Hidden Valley Lake Community Services District
Board Workshop
Saturday, August 26, 2023 – 10:00 AM
19400 Hartmann Road, Hidden Valley Lake, CA.

To join the meeting by teleconference, go to www.hvlcsd.org select the August 26, 2023, Board Workshop and select Join Remote Meeting.

This meeting is being recorded for live streaming and broadcasting purposes.

1) CALL TO ORDER

2) PLEDGE OF ALLEGIANCE

3) ROLL CALL

4) APPROVAL OF AGENDA

5) **DISCUSSION:** Water Reliability Capital Improvement Projects
- Tank 4
- Tank 9
- Generators
- Mainlines
- AMI

Total Cost and Reimbursement of Project
- Total Cost of Individual Project
- Award Amount
- District Match
- Total Spent to Date
- Total Reimbursed to Date
- Clarify Price and Materials Tank 9
- Inflation Rates

Timeframe
- Timeframe of Grants
- Timeframe of Funding
- Funding Affected by Project Delays and Potential Problems

Deadline of Each Project

- Construction Timeline
- Match Commitment Deadline

Risk Percentage & Logic

- Risk Without the $5M Bond for Each Project
- Risk Management on Mission if Projects are Pushed Out
- Risk of Violations if Projects Do Not Move Forward or Pushed Out
- Infrastructure Risk if Projects Do Not Move Forward or Pushed Out
- Risks of Only One Tank at Unit 9

Alternative Options

- Tank & Materials
- Lining of Tanks
- Generators Purchase vs. Rental
- Tank 4 water demand & fire flow
- Wellfield, trees part of funding requirement
- Tank 9

6) DISCUSSION AND POSSIBLE ACTION: Consideration of Financing Structure for Upcoming Bond Issuance

7) PUBLIC COMMENT

8) BOARD MEMBER COMMENT

8) ADJOURNMENT

Public records are available upon request. Board Packets are posted on our website at www.hvlcsd.org/meetings.

In compliance to the Americans with Disabilities Act, if you need special accommodations to participate in or attend the meeting, please contact the District Office at(707) 987-9201 at least 48 hours prior to the scheduled meeting. Public shall be given the opportunity to comment on each agenda item before the Governing Board acts on that item, G.C. 54953.3. All other comments will be taken under Public Comment.

Hidden Valley Lake Community Services District

Water Reliability Capital Projects

Workshop Narrative

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Executive Summary

The District is facing a significant financial decision. The five-year rate structure enacted in 2020 , for the first time in many years, acknowledged the urgent need for Capital Expenditure. Now, in 2023, in the wake of the pandemic crisis, supply chain challenges are still impacting the delivery date of equipment purchases. Double-digit inflation has also impacted the cost of doing business. Costs have increased in both the engineering and construction space, beyond the anticipated inflation rates of 3-4% built into the 2015 & 2020 rate structure[1].

Staff was able to secure grant funding in 2022 to offset the costs of four infrastructure projects. The cost estimates, however, were based on pre-pandemic prices. These four infrastructure projects remain a priority to the Board of Directors, as evidenced by their monthly appearance in the BOD meeting's Agenda.

NHA Advisors has supported the District on a number of occasions, from their assistance with the development of the 2020 rate study, to the securing of underwriters and bond counsel for the current bond financing request. A net revenue bond issuance will allow these critical infrastructure projects to continue by banking on the revenues of the future to pay for the construction in the present. The bond is structured to last for as long as the useful life of the projects it is funding.

The following pages provide an in-depth view of each of these projects. Individual project pages will include categories that explain costing, timelines, unique characteristics and complexities, and alternative scenarios. Based on Director's input, staff has developed this report to inform, and help frame the importance of following through with these projects. Years of deferred maintenance, coupled with the devastating effects of extreme climactic events is shining a spotlight on the District and this important decision.

Staff wishes to arrest the impression of "kicking the can down the road", and address the costs associated with these projects. It is the staff's intent to show that the community benefits of affordability and safety outweigh the cost of a net revenue bond.

There are currently four projects receiving funding from the Hazard Mitigation Grant Program (HMGP). One of these projects, Tank 9 is also funded by the California Department of Water Resources (DWR). The following pages provide details on project status. These details include data and figures that are known, as well as engineer's estimates for events or costs that are not yet known.

[1] NBS Rate Study 2015

Tank 9

Costs

In response to the Director's request, the following image summarizes key financial aspects of the Tank 9 project.

	Key Costs, Awards & Commitments		
	Design Contract	$ 244,212.93	
	Construction Management Contract	$ 256,700.00	
	Construction Contract	$ 2,377,192.40	* Lowest apparent bidder, ECS
	Total Project Amount	**$ 2,878,105.33**	
	Awarded Amount (HMGP & DWR)	$ 1,849,655.25	* Increase requested, TBD
	CSD Match Commitment	$ 1,028,450.08	* Increase requested, TBD

Year	Month	Labor	Contract	Total
	Pre-Award	$ 19,076.17		**$ 19,076.17**
2022	July	$ 1,874.04		**$ 1,874.04**
2022	August			**$ -**
2022	September	$ 1,271.67		**$ 1,271.67**
2022	October	$ 149.62	$ 110.74	**$ 260.36**
2022	November	$ 986.25	$ 4,217.37	**$ 5,203.62**
2022	December	$ 149.62	$ 10,097.89	**$ 10,247.51**
2023	January	$ 397.54	$ -	**$ 397.54**
2023	February	$ 1,687.50	$ 21,277.96	**$ 22,965.46**
2023	March	$ 550.60	$ 43,024.09	**$ 43,574.69**
2023	April	$ 880.80	$ 24,061.52	**$ 24,942.32**
2023	May	$ 1,578.10	$ 10,988.90	**$ 12,567.00**
2023	June	$ 11,165.30	$ 29,773.47	**$ 40,938.77**
2023	July	$ 1,735.08	$ 25,692.60	**$ 27,427.68**
		Total Expenses:		**$ 210,746.83**
		Remaining Costs:		**$ 2,667,358.50**

Figure 1 - Tank 9 Project costs

* Staff has requested an increase in funding from HMGP. While not yet obligated, CalOES has earmarked an additional $619,916.04 for the District

Timeline

The Tank 9 project was awarded funding on May 18, 2022. The deadline to complete this project is August 4, 2024. Engineer's estimated schedule indicates construction to begin in Q4 23, and construction completion to be in Q3 24. August 4, 2024 is within that quarter. New information, however, has revealed an unprecedented delay in the arrival of the recommended tank material. Delivery of a

stainless-steel tank was estimated at 75 weeks. GHD's recent invitation to bid offered bidders to quote on alternative tank materials to reduce potential delays. Staff recently requested an extension of six months but was denied, due to the limitations of FEMA's Period of Performance (POP) on disaster 4382 funding.

*If construction is not completed by the funding program's deadline, future reimbursement requests will not be honored.[2]

Tank Size

Both engineering firms, Coastland and GHD agree that in order to meet demand for the residences in that pressure zone, and to have sufficient fire-flow, 2 tanks at approximately 250,000 gallons each provides the best algorithm for water supply. The most affordable way to meet that demand is to keep the height of the tanks the same, so the District doesn't have to upgrade a booster pump station as well as a tank storage site. Another problem the two tank solution resolves is the lack of redundancy.

*If only one tank is constructed, the project has not met the original goal of fire projection, and water supply

Tank Material

The best and cheapest solution is the material that will last over the useful life of the tank. Engineers use a costing method called life-cycle cost, that includes the cost of maintenance over the life of the tank, as well as the material that is used to build the tank. A cheaper tank material typically means more maintenance is required during the life of the tank. That is why stainless steel was originally recommended by GHD. The maintenance costs are negligible. Due to it's popularity, however, this material delivery date is 75 weeks. The lowest bidder provided these cost estimates:

Glass Fused Steel*	Epoxy Coated Steel*
$2,377,192.40	$2,231,939.60

*Includes GHD's recommended 10% contingency

Alternative Options

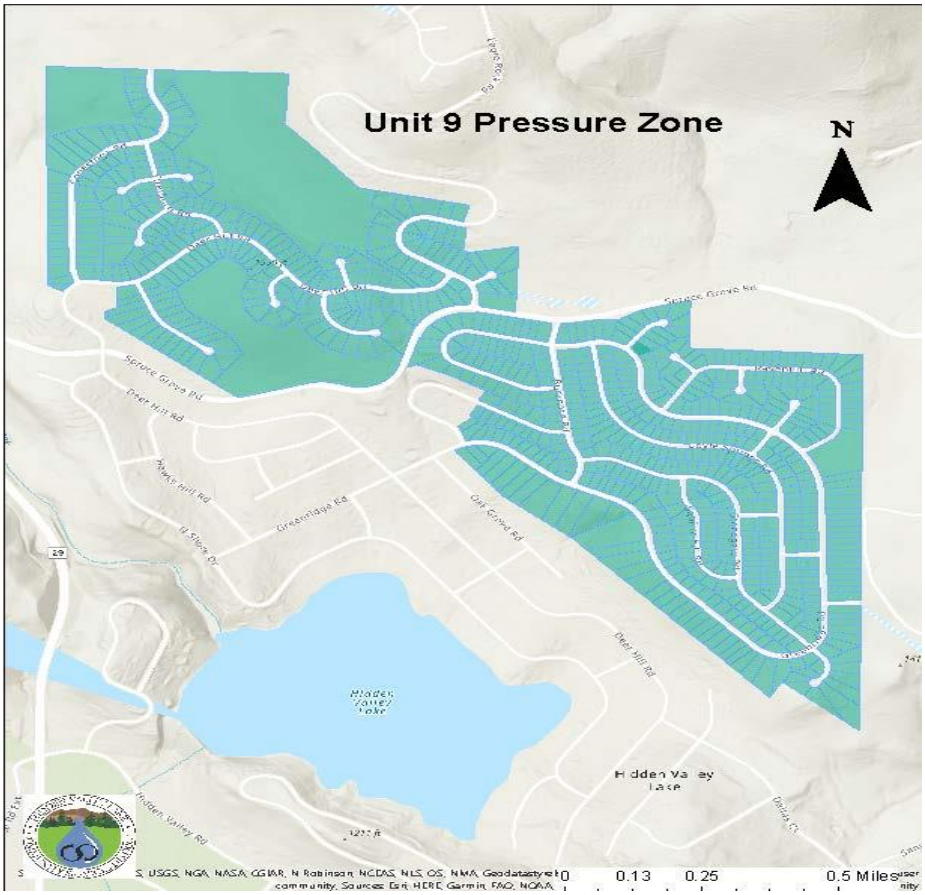
The options below examine the risks involved in foregoing bond financing.

Scenario 1: Don't do the project

If the project is not done, the existing risks that warranted federal funding in the first place would not be addressed. The wood-boring bees, other pests, and wood erosion are causing the District to waste not only the water, but are wasting the costs to treat the water, and the costs to pump the water. Back in 2018, staff had already considered this situation to be dire when the grant application was written. After

[2] Expense Tracking Forecast Cell **W7**

the Valley Fire, there have literally been sleepless nights worrying about what would happen when Tank 9 finally collapses. A collapse could be precipitated by a number of events, including wildfire. A tower of



water coming from just above Conestoga trail would pose an immediate threat to life and health to those immediately below the tank. People would get hurt, and properties damaged. Over the longer term, a tank collapse would mean no water could be delivered to anyone above Oak Grove Road and Spruce Grove Road. Emergency response to a tank collapse is significantly more expensive than a planned improvement. First the District would need to build a temporary tank farm so that the 40% of

Figure 2 - Tank 9 Pressure Zone

residents at the higher elevations would have immediate access to water. Once this temporary access is provided, the permanent tank would need to be designed, a construction contract procured, and tank materials ordered. This thought process was the basis behind the Benefit Cost Analysis that is required for any HMGP application.[3]

Scenario 2: Line the existing tank

Lining a redwood tank is a maintenance task designed to extend the life of the tank. This would cost the District ~$60,000. Tank lining professionals estimate this can extend the useful life of a storage tank by ~20 years. What a tank lining would not do is change the outside material of the tank. It is still made out of wood and can still burn. Lake County, and undoubtably the South Lake County region is known as

[3] Full BCA Technical Memo

ground zero when it comes to natural disasters. In fact, CalOES has characterized the area as falling within the 98th percentile of fire risk.[4] Coupled with the fact that this wooden tank is located on the perimeter of a densely populated area, bordering open space, the lining of this tank would not reduce its vulnerability to wildfire. The unique position between open space and densely populated areas is also known as a wildland urban interface (WUI), which was also highlighted in the grant application, and is a widely known justification for mitigation. Ignoring the fact that this is a wooden tank and is located in a particularly vulnerable spot could be considered irresponsible.

Scenario 3: Build one tank now, and wait to build the second tank

Inflation happens, prices go up. From the time period of 2019 to 2022, some aspects of this project have risen in price 3-fold. COVID changed the world economy, and in its wake brought about double-digit inflation. While it may be challenging to predict prices in the future given our experience of the immediate past, a longer-term look at inflation reveals 3-4% is a more accurate estimate of where our economy is going. Nonetheless it is safe to say prices will go up. The net present value of today's project will be more expensive if the second tank is built later.

Another consideration of building the second tank later is again the area's risk of wildfire, and water demand. Building one tank will eliminate the wildfire risk of a wooden tank catching fire, but the algorithm of how much water is needed for demand and fire-flow have still not been met. A wildfire traveling east into the community will not be stopped by one tank of water, which is why fire-flow calculations are so crucial in sizing the tank.[5] The District would also be continuing to waste money on pumping costs, because the tank size does not meet the demand of the zone it services. As it stands now, and would continue, water would have to be pumped way higher than it should, to an elevation 1000' higher than households, and flow down from the Little Peak tank to eventually reach residents in pressure zone 9.

Scenario 4: Build the tanks, but don't do the vegetation management

In order to be funded by the HMGP, vegetation management is a requirement.[6] Staff has attended seminars where the defensible space concept has been discussed. The funding agency, as part of its analysis and selection process assesses an applicant's commitment to the mitigation. If an applicant is wanting federal funds to build a tank but is not willing to create and maintain a defensible perimeter, the perception is that the applicant may not have the long-term commitment of mitigation necessary to protect its infrastructure. Because of the slope of the land, the density and type of vegetation at the Tank 9 site, Coastland's interpretation of defensible space which is also shared by GHD, is that 23 trees must be removed to protect the newly built tanks. The concept of reducing combustible materials is expected to extend beyond the tank, and into the lands that surround that tank.

[4] https://www.arcgis.com/apps/dashboards/3c78aea361be4ea8a21b22b30e613d6e
[5] Tank Sizing Memo
[6] https://www.fema.gov/sites/default/files/documents/fema_wf4-mitigation-funding-opportunity-defensible-space_02.2021.pdf

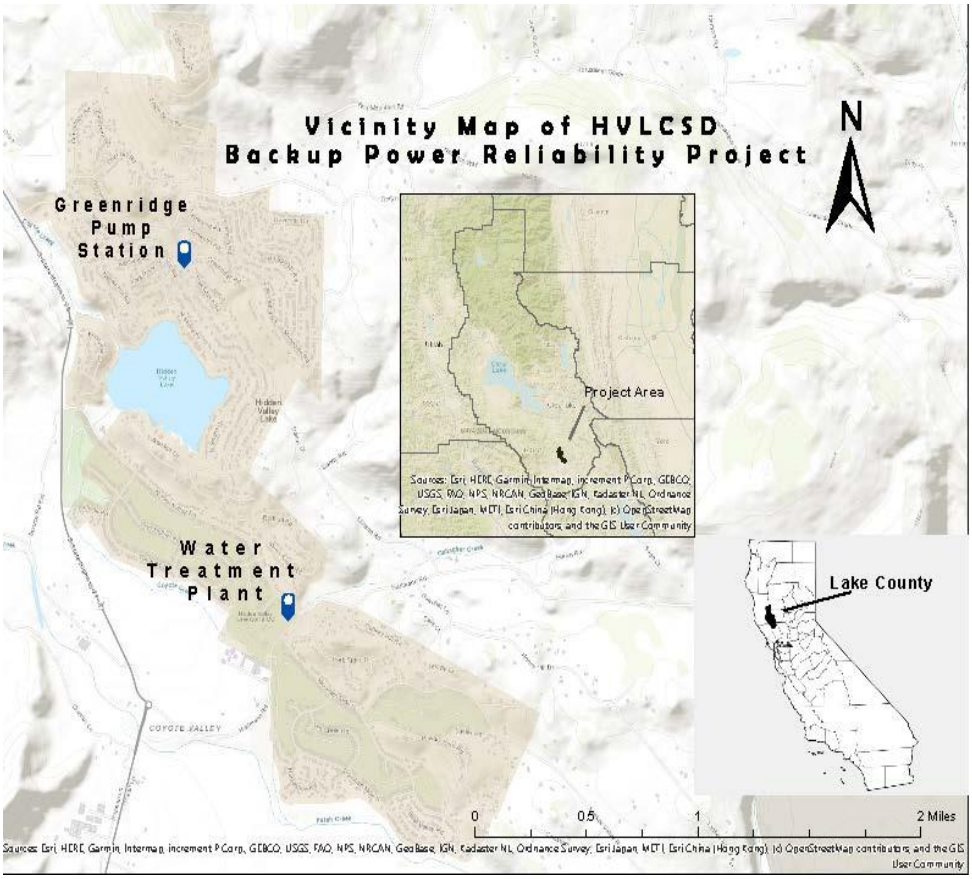


Figure 3 - Generator Project Vicinity Map

Generators

Costs

In response to the Director's request, the following image summarizes key financial aspects of the Generators project.

	Key Costs, Awards & Commitments		
	Design Contract	$ 166,158.46	
	Construction Management Contract	$ 180,560.00	* Estimate, TBD
	Construction Contract	$ 1,478,317.00	* Engineer's estimate, Manufacturer's estimate, TBD
	Total Project Amount	**$ 1,825,035.46**	
	Awarded Amount	**$ 1,041,527.40**	* Increase 3/31/23, Includes SRMC
	CSD Match Commitment	$ 783,508.06	

Year	Month	Labor	Contract	Total
2022	September	$ 370.62		**$ 370.62**
2022	October	$ 535.44	$ 300.00	**$ 835.44**
2022	November	$ 870.09		**$ 870.09**
2022	December	$ 535.44		**$ 535.44**
2023	January	$ 216.84		**$ 216.84**
2023	February	$ 72.28		**$ 72.28**
2023	March	$ 144.54	$ 2,963.53	**$ 3,108.07**
2023	April	$ 477.10	$ 7,945.90	**$ 8,423.00**
2023	May	$ 844.10		**$ 844.10**
2023	June	$ 660.60	$ 35,311.30	**$ 35,971.90**
2023	July	$ 2,256.28	$ 19,036.87	**$ 21,293.15**
		Total Expenses:		**$ 72,540.93**
		Remaining Costs:		**$ 1,752,494.53**

Figure 4 - Generators Project Costs

Timeline

The Generators project was awarded funding on August 10, 2022. The deadline to complete this project is February 10, 2024. Engineer's estimated schedule indicates construction to begin in Q4 23, and construction completion to be in Q3 24. February 10, 2024 is in Q2 24. Staff submitted a request for extension in June of 2023, when GHD had issued their 60% design documents. The initial response from CalOES was skepticism. Staff again issued a revised extension request in late July 2023 once GHD had completed their 90% documents and received delivery estimates from manufacturers. Delivery estimates from the only manufacturers that could exactly match the request puts the generator equipment arrival at 40-42 weeks. If ordered in mid-August, as per the recommendation of GHD, the equipment would arrive in mid-June – July. This request was approved, but only until the end of the overall Period of Performance, which is 7/30/24.[7]

*If construction is not completed by the funding program's deadline, future reimbursement requests will not be honored.[8]

[7] 8-10-23 Email Overall POP extension
[8] Expense Tracking Forecast Cell **T8**

Generator Specifications

GHD's generator recommendation takes a 3-pronged approach. It encompasses a long-term vision to the viability of the equipment, the emerging standards of "equipment tiers", rising costs, and exacerbating effects of climate change.

- GHD recommends the procurement of a Tier 4 generator. This is the highest Tier of generator, and has more strict emissions requirements, but will allow the District greater flexibility in the use of this generator, like demand response events.
- Electricity costs are on the rise, with California far outpacing the rest of the US in the cost per kWh.[9] The generator solution GHD has provided will allow the District to recoup some electrical costs during demand response events. In the event of a longer-term disruption of electrical services, operators also have the ability to turn off the generator at night.
- GHD understands the financial significance of a stationary generator and would not want the District to incur significant costs later if standards or environmental conditions demand an upgrade. The generator and peripheral equipment in their Basis of Design[10] reflects their professional opinion of a backup power solution that is designed to last. The emissions level of this equipment acknowledges the spirit of the California Air Resources Board regulations. The load bank recommendations ensure the generator will realize its potential for a long and purposeful useful life. While the future is largely unknown, extreme climactic events that interrupt conventional power supply (heat, drought, wildfire) appear to be the new norm.

Alternative Options

The options below examine the risks involved in foregoing bond financing.

Scenario 1: Don't do the project

If the project is not done, the existing risks that warranted federal funding in the first place would not be addressed. The risks of electrical service disruption is a very real and present danger. The Diablo wind events of late summer/early fall bring about "red flag days". Low humidity, high winds, and no rain for months are a concern for everyone, including the electrical grid provider, PG&E. In order to protect their equipment, PG&E will turn off electricity when the danger of wildfire is the highest. Since the District does not have backup power generation at its water booster pump stations, the community of Hidden Valley Lake is most vulnerable to fire during a de-energization event. It has been observed that historical de-energizations that have affected Hidden Valley Lake did not address wind events local to Hidden Valley Lake, but a "wind polygon" farther down the distribution line.[11]

Public Safety Power Shutoffs typically provide some level of advanced notice to essential services entities like the District. Given the expected/estimated duration of outage the District would be faced with the decision to top off the water storage tanks, ask for conservation from its ratepayers and hope for the best, or, secure temporary backup generators from a dwindling number of benefactors, and an ever-rising price. There are some entities willing to rent their generators because they are typically needed

[9] https://quickelectricity.com/cost-of-electricity-per-kwh-by-state/
[10] GHD Basis of Design
[11] 2019 Fire History of Lake County

during flood events in the Sacramento Valley. Because the Diablo wind events occur so close to the end of the dry season, and fire season seems to extend into the fall months, “spare” generators may not be available.

Scenario 2: Only do one generator

Inflation happens, prices go up. From the time period of 2021 to 2023, project costs have risen 55%. COVID changed the world economy, and in its wake brought about double-digit inflation. While it may be challenging to predict prices in the future given our experience of the immediate past, a longer-term look at inflation reveals 3-4% is a more accurate estimate of where our economy is going. Nonetheless it is safe to say prices will go up. The net present value of today’s project will be more expensive if the second generator is built later.

Another consideration of building the second generator later is again the area’s risk of de-energization events. With one generator, a loss of electricity still exposes a part of the community. There will still be one booster pump station without power. The District will then be faced with the same choice only on a smaller scale. Who will make the choice of which part of the community is safer from wildfire than another?

Tank 4 & Wellheads

Costs

In response to the Director's request, the following image summarizes key financial aspects of the Tank 4 & Wellheads project.

	Key Costs, Awards & Commitments		
	Design Contract (Phase 1)	$ 337,093.00	
	Construction Management Contract	$ 270,470.00	* Estimate, TBD
	Construction Contract	$ 2,704,700.00	* Engineer's estimate, TBD
	Total Project Amount	**$ 3,312,263.00**	
	Awarded Amount (Phase 1)	$ 273,867.14	* Includes SRMC
	CSD Match Commitment (Phase 1)	$ 84,306.96	

Year	Month	Labor	Contract	Total
2022	August	$ 926.55		**$ 926.55**
2022	September	1050.09		**$ 926.55**
2022	October	$ 1,539.39		**$ 1,539.39**
2022	November	$ 1,807.11		**$ 1,807.11**
2022	December	$ 334.65		**$ 334.65**
2023	January	$ 469.82		**$ 469.82**
2023	February	$ 1,679.44	$ 69,300.25	**$ 70,979.69**
2023	March	$ 1,027.86	$ 27,525.13	**$ 28,552.99**
2023	April	$ 1,744.99	$ 72,995.63	**$ 74,740.62**
2023	May	$ 807.40	$ 26,232.25	**$ 27,039.65**
2023	June	$ 894.19	$ 63,633.19	**$ 64,527.38**
2023	July	$ 914.51	$ 24,575.73	**$ 25,490.24**
		Total Expenses:		**$ 297,334.64**
		Remaining Costs:		**$ 3,014,928.36**

Figure 5 - Tank 4 and Wellheads Project Costs

Timeline

Phase I of the Tank 4 & Wellheads project was awarded funding on July 19, 2022. The deadline to complete this project is November 3, 2023. Since this project is phased, Phase II of the project cannot begin until Phase I is complete. Phase I is deemed complete when the District completes the scope of work, requests final reimbursement, and submits project closeout documentation, and CalOES & FEMA review for completeness and adherence to scope and cost. The District is on target to complete Phase I tasks on schedule and within budget.

Phase II is dependent on the time it takes CalOES and FEMA to conduct their review. There is no official timeline for when the District can expect a response and Notice of Obligation. Casual feedback from those with experience in this process estimate between twelve months and two years from Phase 1 project completion. Staff has issued a conservative estimate of Phase II expenditures in the "Expense Tracking Forecast" spreadsheet.[12]

Tank Size

Tank 4, much like the Tank 9 project, took water demand and fire-flow into consideration when sizing the tank. Fire-flow requirements for businesses are different from households, and Zone 4 had a higher number of businesses than the Tank 9 project. Total tank capacity needed for the Tank 4 project has therefore slightly higher water needs per connection. The Tank 4 site has two tanks providing water to the pressure zone. Given the layout, elevation, and pumping requirements, the new tank would have to be placed in the same footprint as the existing wooden tank, but wider and slightly below grade.

Figure 6 - Tank 4 downslope

Tank Material

The location is different from the Tank 9 site in that it is surrounded by a densely populated area. The nature of the surface and geological effects are also different. The tanks are located at the highest elevation of a fairly large, 5 acre parcel. The top of the parcel also consists of a large rock outcropping. In the southern portion of the parcel, there is evidence of slope degradation. These factors contributed to the recommendation for a concrete tank. The slope in the land would necessitate a retaining wall, but given the tank material, would not have to be as tall, thus preserving the viewshed in the Donkey Hill part of the community. Much like the life-cycle analysis conducted for the Tank 9 project, the Bennett Engineering staff also found that the concrete tank is the cheaper solution in the long run, given the very small amount of maintenance required over the life of the structure.

[12] Expense Tracking Forecast – Cell **R6**

Wellheads

A key component in this project is the reduction of exposure of District wellheads to the elements. For those associated with the District during the Valley Fire of 2015, you may recall that the infrastructure receiving the most damage during that event was the wellfield. During the evacuation, the groundwater wells were inoperable. District staff were unable to produce water to fight the active fire because we couldn't pump it from the source. This project resolves this exposure by enclosing wellheads in an ignition resistant building, and undergrounding key valves and appurtenances in vaults.

Defensible Space

This project application had a decidedly stronger focus on the defensible space concept. As time extended from the Valley Fire of 2015, many more devastating and larger fires continued to ravage Lake County and the surrounding area. Many more Federal Disasters for Wildfire were declared than ever before, and CalOES & FEMA honed their requirements for funding of wildfire mitigation projects. District staff in turn wrote in definitive commitments to creating and maintaining defensible space in all of its owned parcels and easements into the application for funding to help assure its success.

Alternative Options

The options below examine the risks involved in foregoing bond financing.

Scenario 1: Don't do the project

If the project is not done, the existing risks that warranted federal funding in the first place would not be addressed. Built in the same window of time as the Unit 9 Tank, Tank 4A is showing the same signs of age: erosion and leakage. The predominant location of leaks however is at the bottom of this tank. No amount of tank level manipulation is going to counter a leak at the bottom of the tank. Water is wasted, time and effort to treat the water is wasted, and the time and effort to pump the water is wasted. While the Unit 9 Tank poses the most risk due to its nexus between wildlands and residential, the loss of Tank 4 would arguably have the most impact.

Figure 7 - Tank 4 Valley Fire

Despite the fact that there are two tanks at this site, a wooden tank fully engulfed in flames is going to significantly damage the steel tank immediately adjacent to it. This site is located towards the center of the community and supports several businesses. These businesses become essential during times of emergency, serving as places of shelter and food supplies. Just like Tank 9, an emergency response to a tank collapse is significantly more expensive than a planned improvement. Schools, shelters and grocery stores would not have water for the public. Fire-fighters would not have enough water to battle an active fire in this area. A new tank would have to be built according to contemporary standards of the AWWA. Replacing a tank with the same size does not mitigate the risk to businesses and residences of wildfire, nor does it meet everyday demand.

The ignition resistance structures and underground vaults at the wellfield have tangible evidence of what happens if this project is not done. This was the exact scenario that occurred back in 2015.[13]

Scenario 2: Do one or the other, tank or wellfield

Inflation happens, prices go up. The turnaround time from application to award is the shortest for this implementation project, a mere 16 months. The prices are therefore not impacted quite as much from inflation, but a 3-4% annual inflation rate is a reasonable assumption. The statement still stands that the net present value of today's project will be more expensive if the project is split in half, and the remainder of construction conducted at a later date. When the extreme heat, the drought or the wildfire occurs in between the first and second half of the project, the District would be back to expending funds on an emergency basis, rather than planned improvements, a much more costly prospect.

Scenario 3: Don't do the defensible space portion of the project

[13] Eight day loss of function.

The HMGP considers defensible space to be an integral part of protecting against wildfire. It must be part of the scope of any wildfire mitigation project. If the District were to choose to not plan and execute a vegetation management plan, as was committed in the original scope, the District would be in violation of the terms of the project, and therefore subject to de-obligation. The vegetation management plan of this project is larger than that of the Tank 9 project, because it addresses ~13 acres of District owned property. Upon the advice of a Certified Arborist, this management plan identifies several trees within the Tank 4 parcel that make protecting the infrastructure indefensible. Many trees must be removed to achieve the proper distance between canopies, given the slope of the land.[14]

[14] Fuels Management Plan

Mainlines Planning

Costs

In response to the Director's request, the following image summarizes key financial aspects of the Mainlines project.

	Key Costs, Awards & Commitments		
	Design/Planning Contract	$ 489,622.00	
	Total Project Amount	**$ 489,622.00**	
	Awarded Amount	**$ 399,550.00**	* Includes SRMC
	CSD Match Commitment	$ 122,454.46	

Year	Month	Labor	Contract	Total
2022	October	$ 264.60		**$ 264.60**
2022	November	$ 334.65		**$ 334.65**
2022	December	$ 851.24		**$ 851.24**
2023	January	$ 800.58		**$ 800.58**
2023	February	$ 1,084.20		**$ 1,084.20**
2023	March	$ 1,120.34	$ 31,424.25	**$ 32,544.59**
2023	April	$ 1,418.02	$ 19,563.69	**$ 20,981.71**
2023	May	$ 220.20	$ 14,473.31	**$ 14,693.51**
2023	June	$ 1,585.69	$ 8,913.50	**$ 10,499.19**
2023	July	$ 2,208.12		**$ 2,208.12**
		Total Expenses:		**$ 84,262.39**
		Remaining Costs:		**$ 405,359.61**

Figure 8 - Mainlines Planning Project Costs

Timeline

The Mainlines project was awarded funding on September 6, 2022. The deadline to complete this project is September 6, 2025. This is an Advance Assistant project as defined by the HMGP, whose output is a completed application for construction. On February 21, 2023, Coastland Civil Engineering was awarded this project. Their proposal included a scope of work with milestones to meet this project's timeline.[15] At this early stage in this project, tasks are reasonably within schedule and on budget.

Deliverables

[15] CCE Scope of Work

As this is a planning project, expectations are centered around project milestones and deliverables, with the final deliverable being the construction of a grant application for mainline refurbishment. So far, Coastland has conducted field surveys, data gathering, and a seismic analysis. These efforts have resulted in a Condition Summary Statement. This Summary Condition statement presents initial improvement opportunities and lays the groundwork for running a hydraulic model on the District's water distribution system. It would be challenging to try and consider any cost-saving effort that could be introduced into this planning project. The duration is long, and the cost is small compared to the District's implementation projects. Taking the time to build a strong foundation and plan eliminates doubt when it comes to implementation. Pipe material & size, valves & locations, and a prioritized list of repairs will be the output of this project and the contents of the funding application.

Conclusion

Hopefully, the report has helped to shed light on the details of these projects, and the risks associated with foregoing, or pushing projects out. To forego, or push a project out, would mean doing the project without federal funding. The Tank 9 project, for example, would cost more than $2.8 when factoring in inflation, and the lack of federal funding. As it stands today, this project would cost the District between ~$263,000 – $409,000.

Senate Bill 200, also known as the Safe and Affordable Drinking Water Act passed in 2019. This Act declares clean water a human right, and that it needs to be made safe and affordable. The full compliment of projects presented here represent the District's commitment to Water Reliability. Reliable access to clean drinking water is a matter of safety. Service interruptions are reduced with backup generators, steel tanks, and refurbished mainlines. With infrastructure improvements like these, extreme climactic events like wildfire and PSPS have little to no chance of impacting the safety of our residents.

"The mission of the Hidden Valley Lake Community Services District is to provide, maintain and protect our community's water."

Staff wishes that consideration be also given to the alternative scenario of emergency. If a project is pushed-out to a later date, the existing outdated equipment (tank, lack of generator, lack of wellhead protection) remains exposed to the elements. Since 2010 eleven wildfires have breached the Lake County boundary. The Camp fire of 2018 destroyed a small town, including its infrastructure. The Dixie Fire of 2021 destroyed the small town of Greenville, including its infrastructure. Rebuilding after a natural disaster is extremely costly. The District is in the unique position to protect itself from natural disaster and bring safety back to the area. What qualitative benefits could this bring to the community. Home values? Insurance?

Receiving funding from grant programs makes this improvement effort more affordable to the rate payer. A single tank site project costing north of $2.8M is more than the small rate base of Hidden Valley Lake could reasonably bear. This is only one example, of course. The community's vulnerability extends to other tanks, as well as our booster pump stations, which totals close to $10M. All told, it will cost $10M to protect the community from service interruption but will only cost the District ~$5M to do it.[16] It would be difficult to imagine this opportunity ever presenting itself in the future.

As the Directors represent the District to the public, we hope that this report has provided the information you need to respond to inquiries from our ratepayers. The alternative scenarios are meant to underscore the importance of completely executing all aspects of each project. Thank you for taking the time to completely read this report.

[16] NHA Water System Capital Projects Funding Memorandum

HIDDEN VALLEY LAKE
COMMUNITY SERVICES DISTRICT

WATER AND SANITARY SEWER RATE STUDY

Final Report

March 2015

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SECTION 1. PURPOSE AND OVERVIEW OF THE STUDY

PURPOSE

The Hidden Valley Community Services District ("District" or "CSD") retained NBS in June 2014 to re-evaluate its water and sewer rates for a number of reasons, including meeting future funding requirements, improving rate design to be more fair and equitable, and responding to public input. The rates developed in this study meet basic Proposition 218 (Prop 218) requirements and were developed using industry standards and reflect the District's priority of maintaining transparent communications between the District and its residents and businesses.

