REPLENISH
Big Bear

Replenish Big Bear Workshop

April 27, 2026

Survey Results

Question	Yes	No	Other
I believe groundwater recharge is important to the Big Bear Valley.	4		
I would like to review alternative scopes of work and discharge locations (such as Greenspot).	4		
I would like to discuss alternative Program Water allocation options.	3	1	
I believe the current scope of work will meet the needs of my Member Agency.	2	2	
I believe the discharge location of Stanfield Marsh is fair and appropriate for my Member Agency.		2	1 – uncertain 1 – marked yes and no
I believe the current Program Water allocation is fair and appropriate for my Member Agency.	1	1	1 – N/A 1 – marked yes and no

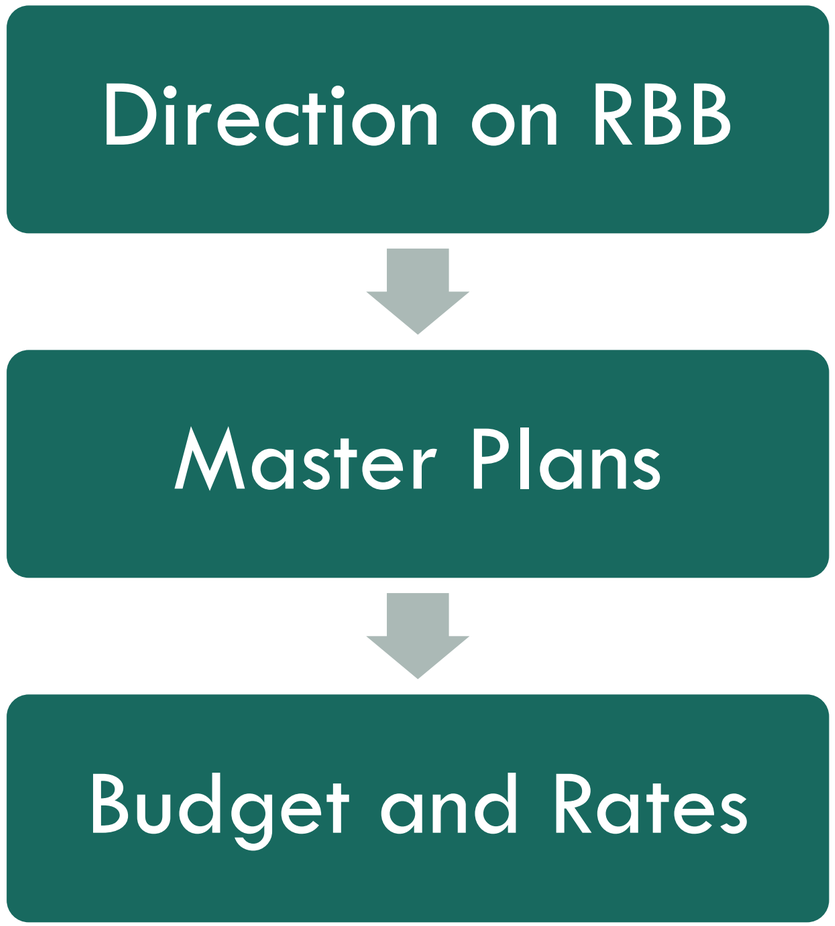
PURPOSE

1. Current RBB Scope and Financial Impacts
2. Greenspot Recharge Alternative
3. Potential Grant Impacts
4. Questions for the Board

❌ NOT COVERED IN TODAY'S WORKSHOP

- Outfall Line repairs or replacements
- Changing regulatory requirements
- Funding and Financing Plan
- Updated financial impacts of stopping or pausing at PDR or final design

Decision Flow Chart



Current Scope of Work

Replenish Big Bear Program Overview

4/27/2026

Project Expenditures as of 2/28/26

Expenditure Category	Amount
Planning	$5,207,630
Final Design	1,080,760
Construction	0
Short-Term Financing	396,251
Finance Costs	284,485
Total	**$6,969,126**

Funding Sources as of 2/28/26

Funding Source	Amount
Program Partner Contributions	$884,848
Grant Reimbursements (including reimbursement requests)	4,417,796
Agency Sewer User Charge	1,666,482
Total	**$6,969,126**

October 2025 Cost Estimate

Basis of Cost Estimate

- AACE Class 3
  - Project Definition: 25%
  - Accuracy Range: -15% to +20%
- Cost Sources
  - Vendor and Manufacturer Equipment Proposals
  - Contractor Outreach
  - Unit Quantity Takeoffs
  - Engineering Judgment based on Past Project Bids and Estimates
- Dollar Basis: November 2025
- Build America, Buy America (BABA) and Tariffs Not Factored Into Estimate

