to be paid from proceeds of the transaction at the time of closing. The fee for these services is based on a number of factors, including the method of sale, financing structure, complexity, series of bonds, funding source, and the time expected to be required to manage the financing process.

Base Municipal Advisory Services

The transaction is expected to utilize one of the following methods of sale: (1) private placement with a private party or bank (requiring no public offering disclosure document), (2) negotiated public offering with a pre-selected underwriter, or (3) competitive public offering engaging an underwriter through a competitive sale. Based on the method of sale, NHA Advisors will receive a fee for services as follows.

Method of Sale	Bond, Loan or Other Debt Financing Fee
Private Placement	$37,500
Public Offering – Negotiated Sale	$42,500

Additional Services

Credit Rating Process (as Needed) – For services related to a credit rating process, NHA Advisors will receive a fee for services as follows.

Credit Rating Process	Fee
Long-Term Financing	$10,000

In-Person Meetings (Upon Request) – NHA Advisors will be reimbursed $1,500 for each in-person meeting. NHA Advisors will participate on conference calls and virtual meetings at no additional cost to the Agency.

Request for Proposals (Upon Request) – If the Agency has not engaged consultants to provide certain services required as part of financing process, at the Agency's direction, NHA Advisors will undertake the solicitation of one or more of these parties for the fees outlined in the following rate table.

Request for Proposal Process	Fee
Broker-Dealer (Underwriter/Placement Agent)	$5,000
Bond/Disclosure Counsel	$2,500
Trustee	$1,000

Expenses (Out-of-Pocket)

All expenses will be billed directly at cost to the Agency. Expenses will be limited to those necessary for completion of the project.

Fee Proposal

Placement Agent Services

Big Bear Area Regional Wastewater Agency
2024 Direct Placement Financing (Replenish Big Bear Project)

Presented By:

Oppenheimer & Co. Inc.
10880 Wilshire Blvd. 24th Floor
Los Angeles, CA 90024

OPPENHEIMER

Big Bear Area Regional Wastewater Agency
RE: Fee Proposal
Christian Sprunger, NHA Advisors
Craig Hill, NHA Advisors

May 29, 2024

Thank you for this opportunity to present our fee proposal to provide placement agent services to the Big Bear Area Regional Wastewater Agency (the "Agency") for the financing to fund pre-construction related to the Replenish Big Bear Project, (the "Project"). Oppenheimer & Co. Inc. ("Oppenheimer" or "Firm") is a leading global full service brokerage and investment bank with roots that trace back to 1881. Our California presence dates back over 40 years and currently consists of 158 employees including 57 retail financial advisors who oversee $4.9 billion of assets under management and $5.8 billion of assets under administration.

With five offices in California, Oppenheimer is ideally suited to serve as placement agent to the Agency for the following reasons:

Earned Trust: Oppenheimer had the privilege of previously serving as placement agent to the Agency in 2023 for an interim financing relating to the Project.

Top California Placement Agent: Based on statistics from the California Debt and Investment Advisory Commission ("CDIAC"), since 2015 our firm is one of the top placement agents in the State of California. In the last 20 years, we have developed strong, long-term relationships with a variety of private placement providers, opening a market for any municipal financing need. We utilize these relationships to stay current on our buyers' fluid lending parameters. Some of these parameters include rate lock capability, and cost of funds fluctuations.

Special District Connection: We have been a consultant to the California Special Districts Finance Corporation ("CSDAFC") since 2014 and have completed over 35 transactions for CSDAFC.

> *"As one of our main consultants to the CSDA Finance Corporation, Oppenheimer is a trusted partner to the districts we work with on a regular basis. Their expertise in public agency finance, especially with districts, allows them to structure a financing that is extremely competitive and in the best interest of the agencies they work with."*
>
> *-Neil McCormick, Chief Executive Officer, California Special Districts Association Finance Corporation*

Jeff Land
Executive Director

Placement Agent Experience

From 2021 to 2023, Oppenheimer served as placement agent on 110 direct purchase transactions. Please see table below for our direct placement productivity.

Year	Transactions
2023	19
2022	51
2021	40

Assigned Personnel

Jeff Land, Executive Director, Lead Banker (Day to Day)
Jeff will serve as the Lead Banker for the Agency's financing. Jeff manages Oppenheimer's direct placement practice. He has played a pivotal role at Oppenheimer by expanding the firm's direct placement program and establishing a pool of over 20 private placement lenders. In 2023, Jeff served as placement agent for the Agency. He has 19 years of experience in municipal finance. Jeff received a Bachelor's degree from the University of Southern California and has FINRA Series 52 and 63 licenses.