In developing proposed new water and sewer rates, NBS and District Staff worked cooperatively with the District's Board and presented an overview of study results and rate alternatives on October 21, 2014. During this workshop, and in subsequent Board meetings, The Board reviewed recommendations and provided NBS and District Staff with direction and feedback. Based on input from the District Board and District Staff, NBS has recommended the water and sewer rates summarized in this report.

OVERVIEW OF THE STUDY

Key Issues Addressed – In addition to ensuring water and sewer rates collect sufficient revenue to meet the annual operating and capital improvement plans, there are a number of key issues that were specifically addressed in this study, including:

- Residential Sewer Rates Based on Winter-Average Water Use – Re-designing residential sewer rates to add a volumetric charge based on winter-average water-consumption.
- Commercial Sewer Rates that Include a Volumetric Rate – A volumetric rate based on monthly water consumption was added to the commercial customer's fixed monthly charge.
- Water Conservation – Creating more conservation-oriented water rates by developing four-tiered volumetric rates for residential customers. Commercial customers would continue using single (uniform) tier volumetric rate.
- Overall Rate Design – Fairness, equity and the impacts of rate increases on customer bills are significant concerns to the District Board and staff. Therefore, the overall rate design, in the form of the amount of revenue collected from fixed monthly charges vs. volumetric rates, were carefully examined and numerous rate alternatives were evaluated prior to arriving at the proposed rates.
- Drought Rates – Drought rates that could be implemented if the District is required to reduce overall water consumption due to the continuing drought were studied and developed, including four drought stages covering 10% reductions in consumption (Stage 1) up to 40% reductions (Stage 4). However, the District is not proposing to adopt these drought rates at this time.
- Financial Planning – The longer-range financial plans of the water and sewer utilities were closely examined and adjusted to best meet annual operating and broader capital improvement costs. Capital improvement funding alternatives were evaluated, including funding at 33%, 50% and 100% levels.

Recommendations – As a part of the long-range financial plan, NBS evaluated projected revenues and expenditures and developed net revenue requirements. NBS recommends the District adopt the water and sewer service rates, and drought water rates summarized in this report.

RATE STUDY METHODOLOGY

Components of the Rate Study Methodology – A comprehensive utility rate study typically encompasses three major components: the utility's overall revenue requirements and financial plan, the cost-of-service for each customer class, and rate structure design. These three components were used in this study, and are summarized in Figure 1.

Figure 1. PRIMARY COMPONENTS OF A RATE STUDY

Step 1: Financial Plan/ Revenue Requirements - Compares current sources and uses of funds and determines the revenue needed from rates and project rate adjustments.

Step 2: Cost-of-Service Analysis - Allocates the revenue requirements to the customer classes in a "fair and equitable" manner that complies industry standards.

Step 3: Rate Design - Considers what rate structure alternatives will best meet the District's need to collect rate revenue from each customer class.

As a part of this rate study, NBS projected revenues, expenditures, and net revenue requirements, performed cost-of-service rate analyses, and recommended new water and sewer rates. Significant rate increases -- or more accurately, increases in the total revenue collected from water and sewer rates -- are recommended. The following sections in this report present an overview of the methodologies, assumptions, and data used along with the financial plans and rates developed during this study.

The components shown in Figure 1 are based on industry standard cost of service methodologies, primarily from the American Water Works Association (AWWA)[1]. These steps address general requirements for equity and fairness. In terms of the chronology of the study, these three steps represent the order they were performed in this study.

Rate Design Criteria – Several criteria are typically considered in setting rates and developing sound rate structures. The fundamentals of this process have been documented in a number of rate-setting manuals. For example, the foundation for evaluating rate structures is generally credited to James C. Bonbright in the *Principles of Public Utility Rates*[2] which outlines pricing policies, theories, and economic concepts along with various rate designs. The other common industry standard is AWWA Manual M1. The following is a simplified list of the attributes of a sound rate structure:

- Rates should be easy to understand from the customer's perspective.
- Rates should be easy to administer from the utility's perspective.
- Rates should promote the efficient allocation of the resource.
- Rates should be equitable and non-discriminating (i.e., cost based).
- There should be continuity in the rate making philosophy over time.
- Other utility policies should be considered (e.g., encouraging conservation & economic development).
- Rates should consider the customer's ability to pay.
- Rates should provide month-to-month and year-to-year revenue stability.

The following section covers basic rate design criteria that NBS and District staff considered as a part of their review of the rate structure alternatives.

Rate Structure Issues – The starting point in considering rate structures is the relationship between fixed costs and variable costs. Fixed costs typically do not vary with the amount of water consumed. Debt

[1] *Principles of Water Rates, Fees, and Charges*, Manual of Water Supply Practices, M1, AWWA, sixth edition, 2012.

[2] James C. Bonbright; Albert L. Danielsen and David R. Kamerschen, *Principles of Public Utility Rates*, (Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988), p. 383-384.

service and District personnel are examples of a fixed cost. In contrast, variable costs such as the cost of chemicals and electricity tend to change with the quantity of water sold. The vast majority of rate structures contain a fixed or minimum charge in combination with a volumetric charge.

The District's rate design objectives are not necessarily the same as those in other communities. For example, some communities, particularly those with very expensive purchased water costs, place a very high priority on conservation-oriented rates. Other communities, particularly those who have many low-income customers, want to implement low-income subsidies. Additionally, AWWA's Manual M1 notes that "other community objectives" can and should be considered in designing rate structures:

> "…the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers. However … other considerations may be equally or more important in determining rates and charges and may better reflect emerging objectives of the utility or the community it serves."
>
> *and*
>
> "…pricing policies may support a community's social, economic, political, and environmental concerns."

Key Financial Assumptions

Following are the key assumptions used in the water and sewer rate analyses:

- **Funding of Capital Projects –** After extensive review of the planned capital improvement projects (CIP) and funding requirements by the District and its engineering consultant, the District has decided that the water utility will only be able to fund one-third (33%) of the planned CIP, and the sewer utility will only fund 50% of planned CIP costs.
- **Reserve Targets –** Target reserves for operations and maintenance (O&M) and capital rehabilitation and replacement (R&R), which essentially follow industry standards for utility fund management, are set at the following levels:
  - ✓ Water Utility Operating & Maintenance Reserve – 90-days of O&M expenses.
  - ✓ Sewer Utility Operating & Maintenance Reserve – 90-days of O&M expenses.
  - ✓ Water and Sewer Capital Rehabilitation and Replacement Reserve – approximately 1.5% of net assets.
- **Inflation and Growth Projections:**
  - ✓ Customer growth is assumed to be zero. While some growth may occur[3], we did not rely on any growth during the next five years.
  - ✓ General costs (such as professional and contractual services, fuel, vehicle maintenance, electricity, etc.) are inflated at 3% annually.
  - ✓ Operating expenses, which include among other things labor costs, health benefits, and retirement benefits, are inflated at a rate of approximately 4% to 4.5% annually.
  - ✓ No inflation is added to other budget items, such as late fee revenue, lease income, and availability fees.

The next two sections discuss the water and sewer rate studies.

[3] The District has a number of undeveloped lost, roughly 700, but these are not expected to develop within the timeframe of this study.

SECTION 2. WATER RATE STUDY

A. KEY WATER RATE STUDY ISSUES

The water rate analysis was undertaken with a few specific objectives, including:

- Generating additional revenue needed to meet projected funding requirements,
- Increasing the percent of water rate revenue collected from volumetric rates vs. fixed monthly charges to improve conservation in the water utility. Currently the District's water rates collect approximately 84% of rate revenue from fixed charges and 16% from volumetric rates.
- Providing the District with a multi-tiered water rate structure for residential customers in order to encourage more water conservation.
- Based water fixed charges on meter size and eliminate the 30 hcf/bi-month quantity currently included in this fixed charge.

NBS developed multiple water rate alternatives over the course of this study. All rate structure alternatives were developed using industry standards and cost-of-service principles. The rate alternative recommended in this report reflects the input from District staff, the Board's Finance Committee, and from the public.

The fixed and volume-based charges were calculated based on the net revenue requirements, number of customer accounts, water consumption, and other District-provided information. The following are the basic components included in this analysis:

- **Developing Unit Costs:** The water revenue requirements were "functionalized" into three categories: (1) customer service costs; (2) fixed capacity costs; and (3) variable (or volume-based) costs. Unit costs for each of these functions were determined based on allocations to functional areas, water consumption, peaking factors, number of accounts by meter size, and customer class.
- **Determining Revenue Requirements by Customer Class:** The total revenue that should be collected from each customer class was determined using the unit costs and the total units belonging to each class. For example, customer costs are allocated based on number of meters, while volume-related costs are allocated based on the water consumption for each class. Once the costs are allocated and the revenue requirement for each customer class is determined, collecting these revenue requirements from each customer class is addressed in the rate design task.
- **Rate Design and Fixed vs. Variable Costs:** The revenue requirements for each customer class are collected from both fixed service charges and variable commodity charges. The cost of service analysis indicated that approximately 65% of the District's costs are fixed and 35% are variable. Although state regulatory agencies, such as the California Urban Water Conservation Council, would like water utilities to collect at least 70% of rate revenue from volumetric rates, many utilities prefer to collect less than 70% from volumetric rates. As a compromise, NBS recommends the rates proposed in this report collect 60% of revenue from fixed charges and 40% of revenue from volumetric charges.

B. WATER UTILITY REVENUE REQUIREMENTS

It is important for municipal utilities to maintain reasonable reserves in order to handle minor emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices. Rate increases are governed by the need to meet operating and capital costs, maintain adequate debt coverage, and build reserve funds. The current state of the District's water utility, with regard to these objectives is as follows:

- **Meeting Net Revenue Requirements:** For Fiscal Year 2015/16 through 2019/20, the projected net revenue requirement (i.e., total annual expenses plus rate-funded capital costs, less non-rate revenues) is approximately $1.56 million to $1.86 million. The District's water utility is currently

running a structural deficit that result in annual deficits of $190,000 in FY'14/15 increasing to more than $560,000 by FY'18/19. Recommended annual rate increases of 12%, 11%, 11%, 8% and 8% are needed to fund all O&M and CIP (at a 33% level). Additionally, the District is currently not meeting its debt coverage requirement of 1.1 for its CIEDB loan, and without these rate increases, the utility will continue to miss this requirement.

- **Building and Maintaining Reserve Funds:** The District should maintain sufficient reserves for the Water Utility. NBS recommends that the District adopt and maintain the following reserve fund target balances:

  - ✓ **Operating Reserve** should normally equal to 25% of the Utility's budgeted annual operating expenses, which is equal to a three-month (or 90-day) cash cushion for normal operations. An Operating Reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures. Fluctuations might be caused by weather patterns, the natural inflow and outflow of cash during billing cycles, natural variability in demand-based revenue streams (e.g., variable charges), and – particularly in periods of economic distress – changes or trends in age of receivables.
  - ✓ **Capital Rehabilitation and Replacement (R&R) Reserve** should typically be equal to a minimum of 3% of net depreciable capital assets, which equates to a 33-year replacement cycle for capital assets. The District has decided to adopt a target of half this amount, or 1.5% which targets a 66-year replacement cycle. This target serves simply as a starting point for addressing long-term capital repair and replacement needs.
  - ✓ **Debt Reserve** is the reserve requirement for the outstanding CEIDB loan, which is approximately $170,000.
  - ✓ **OPEB[4] Reserve** – The District's is establishing this reserve fund to begin addressing its current liability for post-retirement benefits, with the intent of increasing annual contributions in the future.

Figure 2 summarizes the sources and uses of funds, net revenue requirements, and the recommended annual percent increases in total rate revenue for the next five years. As this figure shows, the water utility runs at a deficit through FY 2015/16, with surpluses in subsequent years. These surpluses are used to build up reserves, with the intent of meeting target reserve-fund balances at some point in the future.

Figure 2. Summary of Water Revenue Requirements

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Sources of Water Funds						
Rate Revenue Under Prevailing Rates	$ 1,229,800	$ 1,229,800	$ 1,229,800	$ 1,229,800	$ 1,229,800	$ 1,229,800
Non-Rate Revenues	78,300	77,500	77,500	77,500	77,500	77,500
Interest Earnings	-	385	494	752	1,804	4,333
Total Sources of Funds	**$ 1,308,100**	**$ 1,307,685**	**$ 1,307,794**	**$ 1,308,052**	**$ 1,309,104**	**$ 1,311,633**
Uses of Water Funds						
Operating Expenses	$ 1,326,771	$ 1,379,916	$ 1,435,897	$ 1,494,916	$ 1,557,194	$ 1,622,969
Existing Debt Service	172,507	172,239	171,960	171,671	171,374	171,064
New Debt Service	-	-	56,450	56,450	56,450	56,450
Rate-Funded Capital Expenses	-	85,000	85,000	85,000	85,000	93,229
Total Use of Funds	**$ 1,499,278**	**$ 1,637,155**	**$ 1,749,307**	**$ 1,808,037**	**$ 1,870,018**	**$ 1,943,713**
Additional Revenue from Rate Increases	73,788	299,087	467,265	603,030	749,657	809,040
Surplus (Deficiency) after Rate Increase	**$ (117,390)**	**$ (30,382)**	**$ 25,752**	**$ 103,045**	**$ 188,742**	**$ 176,961**
Projected Annual Rate Increase	***12.00%***	***11.00%***	***11.00%***	***8.00%***	***8.00%***	***3.00%***
Net Revenue Requirement[1]	**$ 1,420,978**	**$ 1,559,269**	**$ 1,671,313**	**$ 1,729,785**	**$ 1,790,714**	**$ 1,861,880**

1. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from water rates.

[4] OPEB refers to "Other Post-Employment Benefits".

Figure 3 summarizes the projected reserve fund balances and reserve targets, for the next five years. A summary of the water utility's proposed 10-year financial plan is included in Appendix A – Water Rate Study Summary Tables. These tables include revenue requirements, reserve funds, revenue source and proposed rate increases for the 10-year period.

Figure 3. Summary of Water Reserve Funds

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Operating Reserve						
Ending Balance	$ 101,980	$ 46,598	$ 48,105	$ 128,153	$ 294,473	$ 449,592
Recommended Minimum Target	*375,000*	*409,000*	*437,000*	*452,000*	*468,000*	*486,000*
Capital Rehabilitation & Replacement Reserve						
Ending Balance	$ 52,200	$ 52,200	$ 52,200	$ 52,200	$ 52,200	$ 52,200
Recommended Minimum Target	*59,200*	*74,100*	*87,600*	*102,900*	*118,300*	*147,000*
Debt Reserve						
Ending Balance	$ 171,428	$ 171,856	$ 228,410	$ 228,121	$ 227,824	$ 227,514
Recommended Minimum Target	*172,507*	*172,239*	*228,410*	*228,121*	*227,824*	*227,514*
Total Ending Balance	**$ 325,608**	**$ 270,654**	**$ 328,716**	**$ 408,474**	**$ 574,498**	**$ 729,306**
Total Recommended Minimum Target	***$ 606,707***	***$ 655,339***	***$ 753,010***	***$ 783,021***	***$ 814,124***	***$ 860,514***

C. CURRENT VS. PROPOSED WATER RATES

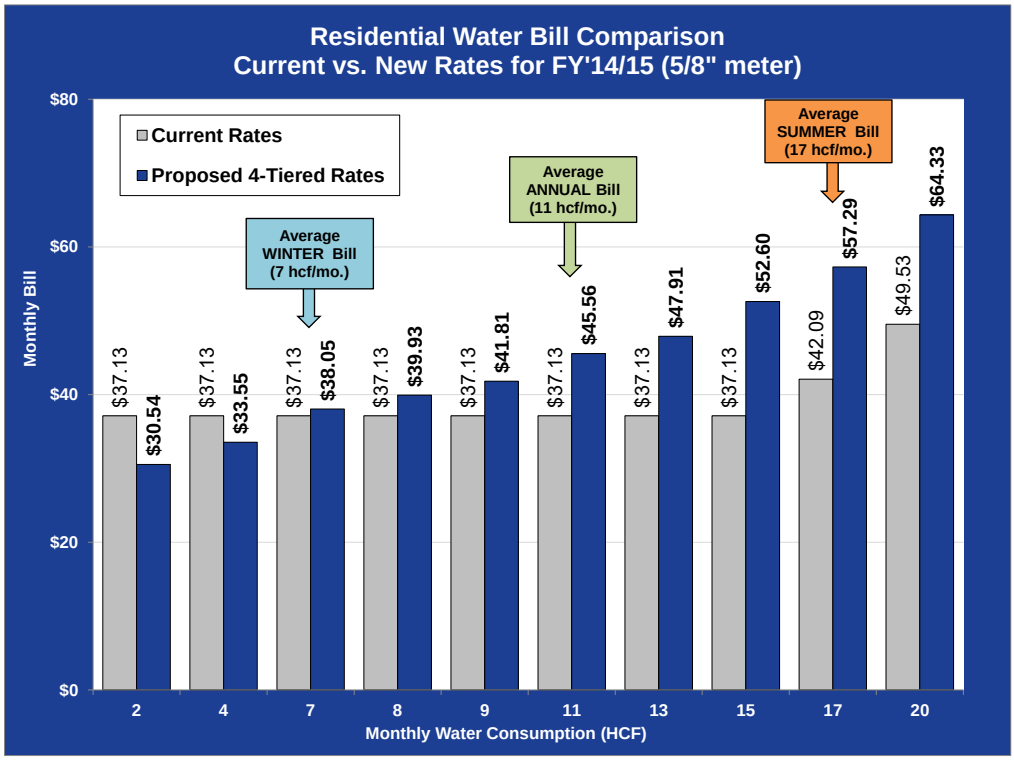
Currently, the District charges all customer classes and water accounts a bi-monthly fixed charge of $74.16, which includes 30 hundred-cubic feet (hcf) of water, plus a uniform commodity charge of $2.48/hcf for all water consumed that is greater than 30 hcf.

The proposed new rate structure includes volumetric charges that include a four-tiered commodity charge for residential customers. Because of the significant differences in typical water use of commercial customers (e.g., laundromat vs. restaurants vs. office space), uniform commodity charges will be applied to their consumption. This is a common approach for these types of customers, and the primary reason why tiered rates aren't used for commercial customers. **Figure 4** provides a comparison of the current and proposed rates for Fiscal Year 2014/15 through 2018/19. **Figure 5** shows a comparison of monthly bills for residential customers under current and proposed rates at varying levels of water consumption.

Figure 4. Current and Proposed Water Rates for FY 2014/15 through 2018/19

Water Rate Schedule	Current Rates	Proposed Rates - Rate Alternative #1				
		FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19
Projected Increase in Rate Revenue per Financial Plan:		*12.00%*	*11.00%*	*11.00%*	*8.00%*	*8.00%*
Fixed Service Charge						
Monthly charge *(includes up to 15 ccf/mo.)*	$37.13	--	--	--	--	--
Monthly Service Charge by Meter Size:						
5/8-inch	--	$27.54	$30.57	$33.93	$36.65	$39.58
3/4-inch	--	$40.37	$44.81	$49.74	$53.72	$58.02
1-inch	--	$66.04	$73.30	$81.37	$87.88	$94.91
1 1/2-inch	--	$130.20	$144.52	$160.42	$173.25	$187.11
2-inch	--	$207.19	$229.99	$255.28	$275.71	$297.76
Commodity Charges for All Water Consumed						
Rate Per CCF of Water Consumed *(consumption above 15 ccf monthly)*	$2.48	--	--	--	--	--
Residential Tiered Rates						
Tier 1: 0-7 hcf		$1.50	$1.67	$1.85	$2.00	$2.16
Tier 2: 8-11 hcf		$1.88	$2.08	$2.31	$2.50	$2.70
Tier 3: 12-24		$2.35	$2.60	$2.89	$3.12	$3.37
Tier 4: All Usage Above 24 hcf		$2.93	$3.26	$3.61	$3.90	$4.21
Commercial Uniform Rates						
Uniform Rate (All Water Consumed)	--	$1.86	$2.07	$2.30	$2.48	$2.68

Figure 5. Comparison of Monthly Water Bills for Single-Family Residential Customers



D. DROUGHT RATES

The District is not proposing to adopt drought rates at this time. However, it may be subject to drought-related cutbacks and may need to adopt drought rates at some point to both offset potential lost revenue and to encourage customers to reduce consumption levels. Assuming these reductions are required, the District's water utility would experience a net loss of revenue that, in the long run, would be financially unsustainable. **Figure 6** shows the drought rates developed to offset these drought-related reductions.

Figure 6. Drought Rates

Calculated Drought Surcharges	Non-Drought	Drought Stages			
		Stage 1	Stage 2	Stage 3	Stage 4
Drought-Stage Factors					
Percent Reduction by Stage	0.0%	10.0%	20.0%	30.0%	40.0%
Price Increase Needed to Meet Reduction[1]	0.0%	25.0%	40.0%	50.0%	66.7%
Calculated Drought-Stage Volumetric Rates					
Single-Family Residential Customers[2]:					
Tier 1	$1.50	$1.50	$1.50	$1.50	$1.50
Tier 2	$1.88	$2.71	$3.42	$3.90	$5.48
Tier 3	$2.35	$3.85	$5.26	$6.22	$9.78
Tier 4	$2.93	$4.81	$6.57	$7.78	$12.23
All Other Customers:					
Proposed Uniform Volumetric Rate	$1.865	$2.33	$2.61	$2.80	$3.11

1. Based on the price elasticity, this is the price increase needed to achieve the "price-induced" reduction in water sales.

2. Note: residential tiered rates are calculated to average the same rate as for uniform rate customers.

SECTION 3. SEWER RATE STUDY

A. KEY SEWER RATE STUDY ISSUES

The specific objectives addressed in the sewer rate analysis included:

- Generating additional revenue needed to meet projected funding requirements, particularly capital improvement costs.
- Creating a volumetric-based charge for residential customers that relies on average winter water use for the purpose of improving equity.
- Creating a volumetric-based charge for commercial customers that relies on monthly water use, which is more consistent with industry practices than the strictly fixed charge the District currently uses.

During the course of this study, NBS developed several sewer rate alternatives for the District to consider. As with the water rates, all rate structure alternatives were developed using industry standards and cost-of-service principles. The rate alternative recommended in this report reflects the input from District staff and the District Board. However, it is ultimately the District Board that decides whether to adopt and implement the recommended rates.

The proposed rate structure for residential customers consists of a smaller fixed charge plus a variable rate based on their average winter water consumption. This average-winter water volumetric charge is used to determine the volumetric charges for the subsequent 12 months and, in this respect, acts like a fixed charge except it varies based on each customer's winter consumption. This is more equitable because it better reflects the actual effluent generation for each residential customer. The rate structure for commercial customers is very similar, with a fixed monthly charge per account, plus a variable rate based on monthly water consumption.

The updated rates were calculated based on the net revenue requirements, number of customer accounts, number of residential units, water consumption and the estimated amount and strength of the effluent produced by the District's customers. The following are the basic components included in this analysis:

- **Customer classes:** Customer classes are typically determined by grouping customers with similar flow and strength characteristics into different categories, in order to reflect the cost differences in servicing each type of customer. The District's existing customer classes have been maintained in the rates developed and proposed in this report, and are as follows:
  - **Residential** – Consists of single-family and multi-family residential properties; multi-family accounts are assessed fixed charges based on the number of household equivalent units (HEUs).
  - **Commercial** – Includes all commercial, industrial and municipal users.
- **Cost Allocation Factors:** For the purpose of allocating costs to customer classes, the sewer revenue requirements were "functionalized" into four categories: (1) flow (volume) related costs; (2) strength costs related to biochemical oxygen demand (BOD); (3) strength costs related to total suspended solids (TSS); and (4) customer service related costs. The effluent strength factors were derived from the State Water Resources Control Board.[5] These cost allocation factors have different implications for the costs of serving customers. For example, effluent from customers that contains higher levels of BOD and TSS is more costly to treat at the wastewater treatment plant and, therefore, those customers should be allocated a greater proportion of treatment costs compared to residential customers, who have lower-strength effluent. Detailed tables that document these cost allocations are shown in Appendix B.

[5] Strength factors for each customer class were derived from the State Water Resources Control Board Revenue Program Guidelines, Appendix G, page G-21 "Commercial User Strength Characteristics."

- **Determining Revenue Requirements by Customer Class:** The cost allocation factors were used to determine the percentage of the revenue requirements allocated to each customer class. For example, customer costs are allocated based on number of accounts and billable units, flow-related costs are allocated based on the estimated effluent generated by each class, and strength-related costs are allocated based on estimated strength of wastewater discharged by each customer class. Once the costs are allocated and the revenue requirement for each customer class is determined, collecting these revenue requirements from each customer class is addressed in the rate design task.
- **Rate Design:** The revenue requirements collected from residential customers were based on the number of household equivalent units and average winter water consumption. Average winter water consumption is the best unit of measurement available to estimate potential flow at the wastewater treatment plant, because outdoor irrigation is typically the lowest during the winter months. Revenue requirements for commercial and industrial customers are most commonly billed based on the number of accounts and their monthly water consumption. This is because the amount of wastewater discharged by each commercial user is generally assumed to correlate to their water use.

B. SEWER UTILITY REVENUE REQUIREMENTS

It is important for municipal utilities to maintain reasonable reserves in order to handle emergencies, fund working capital, maintain a good credit rating, and generally follow sound financial management practices. Rate increases are governed by the need to meet operating and capital costs, maintain and build reserve funds. The current state of the District's sewer utility is as follows:

- **Meeting Net Revenue Requirements:** The District's sewer utility is currently running a small structural deficit in FY 2014/15, which would increase to approximately $400,000 in FY 2018/19 if no rate increases are implemented. Projected net revenue requirement (i.e., total annual expenses plus debt service and rate-funded capital costs, less non-rate revenues) increases from approximately $885,000 to $1,289,000 in Fiscal Years 2014/15 through 2018/19. This assumes funding for capital projects in set at 50% of planned capital improvements. Similar to the water utility, if rate increases aren't implemented, the sewer utility will not meet its debt coverage requirements for its outstanding debt[6], and will begin running annual deficits, which will require larger rate adjustments in later years.

- **Building and Maintaining Reserve Funds:** The District should maintain sufficient reserves for the Utility. NBS recommends that the District adopt and maintain the following reserve fund targets:

  - ✓ **Operating Reserve** equal to 25% of the Utility's budgeted annual operating expenses. This reserve target is equal to a three-month (or 90-day) cash cushion for normal operations. An Operating Reserve is intended to promote financial viability in the event of any short-term fluctuation in revenues and/or expenditures.
  - ✓ **Capital Rehabilitation and Replacement Reserve** equal to a minimum of 2% of net depreciable capital assets (or approximately $200,000 based on a total system asset value of approximately $7 million). This reserve provides for capital repair and replacement needs. However, the District has chosen to adopt an initial target reserve level of 1.5%, or about $110,000; this serves simply as a starting point for addressing longer-term needs.
  - ✓ **Debt Reserve** equal to the reserve requirements for the existing and planned debt, which is approximately $32,000.

Figure 7 summarizes the sources and uses of funds, including net revenue requirements, and the recommended annual percent increases in total rate revenue for the next five years**.** As this figure shows, the sewer utility has a small deficit FY 2015/16, followed by small but increasing surpluses in

[6] The District currently has a small USDA Solar loan, a 1995 Revenue Bond, and a State Revolving Fund Loan, which will be paid off by the end of FY 2014/15.

subsequent years. These surpluses are used to build up reserves, with the intent of meeting future target reserve-fund balances.

Figure 7. Summary of Sewer Revenue Requirements

Summary of Sources and Uses of Funds and Net Revenue Requirements	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Sources of Sewer Funds						
Rate Revenue Under Prevailing Rates	$ 881,000	$ 881,000	$ 881,000	$ 881,000	$ 881,000	$ 881,000
Reclaimed Water Rate Revenue	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000	$ 95,000
Non-Rate Revenues	$ 30,300	$ 30,300	$ 30,300	$ 30,300	$ 30,300	$ 30,300
Interest Earnings	-	385	534	338	270	709
Total Sources of Funds	**$ 1,006,300**	**$ 1,006,685**	**$ 1,006,834**	**$ 1,006,638**	**$ 1,006,570**	**$ 1,007,009**
Uses of Sewer Funds						
Operating Expenses	$ 1,010,600	$ 1,054,131	$ 1,100,209	$ 1,149,028	$ 1,200,801	$ 1,255,756
Debt Service	-	-	53,762	53,762	53,762	53,762
Rate-Funded Capital Expenses	-	160,000	160,000	160,000	160,000	172,637
Total Use of Funds	**$ 1,010,600**	**$ 1,214,131**	**$ 1,313,971**	**$ 1,362,791**	**$ 1,414,563**	**$ 1,482,155**
Surplus (Deficiency) before Rate Increase	**$ (4,300)**	**$ (207,445)**	**$ (307,137)**	**$ (356,152)**	**$ (407,993)**	**$ (475,146)**
Additional Revenue from Rate Increases	44,050	185,010	270,291	362,394	461,866	542,438
Surplus (Deficiency) after Rate Increase	**$ 39,750**	**$ (22,435)**	**$ (36,846)**	**$ 6,242**	**$ 53,873**	**$ 67,291**
Projected Annual Rate Increase	***10.00%***	***10.00%***	***8.00%***	***8.00%***	***8.00%***	***6.00%***
Cumulative Rate Increases	*10.00%*	*21.00%*	*30.68%*	*41.13%*	*52.43%*	*61.57%*
Net Revenue Requirement[1]	**$ 885,300**	**$ 1,088,445**	**$ 1,188,137**	**$ 1,237,152**	**$ 1,288,993**	**$ 1,356,146**

1. Total Use of Funds less non-rate revenues and interest earnings. This is the annual amount needed from Sewer rates.

Figure 8 summarizes the projected reserve fund balances and reserve targets, for the next five years. A summary of the sewer utility's proposed 10-year financial plan is included in Appendix B – Sewer Rate Study Summary Tables. These tables include revenue requirements, reserve funds, revenue source and proposed rate increases for the 10-year period.

Figure 8. Summary of Sewer Reserve Funds

Beginning Reserve Fund Balances and Recommended Reserve Targets	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Operating Reserve						
Ending Balance	$ 154,131	$ 106,776	$ 45,091	$ 26,979	$ 56,713	$ 100,080
Recommended Minimum Target	*253,000*	*264,000*	*275,000*	*287,000*	*300,000*	*314,000*
Capital Rehabilitation & Replacement Reserve						
Ending Balance	$ -	$ -	$ -	$ -	$ -	$ -
Recommended Minimum Target	*102,500*	*109,000*	*116,300*	*121,200*	*129,700*	*137,900*
Debt Reserve						
Ending Balance	$ 32,345	$ 32,345	$ 86,107	$ 86,107	$ 86,107	$ 86,107
Recommended Minimum Target	*32,345*	*32,345*	*86,107*	*86,107*	*86,107*	*86,107*
Total Ending Balance	**$ 186,476**	**$ 139,121**	**$ 131,199**	**$ 113,086**	**$ 142,820**	**$ 186,187**
Total Recommended Minimum Target	***$ 387,845***	***$ 405,345***	***$ 477,407***	***$ 494,307***	***$ 515,807***	***$ 538,007***

C. SEWER CUSTOMER CHARACTERISTICS

The key factors used in allocating costs as a part of the sewer cost-of-service analysis include the estimated effluent (flow) going to the wastewater treatment plant from each customer class as well as the effluent strengths (i.e., biochemical oxygen demand and total suspended solids). Water consumption data from June 2013 through April 2014 was used to estimate flow at the District's wastewater treatment plant, although residential bills reflect average winter consumption because it is correlated to the amount of residential effluent that goes to the treatment plant.

For residential customers, the average winter water consumption is assumed to include two billing periods; January/February and March/April were considered the "winter" months because consumption is

lowest in these months. Based on water consumption records, residential customers account for approximately 95% of effluent at the plant (i.e., single-family = 92% and multi-family = 2.7%). Commercial customers account for only 5% of the flow that goes to the treatment plant. These estimates are summarized in **Figure 9**.

Figure 9. Summary of Estimated Flow to Treatment Plant

Development of the Volume Allocation Factor						
Customer Class	*Jun'13-Apr'14* **Annual Water Consumption (ccf)[1]**	*Jun'13-Apr'14* **Avg. WINTER Water Use (ccf/mo.)[1]**	**Estimated Winter-Based Annual Vol. (ccf/yr.)[2]**	*Jun'13-Apr'14* **Winter-Based Volume (MGD)**	**Adjusted Annual Volume Total (ccf)[3]**	**Percent of Adjusted Volume**
Single Family Residential	189,781	9,493	113,913	0.2335	80,982	**92.1%**
Multi Family Residential	4,596	279	3,350	0.0069	2,381	**2.7%**
Commercial & Industrial	6,434	296	6,434	0.0132	4,574	**5.2%**
Municipal	52	4	52	0.0001	37	**0.0%**
Total	**200,863**	**10,072**	**123,749**	**0.2536**	**87,974**	**100%**
				Total Flow at WWTP (million gallons)		*65.813*
				Target Total (ccf)		*87,974*
				Target Total (ccf) (Adjusted for 5% Conservation)		*83,575*

1. Consumption data source: Hidden Valley Lake Community Services District utility billing system data as provided by District Staff on June 27, 2014.

2. Estimated annual volume is based on average winter water consumption for Residential customers, and is equal to the annual water consumption for commercial, industrial and municipal customers.

(3) Includes an assumed winter water conservation of 5%; assumes winter conservation is about half of annual residential conservation of 10%.

Customer Class Effluent Strengths – Effluent strength factors for individual customer classes are often determined by using the State Water Resources Control Board (SWRCB) Revenue Program Guidelines, Appendix G, page G-21 "Commercial User Strength Characteristics," as described below.

- All residential customers, including single-family, multi-family and mobile homes, have BOD and TSS strength factors of 200 mg/l, which is within the normal range for residential users.
- Commercial standard strength customers can have strength factors that are higher or lower than residential strength factors, depending on the particular type of commercial uses. In the District's case, the District believes typical commercial customers are consistent with professional office space, which is lower than residential. Therefore, strength factors assigned to commercial class customers were lower than residential customers. As shown in Figure 9, commercial customers only account for about 5% of the District's effluent, and play a minor overall role in calculating sewer rates.

Figure 10 summarizes the flow and strength characteristics of each of the utility's customer classes.