Project Capital Cost

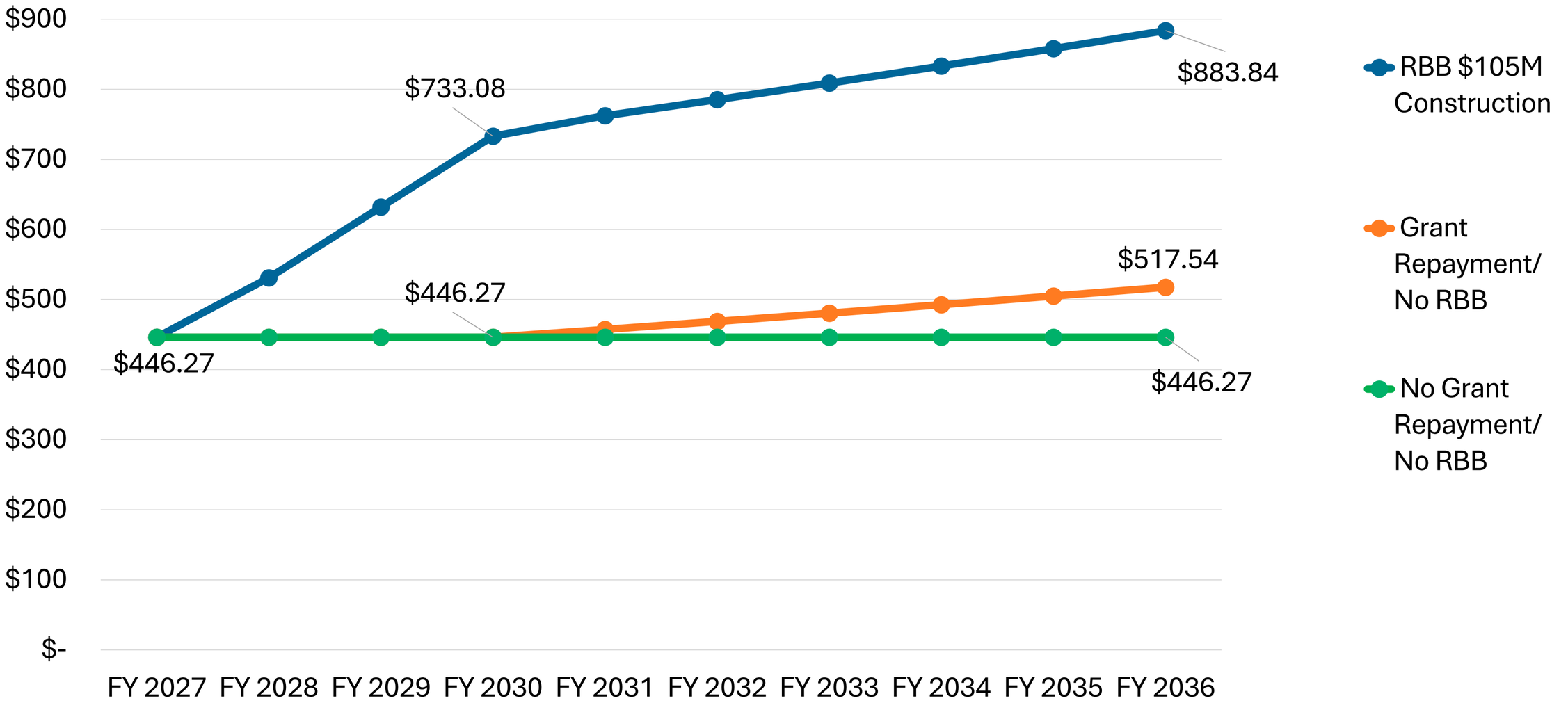
Cost Item	Markup	Cost
Treatment		$52,880,000
Effluent Pump Station and Pipeline		$7,327,000
Evaporation Pond		$3,538,000
Monitoring Wells		$132,000
	Subtotal	**$63,877,000**
Unaccounted for Costs	2%	$1,278,000
Contractor OH&P	15%	$9,582,000
General Conditions	3%	$1,917,000
	Construction Cost Subtotal	**$76,654,000**
Construction Contingency	15%	$11,499,000
Implementation Costs		$16,868,000
	Total Project Cost	**$105,021,000**

Annualized O&M Cost

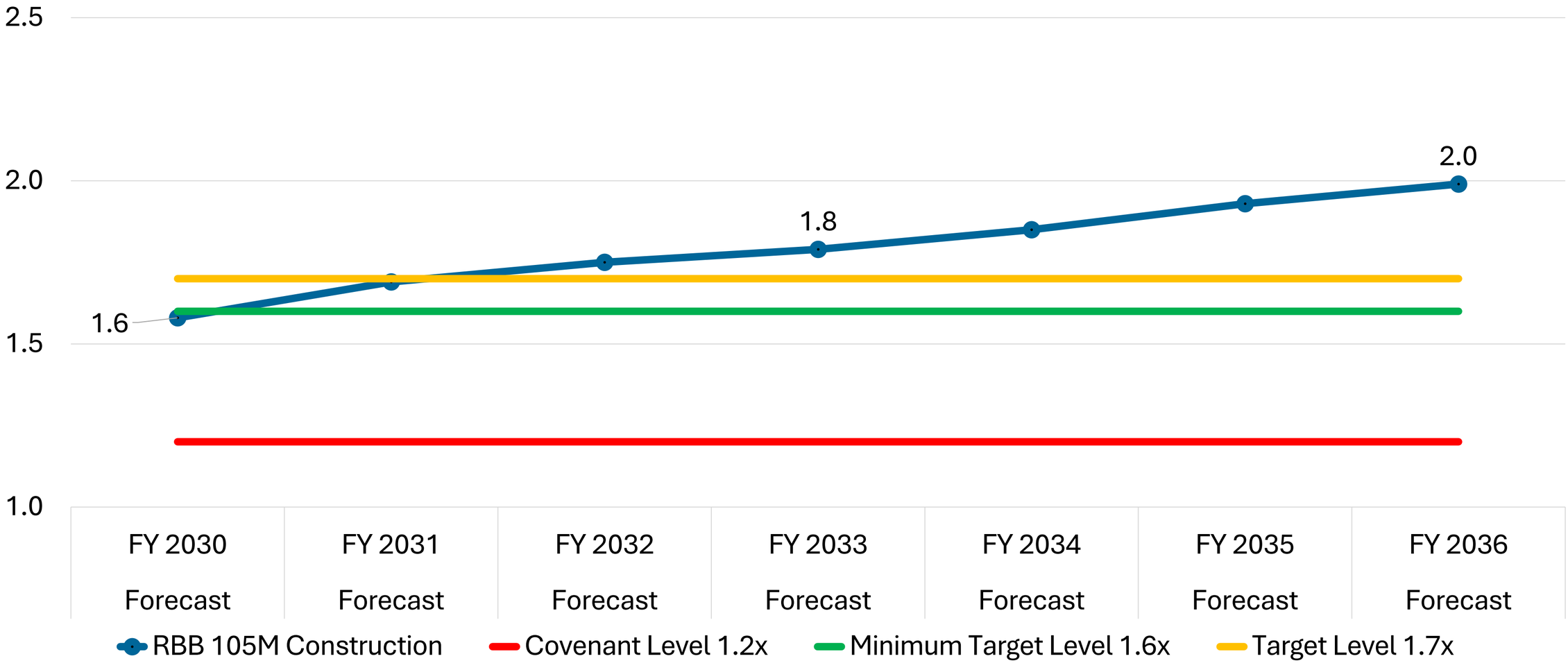
- Energy ($0.11/kW-hr)
- Chemical Deliveries
- Equipment Replacements
- Labor (Administrative, O&M, Lab Analysis)
- NPDES Monitoring for Compliance
- Compliance Activities for Discharge Permit
- Conservatively assumes 12-months of operation
- 20-year basis