Nicki Tallman, Managing Director, Supervising Banker
Nicki will be responsible for the due diligence process, reviewing numerical models and legal documents. Nicki will assist with all the necessary closing procedures for the financing. Nicki has 30 years of experience in municipal finance. She holds FINRA Series 7, 24, 53 and 63 licenses, and is licensed as a CPA in California.

Michael Garcia, Associate, Support Banker
As quantitative analyst for the transaction, Michael will be responsible for assisting with structuring the transaction, including preparing sources and uses of funds, cash flow analysis, and debt service schedules. Michael has his FINRA Series 7, 52 and 63 licenses.

Approach

For banks that actively participate on direct placements, a net revenue pledge is the second strongest type of credit in the market, right behind unlimited general obligation bonds.

Ensuring the Agency has access to the entire direct placement market is paramount to achieve the best possible financing. In order to accomplish this objective, our standard process for a direct placement transaction includes issuing a Lender Request for Proposal ("Lender RFP") in order to maximize the Agency's exposure. The Lender RFP is sent to select lenders of our pool of 20 direct placement investors and includes, but is not limited to, background of the Agency, including economic and demographic information; background on the security of the contemplated financing; key terms of the proposed transaction; and relevant covenants and credit information. We would also include attachments or links to the Agency's last three years of audits, and current year budget at minimum.

We coordinate all communication with investors, including presenting the transaction, facilitating questions and requests, coordinating conference calls, if necessary, and obtaining bids in a timely manner that are complete and responsive to the Agency's requests.

For lenders who respond, we request that they clearly present their understanding of the transaction and provide all the requested information. Most lenders prefer to have 10 days to respond so that they have time to do an internal credit analysis before submitting their proposal.

On the Lender RFP due date, we compile and summarize the responses, highlighting the proposed interest rates, bank fees, rate lock ability, prepayment provisions, lender counsel and other fees, and the proposal's expiration date. We host a conference call with the financing team to discuss each proposal received and to provide some color regarding pros and cons of the proposals. We have found that the winning proposal doesn't necessarily always mean the proposal with the lowest bid. There are many factors to consider when selecting a lender, so we find it beneficial to have a discussion after the proposals are received.

The primary goal of issuing a Lender RFP is to obtain as many competitive bids as possible. Typically, we procure between four to eight bids per Lender RFP. This includes transactions of weak and strong credit, and a variety of terms.

Cost Proposal

Oppenheimer's placement agent fee will be $20,000 for the Agency's transaction. Our fee includes all expenses and is contingent upon closing.

Mrunal Shah
(951) 826-8259
mrunal.shah@bbklaw.com

File No. 09960.000

June 19, 2024

Christine Bennett
Finance Manager
Big Bear Area Regional Wastewater Agency
121 Palamino Drive, PO Box 517
Big Bear City, CA, 92314

Re: Special Counsel for the Proposed Financing for Big Bear Area Regional Wastewater Agency's Replenish Big Bear Project 2024 Financing

Dear Ms. Bennett:

We are pleased to submit this letter to you in connection with our services as special counsel to the Big Bear Area Regional Wastewater Agency (the "Agency") relating to the proposed issuance of the Agency's above-captioned financing (the "2024 Financing") which will finance the continued design and planning of the project known as Replenish Big Bear (the "Project"). The firm of Best Best & Krieger LLP will serve as special counsel to the Authority on this matter and proposes to perform the following services on the basis set forth in this letter.

As special counsel we will confer and consult with Agency staff on all matters relating to the financing. We will assist the Agency in identifying the most advantageous method of financing based upon our experience and we will attend all meetings and hearings of the Agency's staff, consultants and financial advisor at which financing methods are to be discussed and analyzed for successful completion of the financing.

With respect to the 2024 Financing, our services will include the preparation of all agreements, resolutions, notices, and all other legal documents required by California law for the execution, sale and delivery of the 2024 Financing. We will attend all meetings in which the 2024 Financing will be discussed or any action in connection with the proceedings is to be taken.

Subject to completion of the financing to our satisfaction, Best Best & Krieger LLP will issue its approving legal opinion to the purchasers of the 2024 Financing to the effect that all proceedings have been legally undertaken for the authorization, execution, sale and delivery of the 2024 Financing, or other transactions relating to the financing and that interest paid is exempt from State of California personal income tax. We will also issue appropriate supplemental opinions and certificates as may be necessary or appropriate.