Figure 10. Summary of Annual Flow and Strength Characteristics by Customer Class

Development of the Strength Allocation Factor									
	Biochemical Oxygen Demand (BOD)					**Total Suspended Solids (TSS)**			
Customer Class	**Adjusted Annual Flow**	**Average Strength Factor (mg/l)[1]**	**Calculated BOD (lbs./yr.)**	**Adjusted BOD (lbs./yr.)[2]**	**Percent of Total**	**Average Strength Factor (mg/l)[1]**	**Adjusted TSS (lbs./yr.)[2]**	**Adjusted TSS (lbs./yr.)**	**Percent of Total**
Single Family Residential	80,982	200	101,038	127,597	**95%**	490	247,543	267,772	**95.4%**
Multi Family Residential	2,381	200	2,971	3,752	**3%**	490	7,279	7,874	**2.8%**
Commercial & Industrial	4,574	80	2,283	2,883	**2%**	160	4,566	4,939	**1.8%**
Municipal	37	200	46	58	**0%**	490	112	121	**0.0%**
Total	**87,974**		**106,338**	**134,290**	**100%**		**259,500**	**280,706**	**100%**

1. Average strength factors for BOD and TSS are derived from the State Water Resources Control Board Revenue Program Guidelines, Appendix G. However, the TDS average strength factors reflect the District's WWTP data indicating exceptionally high TDS effluent strengths.

2. Adjustments are made to calibrate estimated BOD and TSS loadings with actual treatment records.

Figure 11 compares the total number of accounts and billing units (depending on how customers are billed) by customer class. **Figure 12** then summarizes the total rate revenue requirements by customer class resulting from the cost-of-service cost allocation process.

Figure 11. Number of Accounts and Billing Units by Customer Class

Development of the Customer Allocation Factor				
Customer Class	Number of Accounts[1]	Percent of Total Accounts	Number of Billing Units[2]	Percent of Total Billing Units
Single Family Residential	1,429	**97.2%**	1,451	**95.1%**
Multi Family Residential	27	**1.8%**	34	**2.2%**
Commercial & Industrial (3)	13	**0.9%**	39	**2.6%**
Municipal	1	**0.1%**	1	**0.1%**
Total	**1,470**	**100.0%**	**1,525**	**100.0%**

1. Number of accounts is from the Hidden Valley Lake Community Services District utility billing system data, as of April 2014.

2. Billing units provided by Hidden Valley Lake Community Services District staff on August 6, 2014 in file Capital FAC HEU breakdown 2013-2014.xls.

3. Commercial Class includes customers with meter sizes marked as "1,1", "1,2", and "2,2". The customers have been re-categorized as having either a 1-inch (1,1) or 2-inch (1,2 & 2,2) meter.

Figure 12. Summary of Rate Revenue Requirements by Customer Class

Allocation of FY 2014/15 Revenue Requirements by Customer Class						
Customer Class	Cost Classification Components				Cost-of-Service Net Revenue Reqts.	% of COS Net Revenue Reqts.
	Volume	Treatment		Customer Related		
		BOD	TDS			
Net Revenue Requirements[1]	***$ 469,169***	***$ 196,754***	***$ 196,754***	***$ 106,423***	***$ 969,100***	--
	48.4%	*20.3%*	*20.3%*	*11.0%*	*100.0%*	
Single Family Residential	$ 431,879	$ 186,948	$ 187,688	$ 103,454	**$ 909,970**	93.9%
Multi Family Residential	$ 12,700	$ 5,497	$ 5,519	$ 1,955	**$ 25,671**	2.6%
Commercial & Industrial	$ 24,394	$ 4,224	$ 3,462	$ 941	**$ 33,021**	3.4%
Municipal	$ 196	$ 85	$ 85	$ 72	**$ 438**	0.0%
Total	**$ 469,169**	**$ 196,754**	**$ 196,754**	**$ 106,423**	**$ 969,100**	**100%**

1. Revenue requirement for each customer class is determined by multiplying the revenue requirement from each cost classification by the allocation factors for each customer class.

2. Per Hidden Valley Lake Community Services District's utility billing data for fiscal year 2013/14.

D. CURRENT VS. PROPOSED SEWER RATES

The rate design process provided an opportunity to evaluate several rate-design objectives and policies, such as revenue stability, equity among customer classes, and how changing the amount of rate revenue collected from fixed monthly vs. volumetric charges affects typical customer bills. Currently, all residential customers pay the same fixed monthly charge; commercial customers pay the same fixed charge based on their number of household equivalent units. Neither residential nor commercial customers currently pay any volumetric-based charges.

The proposed rates incorporate a volumetric charge for both residential and commercial customers. While all customers pay the same fixed charge of $38.92 per month, residential customers will pay a volumetric rate of $2.07/hcf based on their average winter water use. Commercial users will pay a volumetric rate of $2.25/hcf based on their monthly water use. Sometimes there is a concern about irrigation for commercial customers and its impact on sewer bills; these commercial water customers can install separate irrigation meters and, therefore, remove irrigation water use from the calculation of their sewer charges.

Figure 13 shows current and proposed sewer rates for FY 2014/15 through FY 2018/19. More detailed tables documenting the development of the proposed sewer rates are documented in Appendix B.

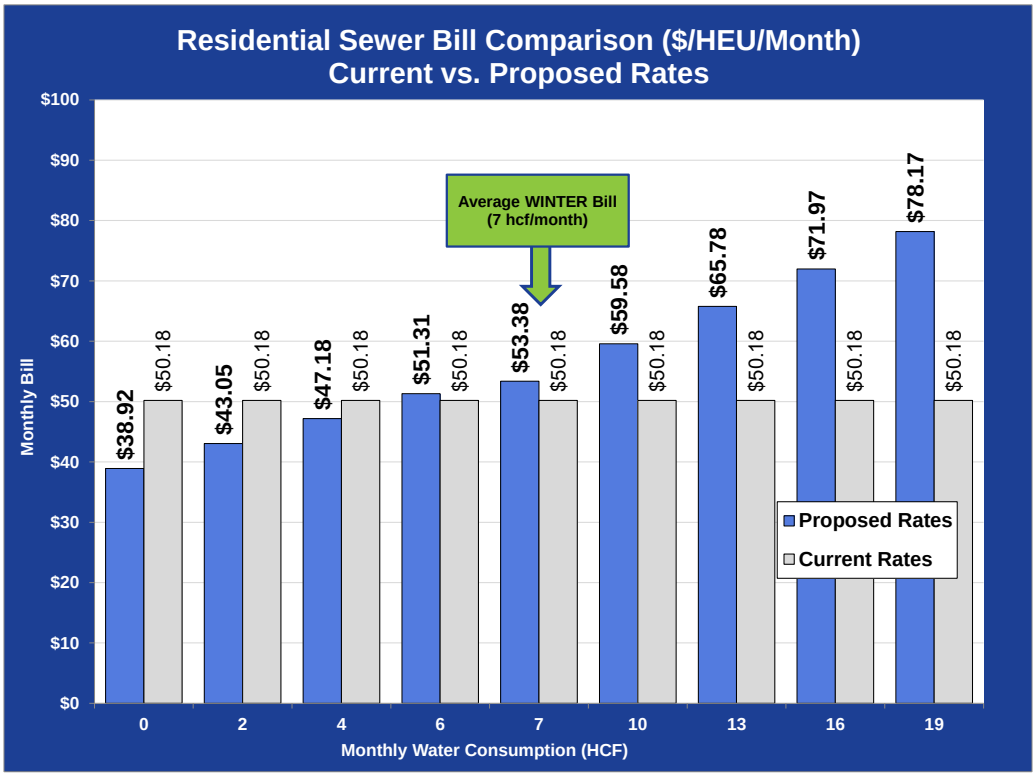
Figure 13. Current vs. Proposed Sewer Rates

Sewer Rate Schedule	Current Rates	Recommended Sewer Rates				
		FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19
Projected Increase in Rate Revenue per Financial Plan:		*10.00%*	*8.00%*	*8.00%*	*8.00%*	*6.00%*
Monthly Fixed Service Charge						
Residential[1]	$50.18	$38.92	$42.03	$45.39	$49.02	$51.96
Monthly Fixed Service Charge						
Commercial, Industrial, Municipal (per HEU)	$50.18	$38.92	$42.03	$45.39	$49.02	$51.96
Volumetric Charge ($/HCF)						
Residential (Applied to *Avg. Winter* Water Use)[2]	*N.A.*	$2.07	$2.23	$2.41	$2.60	$2.76
Commercial (Applied to *Monthly* Water Use)	*N.A.*	$2.25	$2.43	$2.62	$2.83	$3.00

1. Includes Single- and Multi-Family; Multi-Family are assessed on the basis of their number of HEU's.
2. Winter average is January through April billing data.
3. It is assumed that winter water use won't be affected by drought stages, therefore the adjustment for drought stages only applies to Commercial Customers.

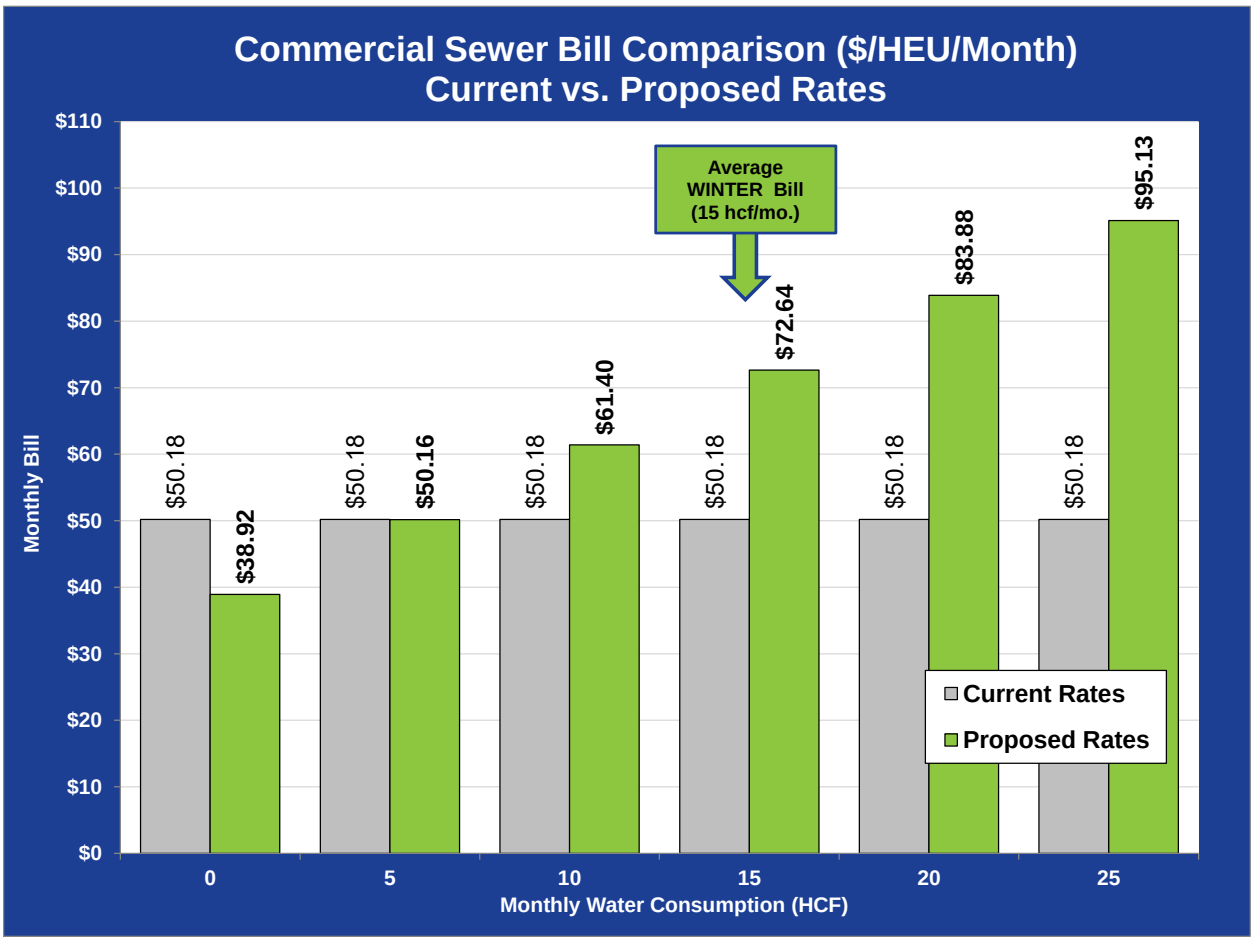
Because of the changes resulting from the cost-of-service adjustments and the inclusion of a volumetric component to the rates, customers will see different increases in their monthly bill depending on the water consumption level. **Figure 14** compares the average monthly sewer bills[7] for residential customers under current and proposed rates; **Figure 15** compares commercial bills under current vs. proposed rates.

Figure 14. Residential Sewer Bill Comparison – Current vs. Proposed Rates



[7] Residential customers are billed based average winter water use and their sewer bill is fixed for the next 12 months.

Figure 15. Commercial Sewer Bill Comparison – Current vs. Proposed Rates



SECTION 4. RECOMMENDATIONS AND NEXT STEPS

CONSULTANT RECOMMENDATIONS

NBS recommends the District take the following actions for the water and sewer rates:

- **Approve and Accept This Study Report:** NBS recommends the District Board formally approve and adopt this report and its recommendations. This will provide documentation of the rate study analyses and the basis for analyzing potential changes to future rates.
- **Complete a Review by a Qualified Attorney:** This rate study outlines proposed new rates. Prior to adoption, these rates should be reviewed by competent legal counsel with respect to compliance with Proposition 218 and related State laws, as well as legal assistance developing acceptable language for new resolutions to implement these rates.
- **Implement Recommended Levels of Rate Increases and Proposed Rates**: Based on the analysis presented in this report, the District Board should implement the proposed rates recommended in this report for the next five years as shown in Figures 4 and 13. These rate adjustments are structured based on industry standards and are necessary to ensure the following objectives are met:
    - Water rates promote water conservation and reflect the cost of providing water service to each customer class.
    - Sewer rates more appropriately reflect the cost of providing sewer service to each customer class; in particular, residential volumetric charges based on average winter water use improve equity between customers in the residential class.
    - Maintaining the financial health of the District's water and sewer utilities.
- **Adopt Reserve Fund Targets**: NBS recommends the District Board adopt the consultant proposed reserve fund targets described in Sections 2 and 3 of this report for the water and sewer utilities. The District should periodically evaluate reserve fund levels and make it a long-term goal to achieve these levels for the Operating, Capital, and Debt Reserves.

NEXT STEPS

- **Annually Review Rates and Revenue –** Any time an Agency adopts new utility rates or rate structures, those new rates should be closely monitored over the next several years to ensure the revenue generated is sufficient to meet the annual revenue requirements. Changing economic and drought-related water consumption patterns underscore the need for this review, as well as potential and unseen changing revenue requirements, particularly those related to environmental regulations that can significantly affect capital improvements and repair and replacement costs.

  Note: The attached Technical Appendices provide more detailed information on the analysis of the water and sewer revenue requirements, cost of serve and rate design analyses that have been summarized in this report.

PRINCIPAL ASSUMPTIONS AND CONSIDERATIONS

In preparing this report and the recommendations included herein, NBS has relied on a number of principal assumptions and considerations with regard to financial matters, number of customer accounts, conditions and events that may occur in the future. This information and assumptions, including the District's budgets and customer account information from District staff, were provided by sources we believe to be reliable, although NBS has not independently verified this data.

While we believe NBS' use of such information and assumptions is reasonable for the purpose of this report and its recommendations, some assumptions will invariably not materialize as stated herein or may vary significantly due to unanticipated events and circumstances. Therefore, the actual results can be expected to vary from those projected to the extent that actual future conditions differ from those assumed by us or provided to us by others.

APPENDIX A – WATER RATE ANALYSIS

TABLE 1
FINANCIAL PLAN AND SUMMARY OF REVENUE REQUIREMENTS

33% CIP Funding Scenario

RATE REVENUE REQUIREMENTS SUMMARY	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Sources of Water Funds						
Rate Revenue Under Prevailing Rates (1,2)	$ 1,229,800	$ 1,229,800	$ 1,229,800	$ 1,229,800	$ 1,229,800	$ 1,229,800
Non-Rate Revenues	78,300	77,500	77,500	77,500	77,500	77,500
Interest Earnings (in Operating & Capital Reserves) (3)	-	385	494	752	1,804	4,333
Total Sources of Funds	**$ 1,308,100**	**$ 1,307,685**	**$ 1,307,794**	**$ 1,308,052**	**$ 1,309,104**	**$ 1,311,633**
Uses of Water Funds						
Operating Expenses (4):						
Salaries	$ 449,553	$ 463,040	$ 476,931	$ 491,239	$ 505,976	$ 521,155
Benefits	$ 223,708	$ 243,761	$ 265,657	$ 289,569	$ 315,686	$ 344,217
Other Operating Expenses	653,510	673,115	693,309	714,108	735,531	757,597
Subtotal: Operating Expenses	$ 1,326,771	$ 1,379,916	$ 1,435,897	$ 1,494,916	$ 1,557,194	$ 1,622,969
Other Expenditures:						
Existing Debt Service	$ 172,507	$ 172,239	$ 171,960	$ 171,671	$ 171,374	$ 171,064
New Debt Service	-	-	56,450	56,450	56,450	56,450
Rate-Funded Capital Expenses	-	85,000	85,000	85,000	85,000	93,229
Subtotal: Other Expenditures	$ 172,507	$ 257,239	$ 313,410	$ 313,121	$ 312,824	$ 320,744
Total Uses of Water Funds	**$ 1,499,278**	**$ 1,637,155**	**$ 1,749,307**	**$ 1,808,037**	**$ 1,870,018**	**$ 1,943,713**
plus: Revenue from Rate Increases	73,788	299,087	467,265	603,030	749,657	809,040
Annual Surplus/(Deficit)	**$ (117,390)**	**$ (30,382)**	**$ 25,752**	**$ 103,045**	**$ 188,742**	**$ 176,961**
Net Revenue Reqt. *(Total Uses less Non-Rate Revenue)*	**$ 1,420,978**	**$ 1,559,269**	**$ 1,671,313**	**$ 1,729,785**	**$ 1,790,714**	**$ 1,861,880**
Total Rate Revenue After Rate Increases	**$ 1,377,376**	**$ 1,528,887**	**$ 1,697,065**	**$ 1,832,830**	**$ 1,979,457**	**$ 2,038,840**
Projected Annual Rate Revenue Increase	***12.00%***	***11.00%***	***11.00%***	***8.00%***	***8.00%***	***3.00%***
Cumulative Increase from Annual Revenue Increases	*12.00%*	*24.32%*	*38.00%*	*49.03%*	*60.96%*	*65.79%*
Debt Coverage After Rate Increase	*0.32*	*1.32*	*1.48*	*1.82*	*2.20*	*2.19*

(1) FY 2014/15 Revenues are proposed revenues for 2014/15 including an additional $174,000 in revenues used to pay the annual CIEDB loan payment; the CIEDB payment funds are not included in budgeted revenues and have been added back for the purpose of this study (email from District staff dated October 8, 2014).
(2) Customer growth is estimated at 0% per District staff.
(3) Interest earnings for FY 2014/15 are included in non-rate revenue.
(4) The FY 2014/15 operating expenses are from the Districts Proposed Budget. Inflationary factors are applied to these expenses to project costs in 2015/16 and beyond.

TABLE 2
RESERVE FUND SUMMARY

33% CIP Funding Scenario

SUMMARY OF CASH ACTIVITY	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Total Beginning Cash *(1)*	**$ 442,570**					
Operating Reserve						
Beginning Reserve Balance *(2)*	$ 219,370	$ 101,980	$ 46,598	$ 48,105	$ 128,153	$ 294,473
Plus: Net Cash Flow (After Rate Increases)	(117,390)	(30,382)	25,752	103,045	188,742	176,961
Plus: Transfer of Debt Reserve Surplus	-	-	755	2,002	2,578	3,158
Less: Transfer Out to OPEB Reserve Fund (3)	-	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)
Less: Transfer Out to Capital Replacement Reserve	-	-	-	-	-	-
Ending Operating Reserve Balance	***$ 101,980***	***$ 46,598***	***$ 48,105***	***$ 128,153***	***$ 294,473***	***$ 449,592***
Target Ending Balance (90-days of O&M)	*$ 375,000*	*$ 409,000*	*$ 437,000*	*$ 452,000*	*$ 468,000*	*$ 486,000*
Capital Rehabilitation & Replacement Reserve						
Beginning Reserve Balance	$ 52,200	$ 52,200	$ 52,200	$ 52,200	$ 52,200	$ 52,200
Plus: Grant Proceeds	-	-	-	-	-	-
Plus: Transfer of Operating Reserve Surplus	-	-	-	-	-	-
Less: Use of Reserves for Capital Projects	-	-	-	-	-	-
Ending Capital Improvement & Depreciation Reserve Ba	***$ 52,200***	***$ 52,200***	***$ 52,200***	***$ 52,200***	***$ 52,200***	***$ 52,200***
Target Ending Balance (1.5% of Assets) (4)	*$ 59,200*	*$ 74,100*	*$ 87,600*	*$ 102,900*	*$ 118,300*	*$ 147,000*
Ending Balance - Excludes Restricted Reserves	**$ 154,180**	**$ 98,798**	**$ 100,305**	**$ 180,353**	**$ 346,673**	**$ 501,792**
Minimum Target Ending Balance - Excludes Restricted	**$ 434,200**	**$ 483,100**	**$ 524,600**	**$ 554,900**	**$ 586,300**	**$ 633,000**
Ending Surplus/(Deficit) Compared to Reserve Targets	***$ (280,020)***	***$ (384,302)***	***$ (424,295)***	***$ (374,547)***	***$ (239,627)***	***$ (131,208)***
Restricted Reserves:						
Bond Project Fund						
Beginning Reserve Balance	$ -	$ -	$ 752,988	$ 549,875	$ 373,419	$ 187,499
Plus: SRF Loan Funding Proceeds	-	1,050,000	-	-	-	-
Plus: Revenue Bond Proceeds	-	-	-	-	-	-
Less: Use of Bond & Loan Funds for Capital Projects	-	(297,012)	(203,112)	(176,456)	(185,921)	(187,499)
Ending Bond Project Fund Balance	***$ -***	***$ 752,988***	***$ 549,875***	***$ 373,419***	***$ 187,499***	***$ -***
Target Ending Balance	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*
Debt Reserve						
Beginning Reserve Balance (5)	$ 171,000	$ 171,428	$ 171,856	$ 228,410	$ 228,121	$ 227,824
Plus: Reserve Funding from New Debt Obligations	-	-	56,450	-	-	-
Plus: Interest Earnings	428	429	859	1,713	2,281	2,848
Less: Transfer of Surplus to Operating Reserve	-	-	(755)	(2,002)	(2,578)	(3,158)
Ending Debt Reserve Balance	***$ 171,428***	***$ 171,856***	***$ 228,410***	***$ 228,121***	***$ 227,824***	***$ 227,514***
Target Ending Balance	*$ 172,507*	*$ 172,239*	*$ 228,410*	*$ 228,121*	*$ 227,824*	*$ 227,514*
OPEB Reserve Fund						
Beginning Reserve Balance	$ -	$ -	$ 25,000	$ 50,125	$ 75,501	$ 101,256
Plus: Annual Contributions	-	25,000	25,000	25,000	25,000	25,000
Plus: Interest Earnings	-	-	125	376	755	1,266
Less: Transfer our for Retirement Benefits	-	-	-	-	-	-
Ending OPEB Reserve Balance	***$ -***	***$ 25,000***	***$ 50,125***	***$ 75,501***	***$ 101,256***	***$ 127,522***
Target Ending Balance (6)	*$ -*	*$ 25,000*	*$ 50,125*	*$ 75,501*	*$ 101,256*	*$ 127,522*
Annual Interest Earnings Rate (7)	*0.25%*	*0.25%*	*0.50%*	*0.75%*	*1.00%*	*1.25%*

(1) Beginning cash balance is from the Statement of Net Position, Enterprise Funds, Water Operations from June 30, 2013.

(2) The beginning Operating Reserve balance is equal to the amount in the Cash and investments account, per the Statement of Net Position, Enterprise Funds, Water Operations from June 30, 2013.

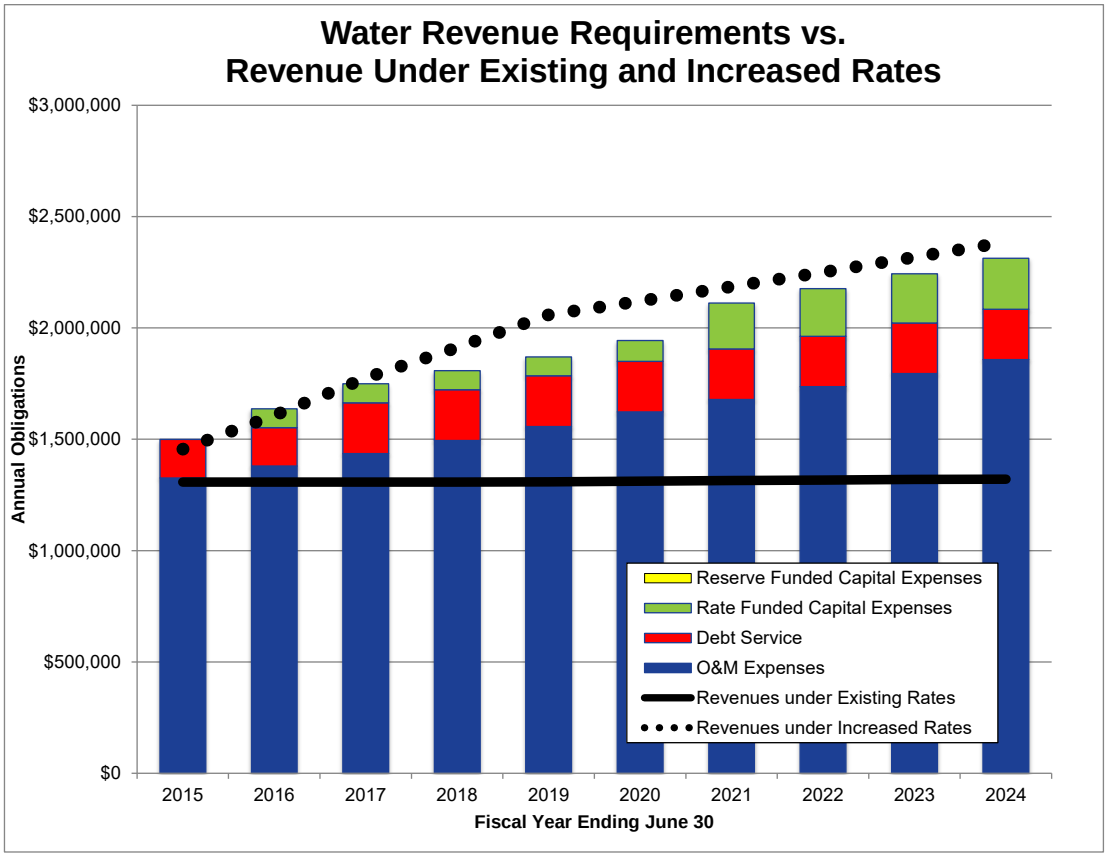
(3) Per District Staff, in an effort to fully fund OPEB liabilities, it is assumed in this analysis that the Utility will begin accumulating $25,000 per year to deposit in an OPEB Reserve fund.

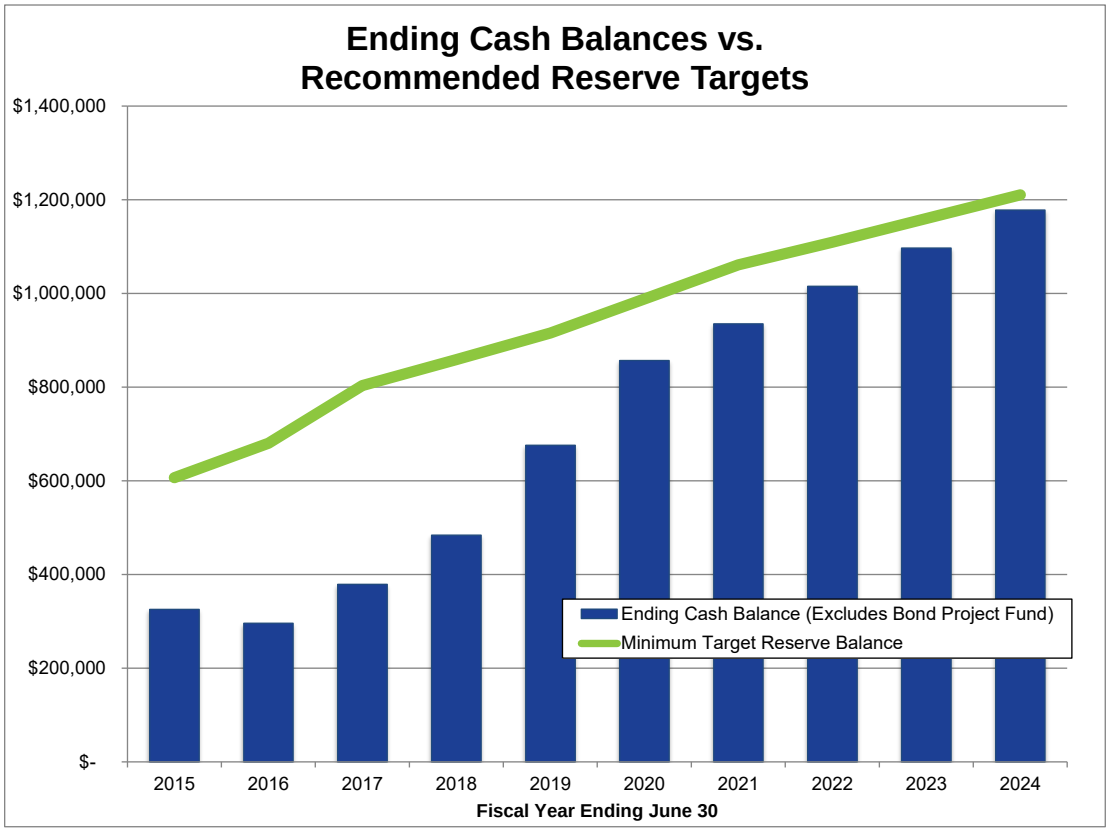
(4) The Capital Rehab & Replacement reserve target is set to 1.5% of net assets, per direction from District Staff.

(5) The District is holding $171,000 in reserve for the CIEDB Loan and it is part of the total beginning cash balance of $442,570 for the Water utility, per District Staff 10/8/201

(6) The target ending balance for the OPEB reserve is preliminarily set to the annual contribution amount.

(7) Historical interest earning rates were referenced on the California Treasurer's Office website for funds invested in LAIF. Future years earnings were conservatively estimated through 2021 and phase into the historical 10 year average interest earnings rate.


Water Revenue Requirements vs.
Revenue Under Existing and Increased Rates
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
Annual Obligations
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Fiscal Year Ending June 30
Reserve Funded Capital Expenses
Rate Funded Capital Expenses
Debt Service
O&M Expenses
Revenues under Existing Rates
Revenues under Increased Rates


Ending Cash Balances vs.
Recommended Reserve Targets
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$-
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Fiscal Year Ending June 30
Ending Cash Balance (Excludes Bond Project Fund)
Minimum Target Reserve Balance

CAPITAL FUNDING SUMMARY

33% CIP Funding Scenario

CAPITAL FUNDING FORECAST	Budget	Projected				
Funding Sources:	**FY 2014/15**	**FY 2015/16**	**FY 2016/17**	**FY 2017/18**	**FY 2018/19**	**FY 2019/20**
Grants	$ -	$ -	$ -	$ -	$ -	$ -
Use of Capacity Fee Reserves	-	-	-	-	-	-
SRF Loan Funding	-	297,012	203,112	176,456	185,921	187,499
Use of New Revenue Bond Proceeds	-	-	-	-	-	-
Use of Capital Rehabilitation and Replacement Reserve	-	-	-	-	-	-
Rate Revenue	-	85,000	85,000	85,000	85,000	93,229
Total Sources of Capital Funds	**$ -**	**$ 382,012**	**$ 288,112**	**$ 261,456**	**$ 270,921**	**$ 280,728**
Uses of Capital Funds:						
Total Project Costs	$ -	$ 382,012	$ 288,112	$ 261,456	$ 270,921	$ 280,728
Capital Funding Surplus (Deficiency)	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
SRF Loan Funding	***$ -***	***$ 1,050,000***	***$ -***	***$ -***	***$ -***	***$ -***
New Revenue Bond Proceeds	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***

$ 1,400,000 Original SRF Loan Funding Amount

EXISTING DEBT OBLIGATIONS	Budget	Projected				
Annual Repayment Schedules:	**FY 2014/15**	**FY 2015/16**	**FY 2016/17**	**FY 2017/18**	**FY 2018/19**	**FY 2019/20**
CIEDB Loan						
Principal Payment	$ 89,642	$ 92,761	$ 95,989	$ 99,330	$ 102,787	$ 106,363
Interest Payment	$ 76,288	$ 73,170	$ 69,942	$ 66,600	$ 63,144	$ 59,566
Annual Fee	$ 6,577	$ 6,308	$ 6,029	$ 5,741	$ 5,443	$ 5,135
Subtotal: Annual Debt Service	**$ 172,507**	**$ 172,239**	**$ 171,960**	**$ 171,671**	**$ 171,374**	**$ 171,064**
Coverage Requirement ($-Amnt above annual payment) (1)	$ 189,758	$ 189,463	$ 189,156	$ 188,838	$ 188,511	$ 188,170
Reserve Requirement (total fund balance) (2)	$ 172,507	$ 172,239	$ 171,960	$ 171,671	$ 171,374	$ 171,064
Grand Total: Existing Annual Debt Service	**$ 172,507**	**$ 172,239**	**$ 171,960**	**$ 171,671**	**$ 171,374**	**$ 171,064**
Grand Total: Existing Annual Coverage Requirement	**$ 189,758**	**$ 189,463**	**$ 189,156**	**$ 188,838**	**$ 188,511**	**$ 188,170**
Grand Total: Existing Debt Reserve Target	**$ 172,507**	**$ 172,239**	**$ 171,960**	**$ 171,671**	**$ 171,374**	**$ 171,064**

Existing Annual Debt Obligations to be Satisfied by Water Rates :

Existing Annual Debt Service	***$ 172,507***	***$ 172,239***	***$ 171,960***	***$ 171,671***	***$ 171,374***	***$ 171,064***
Existing Annual Coverage Requirement	***$ 189,758***	***$ 189,463***	***$ 189,156***	***$ 188,838***	***$ 188,511***	***$ 188,170***
Existing Debt Reserve Target	***$ 172,507***	***$ 172,239***	***$ 171,960***	***$ 171,671***	***$ 171,374***	***$ 171,064***

(1) The District is required to fix, charge and collect from water rates, equal to a minimum of 110% of the maximum annual debt service payment.

(2) The Reserve Requirement in future years is equal to the lesser of: the maximum annual debt service payment, or the maximum amount then permitted under the Code.