Annual O&M Cost	Full-Time Equivalent Labor Increase
$4,331,000	6.15 FTE

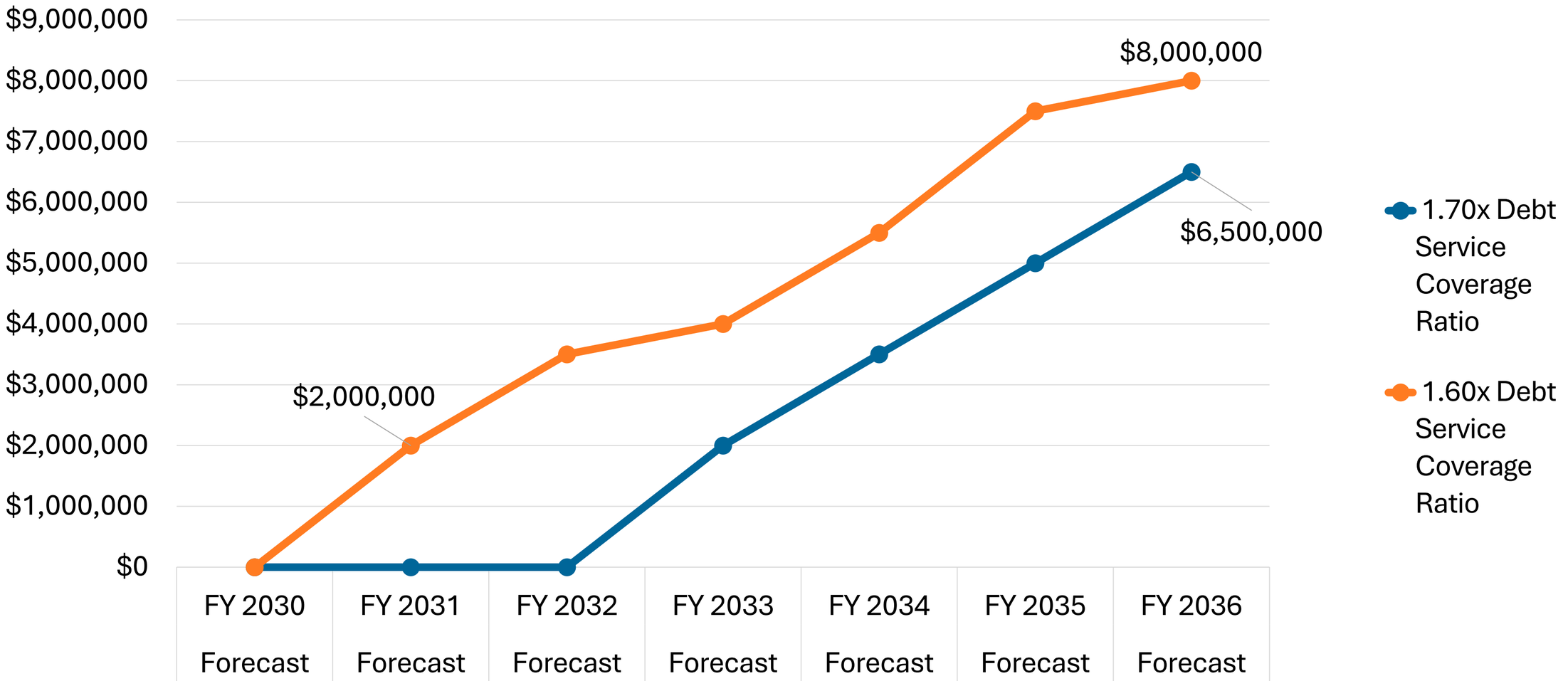
Preliminary Future Rate Increase Scenarios