Based on our current understanding of the issuance of the 2024 Financing and the involvement of Best Best & Krieger LLP attorneys in drafting documents relating to the issuance of the 2024 Financing and delivering our legal opinion, our fee will be $30,000.

Our fee assumes that the Authority will finance approximately $3,500,000 for Project costs and the costs of issuing the Financing and that the Financing will be privately placed with a bank. If the transaction is not completed within the estimated schedule or our involvement differs significantly from our expectations, we would expect to be paid a fee that we mutually agree would reflect reasonable compensation for legal services rendered considering the hourly involvement of the attorneys on this project and the level of expertise required to undertake such legal service. By your signature and return of this letter, you agree to pay our fees and expenses as set forth in this paragraph.

Additionally, we will charge the Agency for out-of-pocket expenses which would include, the costs of duplicating and mailing, transportation, long distance telephone calls, messenger and courier service and the preparation of transcripts of the financing. This expense is not expected to exceed $2,500. Such fee does not include any time provided in our capacity as general counsel.

Sincerely,

Mrunal Shah
of BEST BEST & KRIEGER LLP

MS:kb

Big Bear Area Regional
Wastewater Agency

Jim Miller – Chair
Rick Herrick – Vice-Chair
John Russo – Director
Kendi Segovia – Director
Larry Walsh – Director

AGENDA ITEM: 10.B.

MEETING DATE: July 24, 2024

TO: Governing Board of the Big Bear Area Regional Wastewater Agency

FROM: David Lawrence, P.E., General Manager

PREPARED BY: Bridgette Burton, Administrative Services Manager/Board Secretary

SUBJECT: Resolution No. R. 09-2024, A Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency Approving the Force Main Slip Lining Project and Finding the Project Exempt from the California Environmental Quality Act Pursuant to State CEQA Guidelines Section 15301 (Existing Facilities) and Authorization to Advertise and Solicit Bids

BACKGROUND:

The 16-inch force main operates under high pressure, delivering all wastewater from the City of Big Bear Lake to the Agency's Wastewater Treatment Plant. On March 11, 2023, the Agency was notified of a sewage spill near 42825 Big Bear Blvd., where staff discovered a 4-inch hole in the force main. On April 15, 2023, the Agency was alerted to a second sewage spill at the same location, revealing a 2-inch hole in the force main. Upon reviewing the construction drawings, it was determined that hydrogen sulfide gas, accumulating at the top of the pipe during low flow conditions, likely caused the corrosion.

The potential for a spill into Stanfield Marsh, recent high flows from the City of Big Bear Lake, limited storage at the Garstin ponds, and the risk of an influent overflow classified these events as imminent risks, necessitating emergency repairs. On April 26, 2023, the Governing Board allocated $31,625 for the first emergency repair, and on May 24, 2023, $20,393 was appropriated for the second emergency repair.

On July 26, 2023, the Governing Board approved $50,000 to investigate the force main further. This investigation included installing an access point ("tee") to conduct a video inspection and determine the extent of the damage and the need for additional repairs.

DISCUSSION:

The investigation determined that repairs were necessary. Plans and technical specifications have been developed to slip line approximately 3,300 linear feet (Project). The Project will be divided into six (6) work segments to optimize lining distance and reduce costs per foot.

Following receipt of bids, the Project will be presented to the Governing Board for a contract award.

ENVIRONMENTAL CONSIDERATION:

The proposed Project is categorically exempt from environmental review pursuant to State CEQA Guidelines, §15301, Existing Facilities ("Class 1"). The Class 1 exemption allows, in part, for the repair of existing public mechanical equipment that will result in negligible or no expansion of former use. This includes the rehabilitation of deteriorated or damaged mechanical equipment to meet current standards of public health and safety. Here, the Project proposes repairs to the damaged force main line, which are necessary to meet current standards of public health and safety and avoid any future risk. Through slip lining, the Project will repair the damaged force main line with negligible or no expansion of its former use.

BBARWA has also considered whether the proposed Project is subject to any exception to the Class 1 exemption, as set forth in State CEQA Guidelines section 15300.2. No exception applies for the following reasons:

- Location. The location exception only applies to Class 3, 4, 5, 6, and 11 exemptions, none of which are being utilized here.
- Cumulative Impact. The Project would not result in any significant cumulative impacts on the environment since successive projects of the same type are unlikely to be proposed or implemented.
- Significant Effect. The Project does not involve any unusual circumstances and has no potential to result in a significant impact on the environment. The Project simply permits repairs to the damaged force main line.
- Scenic Highways. The areas affected by the Project are not located within a state scenic highway.
- Hazardous Waste Site. The areas affected by the Project do not contain a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.
- Historical Resources. The areas affected by the Project do not contain a historical resource.