Classification of Expenses								
Budget Categories		Total Revenue Requirements	Commodity	Capacity	Customer	Basis of Classification		
		FY 2014/15	(COM)	(CAP)	(CA)	(COM)	(CAP)	(CA)
Water Operations Expenses								
130-5010	Salary & Wages	$ 449,553	$ 134,866	$ 292,209	$ 22,478	30%	65%	5%
130-5020	Employee Benefits	$ 99,398	$ 29,819	$ 64,609	$ 4,970	30%	65%	5%
130-5021	Retirement Benefits	$ 77,261	$ 23,178	$ 50,220	$ 3,863	30%	65%	5%
130-5025	Retiree Health Benefits	$ 5,027	$ 1,508	$ 3,268	$ 251	30%	65%	5%
130-5030	Director Health Benefits	$ 42,022	$ 12,607	$ 27,314	$ 2,101	30%	65%	5%
130-5040	Election Expense	$ -	$ -	$ -	$ -	30%	65%	5%
130-5060	Gasoline, Oil & Fuel	$ 12,500	$ 3,750	$ 8,125	$ 625	30%	65%	5%
130-5061	Vehicle Maintenance	$ 12,500	$ 3,750	$ 8,125	$ 625	30%	65%	5%
130-5062	Taxes & License	$ 1,600	$ 480	$ 1,040	$ 80	30%	65%	5%
120-5063	Certifications	$ 800	$ 240	$ 520	$ 40	30%	65%	5%
130-5074	Insurance	$ 21,100	$ 6,330	$ 13,715	$ 1,055	30%	65%	5%
130-5075	Bank Fees	$ 7,000	$ 2,100	$ 4,550	$ 350	30%	65%	5%
130-5080	Membership & Subscriptions	$ 17,200	$ 5,160	$ 11,180	$ 860	30%	65%	5%
130-5090	Office Supplies	$ 6,600	$ 1,980	$ 4,290	$ 330	30%	65%	5%
130-5092	Postage & Shipping	$ 1,500	$ 450	$ 975	$ 75	30%	65%	5%
130-5110	Contractual Services	$ 49,650	$ 14,895	$ 32,273	$ 2,483	30%	65%	5%
130-5121	Legal Services	$ 12,500	$ 3,750	$ 8,125	$ 625	30%	65%	5%
130-5122	Engineering Services	$ 15,000	$ 4,500	$ 9,750	$ 750	30%	65%	5%
130-5123	Other Professional Service	$ 144,750	$ 43,425	$ 94,088	$ 7,238	30%	65%	5%
130-5124	Water Rights	$ 10,000	$ 10,000	$ -	$ -	100%	0%	0%
130-5130	Printing & Publication	$ 500	$ 150	$ 325	$ 25	30%	65%	5%
130-5135	Newsletter	$ 1,000	$ 300	$ 650	$ 50	30%	65%	5%
130-5145	Equipment Rental	$ -	$ -	$ -	$ -	30%	65%	5%
130-5148	Operating Supplies	$ 10,000	$ 3,000	$ 6,500	$ 500	30%	65%	5%
130-5150	Repair & Replace	$ 52,000	$ 15,600	$ 33,800	$ 2,600	30%	65%	5%
130-5155	Maint Bldg & Grounds	$ 5,300	$ 1,590	$ 3,445	$ 265	30%	65%	5%
130-5156	Custodial Services	$ 9,450	$ 2,835	$ 6,143	$ 473	30%	65%	5%
130-5157	Security	$ 2,000	$ 600	$ 1,300	$ 100	30%	65%	5%
130-5170	Travel & Meetings	$ 1,300	$ 390	$ 845	$ 65	30%	65%	5%
130-5175	Education/Seminars	$ 7,500	$ 2,250	$ 4,875	$ 375	30%	65%	5%
130-5176	Director Training	$ 200	$ 60	$ 130	$ 10	30%	65%	5%
130-5179	ADM Misc Expense	$ 500	$ 150	$ 325	$ 25	30%	65%	5%
130-5191	Telephone	$ 9,000	$ 2,700	$ 5,850	$ 450	30%	65%	5%
130-5192	Electricity	$ 165,000	$ 148,500	$ 16,500	$ -	90%	10%	0%
130-5193	Other Utilities	$ 1,800	$ 540	$ 1,170	$ 90	30%	65%	5%
130-5195	Env/Monitoring	$ 25,000	$ 7,500	$ 16,250	$ 1,250	30%	65%	5%
130-5198	Annual Operating Fees	$ 27,000	$ 8,100	$ 17,550	$ 1,350	30%	65%	5%
130-5310	Equipment - Field	$ 1,000	$ 300	$ 650	$ 50	30%	65%	5%

Classification of Expenses								
Budget Categories		Total Revenue Requirements	Commodity	Capacity	Customer	Basis of Classification		
		FY 2014/15	(COM)	(CAP)	(CA)	(COM)	(CAP)	(CA)
Water Operations Expenses, continued								
130-5311	Equipment - Office	$ 2,200	$ 660	$ 1,430	$ 110	30%	65%	5%
130-5312	Tools - Field	$ 800	$ 240	$ 520	$ 40	30%	65%	5%
130-5315	Safety Equipment	$ 4,100	$ 1,230	$ 2,665	$ 205	30%	65%	5%
130-5055	Water Conservation	$ 15,000	$ 12,750	$ 1,500	$ 750	85%	10%	5%
130-5545	Recording Fees	$ 160	$ 48	$ 104	$ 8	30%	65%	5%
130-5580	Transfers Out	$ -	$ -	$ -	$ -	30%	65%	5%
130-5585	Flood Control	$ -	$ -	$ -	$ -	30%	65%	5%
130-5591	Expenses Applicable To P/Y	$ -	$ -	$ -	$ -	30%	65%	5%
130-5650	Capital Reserves	$ -	$ -	$ -	$ -	30%	65%	5%
Grand Total: Water Operating Expen		**$ 1,326,771**	**$ 512,281**	**$ 756,901**	**$ 57,589**	**38.6%**	**57.0%**	**4.3%**

Classification of Expenses, continued								
Budget Categories	Total Revenue Requirements	Commodity	Capacity	Customer	Basis of Classification		
	FY 2014/15	(COM)	(CAP)	(CA)	(COM)	(CAP)	(CA)
Debt Service Payments							
CIEDB Loan	$ 172,507	$ -	$ 172,507	$ -	0%	100%	0%
New Debt Issue - SRF Loan	$ -	$ -	$ -	$ -	30%	65%	5%
New Debt Issue - Revenue Bond	$ -	$ -	$ -	$ -	30%	65%	5%
Total Debt Service Payments	**$ 172,507**	**$ -**	**$ 172,507**	**$ -**	**0.0%**	**100.0%**	**0.0%**
Capital Expenditures							
Rate Funded Capital Expenses	$ -	$ -	$ -	$ -	0%	100%	0%
TOTAL REVENUE REQUIREMENTS	**$ 1,499,278**	**$ 512,281**	**$ 929,408**	**$ 57,589**	**34.2%**	**62.0%**	**3.8%**
Less: Non-Rate Revenues							
130-4035 Reconnect Fees	$ (10,000)	$ (3,417)	$ (6,199)	$ (384)	34.2%	62.0%	3.8%
130-4038 COMM Water Connections	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4039 Water Meter Installation	$ (300)	$ (103)	$ (186)	$ (12)	34.2%	62.0%	3.8%
130-4040 Recording Fee Income	$ (100)	$ (34)	$ (62)	$ (4)	34.2%	62.0%	3.8%
130-4045 Availability Fees	$ (40,000)	$ (13,667)	$ (24,796)	$ (1,536)	34.2%	62.0%	3.8%
130-4110 Commercial Water Use	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4112 Government Water Use	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4115 Water Use Charges	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4117 Water Overage Use Fee	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4118 Water Overage Commercial	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4119 Water Overage Gov't	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4210 Late Fee (10%)	$ (22,000)	$ (7,517)	$ (13,638)	$ (845)	34.2%	62.0%	3.8%
130-4215 Returned Check Fee	$ (800)	$ (273)	$ (496)	$ (31)	34.2%	62.0%	3.8%
130-4300 Misc Income	$ (100)	$ (34)	$ (62)	$ (4)	34.2%	62.0%	3.8%
130-4310 Other Income	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
130-4505 Lease Income	$ (4,200)	$ (1,435)	$ (2,604)	$ (161)	34.2%	62.0%	3.8%
130-4550 Interest Income	$ (800)	$ (273)	$ (496)	$ (31)	34.2%	62.0%	3.8%
130-4591 Income Appl to Prior YRS	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
Calculated Interest Earnings from Financi	$ -	$ -	$ -	$ -	34.2%	62.0%	3.8%
NET REVENUE REQUIREMENTS	**$ 1,420,978**	**$ 485,527**	**$ 880,870**	**$ 54,581**			
Allocation of Revenue Requirements	**100.0%**	**34.2%**	**62.0%**	**3.8%**			

Classification of Expenses, continued Adjustments to Classification of Expenses				
Adjustment for Current Rate Level:	**Total**	**(COM)**	**(CAP)**	**(CA)**
FY 2014/15 Target Rate Rev. After Rate Ir	*$1,377,376*			
Projected Rate Revenue at Current Rates	*$1,229,800*			
FY 2014/15 Projected Rate Increase	*12%*			
Adjusted Net Revenue Req'ts	**$ 1,377,376**	**$ 470,629**	**$ 853,841**	**$ 52,906**
Percent of Revenue		*34.2%*	*62.0%*	*3.8%*

Net Revenue Requirements (60% Fixed / 40% Variable)			
Rate-Design Adjustments to Fixed/Variable %	**40.0%**	**56.00%**	**4.0%**
Rate-Design Adjustments to Fixed/Variable ($)	**$550,950**	**$771,331**	**$55,095**
Variable (Volumetric Rates)	*40%*		
Fixed Charges	*60%*		

Development of the BASE CAPACITY Allocation Factor				
Customer Class	FY 2013/14 Volume (ccf)[1]	% Adjustment for Conservation	Estimated Volume Adjusted for Conservation	Percent of Total Volume
Single Family Residential	314,388	10%	282,949	**95.8%**
Multi Family Residential	4,596	10%	4,136	**1.4%**
Commercial & Industrial	8,659	5%	8,226	**2.8%**
Municipal	165	5%	157	**0.1%**
Total	**327,808**	**--**	**295,468**	**100%**
Recycled Water [2]	1,272,590	5%	1,208,961	*N.A.*

(1) Consumption data source: Hidden Valley Lakes Community Services Department utility billing system data as provided by District Staff on June 27, 2014.

(2) Recycled Water excluded from potable water consumption. One customer only in the District.

Development of the CAPACITY (MAX MONTH) Allocation Factors				
Customer Class	Average Monthly Use (ccf)	Peak Monthly Use[1] (ccf)	Peak Month Factor	Max Day Capacity Factor
Single Family Residential	26,199	40,607	**1.55**	**95.9%**
Multi Family Residential	383	523	**1.36**	**1.2%**
Commercial & Industrial	722	1,194	**1.65**	**2.8%**
Municipal	14	19	**1.41**	**0.0%**
Total	**27,317**	**42,343**	**1.55**	**100%**
Recycled Water [2]	106,049	225,665	**2.13**	**100.0%**

(1) Based on peak monthly data (peak day data not available).

(2) Recycled Water excluded from potable water consumption calculations. One customer only in the District.

Development of the Customer Allocation Factor		
Customer Class	Number of Meters[1]	Percent of Total
Single Family Residential	2,391	**97.7%**
Multi Family Residential	27	**1.1%**
Commercial & Industrial	27	**1.1%**
Municipal	2	**0.1%**
Total	**2,447**	**100.0%**
Recycled Water [2]	1	**0.0%**

(1) Number of meters is per Hidden Valley CSD's utility billing data as of June 2014.

(2) Recycled Water excluded from potable water consumption calculations.

ALLOCATION OF WATER REVENUE REQUIREMENTS:

Classification Components	Cost-of-Service Net Revenue Requirements *(2014-15)*		Adjusted Net Revenue Requirements *(2014-15)*	
Commodity-Related Costs	$ 550,950	*40%*	**$ 223,622**	*16%*
Capacity-Related Costs	$ 771,331	*56%*	**$ 1,086,263**	*79%*
Customer-Related Costs	$ 55,095	*4%*	**$ 67,491**	*5%*
Fire Protection-Related Costs	$ -	*0%*	**$ -**	*0%*
Net Revenue Requirement	$ 1,377,376	*100%*	**$ 1,377,376**	*100%*

Allocation of Unadjusted Net Revenue Requirements - FY 2014/15:

Net Revenue Requirements (60% Fixed / 40% Variable)

Classification Components	Customer Classes				Total
	Single Family Residential	Multi Family Residential	Commercial & Industrial	Municipal	
Commodity-Related Costs	$ 527,606	$ 7,713	$ 15,339	$ 292	**$ 550,950**
Capacity-Related Costs	$ 739,706	$ 9,522	$ 21,748	$ 354	**$ 771,331**
Customer-Related Costs	$ 53,834	$ 608	$ 608	$ 45	**$ 55,095**
Total Net Revenue Requirement	**$ 1,321,146**	**$ 17,843**	**$ 37,695**	**$ 692**	**$ 1,377,376**
% Allocations:	*95.9%*	*1.3%*	*2.7%*	*0.1%*	*100.0%*

PROPOSED VOLUMETRIC CHARGES FOR FY 2014/15:

Net Revenue Requirements (Cost-of-Service Allocation of 60% Fixed / 40% Variable)

Customer Classes	Number of Meters[1]	Water Consumption *(ccf/yr)*[2]	Target Rev. Req't from Vol. Charges	% of Total Rate Revenue	Uniform Commodity Rates *($/ccf)*	*Proposed Rate Structure*
Single Family Residential	2,391	282,949	$ 527,606	38%	$1.865	*Tiered*
Multi Family Residential	27	4,136	$ 7,713	1%	$1.865	*Uniform*
Commercial & Industrial	27	8,226	$ 15,339	1%	$1.865	*Uniform*
Municipal	2	157	$ 292	0%	$1.865	*Uniform*
Total	**2,447**	**295,468**	**$ 550,950**	**40%**		

1. Number of meters by size and class are from the Hidden Valley Lake Community Services District utility billing system data for June 2014 in the following file: NBS_Request_Billed.

2. Water consumption is 5% less than FY 2014/15 consumption by customer class to account for conservation.

PROPOSED 4-TIERED VOLUMETRIC CHARGES FOR SINGLE FAMILY RESIDENTIAL CUSTOMERS FOR FY 2014/15:

Customer Class		Upper Tier Breakpoint[1,2]	Water Consumption (ccf/yr)[3]	Adjusted Water Consumption[4]	Price Differential Between Tiers	Proposed Commodity Rates ($/ccf)	Target Revenue Requirement
Single Family Residential	Tier 1	7.0 hcf/mo.	155,939	155,939	0%	$1.50	$ 234,141
	Tier 2	11.0 hcf/mo.	50,179	42,652	25%	$1.88	$ 80,053
	Tier 3	24.0 hcf/mo.	72,405	57,924	25%	$2.35	$ 135,895
	Tier 4	--	35,864	26,433	25%	$2.93	$ 77,517
Total			**314,388**	**282,949**			**$ 527,606**
			Assumed conservation	*10%*			

1. The Tier 1 breakpoint is set to the average winter water consumption and Tier 2 breakpoint is set to average annual water consumption, for all SFR customers.

2. Consumption by tier is estimated based on the District's current bi-monthly billing data. For purposes of the analysis, NBS assumed that the bi-monthly consumption data could be evenly spread between the two months in each billing period. For example, the billed consumption for June 2013, is be split between June and July 2013.

3. Water consumption is Single-family residential consumption for FY 2013-14.

4. Assumes overall water conservation of 10%.

Net Revenue Requirements (Cost-of-Service Allocation of 60% Fixed / 40% Variable)

Drought Rates Option: Price-Induced Reductions

These drought surcharges assume that District customers will voluntarily reduce water use by half of the targeted reductions required at each Drought Stage. The remaining water use reductions will be price-induced in response to these adopted drought surcharges.

Estimated Drought Reductions Needed and Associated Net Revenue Losses	Non-Drought	Drought Stages			
		Stage 1	Stage 2	Stage 3	Stage 4
Needed Savings per Drought Stage	0%	10%	20%	30%	40%
Annual Water Sales & Reductions					
Projected Normal Water Sales (hcf/yr.)[1]	295,468	295,468	295,468	295,468	295,468
Total Reduction in Water Sales Needed (hcf)[2]	0	29,547	59,094	88,640	118,187
Adjusted Water Sales (After Reductions) (hcf/yr.)	295,468	265,921	236,374	206,828	177,281
Net Loss of Annual Water Sales Revenue ($/year)					
Proposed Uniform Volumetric Rate ($/hcf)[3]	$1.86	$1.86	$1.86	$1.86	$1.86
Net Revenue Loss *(Adjusted for Variable Costs)* ($/yr.)[4]	$0	$46,831	$93,662	$140,492	$187,323
Est. Revenue from Volume Charges	***$ 550,950***	***$ 504,120***	***$ 457,289***	***$ 410,458***	***$ 363,627***

1. From Water Rate Model.
2. Drought Stage % reduction multiplied by Projected Normal Water Sales.
3. From proposed newrates, Alternative #1 60% fixed/40% variable.
4. Volumetric rate times Reduction in Water Sales. About 15% of annual expenses are variable (energy & chemicals); therefore, a 10% reduction in water sales results in an 8.5% revenue loss.

Voluntary and Price-Induced Reductions in Water Use	Drought Stages			
	Stage 1	Stage 2	Stage 3	Stage 4
Reductions in Water Use - Voluntary & Price Induced (%)				
Estimated Voluntary Reductions in Water Use (%)[1]	5%	10%	15%	20%
Price-Induced Reduction in Water Use (%)[2]	5%	10%	15%	20%
Total Water Sales Reduction (%)[3]	10%	20%	30%	40%
Reductions in Water Use - Voluntary & Price Induced (hcf)				
Estimated Voluntary Reductions (hcf)	14,773	29,547	44,320	59,094
Price-Induced Reduction in Water Use (hcf)	14,773	29,547	44,320	59,094
Total Water Sales Reduction (hcf)	29,547	59,094	88,640	118,187

1. Responses to Drought Stages are different for each community. This is an estimate of the initial response of HVLCSD customers. Actual voluntary reductions will be determined by the District's public information and education programs.
2. Total Reductions needed less voluntary reductions.
3. Defined by Drought Stages.

Estimated Water Conservation Within Each Tier	*Water Conservation by Tier for Each Conservation Stage*				
	Non-Drought	Stage 1	Stage 2	Stage 3	Stage 4
Overall Conservation Target	***0.0%***	***10.0%***	***20.0%***	***30.0%***	***40.0%***
Single-Family Residential Customers:					
Tier 1	0%	2%	4%	6%	8%
Tier 2	1%	9%	11%	7%	20%
Tier 3	3%	19%	21%	13%	39%
Tier 4	***5%***	***38%***	***43%***	***27%***	***78%***
All Other Customers:					
Uniform Commodity Rate	0%	10%	20%	30%	40%
Consumption by Class and Tier (hcf/yr.)					
Single-Family Residential Customers:					
Tier 1	155,939	152,820	146,708	137,905	126,873
Tier 2	42,652	38,610	34,498	32,199	25,896
Tier 3	57,924	46,944	36,945	32,022	19,484
Tier 4	26,433	16,412	9,420	6,910	1,499
All Other Customers:					
Uniform Commodity Rate	12,519	11,267	9,014	6,310	3,786
Water Sales *(After Conservation Reductions)*	**295,468**	**266,054**	**236,585**	**215,345**	**177,537**
Reduction in Consumption from Normal Sales	***-***	***29,414***	***58,883***	***80,123***	***117,932***

Estimated Price-Elasticity and Calculated Drought Surcharges	Non-Drought	Drought Stages			
		Stage 1	Stage 2	Stage 3	Stage 4
Estimated Price-Elasticity					
Estimated Price Elasticity[1]	0.0%	-2.0%	-2.5%	-3.0%	-3.0%
Price Increase Needed to Meet Reduction[2]	0.0%	25.0%	40.0%	50.0%	66.7%
Calculated Drought-Stage Volumetric Rates					
Single-Family Residential Customers[3]:					
Tier 1	$1.50	$1.50	$1.50	$1.50	$1.50
Tier 2	$1.88	$2.71	$3.42	$3.90	$5.48
Tier 3	$2.35	$3.85	$5.26	$6.22	$9.78
Tier 4	$2.93	$4.81	$6.57	$7.78	$12.23
All Other Customers:					
Proposed Uniform Volumetric Rate	$1.865	$2.33	$2.61	$2.80	$3.11

1. Price Elasticity is the assumed % reduction in water sales for every 10% increase in price.

2. Based on the price elasticity, this is the price increase needed to achieve the "price-induced" reduction in water sales.

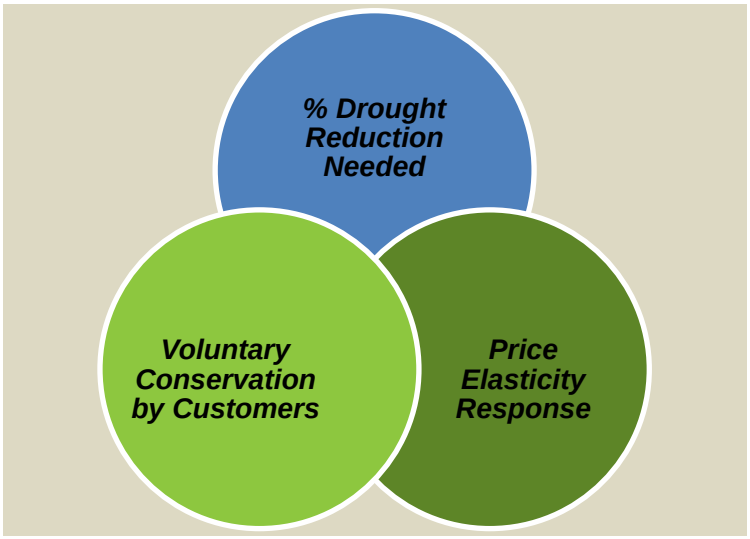
3. Note: residential tiered rates are calculated to average the same rate as for uniform rate customers.

Estimated Revenue from Drought Rates vs. Targeted Volumetric Revenues	Non-Drought	Drought Stages			
		Stage 1	Stage 2	Stage 3	Stage 4
Single Family Residential Customers					
Tier 1	$ 234,141	$ 229,458	$ 220,280	$ 207,063	$ 190,498
Tier 2	$ 80,053	$ 104,699	$ 117,841	$ 125,491	$ 141,844
Tier 3	$ 135,895	$ 180,579	$ 194,155	$ 199,310	$ 190,623
Tier 4	$ 77,517	$ 78,914	$ 61,883	$ 53,759	$ 18,330
Subtotal - Single-Family	$ 527,606	$ 593,650	$ 594,160	$ 585,623	$ 541,295
All Other Customers					
All Water Use	$ 23,344	$ 26,262	$ 23,531	$ 17,648	$ 11,766
Total Revenue from Drought Rates & Consumption	**$ 550,950**	**$ 619,913**	**$ 617,691**	**$ 603,272**	**$ 553,060**
Targeted Revenue[1]	$ 550,950	$ 542,686	$ 534,422	$ 526,158	$ 517,893
Additional Drought Rate Revenue to Reserves	*$ 0*	*$ 77,227*	*$ 83,269*	*$ 77,114*	*$ 35,167*

1. Total Revenue requirements less the 15% reductions in costs due to lower energy and chemical costs.

Calculated Drought Surcharges	Non-Drought	Drought Stages			
		Stage 1	Stage 2	Stage 3	Stage 4
Drought-Stage Factors					
Percent Reduction by Stage	0.0%	10.0%	20.0%	30.0%	40.0%
Price Increase Needed to Meet Reduction[1]	0.0%	25.0%	40.0%	50.0%	66.7%
Calculated Drought-Stage Volumetric Rates					
Single-Family Residential Customers[2]:					
Tier 1	$1.50	$1.50	$1.50	$1.50	$1.50
Tier 2	$1.88	$2.71	$3.42	$3.90	$5.48
Tier 3	$2.35	$3.85	$5.26	$6.22	$9.78
Tier 4	$2.93	$4.81	$6.57	$7.78	$12.23
All Other Customers:					
Proposed Uniform Volumetric Rate	$1.865	$2.33	$2.61	$2.80	$3.11

1. Based on the price elasticity, this is the price increase needed to achieve the "price-induced" reduction in water sales.



Bill Comparisons - Current vs. Proposed Rates for FY 2014

Residential	Water Consumption (HCF)									
	2	4	7	8	9	11	13	15	17	20
			Winter Average			Annual Average			Summer Average	
SFR Bill - Current Rates	$37.13	$37.13	$37.13	$37.13	$37.13	$37.13	$37.13	$37.13	$42.09	$49.53
Net Revenue Requirements (60% Fixed / 40% Variable)										
Proposed 4-Tiered Rates	$30.54	$33.55	$38.05	$39.93	$41.81	$45.56	$47.91	$52.60	$57.29	$64.33

Commercial Bill Comparison for 5/8 inch meter	Water Consumption (HCF)									
	5	10	15	20	25	27	30	35	41	45
			Winter Average			Annual Average			Summer Average	
Commercial Bill - Current Rates	$37.13	$37.13	$37.13	$49.53	$61.93	$66.89	$74.33	$86.73	$101.61	$111.53
Commercial Bill - Proposed	$36.86	$46.19	$55.51	$64.83	$74.16	$77.89	$83.48	$92.80	$103.99	$111.45

Water Consumption Data used for HVLCSD Water Rates:

Summary of Consumption by Class	Consumption (ccf/year)	meters	Avg. ccf/mo. (1) Annual	Winter	Summer	Winter-to-Annual Ratio
Residential	314,388	2,394	11	7	15	0.61
Multi Family Residential	4,596	27	14	10	18	0.73
Commercial & Industrial	8,659	27	27	15	41	0.55
Municipal	165	2	7	6	9	0.82
Total	**327,808**	**2,450**				
Recycled Water (2)	1,272,590	1	212,098	58,405	404,395	0.28

(1) District measures consumption in cubic feet, per current Fees and Charges information sheet. Bi-monthly billing stats were converted to monthly for this iteration of the analysis.

(2) Recycled Water excluded from potable water consumption calculations. One customer only in the District.

APPENDIX B – SEWER RATE ANALYSIS

50% CIP Funding Scenario

TABLE 1
FINANCIAL PLAN AND SUMMARY OF REVENUE REQUIREMENTS

RATE REVENUE REQUIREMENTS SUMMARY	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Sources of Sewer Funds						
Rate Revenue Under Prevailing Rates (1,2)	$ 881,000	$ 881,000	$ 881,000	$ 881,000	$ 881,000	$ 881,000
Reclaimed Water Rate Revenue	95,000	95,000	95,000	95,000	95,000	95,000
Non-Rate Revenues	30,300	30,300	30,300	30,300	30,300	30,300
Interest Earnings (in Operating & Capital Reserves) (3)	-	385	534	338	270	709
Total Sources of Funds	**$ 1,006,300**	**$ 1,006,685**	**$ 1,006,834**	**$ 1,006,638**	**$ 1,006,570**	**$ 1,007,009**
Uses of Sewer Funds						
Operating Expenses (4):						
Salaries	$ 421,213	$ 433,849	$ 446,865	$ 460,271	$ 474,079	$ 488,301
Benefits	223,708	243,761	265,657	289,569	315,686	344,217
Other Operating Expenses	365,679	376,520	387,687	399,189	411,035	423,237
Subtotal: Operating Expenses	$ 1,010,600	$ 1,054,131	$ 1,100,209	$ 1,149,028	$ 1,200,801	$ 1,255,756
Other Expenditures:		4.3%	4.4%	4.4%	4.5%	4.6%
Existing Debt Service	$ -	$ -	$ -	$ -	$ -	$ -
New Debt Service	-	-	53,762	53,762	53,762	53,762
Rate-Funded Capital Expenses	-	160,000	160,000	160,000	160,000	172,637
Subtotal: Other Expenditures	-	160,000	213,762	213,762	213,762	226,399
Total Uses of Sewer Funds	**$ 1,010,600**	**$ 1,214,131**	**$ 1,313,971**	**$ 1,362,791**	**$ 1,414,563**	**$ 1,482,155**
plus: Revenue from Rate Increases	44,050	185,010	270,291	362,394	461,866	542,438
Annual Surplus/(Deficit)	**$ 39,750**	**$ (22,435)**	**$ (36,846)**	**$ 6,242**	**$ 53,873**	**$ 67,291**
Net Revenue Reqt. *(Total Uses less Non-Rate Revenu*	**$ 885,300**	**$ 1,088,445**	**$ 1,188,137**	**$ 1,237,152**	**$ 1,288,993**	**$ 1,356,146**
Total Rate Revenue After Rate Increases	**$ 969,100**	**$ 1,066,010**	**$ 1,151,291**	**$ 1,243,394**	**$ 1,342,866**	**$ 1,423,438**
Projected Annual Rate Revenue Increase	***10.00%***	***10.00%***	***8.00%***	***8.00%***	***8.00%***	***6.00%***

(1) FY 2014/15 Revenues are per the District's Budget.
(2) Customer growth is estimated at 0% per District staff.
(3) Interest earnings for FY 2014/15 are included in non-rate revenue, and are calculated for all future years.
(4) The FY 2014/15 operating expenses are from the District's Proposed Budget. Inflationary factors are applied to these expenses to project costs in 2015/16 and beyond