Debt Service Coverage with RBB Construction



Borrowing Capacity with RBB Construction



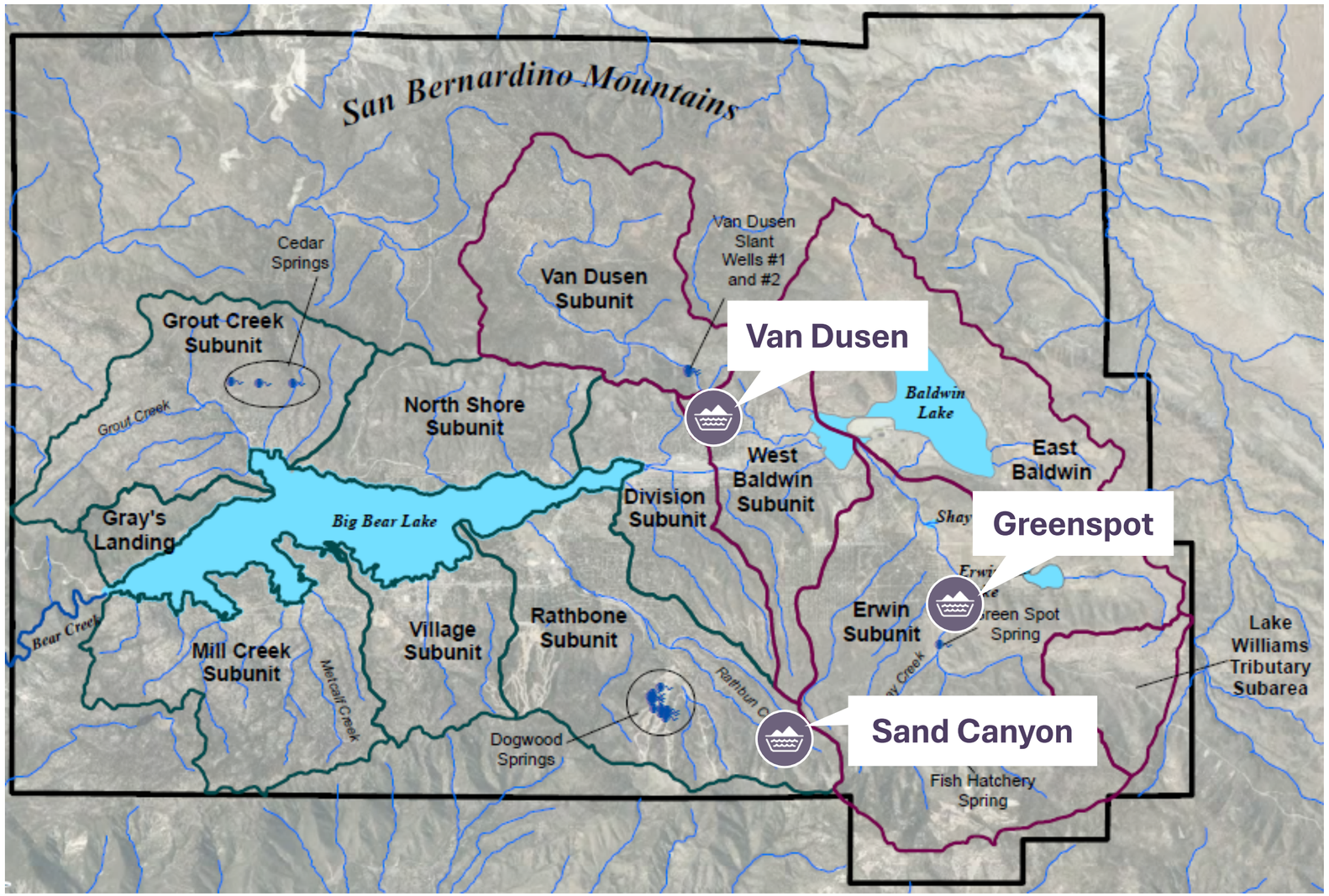
Alternative Options

Recycled Water Alternatives Evaluated Since 2004

Van Dusen Canyon Recharge	Imported Water	Greenspot Recharge	Sand Canyon Recharge
2004–2005	2006	2004–2005, 2016	2004, 2016

Greenspot & Sand Canyon Recharge	Irrigation	Marsh/Lake Discharge + Sand Canyon Recharge + Shay Pond Discharge
2016	2005, 2016	2018

Potential Recharge Locations within Big Bear Valley Groundwater Basin Subunits



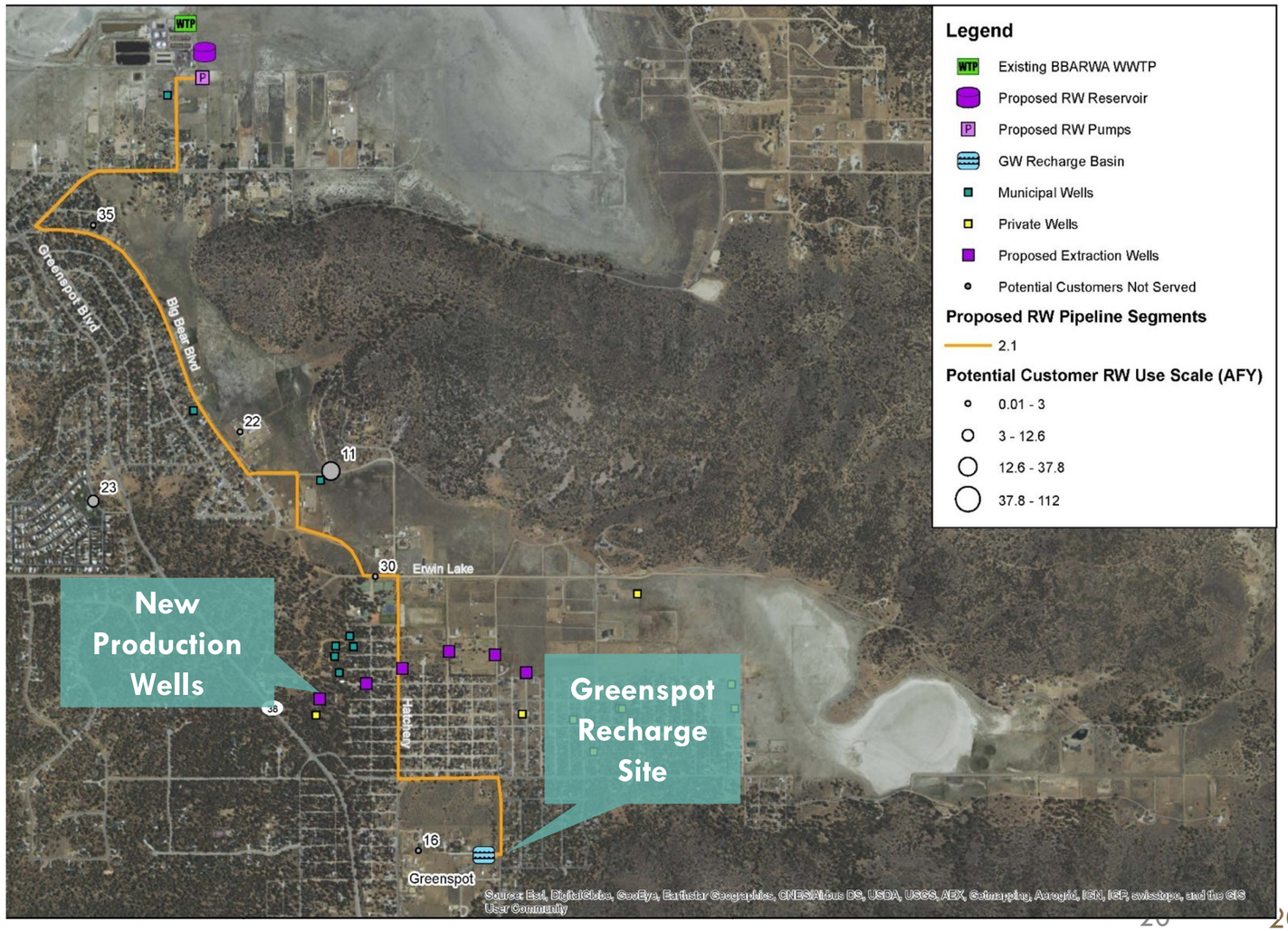
Map Features

- Spring / Slant Well
- Major Hydrologic Feature
- Drainage/Creek
- Baldwin Lake Watershed
- Big Bear Lake Watershed
- Bear Valley Basin Groundwater Sustainability Agency Boundary

ORIGINAL

Groundwater Recharge at Greenspot

- **Yield: 1,000** AFY for groundwater sustainability
- New 12” pipe (15,200 ft)
- 6 new production wells and coordinated pumping to recover recharged water and manage basin water levels