FINANCIAL IMPACT:

There is no fiscal impact for seeking bids from qualified contractors. Funds for advertising project bids throughout the year have been included in the FY 2024-25 budget.

RECOMMENDATION:

1. Adopt Resolution No. R. 09-2024;
2. Direct staff to file a Notice of Exemption within five (5) working days of this approval; and
3. Authorize the General Manager to advertise and solicit bids from qualified contractors to perform contracted services for the Force Main Slip Lining Project.

ATTACHMENTS:

- Resolution No. R. 09-2024
- Notice of Exemption

RESOLUTION NO. R. 09-2024

A RESOLUTION OF THE GOVERNING BOARD OF THE BIG BEAR AREA REGIONAL WASTEWATER AGENCY APPROVING THE FORCE MAIN SLIP LINING PROJECT AND FINDING THE PROJECT EXEMPT FROM THE CALIFORNIA ENVIRONMENTAL QUALITY ACT PURSUANT TO STATE CEQA GUIDELINES SECTION 15301 (EXISTING FACILITIES)

WHEREAS, the Big Bear Area Regional Wastewater Agency ("BBARWA") was established in 1974 as a public agency to transport, treat and dispose of wastewater for Big Bear Valley area residents and businesses; and

WHEREAS, BBARWA's 16-inch force main operates under high pressure, delivering all wastewater from the City of Big Bear Lake to the BBARWA's Wastewater Treatment Plant; and

WHEREAS, BBARWA was notified on March 11, 2023 and April 15, 2023 of a sewage spill near 42825 Big Bear Blvd., Big Bear Lake, Ca; and

WHEREAS, the potential for a spill into Stanfield Marsh, recent high flows from the City of Big Bear Lake, limited storage at the Garstin ponds, and the risk of an influent overflow classified these events as imminent risks, necessitating emergency repairs; and

WHEREAS, an investigation of the integrity of the force main was conducted and it was determined that additional repairs were needed; and

WHEREAS, approximately 3,300 linear feet of the force main will be slip lined.

WHEREAS, BBARWA Staff evaluated the Project in light of the standards for environmental review outlined in the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.; "CEQA") and the State CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.); and

WHEREAS, BBARWA staff has determined that the Project is categorically exempt from CEQA pursuant to State CEQA Guidelines, §15301, Existing Facilities ("Class 1") set forth in State CEQA Guidelines; and

WHEREAS, on July 24, 2024, at a noticed regular meeting, the Governing Board considered the Project, considered the related Staff Report, and accepted any oral and written testimony from interested parties; and

WHEREAS, all other legal prerequisites to the adoption of this Resolution have occurred.

NOW, THEREFORE, THE GOVERNING BOARD OF THE BIG BEAR AREA REGIONAL WASTEWATER AGENCY DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. Compliance with the California Environmental Quality Act. The Governing Board hereby finds and determines that the approval by the Governing Board of the Force Main Slip Lining Project (Project) is categorically exempt from environmental review

pursuant to State CEQA Guidelines, §15301, Existing Facilities ("Class 1"). The Class 1 exemption allows, in part, for the repair of existing public mechanical equipment that will result in negligible or no expansion of former use. This includes the rehabilitation of deteriorated or damaged mechanical equipment to meet current standards of public health and safety. Here, the Project proposes repairs to the force main line, which are necessary to meet current standards of public health and safety and avoid any future risk. Through slip lining, the Project will repair the damaged force main line with negligible or no expansion of its former use. Finally, none of the exceptions to the categorical exemptions apply under State CEQA Guidelines § 15300.2. For all of the foregoing reasons, the Project is categorically exempt from CEQA.

SECTION 2. Approval of the Force Main Slip Lining Project. The Governing Board hereby approves the Force Main Slip Lining Project in its entirety, including all steps to implement the Project as set forth herein and in the Staff Report.

SECTION 3. Execution of Resolution. The Chair of the Governing Board shall sign this Resolution, and the Secretary to the Governing Board shall certify that this Resolution was duly and properly adopted by the Governing Board.

SECTION 4. Notice of Exemption. The Governing Board hereby directs staff to file a Notice of Exemption with the San Bernardino County Clerk within five (5) working days of the adoption of this Resolution.

SECTION 5. Custodian of Records. The documents and materials that constitute the record of proceedings on which these findings have been based are located at BBARWA's office located at 121 Palomino Drive, Big Bear City, California 92314. The custodian for these records is the General Manager of BBARWA.