TABLE 2
RESERVE FUND SUMMARY

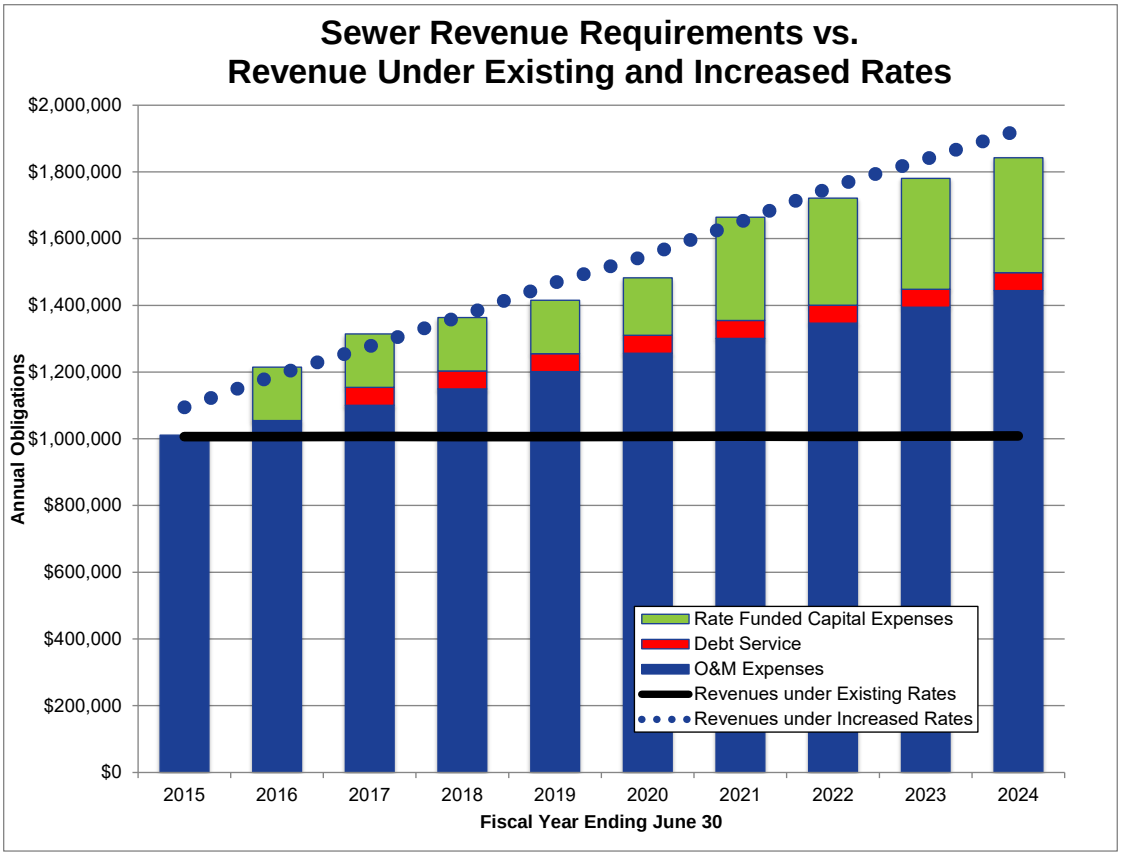
50% CIP Funding Scenario

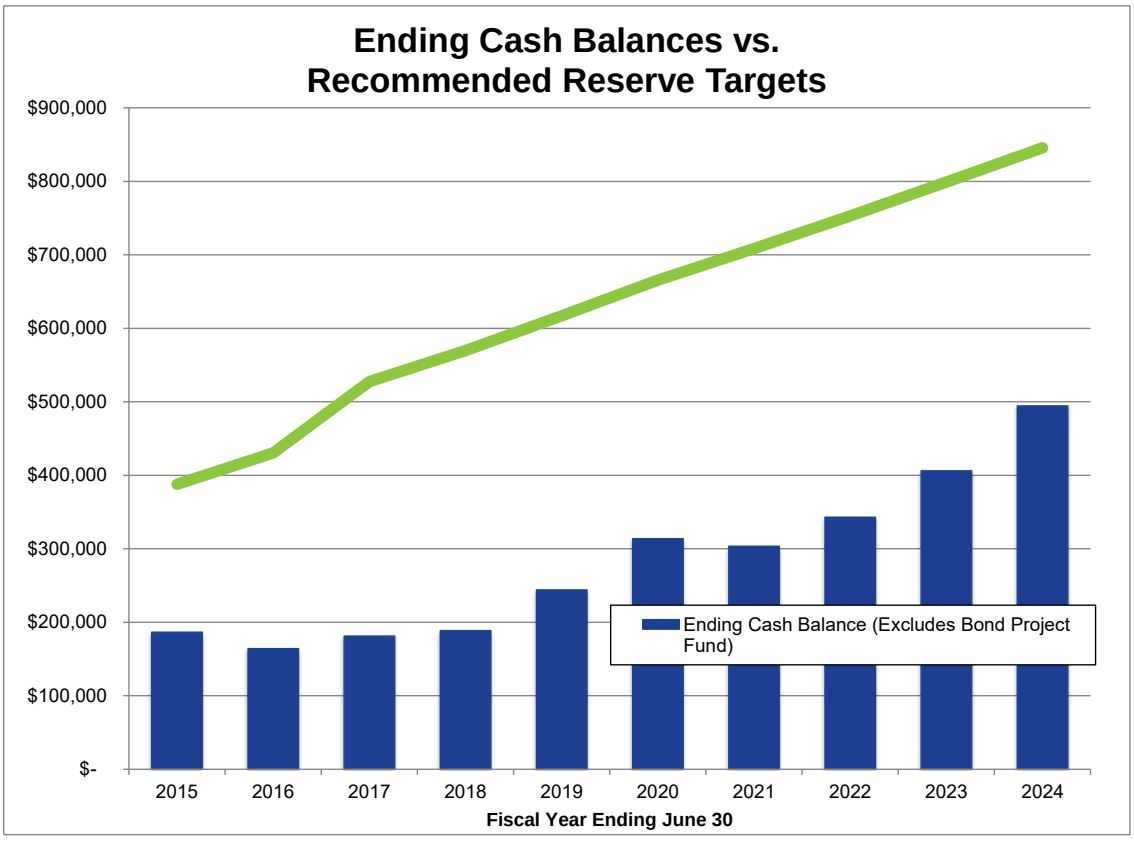
SUMMARY OF CASH ACTIVITY	Budget	Projected				
	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Total Beginning Cash *(1)*	$ 146,645					
Operating Reserve						
Beginning Reserve Balance	$ 114,300	$ 154,131	$ 106,776	$ 45,091	$ 26,979	$ 56,713
Plus: Net Cash Flow (After Rate Increases)	39,750	(22,435)	(36,846)	6,242	53,873	67,291
Plus: Transfer of Debt Reserve Surplus	81	81	162	646	861	1,076
Less: Transfer Out to OPEB Reserve	-	(25,000)	(25,000)	(25,000)	(25,000)	(25,000)
Less: Transfer Out to Capital Replacement Reserve	-	-	-	-	-	-
Ending Operating Reserve Balance	***$ 154,131***	***$ 106,776***	***$ 45,091***	***$ 26,979***	***$ 56,713***	***$ 100,080***
Target Ending Balance (90-days of O&M)	*$ 253,000*	*$ 264,000*	*$ 275,000*	*$ 287,000*	*$ 300,000*	*$ 314,000*
Capital Rehabilitation & Replacement Reserve						
Beginning Reserve Balance	$ -	$ -	$ -	$ -	$ -	$ -
Plus: Grant Proceeds	-	-	-	-	-	-
Plus: Transfer of Operating Reserve Surplus	-	-	-	-	-	-
Less: Use of Reserves for Capital Projects	-	-	-	-	-	-
Ending Capital Improvement & Depreciation Reserve	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
Target Ending Balance (1.5% of Assets) (2)	*$ 102,500*	*$ 109,000*	*$ 116,300*	*$ 121,200*	*$ 129,700*	*$ 137,900*
Ending Balance - Excludes Restricted Reserves	***$ 154,131***	***$ 106,776***	***$ 45,091***	***$ 26,979***	***$ 56,713***	***$ 100,080***
Minimum Target Ending Balance - Excludes Restricte	***$ 355,500***	***$ 373,000***	***$ 391,300***	***$ 408,200***	***$ 429,700***	***$ 451,900***
Ending Surplus/(Deficit) Compared to Reserve Targe	***$ (201,369)***	***$ (266,224)***	***$ (346,209)***	***$ (381,221)***	***$ (372,987)***	***$ (351,820)***
Restricted Reserves:						
Bond Project Fund						
Beginning Reserve Balance	$ -	$ -	$ 831,007	$ 630,240	$ 499,857	$ 243,676
Plus: Lease-Purchase Financing Proceeds	-	1,000,000	-	-	-	-
Plus: Revenue Bond Proceeds	-	-	-	-	-	-
Less: Use of Bond & Loan Funds for Capital Projects	-	(168,994)	(200,767)	(130,383)	(256,180)	(243,676)
Ending Bond Project Fund Balance	***$ -***	***$ 831,007***	***$ 630,240***	***$ 499,857***	***$ 243,676***	***$ -***
Target Ending Balance	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*	*$ -*
Debt Reserve						
Beginning Reserve Balance	$ 32,345	$ 32,345	$ 32,345	$ 86,107	$ 86,107	$ 86,107
Plus: Reserve Funding from New Debt Obligations	-	-	53,762	-	-	-
Plus: Interest Earnings	81	81	162	646	861	1,076
Less: Transfer of Surplus to Operating Reserve	(81)	(81)	(162)	(646)	(861)	(1,076)
Ending Debt Reserve Balance	***$ 32,345***	***$ 32,345***	***$ 86,107***	***$ 86,107***	***$ 86,107***	***$ 86,107***
Target Ending Balance	*$ 32,345*	*$ 32,345*	*$ 86,107*	*$ 86,107*	*$ 86,107*	*$ 86,107*
OPEB Reserve Fund						
Beginning Reserve Balance	$ -	$ -	$ 25,000	$ 50,125	$ 75,501	$ 101,256
Plus: Annual Contributions	-	25,000	25,000	25,000	25,000	25,000
Plus: Interest Earnings	-	-	125	376	755	1,266
Less: Transfer out for Retirement Benefits	-	-	-	-	-	-
Ending OPEB Reserve Balance	***$ -***	***$ 25,000***	***$ 50,125***	***$ 75,501***	***$ 101,256***	***$ 127,522***
Target Ending Balance (6)	*$ -*	*$ 25,000*	*$ 50,125*	*$ 75,501*	*$ 101,256*	*$ 127,522*
Connection Fee Reserve						
Beginning Reserve Balance	$ -	$ -	$ -	$ -	$ -	$ -
Plus: Interest Earnings	-	-	-	-	-	-
Plus: Capacity Fee Revenue\	-	-	-	-	-	-
Less: Use of Reserves for Capital Projects	-	-	-	-	-	-
Ending Connection Fee Fund Balance	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
Annual Interest Earnings Rate (3)	*0.25%*	*0.25%*	*0.50%*	*0.75%*	*1.00%*	*1.25%*

(1) Beginning cash balance is from the Balance Sheet, 120-Sewer Enterprise Fund, as of June 30, 2014, and is the sum of Cash, Petty Cash and Temporary Investments. The balance is split between the Operating and Debt Reserve funds, as shown in this table.

(2) The Capital Rehab & Replacement reserve target is set to 1.5% of net assets, per direction from District Staff.

(3) Historical interest earning rates were referenced on the California Treasurer's Office website for funds invested in LAIF. Future years earnings were conservatively estimated through 2021 and phase into the historical 10 year average interest earnings rate.


Sewer Revenue Requirements vs.
Revenue Under Existing and Increased Rates
$2,000,000
$1,800,000
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
Annual Obligations
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Fiscal Year Ending June 30
Rate Funded Capital Expenses
Debt Service
O&M Expenses
Revenues under Existing Rates
Revenues under Increased Rates


Ending Cash Balances vs.
Recommended Reserve Targets
$900,000
$800,000
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$-
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Fiscal Year Ending June 30
Ending Cash Balance (Excludes Bond Project Fund)

CAPITAL FUNDING SUMMARY

CAPITAL FUNDING FORECAST	Budget	Projected				
Funding Sources:	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
Grants	$ -	$ -	$ -	$ -	$ -	$ -
Use of Capacity Fee Reserves	-	-	-	-	-	-
SRF Loan Funding	-	168,994	200,767	130,383	256,180	243,676
Use of New Revenue Bond Proceeds	-	-	-	-	-	-
Use of Capital Improvement and Depreciation Reserve	-	-	-	-	-	-
Rate Revenue	-	160,000	160,000	160,000	160,000	172,637
Total Sources of Capital Funds	**$ -**	**$ 328,994**	**$ 360,767**	**$ 290,383**	**$ 416,180**	**$ 416,314**
Uses of Capital Funds:						
Total Project Costs	$ -	$ 328,994	$ 360,767	$ 290,383	$ 416,180	$ 416,314
Capital Funding Surplus (Deficiency)	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
New SRF Loan Funding	***$ -***	***$ 1,000,000***	***$ -***	***$ -***	***$ -***	***$ -***
New Revenue Bond Proceeds	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
		$ 1,800,000	*orignial SRF loan amount*			

EXISTING DEBT OBLIGATIONS	Budget	Projected				
Annual Repayment Schedules:	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20
USDA Solar Loan (1)						
Principal Payment	$ 14,000	$ 14,500	$ 15,000	$ 15,500	$ 16,000	$ 16,500
Interest Payment	18,045	17,618	$ 17,175	$ 16,718	$ 16,245	$ 15,758
Subtotal: Annual Debt Service	**$ 32,045**	**$ 32,118**	**$ 32,175**	**$ 32,218**	**$ 32,245**	**$ 32,258**
Coverage Requirement (% above annual payment)	0%	0%	0%	0%	0%	0%
Reserve Requirement (total fund balance) (2)	$ 32,345	$ 32,345	$ 32,345	$ 32,345	$ 32,345	$ 32,345
SWRCB Revolving Fund Loan (3)						
Principal Payment	$ 659,034	$ -	$ -	$ -	$ -	$ -
Interest Payment	28,481	-	-	$ -	$ -	$ -
Subtotal: Annual Debt Service	**$ 687,515**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Coverage Requirement (% above annual payment) (4)	0%	0%	0%	0%	0%	0%
Reserve Requirement (total fund balance) (4)	$ -	$ -	$ -	$ -	$ -	$ -
Series 1995-2 Bond						
Principal Payment	$ 111,000	$ 117,000	$ 123,000	$ 130,000	$ 137,000	$ 145,000
Interest Payment	223,823	217,553	$ 210,953	$ 203,995	$ 196,653	$ 188,898
Subtotal: Annual Debt Service	**$ 334,823**	**$ 334,553**	**$ 333,953**	**$ 333,995**	**$ 333,653**	**$ 333,898**
Coverage Requirement (% above annual payment) (4)	0%	0%	0%	0%	0%	0%
Reserve Requirement (total fund balance) (4)	$ -	$ -	$ -	$ -	$ -	$ -
Grand Total: Existing Annual Debt Service	**$ 1,054,383**	**$ 366,670**	**$ 366,128**	**$ 366,213**	**$ 365,898**	**$ 366,155**
Grand Total: Existing Annual Coverage Requirement	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Grand Total: Existing Debt Reserve Target	**$ 32,345**	**$ 32,345**	**$ 32,345**	**$ 32,345**	**$ 32,345**	**$ 32,345**

Existing Annual Debt Obligations to be Satisfied by Sewer Rates (5):

Existing Annual Debt Service	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
Existing Annual Coverage Requirement	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***	***$ -***
Existing Debt Reserve Target	***$ 32,345***	***$ 32,345***	***$ 32,345***	***$ 32,345***	***$ 32,345***	***$ 32,345***

(1) Repayment schedule is a calculated schedule in draft form.

(2) Per the Trust Agreement for the bond issue, the Reserve Requirement in future years is equal to the least of: 10% of the principal amount of the original principal amount of the certificate, the maximum annual debt service payment, or 125% of the average annual debt service payment.

(3) The principal and interest payments for this loan will be paid off early per District staff email communication. Final payment in 2015/16 has been eliminated.

(4) NBS assumes there is no debt coverage or reserve requirement for this bond issue.

(5) Per District Staff, all debt obligations are funded with revenue sources placed on the tax roll.

Classification of Expenses									
Budget Categories	Total Revenue Requirements	Flow	Strength		Customer	Basis of Classification			
	FY 2014/15	(VOL)	(BOD)	(TSS)	(CA)	(VOL)	(BOD)	(TSS)	(CA)
Sewer Operations Expenses									
120-5010 Salary & Wages	$ 421,213	$ 210,607	$ 84,243	$ 84,243	$ 42,121	50%	20%	20%	10%
120-5020 Employee Benefits	$ 99,398	$ 49,699	$ 19,880	$ 19,880	$ 9,940	50%	20%	20%	10%
120-5021 Retirement Benefits	$ 77,261	$ 38,631	$ 15,452	$ 15,452	$ 7,726	50%	20%	20%	10%
120-5025 Retiree Health Benefits	$ 5,027	$ 2,514	$ 1,005	$ 1,005	$ 503	50%	20%	20%	10%
120-5030 Director Health Benefits	$ 42,022	$ 21,011	$ 8,404	$ 8,404	$ 4,202	50%	20%	20%	10%
120-5040 Election Expense	$ -	$ -	$ -	$ -	$ -	50%	20%	20%	10%
120-5060 Gasoline, Oil & Fuel	$ 14,200	$ 7,100	$ 2,840	$ 2,840	$ 1,420	50%	20%	20%	10%
120-5061 Vehicle Maintenance	$ 10,357	$ 5,179	$ 2,071	$ 2,071	$ 1,036	50%	20%	20%	10%
120-5062 Taxes & License	$ 1,100	$ 550	$ 220	$ 220	$ 110	50%	20%	20%	10%
120-5063 Certifications	$ 800	$ 400	$ 160	$ 160	$ 80	50%	20%	20%	10%
120-5074 Insurance	$ 21,100	$ 10,550	$ 4,220	$ 4,220	$ 2,110	50%	20%	20%	10%
120-5075 Bank Fees	$ 7,000	$ 3,500	$ 1,400	$ 1,400	$ 700	50%	20%	20%	10%
120-5080 Membership & Subscriptions	$ 6,000	$ 3,000	$ 1,200	$ 1,200	$ 600	50%	20%	20%	10%
120-5090 Office Supplies	$ 6,600	$ -	$ -	$ -	$ 6,600	0%	0%	0%	100%
120-5092 Postage & Shipping	$ 1,500	$ -	$ -	$ -	$ 1,500	0%	0%	0%	100%
120-5110 Contractual Services	$ 36,210	$ 18,105	$ 7,242	$ 7,242	$ 3,621	50%	20%	20%	10%
120-5121 Legal Services	$ 12,500	$ 6,250	$ 2,500	$ 2,500	$ 1,250	50%	20%	20%	10%
120-5122 Engineering Services	$ 15,000	$ 7,500	$ 3,000	$ 3,000	$ 1,500	50%	20%	20%	10%
120-5123 Other Professional Service	$ 27,750	$ 13,875	$ 5,550	$ 5,550	$ 2,775	50%	20%	20%	10%
120-5130 Printing & Publication	$ 500	$ -	$ -	$ -	$ 500	0%	0%	0%	100%
120-5135 Newsletter	$ 1,000	$ -	$ -	$ -	$ 1,000	0%	0%	0%	100%
120-5145 Equipment Rental	$ -	$ -	$ -	$ -	$ -	50%	20%	20%	10%
120-5148 Operating Supplies	$ 12,000	$ 6,000	$ 2,400	$ 2,400	$ 1,200	50%	20%	20%	10%
120-5150 Repair & Replace	$ 50,452	$ 25,226	$ 10,090	$ 10,090	$ 5,045	50%	20%	20%	10%
120-5155 Maint Bldg & Grounds	$ 5,300	$ 2,650	$ 1,060	$ 1,060	$ 530	50%	20%	20%	10%
120-5156 Custodial Services	$ 9,450	$ 4,725	$ 1,890	$ 1,890	$ 945	50%	20%	20%	10%
120-5157 Security	$ 2,000	$ 1,000	$ 400	$ 400	$ 200	50%	20%	20%	10%
120-5160 Sludge Disposal	$ 23,000	$ -	$ 11,500	$ 11,500	$ -	0%	50%	50%	0%
120-5170 Travel & Meetings	$ 1,100	$ 550	$ 220	$ 220	$ 110	50%	20%	20%	10%
120-5175 Education/Seminars	$ 6,600	$ 3,300	$ 1,320	$ 1,320	$ 660	50%	20%	20%	10%
120-5176 Director Training	$ 200	$ 100	$ 40	$ 40	$ 20	50%	20%	20%	10%
120-5179 ADM Misc Expense	$ 500	$ 250	$ 100	$ 100	$ 50	50%	20%	20%	10%
120-5191 Telephone	$ 9,000	$ 4,500	$ 1,800	$ 1,800	$ 900	50%	20%	20%	10%
120-5192 Electricity	$ 18,400	$ 11,960	$ 2,760	$ 2,760	$ 920	65%	15%	15%	5%
120-5193 Other Utilities	$ 1,800	$ 900	$ 360	$ 360	$ 180	50%	20%	20%	10%
120-5195 Env/Monitoring	$ 25,000	$ 12,500	$ 5,000	$ 5,000	$ 2,500	50%	20%	20%	10%
120-5196 Risk Management	$ 17,800	$ 8,900	$ 3,560	$ 3,560	$ 1,780	50%	20%	20%	10%
120-5198 Annual Operating Fees	$ 3,000	$ 1,500	$ 600	$ 600	$ 300	50%	20%	20%	10%

Classification of Expenses, continued									
Budget Categories	Total Revenue Requirements	Flow	Strength		Customer	Basis of Classification			
	FY 2014/15	(VOL)	(BOD)	(TSS)	(CA)	(VOL)	(BOD)	(TSS)	(CA)
Sewer Operations Expenses, continued									
120-5310 Equipment - Field	$ 1,000	$ 500	$ 200	$ 200	$ 100	50%	20%	20%	10%
120-5311 Equipment - Office	$ 2,800	$ 1,400	$ 560	$ 560	$ 280	50%	20%	20%	10%
120-5312 Tools - Field	$ 1,100	$ 550	$ 220	$ 220	$ 110	50%	20%	20%	10%
120-5315 Safety Equipment	$ 4,100	$ 2,050	$ 820	$ 820	$ 410	50%	20%	20%	10%
120-5510 Sewer Outreach	$ 5,000	$ -	$ -	$ -	$ 5,000	0%	0%	0%	100%
120-5545 Recording Fees	$ 160	$ 80	$ 32	$ 32	$ 16	50%	20%	20%	10%
Bond Administration Expense	$ 4,300	$ 2,150	$ 860	$ 860	$ 430	50%	20%	20%	10%
Grand Total: Sewer Operating Expense	**$ 1,010,600**	**$ 489,260**	**$ 205,180**	**$ 205,180**	**$ 110,980**	**48.4%**	**20.3%**	**20.3%**	**11.0%**

TOTAL REVENUE REQUIREMENTS	$ 1,010,600	$ 489,260	$ 205,180	$ 205,180	$ 110,980	48%	20%	20%	11%
Less: Non-Rate Revenues									
Calculated Interest Earnings from Financial F	$ -	$ -	$ -	$ -	$ -	48%	20%	20%	11%
120-4020 Permit & Inspection Fees	$ (300)	$ (145)	$ (61)	$ (61)	$ (33)	48%	20%	20%	11%
120-4036 Developer Sewer Fees	$ -	$ -	$ -	$ -	$ -	48%	20%	20%	11%
120-4045 Availability Fees	$ (10,200)	$ (4,938)	$ (2,071)	$ (2,071)	$ (1,120)	48%	20%	20%	11%
120-4050 Sales of Reclaimed Water	$ (95,000)	$ (45,992)	$ (19,288)	$ (19,288)	$ (10,433)	48%	20%	20%	11%
120-4111 Commercial Sewer Use	$ -	$ -	$ -	$ -	$ -	48%	20%	20%	11%
120-4112 Government Sewer Use	$ -	$ -	$ -	$ -	$ -	48%	20%	20%	11%
140-4116 Sewer Use Charges	$ -	$ -	$ -	$ -	$ -	48%	20%	20%	11%
120-4210 Late Fee (10%)	$ (15,500)	$ (7,504)	$ (3,147)	$ (3,147)	$ (1,702)	48%	20%	20%	11%
120-4300 Miscellaneous Income	$ (100)	$ (48)	$ (20)	$ (20)	$ (11)	48%	20%	20%	11%
120-4505 Lease Income	$ (4,200)	$ (2,033)	$ (853)	$ (853)	$ (461)	48%	20%	20%	11%
120-4550 Interest Income	$ -	$ -	$ -	$ -	$ -	48%	20%	20%	11%
NET REVENUE REQUIREMENTS	**$ 885,300**	**$ 428,599**	**$ 179,741**	**$ 179,741**	**$ 97,220**				
Allocation of Revenue Requirements	**100.0%**	**48.4%**	**20.3%**	**20.3%**	**11.0%**				

Classification of Expenses, continued Adjustments to Classification of Expenses					
Adjustment for Current Rate Level:	**Total**	**(VOL)**	**(BOD)**	**(TSS)**	**(CA)**
2015/16 Target Rate Rev. After Rate Increas	$ 969,100				
Projected Rate Revenue at Current Rates	$ 881,000				
2015/16 Projected Rate Increase	10.00%				
Adjusted Net Revenue Req'ts	**$ 969,100**	**$ 469,169**	**$ 196,754**	**$ 196,754**	**$ 106,423**
Percent of Revenue		*48.4%*	*20.3%*	*20.3%*	*11.0%*

Proposed Sewer Rates for FY 2014/15: COMBINED CUSTOMER CLASSES

Customer Class	No. of Billing Units (HEU's)	Water Consumption (ccf)[3]	Annual Rev. Req't			Monthly Fixed Charge Per Billing Unit	Volumetric Charge Per ccf
			Total	Fixed	Volumetric		
Residential[1]	1,485	117,263	$ 935,641	$ 693,350	$ 242,291	$38.92	$2.07
Commercial[2]	40	6,486	$ 33,459	$ 18,875	$ 14,583	$38.92	$2.25
Total	**1,525**	**123,749**	**$ 969,100**	**$ 712,226**	**$ 256,874**	--	--
	Percent of Revenue from Fixed vs. Volumetric Charges		*100%*	*73%*	*27%*		

1. Includes Multi-Family Accounts on an HEU-basis (i.e., MFR accounts are assessed based on their number of HEU's).

2. Includes Municipal (both Commercial and Municipal accounts are assessed based on their number of HEU's and monthly water use).

3. Residential is winter water with assumed conservation of 5%; Commercial is annual water use with assumed conservation of 5%.

Wastewater Treatment Plant Data *NBS Calcs*

Month/ Year	# Days/ Month	Average Daily Flow (MGD)	BOD, 5-day (mg/L)	Total Dissolved Solids (mg/L)		Total Flow (MG)	Total BOD (lbs/yr)	Total TDS (lbs/yr)
Jan-13	31	0.27	183	340		8.34	12,719	23,657
Feb-13	28	0.21	263	440		5.87	12,840	21,522
Mar-13	31	0.19	265	470		5.78	12,783	22,672
Apr-13	30	0.17	300	460		5.15	12,890	19,765
May-13	31	0.17	256	500		5.12	10,931	21,350
Jun-13	30	0.16	293	510		4.83	11,778	20,535
Jul-13	31	0.16	242	500		4.97	10,041	20,712
Aug-13	31	0.17	243	550		5.33	10,774	24,435
Sep-13	30	0.18	223	570		5.24	9,729	24,924
Oct-13	31	0.17	198	560		5.29	8,727	24,683
Nov-13	30	0.17	282	550		5.21	12,244	23,880
Dec-13	31	0.18	252	500		5.42	11,397	22,614
2013 Daily Average		**0.18**	**249.85**	**496**	**Annual Total**	**66.54**	**136,855**	**270,751**
Jan-14	31	0.17	300	490		5.17	12,935	21,128
Feb-14	28	0.21	187	570		5.97	9,292	28,399
Mar-14	31	0.22	193	400		6.69	10,747	22,331
Apr-14	30	0.19	244	500		5.80	11,803	24,186
May-14	31	0.16	265	480		4.93	10,896	19,736
Jun-14	30	0.19	325	490		5.79	15,705	23,678
Jul-14	31	0.20	345	480		6.31	18,164	25,272
2014 Daily Average		**0.19**	**265.43**	**487**	**2014 Total**	**40.68**	**89,542**	**164,730**

FY 2013/14 Summary			
Average Daily Flow	0.18	Total Flow (million gallons)	65.81
Average BOD, 5-day	246.03	Total BOD (lbs/yr)	134,290
Average TDS	513	Total TDS (lbs/yr)	280,706

Sewer Consumption Data used for HVLCSD Sewer Rates:

Summary of Consumption by Class	Consumption (ccf/year)	Accounts	Avg. ccf/bi-mo. Annual	Winter	Summer	Winter-to-Annual Ratio
Single Family Residential	189,781	1,429	22	13	31	60.0%
Multi Family Residential	4,596	27	28	21	36	72.9%
Commercial & Industrial	6,434	13	82	46	126	55.2%
Municipal	52	1	9	8	9	96.7%
Total	**200,863**	1,470				

Memorandum

Date: March 31, 2023

To: Matt Medlands
Grant Specialist-Coastal Unit
Hazard Mitigation Grants Division
Recovery - Hazard Mitigation Assistance Branch
California Governor's Office of Emergency Services
3650 Schriever Avenue
Mather, CA 95655

From: Alyssa Gordon, Project Manager

Subject: **BCA TECHNICAL MEMORANDUM 2023**
Hidden Valley Lake Community Services District
4382 – PJ9112 Water System Storage Reliability Project

INTRODUCTION

In 2019 Hidden Valley Lake Community Services District (District) prepared a subapplication and Benefit Cost Analysis (BCA) to FEMA's HMGP program for the purpose of reducing their community's vulnerability to wildfire through the Water Storage Reliability Project.

In 2023 the District has revised the BCA to reflect changes in project costs. This technical memorandum serves to justify the revised BCA prepared for this project.

PROJECT DESCRIPTION

The existing Unit 9 tank, the only water tank within its pressure zone, is a 19-foot high, 35-foot diameter tank with a capacity of 150,000 gallons. It was constructed in 1968.

The tank site is located at the interface between open space and residential-zoned properties.

The proposed replacement tanks, Tank 9A and 9B, will be made of bolted steel and have a combined capacity of 500,000 gallons. Two tanks were chosen over one primarily because of space restrictions at the site, and the value of a redundant solution.

BENEFIT COST ANALYSIS

A benefit-cost analysis was conducted for the project using FEMA's Benefit Cost Analysis Software, version 6.0

- **File name:** **Water Storage Reliability 2023**
- **Property Structure type:** **Utilities**
- **Hazard type:** **DFA-Wildfire**
- **Mitigation Action type:** **DS, IRC**
- **Analysis method type:** **Professional Expected Damages**

Hazard and Mitigation Information

- **What is the basis for the damages?: Expected Damages**
  - **Justification:** The Unit 9 tank site has never burned, but there have been many frequent, large, and highly damaging wildfires in the County. A wildfire at the Unit 9 tank is an expected occurrence.
  - **Upload Documents:** Fire History of Lake County Memo[i]
- **How many estimated damages do you have: 2**
  - **Justification:** There is a minimum of two damage events required for this module.

Cost Estimation Information

- **Project Useful Life (years): 50**
  - **Justification:** As stated within BCA 2009 Reference Guide, Appendix D, major utility mitigation projects have a range of project useful life between 50-100 years. We used the conservative value of 50 years.
- **Do you have a detailed Scope of work?: Yes**
  - **Upload Documents:** Scope of Work[ii]
- **Do you have a detailed estimate for the entire project?: Yes, this has been revised in 2023**
- **Mitigation Project Cost: $3,864,983[1]**
  - **Supporting Documents:**
    a. Design costs comparison
    b. Construction costs comparison
    c. Revised Cost Estimate Spreadsheet & Narrative
- **Annual Project Maintenance Cost: $1,635.39[2]**
  - **Supporting Documents:**

[1] Appendix A – Project costs
[2] Appendix B – Project maintenance costs

a. Revised annual Tank Maintenance Costs
b. GHD Memo
c. District Pay Rate Certification

Type of Services

- **Facility Type for Loss of Function: Utilities**
  - **Justification:** The Unit 9 water storage tank provides water supply for Zone 9 in Hidden Valley Lake according to District records.

Utilities

- **Utility Facility Description:** The existing Unit 9 tank, the only water tank within its pressure zone, is a 19-foot high, 35-foot diameter tank, constructed out of redwood, with a capacity of 150,000 gallons. It was constructed in 1968. The tank site is located at the interface between open space and residential-zoned properties.
  - **Justification:** Water tank information comes from As-Builts (1968) and from HVL CSD Water Master Plan Update (2001).
- **Type of Service:** Potable Water
- **Number of Customers Served:** 2,074
  - **Justification:** The number of customers served is based on the known value of 864 service connections reliant on the Unit 9 water tank and an average of 2.4 residents per household based on District billing data.

Expected Damages Before Mitigation

- **Selection of Wildfire Recurrence Interval Events:**
  - **Justification:** Two fire recurrence-interval events were selected for this analysis.
    - The 28-year RI event was developed from the Wildfire module of the BCA program based on the project location's zip code[iii]
    - The 13-year RI event was based on a study conducted by Bruce D. Malamud, James D. A. Millington, and George L. W. Perry, **Characterizing Wildfire Regimes in the United States (2005)** https://www.pnas.org/content/pnas/102/13/4694.full.pdf.[iv]

- **Expected Damages Before Mitigation:** In the event of a wildfire, the redwood tank is expected to completely burn.
  - **Justification that a redwood tank will burn:** Redwood is a combustible material with an ignition point of 364 degrees C. Because wildfire can reach temperatures exceeding 800 degrees C, this is a reasonable assumption.[v]

- **Pre-Mitigation Damages:** Damages following a fire are the costs to replace the redwood tank with a steel tank of the same size, associated appurtenances, and the

provision of water to affected residents via a temporary tank farm while the replacement tank is being built.

- **Justification for a Replacement Steel Tank:** California CCR Title 22 Section 64585(b)(1), states that the only acceptable water distribution reservoir materials are welded carbon steel, bolted steel, concrete, or fiberglass-reinforced plastic.[vi]
- **Justification for other Damages:** Damage costs also include replacement of the wooden retaining walls, chainlink fencing, cathodic protection, electrical system and telemetry, and exposed piping. We also assume that the existing concrete foundation, of unknown structural soundness (no as-built foundation plans were found), must also be replaced.

  Our estimated timeline for replacing the tank and other items listed above is 168 days.[vii]
- **Justification for Provision of Water to Customers During Construction:** During construction of the replacement tanks, the water supply system will be off-line to the 2,074 residents within Zone 9 and upper zones. The District must provide alternate sources of water at a reduced scale. We assume that no water will be available for 10 days while the area is evacuated, after which residents will be allowed to return to their homes. During those 10 days, the District is building temporary tank farms.[viii]

- **Cost Estimation Information:** A wildfire that occurs within both the 13 and 28 year Recurrence Interval will completely burn the redwood tank. The cost difference will be associated with the amount of time needed to procure equipment and supplies, based on the assumption that a 28 year RI wildfire affects a larger area. It will take 20% longer to get the water system back online, and 50% longer to get the temporary tank farms online.[ix] As mentioned in Appendix A – Revised Cost Estimate Spreadsheet & Narrative,

  *"** Cost multipliers have been calculated based on two known costs, DS & E [Design, Specifications & Engineering], and GHD's OPCC [Opinion of Probable Construction Costs].*

Since all costs are construction-related the cost multiplier of 2.61 will be applied.

- **Pre-Mitigation costs, 13 year RI: $2,618,056**[3]
- **Pre-Mitigation costs, 28 year RI: $2,898,413**[3]
  - **Supporting Documentation**
    a. Replace tank
    b. Build temporary tanks
    c. Supply Emergency water 13 RI

[3] Appendix C – Pre-Mitigation Damage Costs

d. Supply Emergency water 28 RI
e. Pay Rate Certification

Expected Damages After Mitigation

- **Expected Damages After Mitigation (13-Year RI): $47,299.70**[4]
  In the event of a 13-year RI wildfire, the two steel tanks are not destroyed because firefighters have a defensible perimeter within which to fight a fire and the tanks are made of noncombustible materials. The expected damages are that the interior and exterior of the tanks need cleaning resulting from smoke damage.

- **Expected Damages After Mitigation (28-Yr RI): $1,084,183.19**[4]
  In the event of a 28-year RI wildfire, it is assumed that the fire is hotter and closer than the 13-year event. We assumed that the two tanks are not structurally damaged, but they need to be cleaned from smoke damage and repainted because of blistering of the paint on the interior and exterior of the tanks.