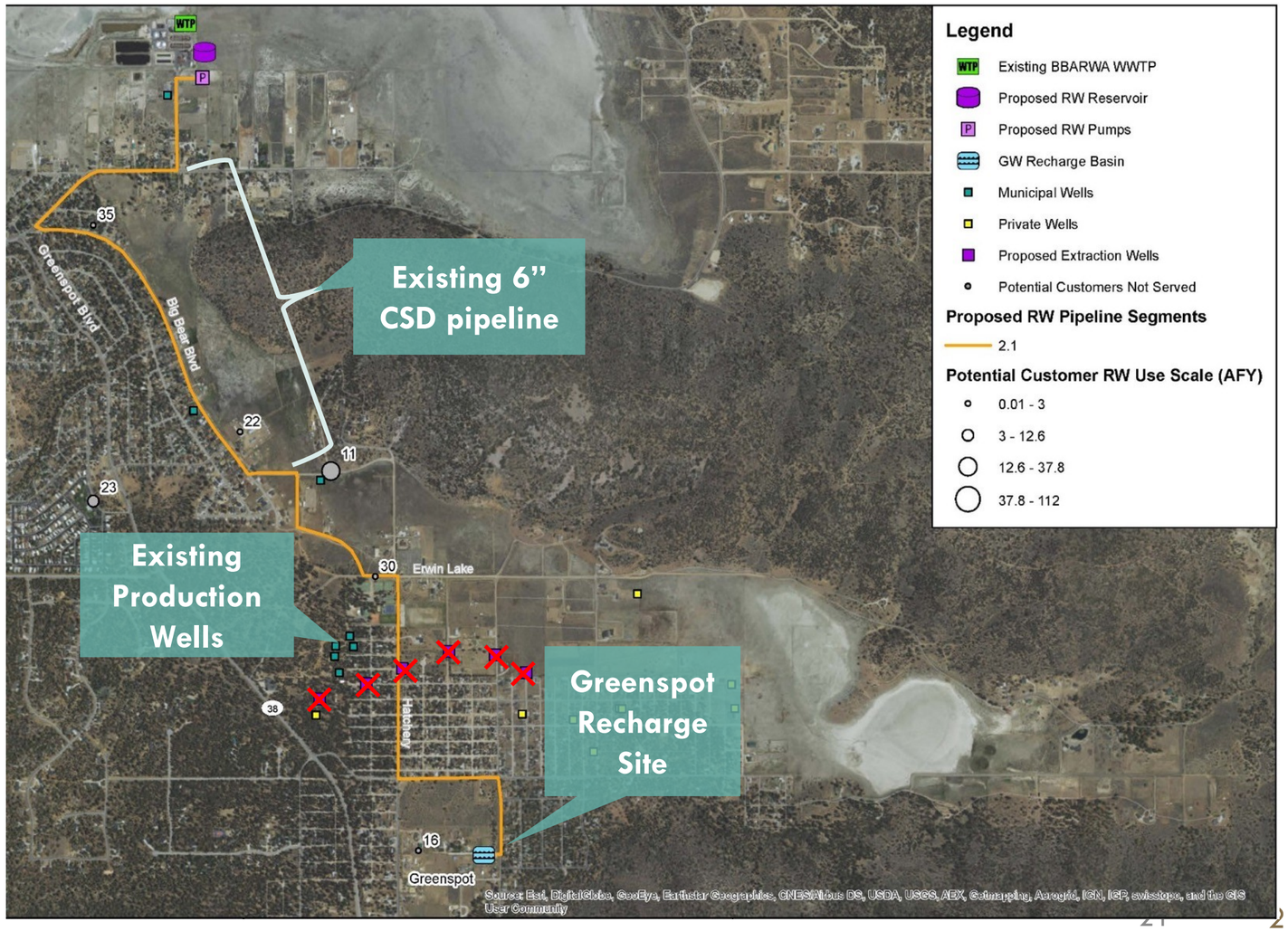


MODIFIED

Groundwater Recharge at Greenspot

REPLENISH Big Bear

- **Yield: 500** AFY for groundwater sustainability
- New 8” pipe (15,200 ft)
  - Use existing 6” CSD pipe for 4,635 ft, if condition allows
- Use existing CSD and DWP wells to manage basin water levels
  - Expected to be feasible, but needs to be confirmed by hydrogeologist



Greenspot Recharge Facility Comparison

Feature	Original	Modified
Recharge Volume, AFY	1,000	500
Recharge Site Size, Acres	7	3.5
RW Pipeline from WWTP to Greenspot Recharge Site	15,200 ft of 12”	15,200 ft of 8” Note 1
Additional Extraction Wells	6	0 Note 2
Monitoring Wells	2	2 Note 3

Notes:

1. If condition allows, 4,635 ft of existing (unused) CSD 6” pipe could be used for a portion of this, reducing the new pipe length.
2. Based on prior studies that evaluated 500 AFY recharge scenarios at Greenspot, it appears to be a potentially feasible to manage water levels with existing wells but needs to be confirmed by the hydrogeology team as a next step.
3. Groundwater recharge regulations require 2 monitoring wells per recharge site regardless of recharge volume