PASSED, ADOPTED, AND APPROVED this 24th day of July, 2024.

_____

Jim Miller, Chair of the Governing Board of the
Big Bear Area Regional Wastewater Agency

ATTEST:

_____
Bridgette Burton, Secretary to the Governing Board
of the Big Bear Area Regional Wastewater Agency

I, Bridgette Burton, Secretary to the Governing Board of the Big Bear Area Regional Wastewater Agency, DO HEREBY CERTIFY that the foregoing Resolution of the Governing Board of the Big Bear Area Regional Wastewater Agency, being Resolution No. R. 09-2024, Approving the Force Main Slip Lining Project and Finding the Project Exempt from the California Environmental Quality Act Pursuant to State CEQA Guidelines Section 15301 (Existing Facilities), was adopted at a special meeting on July 24, 2024 of said Agency by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

NOTICE OF EXEMPTION

TO: Clerk of the Board of Supervisors County of San Bernardino 385 North Arrowhead Avenue, 2nd Fl. San Bernardino, CA 92415 Office of Planning and Research P.O. Box 3044, Room 113 Sacramento, CA 95812-3044	FROM: Big Bear Area Regional Wastewater Agency P.O. Box 517 121 Palomino Dr. Big Bear City, CA 92314 Phone: (909) 584-4018
Project Title:	Force Main Slip Lining Project
Project Location – Identify street address and cross streets or attach a map showing project site (preferably a USGS 15' or 7 1/2' topographical map identified by quadrangle name):	Big Bear Area Regional Wastewater Agency ("BBARWA") service area (map of location where projects will occur is attached)
a) Project Location – City:	Big Bear City
Project Location – County:	County of San Bernardino
Description of nature, purpose, and beneficiaries of Project:	On July 24, 2024, the BBARWA Board of Directors approved the Force Main Slip Lining Project ("Project"). The 16-inch force main operates under high pressure, delivering all wastewater from the City of Big Bear Lake to the Agency's Wastewater Treatment Plant. On March 11, 2023, the Agency was notified of a sewage spill near 42825 Big Bear Blvd., where staff discovered a 4-inch hole in the force main. On April 15, 2023, the Agency was alerted to a second sewage spill at the same location, revealing a 2-inch hole in the force main. Upon reviewing the construction drawings, it was determined that hydrogen sulfide gas, accumulating at the top of the pipe during low flow conditions, likely caused the corrosion. While emergency repairs were performed on these holes, the potential for a spill into Stanfield Marsh, recent high flows from the City of Big Bear Lake, limited storage at the Garstin ponds, and the risk of an influent overflow remains. A recent investigation revealed these repairs are necessary to avoid such risks. The project involves slip lining approximately 3,300 linear feet of existing 16-inch force main in certain parts of the BBARWA service area. All activities will occur within BBARWA's right-of-way.
Name of Public Agency approving project:	Big Bear Area Regional Wastewater Agency
Name of Person or Agency undertaking the project, including any person undertaking an activity that receives financial assistance from the Public Agency as part of the activity or the person receiving a lease, permit, license, certificate, or other entitlement of use from the Public Agency as part of the activity:	Big Bear Area Regional Wastewater Agency P.O. Box 517 121 Palomino Dr. Big Bear City, CA 92314 Phone: (909) 584-4018

Exempt status: (check one)	
☐ Not a project.	
☐ Statutory Exemption.	
☒ Categorical Exemption.	State CEQA Guidelines § 15301
☐ Other. Explanation:	
Reason why project was exempt:	The proposed Project is categorically exempt from environmental review pursuant to State CEQA Guidelines, §15301, Existing Facilities ("Class 1"). The Class 1 exemption allows, in part, for the repair of existing public mechanical equipment that will result in negligible or no expansion of former use. This includes the rehabilitation of deteriorated or damaged mechanical equipment to meet current standards of public health and safety. Here, the Project proposes repairs to the force main line, which are necessary to meet current standards of public health and safety and avoid any future risk. Through slip lining, the Project will repair the damaged force main line with negligible or no expansion of its former use. Finally, none of the "exceptions" to the categorical exemptions apply under State CEQA Guidelines § 15300.2.
Contact Person:	David Lawrence
Telephone:	(909) 584-4018

Date Received for Filing: _____

_____

_____
Signature (Lead Agency Representative)
David Lawrence/General Manager

(Clerk Stamp Here)

Project Map

Project Location Map