- **Supporting Documentation:**
  a. Clean & Disinfect
  b. Supply Emergency Water (post-mit) 13RI
  c. Clean, Disinfect, Coat, Paint
  d. Supply Emergency Water (post-mit) 28RI
  e. Pay Rate Certification

[i] Included in original BCA
[ii] Included in original BCA
[iii] Included in original BCA Tech Memo
[iv] Included in original BCA Tech Memo
[v] Included in original BCA Tech Memo
[vi] Included in original BCA Tech Memo
[vii] Revised in 2023, see Appendix C, Supply Emergency Water 13RI
[viii] Revised in 2023, see Appendix C, Supply Emergency Water 13RI
[ix] Included in original BCA Tech Memo

[4] Appendix D – Post-Mitigation Damage Costs

Appendix A:

Project Costs

Design cost comparison

HMGP Application
Water Storage Reliability

Task #	Task Description	
2.7	Construction Management and Inspect	
	Construction Management	$227,338
	Inspection	$12,464
	Subtotal	$239,800
	SUBTOTAL POST-AWARD DESIGN & CM/I	$333,235

Coastland Work Estimate 4/19/2019

Design & CM/I = $333,235
CM/I = $239,800
=========
Design $93,435

8. | Fee Proposal

GHD

Federally Funded Worksheet

Date Prepared:	6/30/2022
Project Number:	12586063
Project Name:	Planning, Engineering and Design for the Water Storage Reliability Project
Client Name:	Hidden Valley Lake Community Services District

GHD LABOR TOTAL	$199,111.93
GHD ODC'S TOTAL	$0.00
SUB'S LABOR TOTAL	$45,101.00
SUB'S ODC'S TOTAL	$0.00
TOTAL ESTIMATE	$244,212.93

Construction cost comparison

HMGP Cost Estimate Spreadsheet

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #	PROJECT OR PLANNING TITLE
4/8/2019	HIDDEN VALLEY LAKE CSD	4382	Water System Storage Reliability Project

#	Item Name	Unit Quantity	Unit of Measure	Unit Cost	Cost Estimate Total
1	**Pre-Award Costs:** (see Work Estimate for details)	1	EA	$ 46,610.00	$ 46,610
2	**Post-Award Design & Const. Mgmt:** (See Work Estimate)	1	EA	$ 333,235.00	$ 333,235
3	**Land Acquistion** (for Lot-line Adjustment)	0.72	AC	$ 50,000.00	$ 36,000

Total Project Cost Estimate:	$ 1,850,207

Coastland Project Estimate 4/19/2019

Total Project Cost Estimate = $1,850,207

Pre-Construction costs = $ 415,845 ($46,610+$333,235+$36,000)

=========

Total Construction costs $1,434,362

Water Storage Reliability Project

Basis of Design Report

Hidden Valley Lake CSD

January 22, 2023

TOTAL OPINION OF POTENTIAL COST **$ 2,994,000**

Revised HMGP Cost Estimate Spreadsheet pg 1 of 4

Revised Costs			Cost Multiplier
1	Coastland Design Only (2019) * See Appendix A: Design cost comparison	$ 93,435.00	
2	GHD Design Only (2023)	$ 244,213.00	2.61
3	Coastland Construction Only (2019)	$ 1,434,370.05	
4	GHD Construction Only (2023)	$ 2,994,000.00	2.09

Revised HMGP Cost Estimate Spreadsheet pg 2 of 4

2.61 multiplier

HMGP Cost Estimate Spreadsheet

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #	PROJECT OR PLANNING TITLE
4/8/2019	HIDDEN VALLEY LAKE CSD	4382	Water System Storage Reliability Project

Applying the cost multipliers to origional cost estimates

#	Item Name	Unit Quantity	Unit of Measure	Unit Cost	Cost Estimate Total	2023 Revision
1	**Pre-Award Costs:** (see Work Estimate for details)	1.0	EA	$ 46,610.00	$ 46,610	$ -
2	**Post-Award Design & Const. Mgmt:** (See Work Estimate)	1.0	EA	$ 333,235.00	$ 333,235	$ 870,983
3	**Land Acquistion** (for Lot-line Adjustment)	0.7	AC	$ 50,000.00	$ 36,000	$ -
	Pre-Construction Subtotal (including CMI)				$ 415,845	$ 870,983

Revised HMGP Cost Estimate Spreadsheet pg 3 of 4

2.09 multiplier

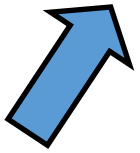
Applying the cost multipliers to original cost estimates

4	**Construction Costs:**					
5	Mobilization	1.0	EA	$ 90,697.05	$ 90,697	$ **189,316**
6	Remove Tree and Grind Roots	23.0	EA	$ 1,620.00	$ 37,260	$ **77,774**
7	Clearing and Grubbing/Vegetation Management	1.0	AC	$ 6,750.00	$ 6,750	$ **14,090**
8	Demolish Security Fence	344.0	LF	$ 13.50	$ 4,644	$ **9,694**
9	Site Excavation	3265.0	CY	$ 47.25	$ 154,271	$ **322,016**
10	Drainage Inlet, 24"x24"	3.0	EA	$ 4,050.00	$ 12,150	$ **25,361**
11	Drainage Pipe (12")	190.0	LF	$ 135.00	$ 25,650	$ **53,540**
12	Security Fencing: 8' tall	670.0	LF	$ 101.00	$ 67,670	$ **141,250**
13	Security Gate - 15' wide	1.0	EA	$ 8,100.00	$ 8,100	$ **16,907**
14	Remove Water Main	1.0	EA	$ 5,400.00	$ 5,400	$ **11,272**
15	Water Pipe (8" C900)	390.0	LF	$ 162.00	$ 63,180	$ **131,878**
16	Water Pipe (8" DIP)	40.0	LF	$ 270.00	$ 10,800	$ **22,543**
17	8" Gate Valve	5.0	EA	$ 2,430.00	$ 12,150	$ **25,361**
18	6" Gate Valve	2.0	EA	$ 2,025.00	$ 4,050	$ **8,454**
19	Concrete Retaining Walls	79.8	CY	$ 2,700.00	$ 215,460	$ **449,738**
20	Tank Foundation	42.8	CY	$ 2,700.00	$ 115,560	$ **241,213**
21	Minor Concrete, Valley Gutter	565.0	LF	$ 54.00	$ 30,510	$ **63,685**
22	Bolted Steel Tank (250,000 gallon)	2.0	EA	$ 229,500.00	$ 459,000	$ **958,089**
23	Demolish Water Tank and Concrete Ring Foundation	1.0	EA	$ 10,800.00	$ 10,800	$ **22,543**
24	Abandon and Remove Overflow and Drainage Pipe	60.0	LF	$ 13.50	$ 810	$ **1,691**
25	Electrical System	1.0	EA	$ 8,100.00	$ 8,100	$ **16,907**
26	Cathodic Protection	1.0	EA	$ 6,750.00	$ 6,750	$ **14,090**
27	Drainage Pipe (6" WSP)	40.0	LF	$ 128.00	$ 5,120	$ **10,687**
28	Overflow Pipe (6" WSP)	60.0	LF	$ 128.00	$ 7,680	$ **16,031**
29	Rock Slope Protection	15.0	SY	$ 162.00	$ 2,430	$ **5,072**
30	Class 2 Aggregate Base	170.0	CY	$ 202.50	$ 34,425	$ **71,857**
31	Asphalt Concrete	167.0	TON	$ 209.25	$ 34,945	$ **72,942**
	Construction Subtotal				$ 1,434,362	$ **2,994,000**
				Total Project Cost Estimate:	$1,850,207	

Revised HMGP Cost Estimate Spreadsheet pg 4 of 4

Pre-Construction Subtotal (including CMI)				$ 415,845	$ 870,983

Construction Subtotal:				$ 1,434,362	$ 2,994,000
			Total Project Cost Estimate:	$ 1,850,207	$ 3,864,983
				Difference:	$ 2,014,776



REVISED

Hidden Valley Lake Community Services District
Water System Storage Reliability Project
Cost Estimate Narrative

The ***original*** estimated design and construction costs described herein are based upon 28 years of Coastland Engineering's design and construction management experience. The ***revised*** estimated design and construction costs are based on the incurred design costs to date, and GHD's 60% design Opinion of Probable Construction Cost (OPCC). Below is a description of each task and the basis for estimating its cost.

PRE-AWARD DESIGN TASKS

** Pre-award tasks are immaterial to the 2023 Federal Increase request, and have been removed from the cost estimate

POST-AWARD DESIGN TASKS

1. **2023 REVISION: The Hidden Valley Lake Community Services District (District), in compliance with 2 CFR 200.317-.326, incurred additional procurement costs. Also discovered during the Design, Specifications, and Engineering (DS&E) process, was a significant increase in costs due to a number of factors outlined in the Federal Increase Request. The highlighted factors are**
    - **Extended period of time between Subapplication and obligation**
    - **Engineer's News Record (ENR) Construction Cost Index confirmed significant price increases**
    - **GHD's Opinion of Probable Construction Costs (OPCC) substantially exceeded Coastland's preliminary cost estimates**
    - **Extraordinary effects of the recent economic environment (supply chain, labor shortage, inflation)**

For these reasons, cost multipliers have been calculated based on two known costs, DS & E, and GHD's OPCC. These multipliers have been applied to the original estimated costs.

Engineering firm	Description	Costs	Cost multiplier
Coastland	Design	$93,435	
GHD	Design	$244,213	2.61
Coastland	Construction	$1,434,362	
GHD	Construction	$2,994,000	2.09

2. **2023 REVISION: Design costs have been itemized in the winning proposal of GHD, which contained a Scope of Work of nine (9) tasks, culminating in total design costs of $244,213. To align with the original Cost Estimate Spreadsheet, Design & Construction Management have been combined and re-costed based on the cost multiplier.**

Description	Original Costs	Cost multiplier	Revised Costs
Design & Const. Mgmt	$333,235	2.61	$870,983

Kick-off Meeting. *A kick-off meeting will be conducted post-award to review the scope and discuss details of tank operation and control, environmental constraints, and other issues that will shape the final design. For this meeting, a Principal Engineer, Senior Engineer and CAD Designer will travel to the tank site (2 hours total) and attend a 2-hour meeting.*

Progress Design Review Meetings. *Two other progress design meetings via conference call (1.5 hours each) will be attended by the Principal Engineer and Senior Engineer following District review of progress submittals. An additional 3 hours of Senior Engineer time will be needed to coordinate these meetings and prepare agenda and meeting minutes.*

Prepare Environmental Permits. *The environmental planning firm, WRA, will provide documentation and prepare permits that are necessary for the proposed project. The proposal for the Post-Award Environmental tasks are shown as Phase 2 in the proposal attached as CEN #3.*

Geotechnical Investigation. *A geotechnical investigation will be conducted to provide design guidance for the tank foundation, retaining walls, pavement design, and site grading. The geotechnical scope will include borings, soil analyses, and preparation of a report. Coastland Engineers estimates that the geotechnical work will require 6 hours of Principal Engineering time, 20 hours of Senior Engineer time, and 25 hours of Project Geologist. A proposal for a similar scope of work, by RGH Geotechnical Engineers, is attached as Cen #4.*

3. **2023 REVISION: This task was no longer necessary in the GHD 60% Design**

Lot-Line Adjustment. *A 0.72-acre lot-line adjustment is necessary to fit both tanks and their 100-foot defensible corridor within the tank site. This task will require obtaining title reports ($1,000) and paying County fees (up to $2,900), preparing a grant deed and legal description, coordination with the property owners, the HVL Community Services District and the HVL Homeowner's Association and filing the necessary documents with the County of Lake. Coastland estimates that it will take 23 hours of effort by Coastland Engineers to prepare the grant deed and legal descriptions and coordinate with the property owners.*

4. 2023 REVISION: These costs are included in GHD's Scope of Work (Task 9)

Prepare Bid Documents. *Coastland Engineering will prepare bid documents, including plans and specifications, for the proposed project. The plan set will include:*

- *A demolition plan that shows the limits of removal for the existing fencing, tank, trees, piping and appurtenances to be removed;*
- *A grading and drainage plan that shows the location of retaining walls, if necessary, the expanded pad, and drainage features that will convey stormwater to existing drainage channels;*
- *A site plan that shows the extent of paving for a new access road around the tanks and the location of new fencing;*
- *A vegetation maintenance plan that shows the extent of vegetation clearing and pruning for maintaining the defensible space around the tank;*
- *A retaining wall and foundation plan that shows a reinforced-concrete ring foundation for the tank, and the retaining walls;*
- *A tank and piping plan that shows the new tank and appurtenances, and new piping connections to the existing water mains;*
- *Electrical plans showing tank controls and telemetry; and*
- *Additional sheets that show structural details for the retaining walls and foundation, sections, details for fencing, piping, and tank appurtenances.*

Coastland Engineering will also prepare written instructions for the work, or specifications, that,
together with the plan set, comprise bid documents that are suitable for public works bid. Coastland will provide a 60%, 95% and Final submittal. Each submittal will incorporate the District's previous review comments. Coastland estimates a total of 436 hours of time for engineers and CAD designers to complete this task.

Also included is 69 hours of electrical engineering time, to be conducted by Sonoma Electrical Engineering, to design and prepare plans and specifications for tank electrical operations and control. The Sonoma Electrical Engineering hourly estimate was taken from a similar and recent tank project. Sonoma Electrical's Schedule of Hourly Rates are included as CEN #5.

Contract Bid and Award. *The project will be advertised, put out to public bid and awarded to the lowest bidder. Coastland Engineers will prepare any necessary addenda and respond to requests for information from contractors, provide assistance to the District as needed during the advertising process, attend the bid opening, and analyze the bids to ensure that they meet the bid requirements.*

These tasks are estimated to take a total of 25 hours of time. The bid opening will be attended by a
Principal Engineer and a Senior Engineer and includes 2 hours of travel time.

5. **2023 REVISION: Construction Management & Inspection are design-related costs that occur during the construction phase. These costs were calculated based on the Design Cost Multiplier of 2.61, and incorporated into 2023 REVISION #2.**

   Construction Management and Inspection. *Construction management and inspection occurs during the construction phase, but it is normally estimated as a percentage of the construction's total cost. For this project, we estimated that 13% of the total construction cost would be needed to complete this task. Construction Manager hours bill out at $190/hour and Inspectors have an hourly rate of $160/hr.*

CONSTRUCTION TASKS

2023 REVISION: GHD was awarded the DS & E contract, and has subsequently developed 60% design documents. Included in these documents is GHD's OPCC. Total construction costs have increased by a factor of 2.09. To align with the original cost estimates of Coastland, the individual line items have been re-costed based on this cost multiplier of 2.09.

Coastland Engineering provides municipal engineering services to cities throughout the North Bay. Part of our services are to prepare bid packages and oversee the award of contracts for public works construction. This role allows us to have a constant supply of current Contractor pricing for various construction tasks obtained from the bid tabs of work we oversee. We compile this pricing information and use it as a basis for estimating construction costs. We also get quotes directly from suppliers and manufacturer's for specific costs, as needed.

***Mobilization** includes obtaining permits, installing environmental protections, moving equipment and materials to the site, hiring subcontractors, ordering materials, preparing submittals, and conducting project administration. This task also includes the work to demobilize from the site, and closing out the project and grant. The construction estimate for mobilization is normally estimated as a percentage of the total construction cost, and in this case, was estimated as 5%. The basis for this estimate is from the review of bid tabs for similar projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Mobilization	$90,697	2.09	$189,316

***Remove Trees and Grind Roots** will involve removing 23 trees from the project area. The cost of $1,620/tree is based on bid tab review.*

Description	Original Costs	Cost multiplier	Revised Costs
Remove Trees and Grind roots	$37,260	2.09	$77,774

***Clearing and Grubbing/Vegetation Management** involves removing vegetation, rock, and organic soils within the 0.75-acre of excavated area as well as conducting weed abatement and pruning trees within the 100 foot-radius defensible corridor around each tank. Clearing and grubbing and vegetation management was estimated to be $9,000/acre based on similar tasks of other projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Clearing & Grubbing	$6,750	2.09	$14,090

Demolish Security Fence *involves the removal of 344 linear feet of fencing (lf). The estimated cost of $13.50/lf is based on the average of bid tab information from multiple projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Demolish Security Fence	**$4,644**	**2.09**	**$9,694**

Site Excavation *involves excavating 3,136 cubic yards (cy) of soil, building a road embankment, and off- hauling 2,690 cy of soil 5 miles to the HVL wastewater treatment plant. An excavator will be used to excavate the soil directly into 10-wheeler dump trucks. The off-hauling of soil will take approximately 280 trips. Mass grading will occur for both tank sites simultaneously. The Tank 9B site will be used as a staging area during the construction of Tank 9A. The cut and fill quantities, as obtained by Civil 3D, are attached as CEN#7. The cost of $47.25/cy is based on the average of bid tab information from multiple projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Site Excavation	**$154,271**	**2.09**	**$322,016**

Drainage *includes the installation of 190 of 12" storm drain piping and 2 drop inlets. The costs for installing drop inlets and piping is based on the average of bid tab information from multiple projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Drainage Inlet	**$12,150**	**2.09**	**$25,361**
Drainage piping	**$25,650**	**2.09**	**$53,540**

Security Fencing. *Approximately 670 feet of 8' tall security fencing will be constructed at the property boundaries to protect the site. A 15 feet-wide gate will be installed at the access road.*

Description	Original Costs	Cost multiplier	Revised Costs
Security Fencing	**$67,670**	**2.09**	**$141,250**
Security Gate	**$8,100**	**2.09**	**$16,907**

Water Main Piping. *Water main piping modifications will be constructed but no connections will be made at this time. Buried water main will match the existing 8-inch C900 PVC pipe and will be buried with 40 inches of cover. Trench excavation will be conducted using an excavator. Some piping will be removed out of the footprint of the new tanks. Exposed water main or drain piping will be ductile iron. Overflow drains will also be constructed (once the tanks are built). This task also includes connecting the new water pipe to the existing water main (once the tanks are built). Unit costs for water main pipe and valves are based the average of bid*

tab data from similarly sized projects.

Description	Original Costs	Cost multiplier	Revised Costs
Remove Water Main	**$5,400**	**2.09**	**$11,272**
Water Pipe C900	**$63,180**	**2.09**	**$131,878**
Water Pipe DIP	**$10,800**	**2.09**	**$22,543**
8" Gate Valve	**$12,150**	**2.09**	**$25,361**
6" Gate Valve	**$4,050**	**2.09**	**$8,454**

Concrete Retaining Walls and Tank 9A Foundation. *Retaining walls for both Tank 9A and 9B will be constructed simultaneously. Tank 9A's retaining wall will be 140 feet long with heights ranging from 1 to 5 feet high. Tank 9B's retaining wall will be 130 feet long with heights ranging from 1 to 10 feet high. A reinforced concrete ring foundation will be poured for Tank 9A. Detailed wall design has not been completed at this time. Wall thicknesses of 10 inches were assumed as well as spread footing dimensions. The ring foundation has not yet been designed, but the assumed dimensions were taken from another tank project of similar size. This task also includes the construction of 565 lf of valley gutter at the base of the retaining walls. The unit cost for construction of reinforced concrete used is $2,700/cy.*

Description	Original Costs	Cost multiplier	Revised Costs
Concrete retaining walls	**$215,460**	**2.09**	**$449,738**
Tank Foundation	**$115,560**	**2.09**	**$241,213**
Valley Gutter	**$30,510**	**2.09**	**$63,685**

Tank 9A Construction and Testing. *Tank 9A will be assembled from pre-coated steel panels onsite. After assembly, the tank coating will be spot-repaired as necessary. Appurtenances will be added such as caged ladders, manways, drains with vortex breaker, vents and overflow pipes. The tank will be tested for leaks. Coastland obtained a quote to furnish to the site and install the proposed bolted steel tanks from Superior Tanks. The quote is included as CEN#6.*

Description	Original Costs	Cost multiplier	Revised Costs
Bolted Steel Tanks	**$459,000**	**2.09**	**$958,089**
Electrical System	**$8,100**	**2.09**	**$16,907**
Cathodic protection	**$6,750**	**2.09**	**$14,090**

Tank 9A Tie-in to Water System. *The tank and water piping will be disinfected prior to making the connection to the existing water main piping. After the tie-in, Tank 9A will be in service.* ***The costs for water pipe tie-in is included in the water main piping costs.***

Demolish Existing Tank. *Once Tank 9A is in service, the existing 150,000-gallon redwood tank and foundation will be demolished using an excavator and removed from the site in 10-wheeler dump trucks. The cost of demolition and removal is based on the judgment of our construction management team.*

Description	Original Costs	Cost multiplier	Revised Costs
Demolish Tank & Foundation	**$10,800**	**2.09**	**$22,543**

Water Main Piping to Tank 9B. *Water main piping will be extended from the existing water main to Tank 9B (no connections will be made at this time). Buried water main will match the existing 8-inch C900 PVC pipe and will be buried with 40 inches of cover. Trench excavation will be conducted using an excavator. Some piping will be removed out of the footprint of the new tanks. Exposed water main or drain piping will be ductile iron. Overflow drains will also be constructed (once the tanks are built). This task also includes connecting the new water pipe to the existing water main (once the tanks are built). Unit costs for water main pipe and valves are based the average of bid tab data from similarly sized projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Abandon & remove overflow and drainage pipe	**$810**	**2.09**	**$1,691**

Tank 9B Foundation. *A reinforced concrete ring foundation will be poured for Tank 9B. The ring foundation has not yet been designed, but the assumed dimensions were taken from another tank project of similar size. The unit cost for construction of reinforced concrete used is $2,700/cy.* ***The costs are included in the Tank 9a foundation costs.***

Tank 9B Construction and Testing. *Tank 9B will be assembled from pre-coated steel panels onsite. After assembly, the tank coating will be spot-repaired as necessary. Appurtenances will be added such as caged ladders, manways, drains with vortex breaker, vents and overflow pipes. The tank will be tested for leaks. Coastland obtained a quote to furnish to the site and install the proposed bolted steel tanks from Superior Tanks. The quote is included as CEN#6.*

Description	Original Costs	Cost multiplier	Revised Costs
Drainage Piping	**$5,120**	**2.09**	**$10,687**
Overflow Piping	**$7,680**	**2.09**	**$16,031**

Tank 9B Tie-in to Water System. *The tank and water piping will be disinfected prior to making the connection to the existing water main piping. After the tie-in, Tank 9B will be in service.* ***The costs for water pipe tie-in is included in the water main piping costs.***

Paving. *The 15-foot wide access road will be paved with 3 inches of asphalt concrete over 6 inches of aggregate base. The costs for installing the access road is based on bid tab data for similarly-sized projects.*

Description	Original Costs	Cost multiplier	Revised Costs
Rock Slope Protection	**$2,430**	**2.09**	**$5,072**
Class 2 Aggregate Base	**$34,425**	**2.09**	**$71,857**
Asphalt Concrete	**$34,945**	**2.09**	**$72,942**

Demobilization. *Demobilization includes final inspection, completion of the final punch-list tasks, and the removal of equipment and supplies from the site.* ***The costs of demobilization are included in the costs of mobilization as described above.***

Project Close-out and Record Drawings. *This task involves completion of project paperwork and records, as well as preparing as-built drawings.* ***The costs of project close-out and record drawings are included in the costs of mobilization as described above.***

Grant Close-out. *Grant close out involves completing the paperwork and inspections required to complete the project to the satisfaction of FEMA and CalOES.* ***The costs of grant close-out are included in the costs of mobilization as described above.***

Hidden Valley Lake CSD

Water Storage System Reliability Project

Maintenance Costs

Current Date	Multiplier
2023	2.09

Task	Recurrence	Cost Assumptions	Costs per Recurrence	Total Cost over 50 Years	
Exterior Tank Inspection	Annually	Inspection:	**$ 462.84**		
		Utility Supervisor: 6 hrs x **$77.14**/hr	**$ 306.66**		
		Utility Operator II: 6 hrs x **$51.11**/hr (Avg)	**$ 769.50**		
		Total Cost per Recurrence		$ 38,475.00	**$ 38,475.00**
Interior Tank Inspection	Every 10 years	Dive inspection:	$ 3,375.00		**$ 43,294.35**
		Inspect (2) 250,000 gallong steel tank ($1,687 ea) Utility Operator II: 12 hrs x $64/hr	$ 768.00		
			$ 4,143.00		
		Total Cost per Recurrence		**$ 20,715.00**	
Minor Repairs	Every 10 years	Replace gaskets/tighten bolts, minor rust repairs	$ 1,240.00		**n/a per GHD**
		Utility Supervisor: 20 hrs x $62/hr Utility Operator II: 20 hrs x $64/hr Utility	$ 1,280.00		
		Worker: 40 hrs x $39/hr Materials and equipment	$ 1,560.00		
		Total Cost per Recurrence	$ 6,000.00		
			$ 10,080.00		
				$ 50,400.00	
Re-Painting	Every 20 years	Exterior Repainting ($150,000 each)	$ 300,000.00		**n/a per GHD**
		Interior Repainting ($100,000 each)	$ 200,000.00	**$ 1,032,160.00**	
		Total Cost per Recurrence	**$ 516,080.00**		
Total Maintenance Costs over 50 Years					**$ 81,769.35**
Maintenance Cost/Year					**$ 1,635.39**

Appendix C:

Pre-Mitigation Damage Costs

Pre-Mitigation costs, 13 year and 28 year RI		
	13 Year RI	28 Year RI
Replace Tank (materials)	$ 937,196.00	$ 937,196.00
Build Temporary Tank Farm (materials)	$ 92,169.00	$ 92,169.00
Supply Emergency Water	$ 1,588,691.00	$ 1,869,048.00
Outage Days	16	29
Totals	**$ 2,618,056.00**	**$ 2,898,413.00**

Replace Tank

Pre-Mitigation Damage: Cost to Replace Existing Water Tank in Kind

Current date	Multiplier
2023	2.09

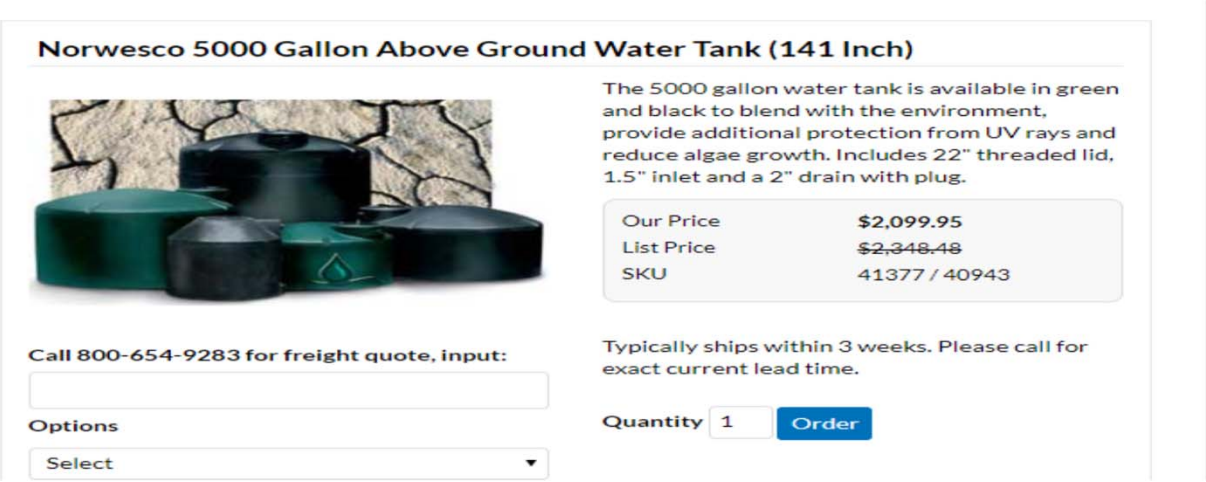
DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING		PROJECT OR PLANNING TITLE		
4/8/2019	HIDDEN VALLEY LAKE CSD	4382		Water System Storage Reliability Project		
#	Item Name	Unit Quantity	Unit of Measure	Unit Cost	Cost Estimate Total	28 year RI
1	Replace Water Tank					
2	Demolish (E) Redwood Tank, Foundation and Fencing	1	LS	$ 15,000.00	$15,000	$ 31,350
3	Security Fencing - 8' tall	638	LF	$136.00	$86,768	$ 181,345
4	Security Gate - 15' wide	1	EA	$8,100.00	$8,100	$ 16,929
5	Concrete Retaining Wall (60' long x 4' high)	7.5	CY	$2,700.00	$20,250	$ 42,323
6	Tank Foundation	20.6	CY	$2,700.00	$55,620	$ 116,246
7	Bolted Steel Tank (150,000 gallon)	1	EA	$182,231.10	$182,231	$ 380,863
8	Water Piping (8" DIP)	40	LF	$270.00	$10,800	$ 22,572
9	Drain Pipe (6" WSP)	40	LF	$128.00	$5,120	$ 10,701
10	Overflow Pipe (6" WSP)	60	LF	$128.00	$7,680	$ 16,051
11	Cathodic Protection	1	EA	$6,750.00	$6,750	$ 14,108
12	Electrical System and Telemetry	1	EA	$8,100.00	$8,100	$ 16,929
13	Mobilization	1	EA	$42,000.00	$42,000	$ 87,780
				Total Project Cost Estimate:	$448,419	$ 937,196

Build Temporary Tanks

Current date	Multiplier
2023	2.09

Assumptions

1. Assume the existing water tank is destroyed and all 2,074 customers have no water supply.
2. The District sets up 3 temporary tank sites with (2) 5,000 gallon tanks at parking lots or similar convenient locations and accessible to HVL residents 12 hours/day.
3. Assume the tank farms are located at existing paved sites. No grading is required.



Cost to Bring Temporary Tank Farm Water Supply online

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE	
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project	
#	**Item Name**	**Unit Quantity**	**Unit of Measure**	**Unit Cost**	**Cost Estimate Total**	
1	Temporary security fencing (100 LF per site)	300	LF	$75.00	$22,500.00	**$ 47,025.00**
2	Temporary security gates	3	EA	$1,500.00	$4,500.00	**$ 9.405.00**
3	Water Tanks - 5,000 gallon polyethylene	6	EA	$2,700.00	$16,200.00	**$ 33,858.00**
4	Connect 2-inch flexible hose and valves	6	EA	$150.00	$900.00	**$ 1,881.00**
				Total Project Cost Estimate:	**$44,100.00**	**$ 92,169.00**

Supply Emergency Water 13 RI

Current date	Multiplier
2023	2.09

Time to Install Temporary Water Supply Tank Farms - 3 sites		
Task	Time (days)	
1. Order tanks and furnish to site	6	
2. Build security fence	10 (concurrent with ordering tank)	
Total time (days)	10	20.9
Time to build Bolted steel tank in kind (150,000 gal), in days	168	351.12

Assumptions

1. Assume the existing water tank is destroyed and all 2,074 customers have no water supply.
2. Assume temporary tank farm is built during 10 day evacuation, 11 day gap is noted as "outage days"
3. Assume replacement tank in kind is built concurrently with temporary tank farm
4. The temporary tank farm will supply water for **340 days**

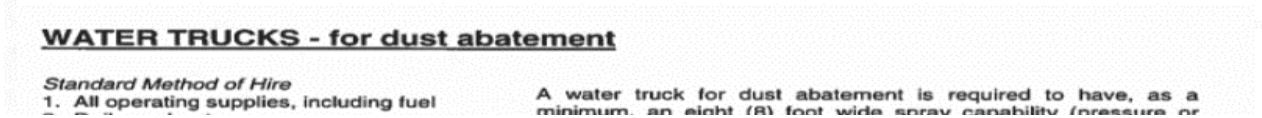
   351 - 11 = 340

5. Once operational, tank farms are staffed by a utility worker to operate tank farm site 12 hours/day.
6. Once operatonal, tank farms will require 1 water tender truck (500,000 gal), single shift with operator each day to refill tanks until replacement tank is built.
7. Coastland offers a multiplier to bring water tender prices from 2015 to 2018 prices of 1.35

   2182 * 1.35 = $2,945.70

Cost to Provide Temporary Tank Farm Water Supply

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE	
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project	
#	Item Name	Unit Quantity	Unit of	Unit Cost	Cost Estimate
1	Utility worker 3 @ 6 hrs/day for **340** days	**6120**	HR	**$ 47.97**	$ 293,576.40
2	Utility worker 3 @ 6 hrs/day for 340 days	**6120**	HR	**$ 47.97**	$ 293,576.40
3	1 Water Tender Truck (Single shift w/ operator)	**340**	Days	**$ 2,945.70**	$ 1,001,538.00
Total Project Cost					**$ 1,588,691**



WATER TRUCKS - for dust abatement

Standard Method of Hire

1. All operating supplies, including fuel

A water truck for dust abatement is required to have, as a minimum, an eight (8) foot wide spray capability (pressure or

Supply Emergency Water 28 RI

Time to Install Temporary Water Supply Tank Farms - 3 sites				
Task	Time (days)			
1. Order tanks and furnish to site	6			
2. Build security fence	10 (concurrent with ordering tank)			
Total time (days)	10	**20.9**	**31.35**	**<-50% increase**
Time to build Bolted steel tank in kind (150,000 gal), in days	168	**351.12**	**421.344**	**<-20% increase**

Assumptions

1. Assume the existing water tank is destroyed and all 2,074 customers have no water supply.
2. Assume temporary tank farm is built during 10 day evacuation, with a 21 day gap noted as "outage days"
3. Assume replacement tank in kind is built concurrently with temporary tank farm
4. The temporary tank farm will supply water for 400 **days**

   421 - 21 = 400

5. Once operational, tank farms are staffed by a utility worker to operate tank farm site 12 hours/day.
6. Once operatonal, tank farms will require 1 water tender truck (500,000 gal), single shift with operator each day to refill tanks until replacement tank is built.
7. Coastland offers a multiplier to bring water tender prices from 2015 to 2018 prices of 1.35

   2182 * 1.35 = $2,945.70

Cost to Provide Temporary Tank Farm Water Supply

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE	
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project	
#	**Item Name**	**Unit Quantity**	**Unit of**	**Unit Cost**	**Cost Estimate**
1	Utility worker 3 @ 6 hrs/day for **400** days	**7200**	HR	**$ 47.97**	$ 345,384.00
2	Utility worker 3 @ 6 hrs/day for **400** days	**7200**	HR	**$ 47.97**	$ 345,384.00
3	1 Water Tender Truck (Single shift w/ operator)	**400**	Days	**$ 2,945.70**	$ 1,178,280.00
Total Project Cost					**$ 1,869,048**

WATER TRUCKS - for dust abatement

Standard Method of Hire
1. All operating supplies, including fuel
2. Daily work rate
3. One operator

A water truck for dust abatement is required to have, as a minimum, an eight (8) foot wide spray capability (pressure or gravity). They also must have a 100-gallon per minute (gpm) self-loading capability.

Min. Gallon	SPRAY TYPE	Daily Single Shift With Operator	Daily Double Shift With Operator	Daily Single Shift Without Operator	Daily Double Shift Without Operator
1000	All	$792	$1,354	$372	$636
2500	All	$1,132	$1,936	$684	$1,170
5000	All	$1,276	$2,182	$828	$1,416

Hidden Valley Lake
Community Services District

19400 Hartmann Road
Hidden Valley Lake, CA 95467
707.987.9201
707.987.3237 fax
www.hvlcsd.org

I, Trish Wilkinson, Accounting Supervisor to the Hidden Valley Lake Community Services District hereby certify that the following rates accurately reflect employee compensation.

									CalPERS			
	HOURLY LABOR COSTS	Current Step	* Employee Compensation						0.1221	MEDICARE	TOTAL	TOTAL
1	Employee	Hourly Wage	Health	Dental	Vision	Life	Sick	Vacation	0.0747	0.0145	fringe rate	hourly rate
2	General Manager	$ 63.70	$ 5.99	$ 0.71	$ 0.14	$ 0.08	$ 2.94	$ 4.90	$ 7.78	$ 0.92	$ 23.46	$ 87.16
3	Admin Svrc Mgr	$ 36.22	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 1.67	$ 2.09	$ 2.71	$ 0.53	$ 23.48	$ 59.70
4	Accounting Supervisor	$ 45.21	$ 5.99	$ 0.19	$ 0.05	$ 0.08	$ 2.09	$ 3.48	$ 5.52	$ 0.66	$ 18.05	$ 63.26
5	Sr Acct Rep	$ 28.20	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 1.30	$ 1.09	$ 2.11	$ 0.41	$ 21.39	$ 49.59
6	Acct Rep	$ 20.73	$ 5.99	$ 0.71	$ 0.14	$ 0.08	$ 0.96	$ 0.80	$ 1.55	$ 0.30	$ 10.52	$ 31.25
7	Acct Rep	$ 25.45	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 1.17	$ 0.98	$ 1.90	$ 0.37	$ 16.96	$ 42.41
8	Project Manager	$ 50.07	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 2.31	$ 2.89	$ 3.74	$ 0.73	$ 22.21	$ 72.28
9	Water Resources Specialist	$ 29.52	$ 5.99	$ 0.19	$ 0.05	$ 0.08	$ 1.36	$ 1.14	$ 2.21	$ 0.43	$ 11.44	$ 40.96
10	Utility Supervisor	$ 48.89	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 2.26	$ 2.82	$ 5.97	$ 0.71	$ 28.25	$ 77.14
11	OP II	$ 35.38	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 1.63	$ 1.36	$ 2.64	$ 0.51	$ 18.69	$ 54.07
12	OP II	$ 30.33	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 1.40	$ 1.17	$ 2.27	$ 0.44	$ 17.81	$ 48.14
13	OP I	$ 27.37	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 1.26	$ 1.05	$ 3.34	$ 0.40	$ 22.54	$ 49.91
14	OP I	$ 24.70	$ 15.56	$ 0.40	$ 0.09	$ 0.08	$ 1.14	$ 0.95	$ 1.85	$ 0.36	$ 20.42	$ 45.12
15	Utility Tech	$ 22.30	$ 15.56	$ 0.19	$ 0.05	$ 0.08	$ 1.03	$ 0.86	$ 1.67	$ 0.32	$ 19.76	$ 42.06
16	Utility Tech	$ 18.16	$ 11.97	$ 0.19	$ 0.09	$ 0.08	$ 0.84	$ 0.70	$ 1.36	$ 0.26	$ 15.49	$ 33.65
17	Utility Tech *open*											$ -
18												

_____ 12/19/2022

Signature Date

Appendix D:

Post-Mitigation Damage Costs

Cost Summary

Post-Mitigation costs, 13 year and 28 year RI		
	13 Year RI	28 Year RI
Interior/Exterior Tanks (2) clean & disinfect	$ 4,025.00	
Interior/Exterior Tanks (2) clean, disinfect, coat, paint		$ 990,505.21
Emergency Water Supply	$ 43,274.70	$ 93,677.98
Totals	**$ 47,299.70**	**$ 1,084,183.19**

Clean & Disinfect

Post-Mitigation Damage: Cost to Clean a Steel Tank after a Fire

See Assumptions below.