Original Proposed Recharge Site

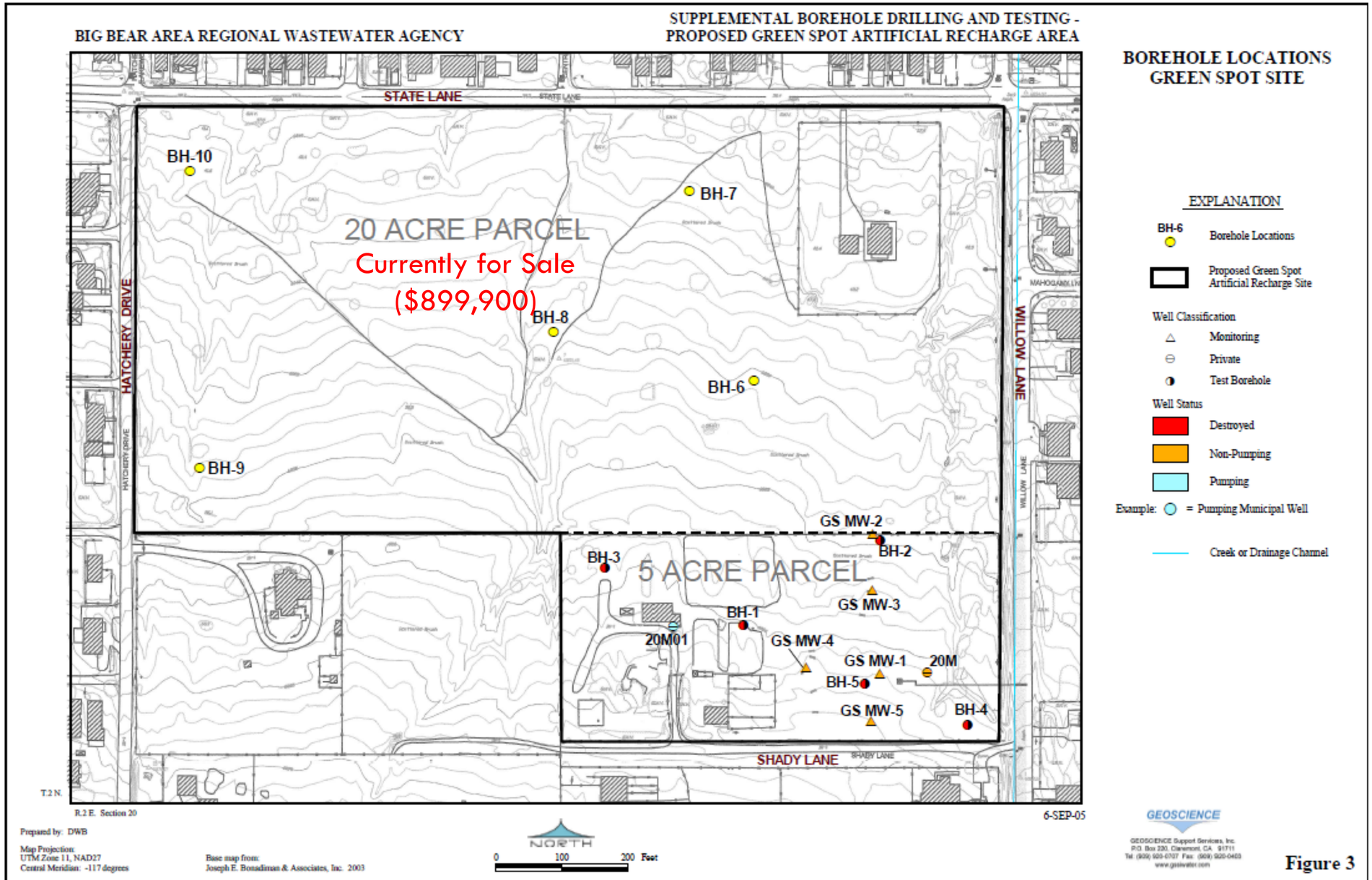


Figure 3

Water Quality Requirement Comparison

Discharge Location	TDS mg/L	Hardness mg/L	Chloride mg/L	Sodium mg/L	Sulfate mg/L	TIN mg/L-N	TP mg/L-P	Nitrate mg/L-N	TOC mg/L
Lake Discharge	175	125	10	20	10	0.15	0.035	--	0.5
Greenspot Recharge	300	225	10	20	20	--	--	5.0	0.5

Treatment Process Comparison

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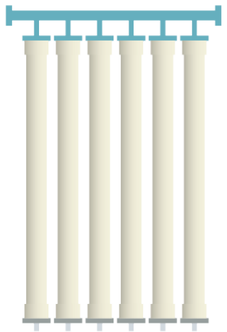
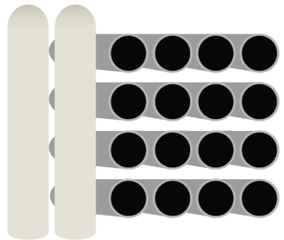
BBARWA WWTP Secondary Effluent

ULTRAFILTRATION



HIGH RECOVERY REVERSE OSMOSIS

~~**PRIMARY REVERSE OSMOSIS**~~



UV-AOP

~~*Produced Water*~~

Product Water Stabilization

~~CO_2~~

Lime

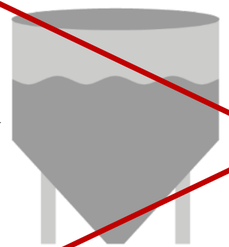
~~**Ammonia Removal**~~

~~*Sodium Hypochlorite*~~

Produced Water

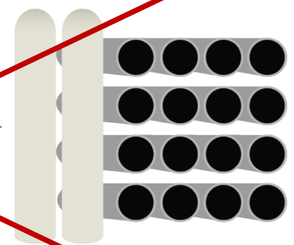
BRINE MINIMIZATION

Brine



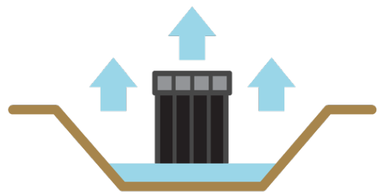
BRINE SOFTENING

Softened Brine



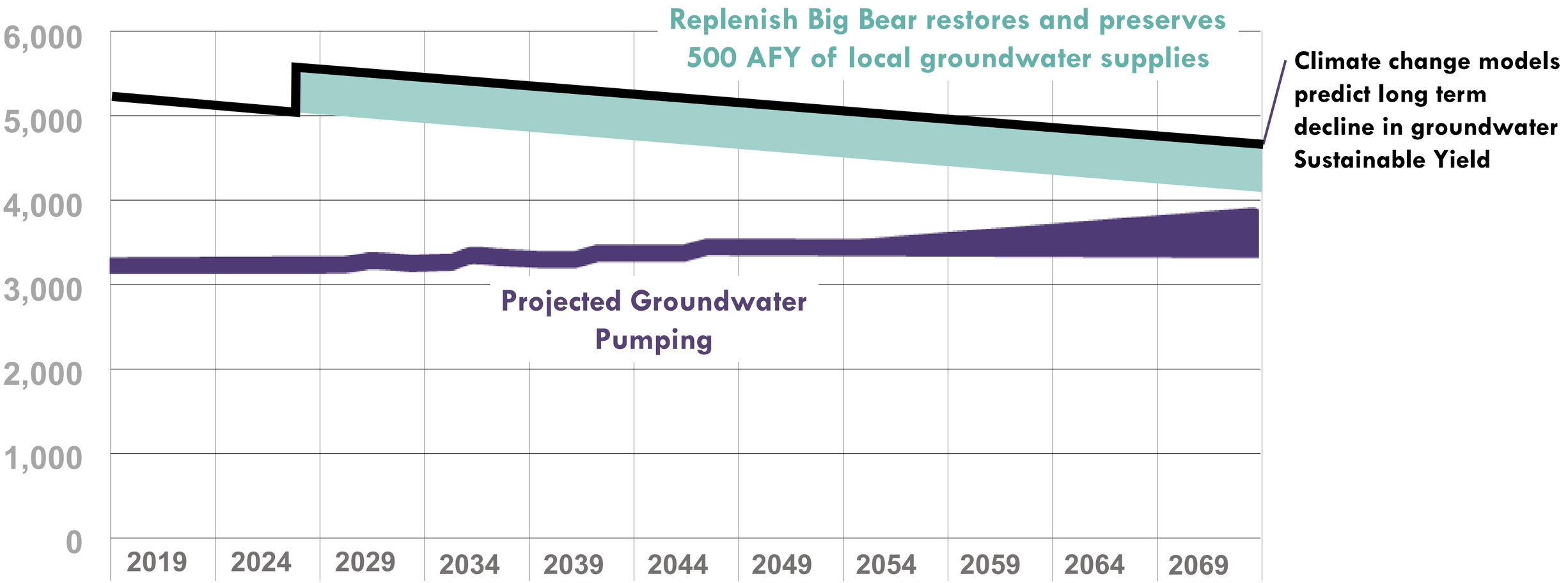
SECONDARY REVERSE OSMOSIS

Brine



UPSIZE ENHANCED EVAPORATION

New Water Source Enhances Groundwater Sustainability



Updated: 6/27/2024

26

Implementation Considerations for 500 AFY Greenspot Recharge Project

- Greenspot recharge would be a complete effluent discharge system, similar to BBARWA's Lucerne Valley discharge.
- Therefore, BBARWA could construct and operate the Greenspot facilities as part of Phase 1 of Replenish Big Bear. CSD and DWP would not need to implement the recharge separately.
- CSD and DWP would both have direct access to the water recharged at Greenspot through existing wells in the area. Program Water allocation not needed.
- BBARWA would hold the groundwater recharge permit and coordinate with CSD/DWP for groundwater management.
- Future phases of Replenish Big Bear could include additional recharge at Van Dusen, Sand Canyon and/or discharge to the Lake

Basis of Cost Estimate – 500 AFY Greenspot Alternative

- AACE Class 4
  - Project Definition: 15%
  - Accuracy Range: -15% to +25%
- Cost Sources
  - Vendor and Manufacturer Equipment Proposals
  - Contractor Outreach
  - Unit Quantity Takeoffs
  - Engineering Judgment based on Past Project Bids and Estimates
- Dollar Basis: March 2026
- Build America, Buy America (BABA) and Tariffs Not Factored Into Estimate
- Process Building is not sized for additional capacity. Footprint would have to be increased to accommodate space for future expansion within the same building.

Capital Cost - 500 AFY Greenspot Alternative

Cost Item	Markup	Cost
Treatment		$33,558,000
Effluent Pump Station and Pipeline		$4,738,000
Evaporation Pond and Monitoring Wells		$8,525,000
Greenspot Recharge Basin		$1,430,000
Recharge Basin Monitoring Wells		$314,000
	Subtotal	**$48,565,000**
Unaccounted for Costs	5%	$2,429,000
Contractor OH&P	15%	$7,285,000
General Conditions	3%	$1,457,000
Construction Cost Subtotal		**$11,717,000**
Construction Contingency	15%	$8,961,000
Land Acquisition		$1,000,000
Implementation Costs		$18,901,000
Total Project Cost		**$88,598,000**

Annualized O&M Cost - 500 AFY Greenspot Alternative

- Energy ($0.11/kW-hr)
- Chemical Deliveries
- Equipment Replacements
- Labor (Administrative, O&M, Lab Analysis)
- Permit Monitoring for Compliance
- Compliance Activities for Discharge Permit
- Assumes 9-months of operation + 1 month for seasonal startup and shutdown (10 months/year)
- 20-year basis

Annual O&M Cost	Full-Time Equivalent Labor Increase
$1,819,000	4.8 FTE

Comparison of Current vs. Potential Modified Scope

Item	Current Scope	500 AFY Greenspot Alternative (Phase 1)
Total Purified Water Produced	1,950 AFY	500 AFY
Water Supply Benefit	500 AFY	500 AFY
Total Capital Cost ($2025)	$105 M	$88.6 M
Annual O&M Cost ($2025)	$4.3 M	$1.8 M