Current Date	Multiplier
2023	2.09

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE			
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project			
#	Item Name	Unit Quantity	Unit of Measure	Unit Cost	Cost Estimate Total		
1	Empty water tanks, clean and disinfect:				$ -		
2	Power-washer Rental	3	DAY	$ 203.00	$609.00	$	1,273
3	Utility Supervisor	8	HR	$ 77.14	$992.00	$	617
4	Operator II	24	HR	$ 51.11	$3,072.00	$	1,227
5	Utility Worker	24	HR	$ 37.86	$1,872.00	$	909
				Total Project Cost Estimate:	$6,545.00	$	4,025

Assumptions:

1. Assume the steel tanks do not burn because fire trucks are able to defend the site due to improved access and defensible space.
2. Assume that the tanks are unharmed but interior and exterior of tank must be cleaned and disinfected (due to smoke damage) prior to bringing back on-line.
3. Water tank cleaning and disinfection consists of power washing and sanitizing. This takes 3 days for 2 District staff.
4. Assume it takes 6 days to clean each tank and bring it on line.
5. Due to the redundant nature of the storage tank configuration, residents would be provided emergency water while the first tank is cleaned & disinfected.
6. Assume average pay rate of Operator IIs, and Utility workers

HVL CSD STAFF - Field Fringe Rate	
Utility Supervisor	62
Operator II	64
Operator II	56
Operator I	38
Utility Worker	39
Utility Worker	37
Average	$49.33

Supply Emergency Water (Post-Mit) 13 RI

Daily Cost to Provide Emergency Water via Water Tender Trucks

Current date	Multiplier
2023	2.09

See Assumptions below.

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE		
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project		
#	**Item Name**	**Unit Quantity**	**Unit of Measure**	**Unit Cost**	**Cost Estimate Total**	
1	1 Water Tender Trucks (Single shift w/ operator)	6	DAY	$ 1,722.60	$ 10,335.60	**$ 21,601.40**
2	Buckets - 5 gal	2074	EA	$ 5.00	$ 10,370	**$ 21,673.30**
				Total Project Cost Estimate:	$ 18,211	**$ 43,274.70**

Assumptions:

1. Assume every customer is provided 5 gallons of potable water per day. (2,074 customers x 5 gallons/day = 10,370 gallons/day
2. Assume 1 water tender truck, 5,000 gal capacity stationed at existing paved site, single shift
3. Coastland offers a multiplier to bring water tender prices from 2015 to 2018 prices of 1.35
   ($1,276*1.35) = $1722.6
4. Assume it takes 6 days to clean and disinfect tank and bring it on line.
5. Truck refills as needed at the CSD water plant or functioning hydrant.

WATER TRUCKS - for dust abatement

Standard Method of Hire
1. All operating supplies, including fuel
2. Daily work rate
3. One operator

A water truck for dust abatement is required to have, as a minimum, an eight (8) foot wide spray capability (pressure or gravity). They also must have a 100-gallon per minute (gpm) self-loading capability.

Min. Gallon	SPRAY TYPE	Daily Single Shift With Operator	Daily Double Shift With Operator	Daily Single Shift Without Operator	Daily Double Shift Without Operator
1000	All	$792	$1,354	$372	$636
2500	All	$1,132	$1,936	$684	$1,170
5000	All	$1,276	$2,182	$828	$1,416

Clean, Disinfect, Coat, Paint

Post-Mitigation Damage: Cost to Clean and Paint a Steel Tank after a Fire

See Assumptions below.

Current date	Multiplier
2023	2.09

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE		
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project		
#	Item Name	Unit Quantity	Unit of Measure	Unit Cost	Cost Estimate Total	
1	Empty water tank, and power wash				$ -	
2	Power-washer Rental	3	DAY	$203.00	$609.00	$ 1,272.81
3	Utility Supervisor	8	HR	**$77.14**	$617.12	$ 617.12
4	Operator II	24	HR	**$51.11**	$1,226.64	$ 1,226.64
5	Utility Worker	24	HR	**$37.86**	$908.64	$ 908.64
6	Paint Exterior of (2) 250,000-gallon Tanks	2	EA	$160,000.00	$320,000.00	$ 668,800.00
7	Paint Interior of (2) 250,000-gallon Tanks	2	EA	$76,000.00	$152,000.00	$ 317,680.00
				Total Project Cost Estimate:	$475,361.40	**$ 990,505.21**

Assumptions:

1. Assume the steel tanks do not burn because fire trucks are able to defend the site due to improved access and defensible space.
2. Assume that the tank is struturally undamaged, but the paint is blistered on interior and exterior prior to bringing back on-line.
3. Water tank cleaning and disinfection consists of power washing and sanitizing. This takes 3 days for 2 District staff.
4. Due to the redundant nature of the storage tank configuration, residents would be provided emergency water while the first tank is cleaned, disinfected, painted and coated.
5. Assume it takes 20 days to clean and paint each tank and bring it on line.
6. Assume average pay rate of Operator IIs, and Utility workers

HVL CSD STAFF - Field Fringe Rate	
Utility Supervisor	62
Operator II	64
Operator II	56
Operator I	38
Utility Worker	39
Utility Worker	37
Average	$49.33

Supply Emergency Water (Post-Mit) 28 RI

Daily Cost to Provide Emergency Water via Water Tender Trucks

Current date	Multiplier
2023	2.09

See Assumptions below.

DATE	JURSIDICTION NAME	DISASTER & PROJECT OR PLANNING #		PROJECT OR PLANNING TITLE		
4/10/2019	Hidden Valley Lake CSD	4382		Water System Storage Reliability Project		
#	**Item Name**	**Unit Quantity**	**Unit of Measure**	**Unit Cost**	**Cost Estimate Total**	
1	1 Water Tender Trucks (Single shift w/ operator)	20	DAY	$ 1,722.60	$ 34,452.00	**$ 72,004.68**
2	Buckets - 5 gal	2074	EA	$ 5.00	$ 10,370	**$ 21,673.30**
				Total Project Cost Estimate:	$ 18,211	**$ 93,677.98**

Assumptions:

1. Assume every customer is provided 5 gallons of potable water per day. (2,074 customers x 5 gallons/day = 10,370 gallons/day
2. Assume 1 water tender truck, 5,000 gal capacity stationed at existing paved site, single shift
3. Coastland offers a multiplier to bring water tender prices from 2015 to 2018 prices of 1.35
   ($1,276*1.35) = $1722.6
4. Assume it takes 40 days to clean and paint tank and bring it on line.
5. Truck refills as needed at the CSD water plant or functioning hydrant.

WATER TRUCKS - for dust abatement

Standard Method of Hire
1. All operating supplies, including fuel
2. Daily work rate
3. One operator

A water truck for dust abatement is required to have, as a minimum, an eight (8) foot wide spray capability (pressure or gravity). They also must have a 100-gallon per minute (gpm) self-loading capability.

Min. Gallon	SPRAY TYPE	Daily Single Shift With Operator	Daily Double Shift With Operator	Daily Single Shift Without Operator	Daily Double Shift Without Operator
1000	All	$792	$1,354	$372	$636
2500	All	$1,132	$1,936	$684	$1,170
5000	All	$1,276	$2,182	$828	$1,416

Wage & Equipment Rate Guide for 2015 13

Hidden Valley Lake
Community Services District

19400 Hartmann Road
Hidden Valley Lake, CA 95467
707.987.9201
707.987.3237 fax
www.hvlcsd.org

I, Trish Wilkinson, Accounting Supervisor to the Hidden Valley Lake Community Services District hereby certify that the following rates accurately reflect employee compensation.

									CalPERS			
	HOURLY LABOR COSTS	Current Step	* Employee Compensation						0.1221	MEDICARE	TOTAL	TOTAL
1	Employee	Hourly Wage	Health	Dental	Vision	Life	Sick	Vacation	0.0747	0.0145	fringe rate	hourly rate
2	General Manager	$ 63.70	$ 5.99	$ 0.71	$ 0.14	$ 0.08	$ 2.94	$ 4.90	$ 7.78	$ 0.92	$ 23.46	$ 87.16
3	Admin Svrc Mgr	$ 36.22	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 1.67	$ 2.09	$ 2.71	$ 0.53	$ 23.48	$ 59.70
4	Accounting Supervisor	$ 45.21	$ 5.99	$ 0.19	$ 0.05	$ 0.08	$ 2.09	$ 3.48	$ 5.52	$ 0.66	$ 18.05	$ 63.26
5	Sr Acct Rep	$ 28.20	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 1.30	$ 1.09	$ 2.11	$ 0.41	$ 21.39	$ 49.59
6	Acct Rep	$ 20.73	$ 5.99	$ 0.71	$ 0.14	$ 0.08	$ 0.96	$ 0.80	$ 1.55	$ 0.30	$ 10.52	$ 31.25
7	Acct Rep	$ 25.45	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 1.17	$ 0.98	$ 1.90	$ 0.37	$ 16.96	$ 42.41
8	Project Manager	$ 50.07	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 2.31	$ 2.89	$ 3.74	$ 0.73	$ 22.21	$ 72.28
9	Water Resources Specialist	$ 29.52	$ 5.99	$ 0.19	$ 0.05	$ 0.08	$ 1.36	$ 1.14	$ 2.21	$ 0.43	$ 11.44	$ 40.96
10	Utility Supervisor	$ 48.89	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 2.26	$ 2.82	$ 5.97	$ 0.71	$ 28.25	$ 77.14
11	OP II	$ 35.38	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 1.63	$ 1.36	$ 2.64	$ 0.51	$ 18.69	$ 54.07
12	OP II	$ 30.33	$ 11.97	$ 0.40	$ 0.09	$ 0.08	$ 1.40	$ 1.17	$ 2.27	$ 0.44	$ 17.81	$ 48.14
13	OP I	$ 27.37	$ 15.56	$ 0.71	$ 0.14	$ 0.08	$ 1.26	$ 1.05	$ 3.34	$ 0.40	$ 22.54	$ 49.91
14	OP I	$ 24.70	$ 15.56	$ 0.40	$ 0.09	$ 0.08	$ 1.14	$ 0.95	$ 1.85	$ 0.36	$ 20.42	$ 45.12
15	Utility Tech	$ 22.30	$ 15.56	$ 0.19	$ 0.05	$ 0.08	$ 1.03	$ 0.86	$ 1.67	$ 0.32	$ 19.76	$ 42.06
16	Utility Tech	$ 18.16	$ 11.97	$ 0.19	$ 0.09	$ 0.08	$ 0.84	$ 0.70	$ 1.36	$ 0.26	$ 15.49	$ 33.65
17	Utility Tech *open*											$ -
18												

_____ 12/19/2022

Signature Date

COASTLAND
CIVIL ENGINEERING - CONSTRUCTION MANAGEMENT - BUILDING DEPARTMENT SERVICES

Memorandum

Date: January 30, 2019

To: Alyssa Gordon
Hidden Valley Lake CSD
19400 Hartmann Road
Hidden Valley Lake, CA 95467-8371

From: Jenny Melman, P.E.

Subject: **Tank Sizing Memo**
FEMA HMGP Sub-Application
Water System Storage Reliability

Hidden Valley Lake Community Services District (District) is preparing a sub-application to FEMA through its Hazard Mitigation Grant Program to improve their water system storage reliability. Their proposed project is the replacement of the Unit 9 water storage tank. The purpose of the project is to reduce the risk of damage or loss of the District's critical water storage facilities during a wildfire. Coastland is assisting the District in the preparation of this application.

This memorandum provides engineering calculations that conclude that the proper sizing of the replacement water storage tank is 0.5 million gallons (MG). The engineering methods and calculations are described below.

Existing Unit 9 Storage Tank

The existing Unit 9 water storage tank is the District's only water storage facility within the Zone 9 pressure zone. It is a 150,000-gallon (0.15 MG) redwood tank built in 1968. The tank is located on lot APN-142-363-23, on Eagle Rock Rd.

Pressure Zone Interconnections

There are four primary pressure zones within Hidden Valley Lake, known as Little Peak, Zone 9, Zone 4, and Zone 1, listed from highest to lowest elevation. The Little Peak zone is fed solely from the Unit 9 tank via a booster pump station adjacent to the Unit 9 tank. Little Peak's 0.5 MG tank provides additional water storage to Zone 9 because the zones are interconnected by pressure reducing valves (PRVs) and altitude valves. However, if the Unit 9 tank was lost during a fire, the residents of both Zone 9 and Little Peak would be without water.

Tank Sizing Criteria

The proposed tank was sized according to the formula used in the District's Water Master Plan Update (2001 Master Plan), as prepared by Winzler & Kelly, dated June, 2001:

Required storage = Average day demand + 25% Peak day demand + Fire flow (2-hr duration)

Average Day Demand and Peak Day Demand

Average Day Demand and Peak Day Demand values were updated from those presented in the 2001 Master Plan based on the increased number of service connections since 2001. For these calculations, it is assumed that the average rate of water use per service connection hasn't changed significantly since 2001.

The 2001 Master Plan calculated Average Day Demand and Peak Day Demand by evaluating water use records for each pressure zone. Their results are shown in Columns A-C of Table 1.

Table 1. Average Day and Peak Day Demand from 2001 Master Plan

Pressure Zone	Number of Service Connections in 2001 [A]	2001 Average Day Demand (MG) [B]	2001 Peak Day Demand (MG) [C]	Average Day Demand per Service Connection [D] = [B]/[A]	Peak Day Demand per Service Connection [E] = [C]/[A]
Zone 9	511	0.187	0.355	0.000366	0.000695

The average daily demand *per connection* was calculated by dividing (2001 Average Day Demand) by (Number of Service Connections in 2001). Likewise, the peak daily demand per connection was calculated by dividing (2001 peak Day Demand) by (Number of Service Connections in 2001). The back-calculated values are shown in Columns D and E in Table 1 above.

To determine the 2018 Average Day Demand, the (Number of Service Connections in 2018) was multiplied by (Average Day Demand per Service Connection). Likewise, the 2018 Peak Day Demand was obtained by multiplying the (Number of Service Connections in 2018) by (Peak Day Demand per Service Connection). The updated values for 2018 are shown in Table 2.

Table 2. 2018 Average Day and Peak Day Demand

Pressure Zone	Number of Service Connections in 2018 [A]	Average Day Demand per Service Connection [B]	Peak Day Demand per Service Connection [C]	2018 Average Day Demand (MG) [D] = [B]*[A]	2018 Peak Day Demand (MG) [E] = [C]*[A]
Zone 9	814	0.000366	0.000695	0.298	0.566

Water Storage Requirements

As mentioned above, water storage requirements were calculated by the following formula:

Required storage = Average day demand + 25% Peak day demand + Fire flow (2-hr duration)

Average day demand and Peak day demand were calculated in the section above. Fire flow requirements were determined in the 2001 Master Plan by using the Insurance Services Office's Fire Suppression Rating Schedule and information provided by the South Lake Fire Department. Fire flow requirements were determined to be 1,500 gallons per minute (gpm) for a two-hour duration (equivalent to 180,000 gallons or 0.18 MG).

For the Unit 9 tank, the required storage is calculated in Table 3.

Table 3. Unit 9 Tank Water Storage Calculation

Pressure Zone	2018 Average Day Demand (MG) [A]	2018 Peak Day Demand (MG) [B]	25% of 2018 Peak Day Demand (MG) [C] = 0.25*[B]	Fire Flow (2-hr duration) (MG) [D]	Unit 9 Storage Requirement (MG) [E]=[A]*[C]*[D]
Zone 9	0.298	0.566	0.142	0.18	0.62

The water storage calculation in Table 3 is conservative because it does not account for the water that would transfer by gravity from the higher Little Peak zone to Zone 9 through PRVs and altitude valves during fire flows. As stated in the 2001 Master Plan:

> "…Therefore, it is reasonable to assume that the higher zones may transfer water to the lower zones at the following rates:
> - Little Peak to Zone 9: 1,000 gpm – equivalent to 0.12 MG for a 2-hour fire flow

Therefore, the size of the proposed Unit 9 tank may be reduced by the volume of water readily available from the higher zone. The calculated Unit 9 storage requirement of 0.62 MGD (from Table 3, Column E) may be reasonably reduced by 0.12 MG, to 0.5 MG.

Existing Unit 9 Tank Sizing

The existing Unit 9 water tank is undersized for current water storage needs. The existing capacity is 150,000 gallons (0.15 MG), which is only 30% of the 0.5 MG current water storage needs, as calculated above.

Proposed Tank Maximum Water Surface Elevation

The existing Unit 9 Tank has a maximum water surface elevation (WSE) of (elev. 1624.9), which is 19 feet above the existing tank floor (elev. 1605.9). It is critical that the proposed tank be designed with the same maximum water surface elevation in order to maintain pressure consistency within the pressure zone as well as to maintain the existing discharge-head operating point for the booster pumps that supply the Unit 9 Tank.

Tanks 9A and 9B: (2) 250,000 Gallon Bolted Steel Tanks

The most cost-effective design solution, based on many iterations of one or two tanks in different locations, was determined to be two tanks, one on either side of the existing tank. There are two important advantages of having two tanks rather than one. The first is that it allows the existing tank to remain in service while the first tank is constructed (this was difficult to provide with the one tank solutions because of site limitations). This eliminates the need for a temporary water supply reservoir which would have been difficult and expensive to implement based on limited amount of flat land at the appropriate elevation. The second advantage is ease

of maintenance because when there are two tanks in a zone, one can easily be taken out of service for maintenance or inspection.

Using Standard Tank Sizes (from Superior Tank, attached) to provide 250,000 gallons of usable storage:

Diameter = 44'-6 ¾" = 44.56 ft (from standard bolted tank capacities table)

Radius = 44.56/2 = 22.28 ft

Tank XS Area = $3.14*(22.28)^2$ = 1559.48 sf

Calculate height, given volume.

Volume of 250,000 gallons in cf: 250,000gal/7.48 gal/cf = 33,422 cf

Height = Volume/XS Area = 33,422cf/1559.48 = 21.43 ft or taller

Pad elev = 1624.9 – 21.4 = 1603.5 ft

Tanks 9A and 9B will have pad elevations of 1603.5 feet and maximum water surfaces of 1624.9 feet.

Standard tank height = 24'-1 ½" = 24.125 ft
Top of Tank = 1603.5 + 24.125 = 1627.625 ft

SUPERIOR TANK COMPANY INC.®

STANDARD BOLTED TANK CAPACITIES

TANK		HEIGHTS															
		feet	meters	feet	meters	feet	meters	feet	meters	feet	meters	feet	meters	feet	meters	feet	meters
DIAMETERS (FEET)	DIAMETERS (METERS)	8'-1/2"	2.451	16'-1"	4.901	24'-1 1/2"	7.353	32'-2"	9.805	40'-2 1/2"	12.255	48'-3"	14.707	56'-3 1/2"	17.158	64'-4"	19.609
9'-2 3/4	2.813	4,023	15	8,047	30	12,073	46	16,097	61	20,121	76	24,145	91	28,169	107	32,193	122
12'-3 11/16"	3.751	7,155	27	14,309	54	21,468	81	28,624	108	35,780	135	42,936	163	50,092	190	57,248	217
15'-4 5/8	4.690	11,181	42	22,362	85	33,549	127	44,733	169	55,915	212	67,099	254	78,282	296	89,464	339
17'-2 1/4"	5.239	13,955	53	27,910	106	41,874	159	55,832	211	69,789	264	83,747	317	97,705	370	111,662	423
18'-5 9/16"	5.628	16,104	61	32,208	122	48,322	183	64,429	244	80,535	305	96,643	366	112,751	427	128,857	488
21'-6 1/2"	6.567	21,920	83	43,841	166	65,775	249	87,701	332	109,624	415	131,550	498	153,476	581	175,399	664
23'-9 3/16"	7.244	26,679	101	53,359	202	80,055	303	106,741	404	133,424	505	160,110	606	186,796	707	213,478	808
25'-9 3/8"	7.859	31,396	119	62,792	238	94,208	357	125,612	476	157,012	595	188,416	713	219,820	832	251,220	951
26'-8 15/16"	8.153	33,788	128	67,576	256	101,385	384	135,182	512	168,974	640	202,770	768	236,567	896	270,359	1024
29'-8 5/8"	9.059	41,720	158	83,440	316	125,186	474	166,917	632	208,642	790	250,373	948	292,103	1106	333,829	1264
32'-8 3/16"	9.962	50,454	191	100,908	382	151,393	573	201,860	764	252,320	955	302,786	1146	353,253	1337	403,713	1528
34'-2"	10.415	55,143	209	110,286	418	165,464	626	220,620	835	275,770	1044	330,927	1253	386,084	1462	441,234	1671
38'-7 5/8"	11.777	70,508	267	141,016	534	211,568	801	282,094	1068	352,611	1335	423,137	1602	493,662	1869	564,179	2136
40'-1 5/16"	12.226	75,991	288	151,982	575	228,020	863	304,030	1151	380,030	1439	456,040	1727	532,049	2014	608,050	2302
41'-7 1/8"	12.679	81,722	309	163,444	619	245,217	928	326,959	1238	408,691	1547	490,434	1857	572,176	2166	653,908	2476
44' - 6 3/4"	13.586	93,820	355	187,640	710	281,459	1065	375,280	1421	469,100	1776	562,920	2131	656,740	2486	750,560	2841
47'-6 3/8"	14.488	106,716	404	213,433	808	320,216	1212	426,959	1616	533,689	2020	640,432	2424	747,175	2829	853,904	3233
50'-6 1/16"	15.395	120,489	456	240,977	912	361,541	1369	482,060	1825	602,563	2281	723,082	2738	843,601	3194		
54'-11 3/4"	16.759	142,781	541	285,563	1081	428,433	1622	571,249	2163	714,048	2703	856,865	3244				
59'-5"	18.111	166,763	631	333,525	1263	500,392	1894	667,196	2526	833,980	3157	1,000,784	3789				
65'-4 5/16"	19.922	202,403	764	404,805	1528	607,334	2292	809,787	3056	1,012,215	3820						
72'-9 7/16"	22.186	250,250	947	500,499	1895	750,904	2843	1,001,216	3790	1,251,497	4738						
74'-3 1/4"	22.639	260,565	986	521,130	1973	781,857	2960	1,042,487	3947	1,303,084	4933						
80'-2 9/16"	24.450	303,933	1151	607,866	2301	911,988	3452	1,215,997	4603								
86'-1 7/8"	26.261	350,630	1327	701,259	2655	1,052,107	3983	1,402,824	5311								
92'-1 3/16"	28.073	400,671	1517	801,341	3034	1,202,261	4551										
95' - 0 3/16"	28.956	426,994	1616	853,988	3233	1,280,981	4849										
103'-11 3/4"	31.676	510,776	1933	1,021,551	3867	1,532,327	5800										
124'-9 5/16"	38.033	735,427	2784	1,470,854	5568	2,206,739	8354										
		US Gallons	Cubic Meters	US Gallons	Cubic Meters	US Gallons	Cubic Meters	US Gallons	Cubic Meters	US Gallons	Cubic Meters	US Gallons	Cubic Meters	US Gallons	Cubic Meters	US Gallons	Cubic Meters

- Other Tank Configurations Available Upon Request

Please note: this chart is for reference only. Soil investigation, foundation design, freeboard requirements, wind loads, deck loads, seismic loads and liquid weight are factors that can impact your overall tank design.

Superior Tank Co., Inc.
9500 Lucas Ranch Road
Rancho Cucamonga, California 91730 • (909) 912-0580 • FAX: (909) 912-0585
http://www.superiortank.com | sales@superiortank.com

Alyssa Gordon

From: Kluenker, Nicole@CalOES <Nicole.Kluenker@CalOES.ca.gov>
Sent: Thursday, August 10, 2023 11:19 AM
To: Alyssa Gordon; Dennis White
Subject: RE: DR4431-PA0057 Approved Time Extension

Hi Alyssa,

Cal OES has yet to have an overall DR extension denied, but we have gotten very, very close to the DR POP date before it comes through, including cases where we have started the closeout process for the project and then were able to let the SR restart project activities. We also can't ask FEMA for the overall extension until we are within 6 months of that POP date.

Sincerely,
Nicole Kluenker
DR4683/4699 JFO Hazard Mitigation Branch Director
Grant Specialist – Coastal Unit
Hazard Mitigation Grants Division
Recovery - Hazard Mitigation Assistance Branch
California Governor's Office of Emergency Services

Phone/ Cell: 916.879.1195
Nicole.Kluenker@caloes.ca.gov
Hazard Mitigation | California Governor's Office of Emergency Management

---

From: Alyssa Gordon <agordon@hvlcsd.org>
Sent: Thursday, August 10, 2023 11:13 AM
To: Kluenker, Nicole@CalOES <Nicole.Kluenker@CalOES.ca.gov>; Dennis White <dwhite@hvlcsd.org>
Subject: RE: DR4431-PA0057 Approved Time Extension

Nicole,

Thanks for this. Since our generators won't arrive until July 2024, what do you think our chances of the overall POP date being extended?

Alyssa

From: Kluenker, Nicole@CalOES <Nicole.Kluenker@CalOES.ca.gov>
Sent: Thursday, August 10, 2023 10:45 AM

To: Alyssa Gordon <agordon@hvlcsd.org>; Dennis White <dwhite@hvlcsd.org>; Jacob Lampert <jlampert@hvlcsd.org>; oegorov@hvlcsd.org
Subject: DR4431-PA0057 Approved Time Extension

Good Morning,

Please find attached the approved TE for DR4431-PA0057. This TE moves your POP date to 7/30/24, due to the overall DR POP date which Cal OES cannot exceed at this time.

Sincerely,
Nicole Kluenker
DR4683/4699 JFO Hazard Mitigation Branch Director
Grant Specialist – Coastal Unit
Hazard Mitigation Grants Division
Recovery - Hazard Mitigation Assistance Branch
California Governor's Office of Emergency Services

Phone/ Cell: 916.879.1195
Nicole.Kluenker@caloes.ca.gov
Hazard Mitigation | California Governor's Office of Emergency Management

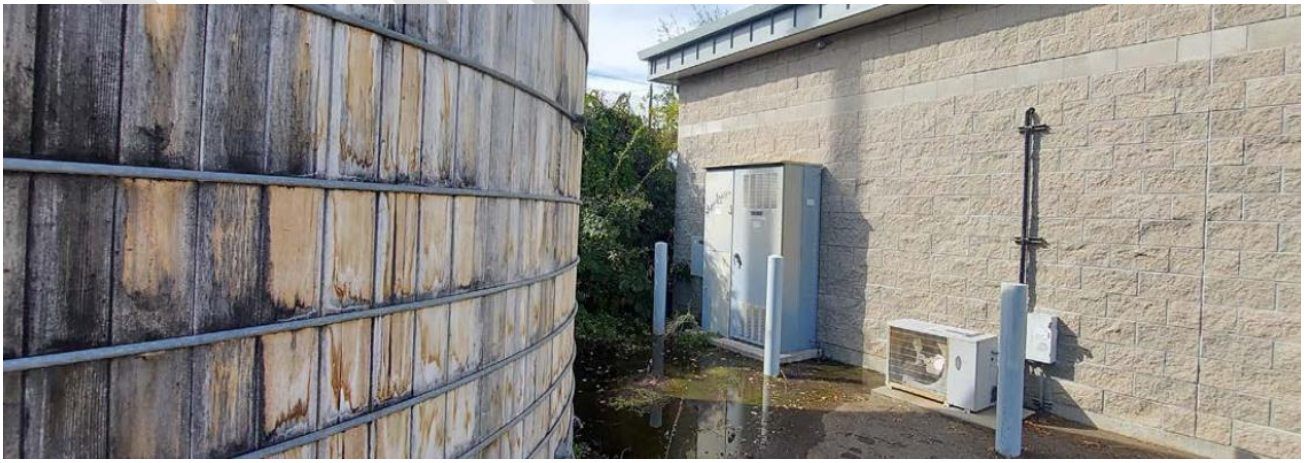
Basis of Design Report

Backup Power Reliability Project

Hidden Valley Lake Community Service District

May 17, 2023

→ **The Power of Commitment**



Project name		Hidden Valley Lake Backup Power Reliability Project					
Document title		Basis of Design Report | Backup Power Reliability Project					
Project number		12597809					
File name		12597809-GHD-0000-BOD-EL-0001					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S0	01	E. Osorno	S.McHaney		M.Davidson		4/21/23
S3	02	E. Osorno	S.McHaney		M.Davidson		5/17/23
[Status code]							
[Status code]							

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Contents

Attachments

1. Introduction

1.1 Purpose of this report

The Hidden Valley Lake Community Service District (District) wishes to install fixed generators at the Water Treatment Plant site and Greenridge Booster Pump Station . A site visit was conducted on February 1, 2023 to review the characteristics at each site with District staff. Recommendations contained within this report are based on proposed upgrades for the two sites based on existing conditions, District requests, and discussions conducted during the visit. A Basis of Design figure showing the proposed options resulting from the analysis is presented in Attachment 1.

1.2 General Notes

1.2.1 Preferred Manufacturer

As of this time, HVLSD has not indicated if they have a preferred manufacturer. Generators from common brands such as Kohler, Cummins, or Generac would be appropriate as all noted manufacturers have service centers in the Sacramento area.

For the purposes of this report, GHD will use Cummins as the example manufacturer and their generator sizing software will be used to compare and confirm generator sizes anticipated by the District. Using Cummins sizing software provides a base line, as other manufacturers can provide comparable generators in the expected size range. Although each manufacturer has slightly different generator sizes, dimensions, and fuel consumption, they all can provide similar equipment meeting District needs.

The proposed generator data sheet can be found in Attachment 2 of this report.

1.2.2 Preferred Generator Type

The District has indicated that outdoor fixed generators with sound attenuation enclosures and subbase diesel fuel tanks are preferred at both sites.

During the site visit, District staff expressed interest in alternate generator fuel types, a brief description of fuel types is included in this report.

1.2.3 Motor Starting Current

When motors start, there is an initial inrush current demand as the motor comes up to speed. Generators do not have the Utility's considerable capacity to provide momentary inrush current associated with across the line motor starting, which is often far beyond the nameplate rating of the feeder, starter, and even the total nameplate capacity of the motor being served. To address this inrush current issue, many pumping applications are equipped with current limiting variable frequency drives (VFDs) or reduced voltage soft starters (RVSS) for each pump motor. These components reduce the inrush current during motor starting by ramping the motor speed up more slowly. All observed motors at the Water Treatment Plant and at Greenridge Booster Pump Station are connected via VFD's, so inrush current will be moderated and no sizing issues due to motor starting current are anticipated.

For this project and based on the fact that all existing VFDs are equipped with an emergency bypass, we will calculate the generator size assuming 1 motor (of the largest available size on the site) is running in bypass mode to simulate a possible VFD failure. As it is unlikely that more than 1 VFD will fail at a time, we will not simulate all motors on bypass.

1.2.4 Code Review and Generator Classification

NFPA 110, the National Fire Protection Association's Standard for Emergency and Standby Power Systems, does not specifically define this water system as requiring emergency power. Strictly speaking, the term "emergency" is limited to use for specific life-safety related loads (like emergency lighting and operation of elevators in an outage). With that note, classifying a generator as "emergency" allows for a wider selection of available models, as emergency generators do not need to meet as strict an emissions requirement as for non-emergency generators. Emergency generators must comply with EPA Tier 3 requirements, while non-emergency generators must comply with EPA tier 4 requirements. For the purposes of this report, it is assumed that the generators are designated as "emergency" and that they will need to comply with EPA Tier 3 standards. However, it is recommended that the final design include appropriate external emissions control equipment to reach or exceed current EPA tier 4 requirements. This approach will provide the greatest flexibility in selection of generator options.

1.2.5 Fuel Type and Tank Capacity

1.2.5.1 Fuel Type

The most common fuel types in use for industrial or commercial standby power generators are diesel fuel and natural or propane gas. Smaller residential generators also use gasoline, but they are typically not sufficiently sized for pumping applications.

At this time the district has shown a preference for diesel fuel, so generator sizing in this report will be based on diesel fuel. Note that if propane fuel is preferred, it would likely slightly increase the generator's rated size, as propane gas engines tend to be slightly less capable of supporting added load.

1.2.5.2 Fuel Tank Capacity and Runtime

Standard fixed generators are typically equipped with subbase fuel tanks ranging from 12 to 72-hours of run time. In the case of the proposed 400 kW generator (see below) the standard 48-hour fuel tank is approximately 1500-gallons, and for a 350-kW generator a 48-hour fuel tank is approximately 1300-gallons. As this rating is based on full load for 48 hours (all loads in the building operating together continuously) these generators will likely operate longer due to having a lower average load. If it is assumed the generator is 50% loaded, the run time for the 400-kW generator will extend to approximately 98 hours and for a 350 kW generator the run time will extend to approximately 95 hours. With an onsite operator turning the engine on only when needed, and off again when not needed, the generator could support the facility for multiple days.

1.2.6 Clean Energy Options

Though some cleaner energy options for standby power exist, such as fuel cells and battery backup systems, they are not typically used in remote critical infrastructure systems. Fuel cells are reliant on either a natural gas or hydrogen gas fuel source that is less common and less reliably sourced than diesel fuel. Batteries are more appropriate for short run-time applications, or in applications coupled with appropriately sized photovoltaic systems. Though batteries are more frequently being used for reliability in some designs, they are still not generally considered as easy to implement, manage, service, and repair as a standby generator. As such, a standard diesel or natural gas generator is still the preferred equipment for this application. Note that diesel fuel is currently planned based on the information noted above.

In terms of clean operation of the diesel generator, all generators installed in California are required by the California Air Resources Board (CARB) to be equipped with significant and effective emissions control equipment. For diesel generators, CARB requires particulate filters and other emissions control devices, and for gas burning engines, selective catalytic reduction is often required, except for certain engines that meet the strict NOx requirements without it. Based on the minimal runtime of standby generators, meeting CARB requirements is generally considered sufficient

for effective operation. As noted above, this project will assume all generators are either natively meeting EPA Tier 4 and CARB requirements or are to be equipped with emissions control devices as necessary to meet that tier.

1.2.7 Load Bank

As the generator will often be running at less than full load, and in many cases below half load, there is a potential for a condition known as “wet stacking”. When running at or below 50% loading, the generator may not reach its designed operating temperature. When it operated below its design temperature for extended periods, unburned fuel is passed through the engine to the exhaust system, where it shows up as a visible wetness in or around the exhaust stack, known as “wet stacking”. Wet stacking causes build-up in injectors and carbon buildup in the exhaust valves and stack. Significant wet stacking increases pollution and will shorten the life of the generator.

To address this condition, GHD recommends the purchase of a load bank, which is device that provides resistive load when the generator runs below 30% load and can be connected to the generator to ensure that it is loaded sufficiently to achieve its design operating temperature and burn off the carbon buildup.