Potential Grant Impacts

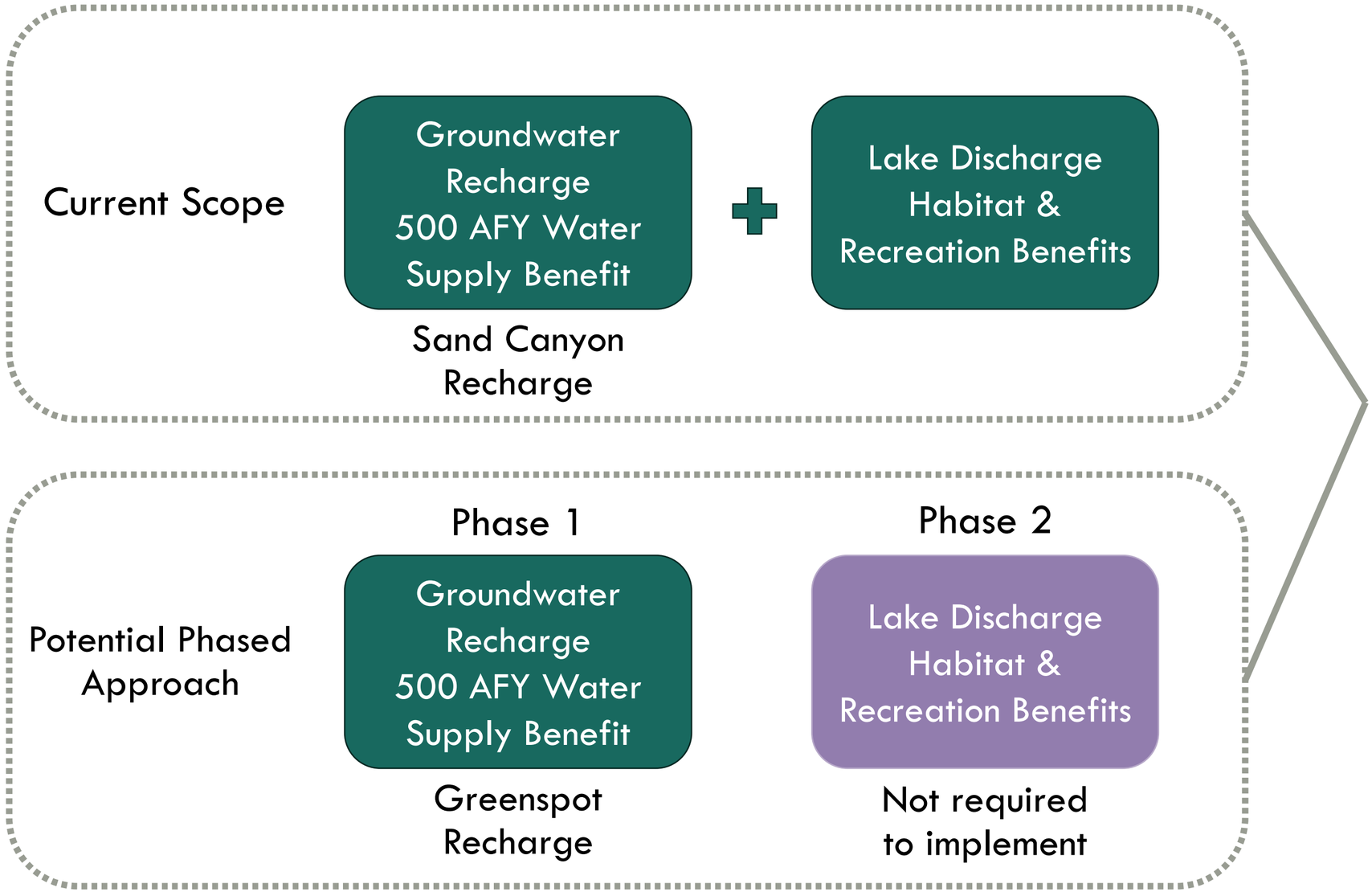
Current Grant Status

Grant	Status	Grant Amount	Reimbursed (a)	Outstanding Invoices (b)	Total (a) + (b)
State Grants					
DCI Technical Assistance	Fully Funded; Closed	$500,000	$500,000	$0	$500,000
IRWM Prop 1 Round 1	Awarded; In Process	$4,563,338	$3,695,345	$222,451	$3,917,796
	Subtotal State Grants	**$5,063,338**	**$4,195,346**	**$222,451**	**$4,417,797**
Federal Grants					
2021, 2022, & 2023 Title XVI	preparing first reimbursement request	$18,919,655	0	0	0
2022 STAG	Appropriated; nearing grant agreement	$960,000	0	0	0
2023 & 2024 STAG	Appropriated; application not yet submitted	$2,000,000			
	Subtotal Federal Grants	**$21,879,655**	**$0**	**$0**	**$0**
Grand Total		**$26,942,993**	**$4,195,345**	**$222,451**	**$4,417,796**

Potential Grant Impacts with Scope Change

Grant	Grant Amount	Notes
State Grants		
DCI Technical Assistance	$500,000	No repayment risk, all requirements met
IRWM Prop 1 Round 1	$4,563,338	Risk of repayment if Project not constructed
Subtotal State Grants	**$5,063,338**	
Federal Grants		
2021, 2022, & 2023 Title XVI	$18,919,655	**Risk of losing all unused grant funds if total project benefits are reduced; phasing may preserve grant funds, subject to USBR determination**
2022 STAG	$960,000	No repayment risk expected
2023 & 2024 STAG	$2,000,000	No repayment risk expected (scope not yet defined)
Subtotal Federal Grants	**$21,879,655**	
Grand Total	**$26,942,993**	

Potential Phased Approach - Combined



Same Overall Benefits from Title XVI Perspective

Grant may not be impacted, final determination by USBR

$30M maximum grant for entire scope

Potential Phased Approach - Separate

Phase 1

Groundwater Recharge
500 AFY Water Supply Benefit

Greenspot Recharge

Eligible for up to $30M grant on its own, but reduced benefits of separate recharge phase would need to be re-evaluated under Title XVI to see if it would have been competitive in the original application

Grants could be withdrawn by USBR

Phase 2

Lake Discharge Habitat & Recreation Benefits

Not required to implement

Separate future phase would be eligible for separate Title XVI funding, up to an additional $30M maximum (based on current Title XVI rules)

Lake discharge without GWR in the future may not be competitive for Title XVI. More recharge in Phase 2 scope may help.

Recommended Title XVI Grant Approach

Keep Overall RBB Scope in Grant Agreement

- Eligible for up to $30M total grant for **all phases (25% max)**
- **$11.1M remaining grant capacity for future phases**
- Does not *require* implementation of any future phases
- Same overall benefits from Title XVI perspective, more likely to keep current grant
- Requires scope change for existing grants and final determination of eligibility is up to USBR.

$30M Grant Max for Entire RBB Program

Questions for the Board

Direct Questions to the Board

- Does the Board want to continue pursuing a groundwater recharge project for the Big Bear Valley?

- Does the Greenspot Recharge alternative better achieve the outcomes the Board is looking for? If no, what concerns remain with the Greenspot Recharge alternative?

- Does the Board want staff to move forward with the Greenspot Recharge Alternative? Actions would include:
  - Stop final design for the current RBB scope
  - Investigate private wells in the Greenspot area to confirm water quality regulations would be met
  - Request a scope change for the Title XVI Grant for the 500 AFY Greenspot Recharge Alternative
  - Request a scope change for the EPA WIFIA Loan

Next Steps