GHD recommends the purchase of an ASCO/AVTRON pad mounted load bank, which is suitable for operating and testing generators between 10kW and 600-kW. This or an equivalent load bank can be periodically connected to the generator for testing and maintenance runtime, allowing the District to maintain the unit without taking it to a service center. In most cases during an outage no user interaction is required.

2. Site Evaluations

2.1 Water Treatment Plant Site

2.1.1 Existing system

The existing onsite power system consists of three separate metered utility services. The former booster pump station building and the Community Service District (CSD) building each appear to have a 200-amp 480-volt 3 phase utility service served by an exterior wall mount 200-amp service meter. The new booster pump station building has an 800-amp 480-volt 3-phase utility service served by a 800-amp switchboard with a 800-amp main circuit breaker. Site utility power is served from underground utility feeders.

The former booster pump station building houses a motor control center (MCC) and various pump control panels. The MCC is energized but is believed to only be powering lights, receptacles in the building, and possibly a motorized gate located directly outside of the building that is currently used for vehicle site access. The various control panels and communications equipment all appear to be abandoned. The District is currently using this room as a storage room, but the plan is to demolish this building and place the new generator in its location.

The new booster pump station houses an 800-amp MCC containing pump starting equipment, HVAC breaker, a controls section, a step-down transformer with a low voltage sub panel, and an Automatic transfer switch (ATS). The MCC currently serves three 30HP (BP 401-403) and three 60HP (BP 101-103) booster pumps with a spare section for one additional 60-hp booster pump (BP 104). All pumps are equipped with variable frequency drives, set to start all motors on a slow ramp system which reduces starting inrush current levels. Based on our conversations with District staff regarding planned operations, the system will be modeled with the entire running load of all current and the future pump for generator sizing.

The CSD building is made up of several rooms consisting of a reception area, kitchen, server room, bathrooms, various offices, and conference rooms. An exterior wall mounted 200-amp Manual Transfer Switch (MTS) with generator connections and an exterior pad mounted transformer are located adjacent to the meter/main panel. The transformer steps down to a 208/120V 225-amp 3 phase panel located in the kitchen and serves the various loads in the CSD building.

2.1.2 Site Electrical Load

The site electrical loads are tabulated below:

Load Calculation – Wastewater Treatment Plan		
Load Name	**Qty**	**Running KW**
Booster Pump Station		
Booster Pump 30 Hp	3	75
Booster Pump 60 Hp	3	150
Booster Pump 60 HP (Future)	1	50
AC Equipment	1	5
Interior Lighting (Fluorescent)	10	1
Misc Controls (Estimated)	1	5
CSD Office		
Interior Lights (Estimate) 1-watt per sqft	1	3
Receptacle (Estimate) 2-watt per sqft	1	6
AC Equipment	8	21
Misc Loads (Estimate)	1	10
	Total KW	**326**
	Total Amps (480 3PH)	**392**

2.1.3 Generator Size

Based on the loads observed the recommended generator required to operate all equipment in an essentially normal fashion is 450-kW. This generator will be running at approximately 81% of its capacity with all loads running, which means in most cases, it will be running with significantly less load.

2.1.4 Proposed Site Modifications and System Description

The former booster pump station building will be demolished to accommodate space for the new permeant generator. All electrical equipment, electrical devices, lighting, communications equipment, conduit, and circuits will be demolished. The existing power circuit to the gate motor will need to be relocated and connected to a different power source. Coordination with local power utility will be required to remove electrical service feeders and service meter.

The potential reuse of the building slab was considered as a possible option for reducing the cost of the new generator installation. To be able to reuse the slab, it is necessary to know the thickness of the slab and the reinforcing in the slab so it could be checked against the requirements for the generator. However, the District does not have record drawings of the building and slab that show how the slab was actually constructed. Also, the existing slab is larger than is needed for the new generator, likely has anchor bolts embedded, and may have other features that are in the way and would need to be removed. A better approach is to demolish the existing slab, and install a slab designed to current codes and sized as needed for the new generator. The slab could also be positioned closer to the existing block wall, which would allow more room in the yard area. This may be beneficial when the existing redwood tank needs to be replaced as it will provide more working room and there would be more space for increasing the size of the tank if necessary.

GHD recommends the following for the installation of a generator at the Water Treatment Plant site:

- Demolish existing building, interior and exterior electrical equipment, and existing slab.
- Construct new slab for generator based on current code requirements.
- Provide a new 450-kW generator with 48-hr subbase fuel tank, sound attenuation enclosure (73 dB avg at 23 ft), and concrete base pad.
- Provide a fixed 250-kW auxiliary load bank and an auxiliary circuit breaker on the generator to support maintenance and servicing the generator onsite without changing system connections.
- Provide a diesel particulate filter to meet and/or exceed EPA tier 4 regulations. Note – some manufacturers may have alternate size engines (i.e. 500-kW) that already meet Tier 4 requirements. GHD will coordinate with the preferred manufacturers to select the best combination of generator size (not below that stated above) and emissions control equipment to meet the project needs.
- Remove all electrical components from existing connection box. Preserve enclosure and re-use as a junction box for new generator feeders.
- Provide 800-amp MTS with generator receptacles. GHD suggest a combined MTS/receptacle such as the Eaton quick connect double throw switch (product data sheet can be found in Attachment 2 of this report). This device is an outdoor rated cabinet that combines a cam-lock style generator connection and a manual transfer switch. Similar combination devices exist from other manufacturers, and separate generator receptacles and transfer switches are commonly available.
    - Intercept normal power feeder and extend to MTS.
    - Provide 800-amp feeder from 800-amp MTS to existing 800-amp ATS.
- Provide 800-amp underground feeders between generator and existing 800-amp ATS via existing generator connection enclosure.
- Provide 120-volt underground circuit for generator battery charger and block heater. Route with 800-amp feeder to MCC.
- Provide exterior mounted NEMA 3R junction box (for signal wires) adjacent to utility switchboard and provide weatherproof wall penetration to exterior wall of pump station building.
- Provide underground generator start/stop signal wires to existing 800-amp ATS. Route via new junction box.

CSD building-

- Disconnect and remove existing 200-amp MTS/connection box located on exterior wall of CSD building.
- Provide new 200-amp exterior wall mounted ATS for CSD building.
- Provide 200-amp underground feeder from generator to new 200-amp ATS.
- Provide underground start/stop signal wires from new 200-amp ATS to generator.
- Provide 6 ft high chain link fence between existing block wall and rolling gate.
- Provide 200-amp MTS with portable generator connections. (Optional)
    - Intercept normal power feeder and extend to MTS.
    - Provide 200-amp feeder from new MTS to new 200-amp ATS.

A figure showing fixed generator and site improvements can be found in attachment 1 of this report.

2.2 Greenridge Booster Pump Station.

2.2.1 Existing system

The existing onsite power system consists of a 400-amp 480/277-volt 3-phase utility service, an exterior pad mounted service switchboard with meter/main circuit breaker, and a feeder to an interior MCC serving the pump station loads. The service is derived from a utility owned pad mount transformer located on site with underground feeders to the main switchboard. An exterior mounted generator connection box is located outside the building.

The booster pump building houses a 600-amp MCC containing pump starting equipment, HVAC breakers, controls section, a step-down transformer with a low voltage sub panel, and an Automatic transfer switch (ATS). The MCC currently serves two 60HP (BP 501-502) booster pumps with a spare section for one additional 60HP booster pump (BP 503) that the district currently has but is not connected to the overall system. All pumps are equipped with variable frequency drives, set to start all motors on a slow ramp system to reduce starting inrush current levels. Based on our conversations with the District regarding planned operations, the system will be modeled with the entire running load of all current and the future pump for generator sizing.

2.2.2 Site Electrical Load (needs editing)

The site electrical loads are tabulated below:

Load Calculation – Greenridge Booster Pump Station		
Load Name	**Qty**	**Total KW**
Booster Pump 60 Hp	2	100
Booster Pump 60 HP (Future)	1	50
AC Equipment	2	4
Interior Lighting (Fluorescent)	2	0.2
Exterior Lighting (Fluorescent)	2	0.1
Misc Controls (Estimated)	1	5
Total KW		**160**
	Total Amps (480 3PH)	**192**

2.2.3 Generator Size

Based on the loads observed a 230-kW generator would operate all current and planned future equipment. The generator would be running at approximately 69% of its capacity with all loads running, which means in most cases, it will be running with significantly less load.

2.2.4 Proposed Site Modifications and System Description

There is space next to the existing pump station building for constructing a concrete slab and installing the generator. The generator slab will be separated from the existing building foundation to allow for drainage between them. The topography of the site was evaluated and the due to the sloping nature of the site either retaining walls or fill slopes will be required. Both options were considered and based on the site characteristics, it is reasonable to construct fill slopes at 2:1, which will be more cost effective than building retaining walls. The generator needs to be in a secure area and so a 6’ chain link fence with locking gate will surround the generator pad.

GHD recommends the following:

- Provide a new concrete slab with fills slopes to meet existing grades.
- Install 6-ft high security fencing.
- Provide a new 230-kW generator with 48-hr subbase fuel tank, sound attenuation enclosure (73 dB avg at 23 ft), and concrete base pad.
- Provide a fixed 120-kW auxiliary load bank and an auxiliary circuit breaker on the generator to support maintenance and servicing the generator onsite without changing system connections.
- Provide a diesel particulate filter to meet and/or exceed EPA tier 4 regulations. Note – some manufacturers may have alternate size engines (i.e. 250-kW) that already meet Tier 4 requirements. GHD will coordinate with the preferred manufacturers to select the best combination of generator size (not below that stated above) and emissions control equipment to meet the project needs.
- Remove existing generator connection box.
- Provide 400-amp UG feeders between generator and existing ATS via existing wall penetrations.
- Provide 120-volt circuit for generator battery charger and block heater. Route with 400-amp feeder to MCC.
- Provide exterior mounted NEMA 3R junction box adjacent to utility weatherproof wall penetration for generator signal wires to ATS.
- Provide 400-amp MTS with generator receptacles. GHD suggest a combined MTS/receptacle such as the Eaton quick connect double throw switch (product data sheet can be found in attachment 2 of this report). This device is an outdoor rated cabinet that combines a cam-lock style generator connection and a manual transfer switch. Similar combination devices exist from other manufacturers, and separate generator receptacles and transfer switches are commonly available.
    - Intercept normal power feeder and extend to MTS.
    - Provide 400-amp feeder from MTS to ATS.

A figure showing fixed generator and site improvements can be found in attachment 1 of this report.

3. Opinion of Potential Construction Cost

Opinion of potential construction costs included in the table below are based on a Class 3 estimate of potential project costs as defined by the Association for the Advancement of Cost Engineering International (AACE). AACE defines the "Class 3" estimate as follows:

> *Generally, Class 3 estimates are prepared to form the basis for budget authorization, appropriation, and/or funding. Typically, engineering is from 10% to 40% complete.,*

The contingency factor included in the cost estimates are not directly related to the class of the estimate. Determination of construction cost contingency is based on various factors, such as the level of completeness of the plans and specifications, but also many factors that can affect the potential bidding climate. For the purposes of the estimate at this time, we have selected a 30% contingency.

Opinion of Potential Cost Summary

Item	Description	Greenridge Total	WTP Total	Total Cost
1	Mobilization/Demobilization	$ 20,200	$ 33,900	$ 54,100
2	Demolition	$ N/A	$ 80,000	$ 80,000
3	Grading and Surface Improvements	$ 50,000	$ 25,000	$ 75,000
4	Trench and Backfill	$ 10,000	$ 20,000	$ 30,000
5	Generator Concrete Pad	$ 14,000	$ 16,000	$ 30,000
6	Diesel Generator - 230 kW Greenridge & 450 KW Water Treatment	$ 260,000	$ 440,000	$ 700,000
7	Portable Load Bank	$ 35,000	$ 45,000	$ 80,000
8	Manual Transfer Switch (MTS) with Camloc connections in Nema 3R Enclosure - 400A Greenridge & 800A Water Treatment	$ 20,000	$ 35,000	$ 55,000
9	200A Automatic Transfer Switch Administration Building	$ N/A	$ 15,000	$ 15,000
10	Misc. Hardware and Demo Electrical	$ 10,000	$ 10,000	$ 20,000
11	Pull Boxes	$ 2,500	$ 5,000	$ 7,500
12	Security Fencing	$ 5,000	$ 5,000	$ 10,000
	Subtotal			**$ 1,156,600**
	Contingency (30%)			$ 347,000
	Contractor's Overhead, Profit & General Conditions (15%)			$ 174,000
	Bonds and Insurance (3%)			$ 35,000
	Mid Point Escalation (8%)			$ 93,000
	TOTAL OPINION OF POTENTIAL COST			**$ 1,805,600**

It is important to note that the foregoing is an opinion of potential construction cost and is not a guarantee that contractor bids received will actually be below the stated potential cost. GHD does not control contractor costs, the

bidding environment, who chooses to bid, or how they bid, and actual costs cannot be known until bids have been received. The actual cost of the construction contract cannot be known until bids are opened.

4. Conclusions

The District should review the revised draft basis of design report that includes opinion of potential construction cost and provide feedback on the proposed system description. Once the District has reviewed the 60% Basis of Design Report and provided comments, GHD will incorporate comments and finalize the Basis of Design Report.

Attachments

Opinion of Conceptual Construction Cost

Client Hidden Valley Lake CSD

Project Name: Backup Power Reliability Project

Submittal 60% Design

Date of Estimate: May 2023

CONSTRUCTION CAPITAL COSTS

Item No.	Description	Greenridge Booster Pump Station Site				Water Treatment Plant Site				Total Cost
		Quantity	Units	Unit Cost	Cost Per Site	Quantity	Units	Unit Cost	Cost Per Site	
1	Mobilization/Demobilization	1	LS	$ 20,200	$ 20,200	1	LS	$ 33,900	$ 33,900	$ 54,100
2	Demolition and Site Preparation		LS	$ -	$ -	1	LS	$ 80,000	$ 80,000	$ 80,000
3	Grading and Surface Improvements	1	LS	$ 50,000	$ 50,000	1	LS	$ 25,000	$ 25,000	$ 75,000
4	Trench and Backfill	1	LS	$ 10,000	$ 10,000	1	LS	$ 20,000	$ 20,000	$ 30,000
5	Generator Concrete Pad	1	LS	$ 14,000	$ 14,000	1	LS	$ 16,000	$ 16,000	$ 30,000
6	Diesel Generator - 230 kW Greenridge & 450 KW Water Treatment	1	LS	$ 260,000	$ 260,000	1	LS	$ 440,000	$ 440,000	$ 700,000
7	Load Bank	1	LS	$ 35,000	$ 35,000	1	LS	$ 45,000	$ 45,000	$ 80,000
8	Manual Transfer Switch (MTS) with Camloc connections in Nema 3R Enclosure - 400A Greenridge & 800A Water Treatment	1	LS	$ 20,000	$ 20,000	1	LS	$ 35,000	$ 35,000	$ 55,000
9	200A Automatic Transfer Switch Administration Building				$ -	1	LS	$ 15,000	$ 15,000	$ 15,000
10	Misc. Hardware and Demo Electrical	1	LS	$ 10,000	$ 10,000	1	LS	$ 10,000	$ 10,000	$ 20,000
11	Pull Boxes	1	LS	$ 2,500	$ 2,500	1	LS	$ 5,000	$ 5,000	$ 7,500
12	Security Fencing	1	LS	$ 5,000	$ 5,000	1	LS	$ 5,000	$ 5,000	$ 10,000

Construction Capital Subtotal	$	1,156,600.00
Estimating Contingency (30%)	$	347,000.00
Contractor's Overhead, Profit & General Conditions (15%)	$	174,000.00
Bonds and Insurance (3%)	$	35,000.00
Mid Point Escalation (8%)	$	93,000.00
Total Construction Capital Cost	**$**	**1,805,600.00**

THIS OPINION OF PROBABLE COST HAS BEEN PREPARED USING STANDARD ENGINEERING ESTIMATE PROCEDURES. GHD HAS NO CONTROL OVER ACTUAL CONTRACTOR COSTS, BIDDING, OR MARKET CONDITIONS.

Attachment 1

Opinion of Probable Cost

Specification sheet

Diesel generator set QSL9-G2 series engine

230 kW Standby

Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby and Prime Power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® 2.3 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Enclosures - Optional weather protective and sound attenuated enclosures are available.

Fuel tanks - Dual wall sub-base fuel tanks are also available.

NFPA - The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Standby rating		Prime rating		Continuous rating		Data sheets	
Model	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz kW (kVA)	50 Hz kW (kVA)	60 Hz	50 Hz
DSHAD	230 (288)		209 (261)				D-3453	

Generator set specifications

Governor regulation class	ISO 8528 Part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
Radio frequency emissions compliance	Meets requirements of most industrial and commercial applications.

Engine specifications

Bore	114.0 mm (4.49 in)
Stroke	145 mm (5.69 in)
Displacement	8.9 L (543 in^3)
Configuration	Cast iron, in-line 6 cylinder
Battery capacity	1500 amps minimum at ambient temperature of -18 °C (0 °F)
Battery charging alternator	100 amps
Starting voltage	12 volt, negative ground
Fuel system	Direct injection: number 2 diesel fuel, fuel filter, automatic electric fuel shutoff
Fuel filter	Single element, 10 micron filtration, spin-on fuel filter with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Spin-on, full flow
Standard cooling system	High ambient radiator

Alternator specifications

Design	Brushless, 4 pole, drip proof revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible discs
Insulation system	Class H
Standard temperature rise	150 °C Standby at 40 °C ambient
Exciter type	Torque match (shunt)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	< 3

Available voltages

Three phase reconnectable				**Single phase non-reconnectable**	**Three phase non-reconnectable**	
• 120/208 • 240/416	• 120/240 • 254/440	• 127/220 • 277/480	• 139/240	• 120/241	• 220/380	• 347/600

Note: Consult factory for other voltages.

Generator set options and accessories

Engine

- 120/240 V 1500 W coolant heater
- 120/240 V 150 W lube oil heater
- Heavy duty air cleaner
- Engine oil temperature

Fuel system

- 12 hour sub-base tank (dual wall)
- 24 hour sub-base tank (dual wall)
- 473 L (125 gal) sub-base tank (single wall)

Alternator

- 105 ℃ rise
- 125 ℃ rise
- 120/240 V 100 W anti-condensation heater
- PMG excitation
- Single phase

Exhaust system

- Genset mounted muffler
- Heavy duty exhaust elbow
- Slip on exhaust connection

Generator set

- AC entrance box
- Battery
- Battery charger
- Enclosure: aluminium, steel, weather protective or sound attenuated
- Export box packaging
- UL 2200 Listed
- Main line circuit breaker
- PowerCommand Network Communications module (NCM)
- Remote annunciator panel
- Spring isolators
- 2 year Prime power warranty
- 2 year Standby power warranty
- 5 year Basic power warranty

Note: Some options may not be available on all models - consult factory for availability.

Control system PowerCommand 2.3

The PowerCommand 2.3 control system - An integrated generator set control system providing voltage regulation, engine protection, generator protection, operator interface and isochronous governing (optional).

Control – Provides battery monitoring and testing features and smart-starting control system.

InPower™ – PC-based service tool available for detailed diagnostics.

PCCNet RS485 – Network interface (standard) to devices such as remote annunciator for NFPA 110 applications**.**

Control boards – Potted for environmental protection.

Ambient operation – Suitable for operation in ambient temperatures from -40 ºC to +70 ºC and altitudes to 13,000 feet (5000 meters). Prototype tested - UL, CSA and CE compliant.

AC protection

AC protection

- AmpSentry protective relay
- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload
- Overload warning
- Reverse kW shutdown
- Reverse Var shutdown
- Short circuit protection

Engine protection

- Overspeed shut down
- Low oil pressure warning and shut down
- High coolant temperature warning and shut down
- Low coolant level warning or shut down
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (over crank) shut down
- Fail to crank shut down
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown

Operator/display panel

- Manual off switch
- 128 x 128 Alpha-numeric display with push button access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating genset running, not in auto, common warning, common shutdown, manual run mode and remote start.

  Suitable for operation in ambient temperatures from -20 ºC to +70 ºC

Alternator data

- Line-to-Neutral AC volts
- Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kVA, kW, power factor

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature

Control functions

- Time delay start and cool down
- Glow plug control (some models)
- Cycle cranking
- PCCNet interface
- (4) Configurable inputs
- (4) Configurable outputs
- Remote emergency stop
- Battle short mode
- Load shed
- Real time clock with exerciser
- Derate

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase Line-to-Line sensing
- Configurable torque matching
- Fault current regulation under single or three phase fault conditions

Other data

- Genset model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)
- Total kilowatt hours
- Load Profile

Options

- Auxiliary output relays (2)
- 120/240 V, 100 W anti-condensation heater
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand for Windows® remote monitoring software (direct connect)
- AC output analogue meters
- PowerCommand 2.3 and 3.3 control with AmpSentry protection

For further detail on PC 2.3 see document S-1569.
For further detail on PC 3.3 see document S-1570.

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

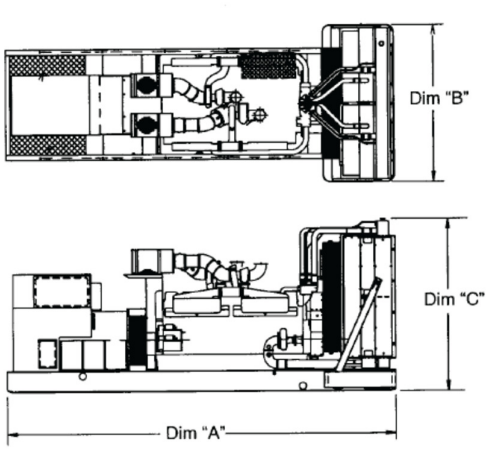
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only.
See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim "A" mm (in.)	Dim "B" mm (in.)	Dim "C" mm (in.)	Set weight* dry kg (lbs)	Set weight* wet kg (lbs)
DSHAD	2667 (105.0)	1016 (40.0)	1372 (54.0)		1469 (3238)

*Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards,40 CFR 60 subpart IIII Tier 3 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006, IBC2009 and IBC2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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S-1587.DOCX (02/22)

Specification sheet

Diesel generator set QSX15 series engine

450 kW – 500 kW Standby

Description

Cummins® commercial generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary standby and prime power applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, industrial diesel delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Permanent Magnet Generator (PMG) - Offers enhanced motor starting and fault clearing short-circuit capability.

Control system - The PowerCommand® electronic control is standard equipment and provides total genset system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, AmpSentry™ protection, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Enclosures - Optional weather protective and sound attenuated enclosures are available.

Fuel tanks - Dual wall sub-base fuel tanks are also available.

NFPA - The genset accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Standby rating	Prime rating	Continuous rating	Data sheets
Model	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz kW (kVA)	60 Hz
DFEJ	450 (563)	410 (513)		D-3400
DFEK	500 (625)	455 (569)		D-3401

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Generator set specifications

Governor regulation class	ISO 8528 part 1 Class G3
Voltage regulation, no load to full load	± 0.5%
Random voltage variation	± 0.5%
Frequency regulation	Isochronous
Random frequency variation	± 0.25%
EMS compatibility	IEC 61000-4-2: Level 4 Electrostatic discharge IEC 61000-4-3: Level 3 Radiated susceptibility

Engine specifications

Design	Turbocharged with air-to-air charge air-cooling
Bore	136.9 mm (5.39 in.)
Stroke	168.9 mm (6.65 in.)
Displacement	14.9 L (912.0 in^3)
Cylinder block	Cast iron with replaceable wet liners, in-line 6 cylinder
Battery capacity	1400 Amps minimum at ambient temperature 0 ℃ (32 ℉)
Battery charging alternator	35 Amps
Starting voltage	24 volt, negative ground
Fuel system	Full authority electronic (FAE) Cummins HPI-TP
Fuel filter	
Air cleaner type	
Lube oil filter type(s)	Single spin-on combination full flow and bypass filters
Standard cooling system	40 ºC (104 ºF) ambient radiator

Alternator specifications

Design	Brushless, 4 pole, drip-proof revolving field
Stator	2/3 pitch
Rotor	Single bearing, flexible discs
Insulation system	Class H
Standard temperature rise	125 ℃ standby at 40 ℃ ambient
Exciter type	PMG (Permanent Magnet Generator)
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform total harmonic distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone influence factor (TIF)	< 50% per NEMA MG1-22.43
Telephone harmonic factor (THF)	< 3%

Available voltages

60 Hz Line – Neutral/Line - Line

- 110/190
- 110/220
- 115/200
- 115/230
- 120/208
- 127/220
- 139/240
- 220/380
- 230/400
- 240/416
- 255/440
- 277/480
- 347/600

Note: Consult factory for other voltages.

Generator set options

Engine

- 208/240/480 V thermostatically controlled coolant heater for ambient above 4.5 ℃ (40℉)
- 208/240/480 V thermostatically controlled coolant heater for ambient below 4.5 ℃ (40℉)
- 120 V 300 W lube oil heater
- Heavy duty air cleaner with safety element

Alternator

- 80 ℃ rise
- 105 ℃ rise
- 150 ℃ rise
- 120/240 V 200 W anti-condensation heater

Exhaust system

- Critical grade exhaust silencer
- Exhaust packages
- Industrial grade exhaust silencer
- Residential grade exhaust silencer

Fuel system

- 1022 L (270 gal) sub-base tank
- 1136 L (300 gal) sub-base tank
- 1514 L (400 gal) sub-base tank
- 1893 L (500 gal) sub-base tank
- 2271 L (600 gal) sub-base tank
- 2498 L (660 gal) sub-base tank
- 3218 L (850 gal) sub-base tank
- 6435 L (1700 gal) sub-base tank
- 9558 L (2525 gal) sub-base tank

Cooling system

- High ambient 50 ℃ radiator

Control panel

- PC 3.3
- PC 3.3 with MLD
- 120/240 V 100 W control anti-condensation heater
- Ground fault indication
- Remote fault signal package
- Run relay package

Generator set

- AC entrance box
- Battery
- Battery charger
- Export box packaging
- UL 2200 Listed
- Main line circuit breaker
- Paralleling accessories
- Remote annunciator panel
- Spring isolators
- Enclosure: aluminium, steel, weather protective or sound attenuated
- 2 year standby power warranty
- 2 year prime power warranty
- 5 year basic power warranty
- 10 year major components warranty

*Note: Some options may not be available on all models - consult factory for availability.

Control system 2.3

The PowerCommand 2.3 control system - An integrated generator set control system providing voltage regulation, engine protection, generator protection, operator interface and isochronous governing (optional).

Control – Provides battery monitoring and testing features and smart-starting control system.

InPower™ – PC-based service tool available for detailed diagnostics.

PCCNet RS485 – Network interface (standard) to devices such as remote annunciator for NFPA 110 applications.

Control boards – Potted for environmental protection.

Ambient operation – Suitable for operation in ambient temperatures from -40 ℃ to +70 ℃ and altitudes to 13,000 feet (5000 meters). Prototype tested - UL, CSA and CE compliant.

AC protection

- AmpSentry protective relay
- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload
- Overload warning
- Reverse kW shutdown
- Reverse Var shutdown
- Short circuit protection

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown
- Fuel-in-rupture-basin warning or shutdown

Operator/display panel

- Manual off switch
- 128 x 128 Alpha-numeric display with push button access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating genset running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -20 ºC to +70 ºC

Alternator data

- Line-to-Neutral AC volts
- Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kVA, kW, power factor

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature

Control functions

- Time delay start and cool down
- Glow plug control (some models)
- Cycle cranking
- PCCNet interface
- (4) Configurable inputs
- (4) Configurable outputs
- Remote emergency stop
- Battle short mode
- Load shed
- Real time clock with exerciser
- Derate

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase Line-to-Line sensing
- Configurable torque matching
- Fault current regulation under single or three phase fault conditions

Other data

- Genset model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)
- Total kilowatt hours
- Load profile

Options

- Auxiliary output relays (2)
- 120/240 V, 100 W anti-condensation heater
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand for Windows® remote monitoring software (direct connect)
- AC output analogue meters
- PowerCommand 2.3 and 3.3 control with AmpSentry protection

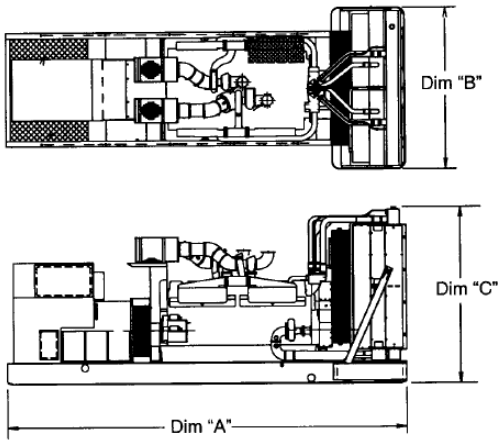
For further detail on PC 2.3 see document S-1569.
For further detail on PC 3.3 see document S-1570.

Emergency Standby Power (ESP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time running Power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):
Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing if for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

Model	Dim 'A' mm (in.)	Dim 'B' mm (in.)	Dim 'C' mm (in.)	Set weight dry* kg (lbs)	Set weight wet* kg (lbs)
DFEJ	3864 (152.1)	1524 (60.0)	1812 (71.3)	4098 (9035)	4234 (9335)
DFEK	3864 (152.1)	1524 (60.0)	1812 (71.3)	4325 (9535)	4461 (9835)

*Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available listed to UL 2200, Stationary Engine Generator Assemblies for all 60 Hz low voltage models. The PowerCommand control is Listed to UL 508 - Category NITW7 for U.S. and Canadian usage. Circuit breaker assemblies are UL 489 Listed for 100% continuous operation and also UL 869A Listed Service Equipment.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S EPA**	Engine certified to Stationary Emergency U.S. EPA New Source Performance Standards, 40 CFR 60 subpart IIII Tier 2 exhaust emission levels. U.S. applications must be applied per this EPA regulation.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set package is available certified for seismic application in accordance with the following International Building Code: IBC2000, IBC2003, IBC2006, IBC2009 and IBC2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

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S-1582 (08/17)

Attachment 2

Generator Specifications

ghd.com

The Power of Commitment

COASTLAND
CIVIL ENGINEERING - CONSTRUCTION MANAGEMENT - BUILDING DEPARTMENT SERVICES

Memorandum

Date: February 15, 2019

To: Alyssa Gordon

From: Jenny Melman, PE

Subject: Fire History of Lake County

Fire History of Lake County

Wildfire is a major hazard for the Hidden Valley Lake community. More than 50% of Lake County has burned since 2012[1].

> "'No other county in California has experienced wildfires more frequently in the past seven years, on such a stunning scale of both size and destruction', said state Sen. Mike McGuire, who represents [Lake County] with 68,000 residents.
>
> 'There is no other county in the Golden State that has received such a devastating blow when it comes to wildland disaster,' McGuire said Tuesday as he surveyed yet another disaster unfolding in his district. 'The people of Lake County have suffered significantly.'"[2]

The hazards of wildfire include the wholesale destruction of communities as we saw recently in Paradise, California, the taking of life, destruction of homes and property, and the cause of prolonged utility disruption. Table 1 provides a brief description of ten of these fires and the damages incurred. Figure 1 shows the proximity of these fires to Hidden Valley Lake.

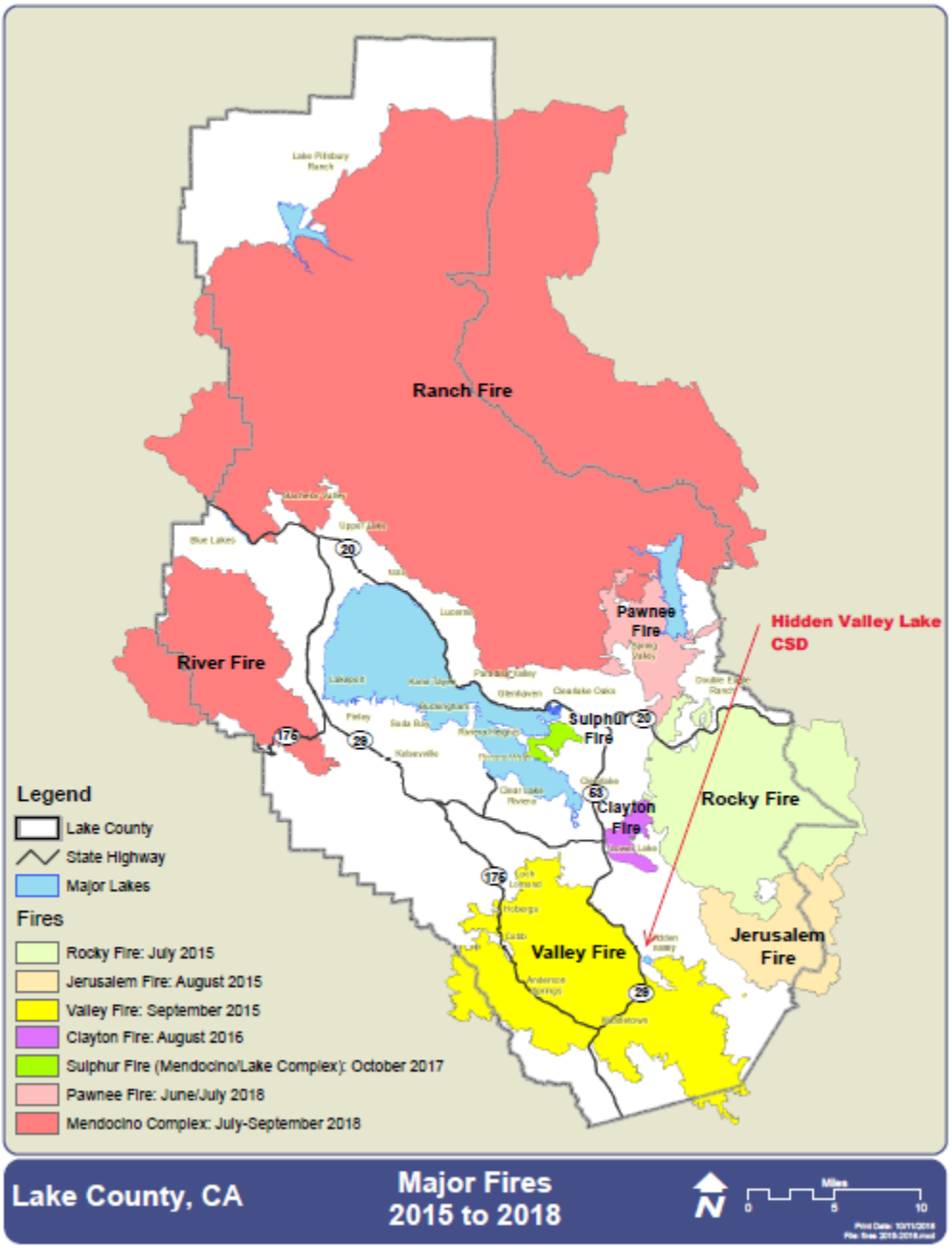
[1] From LA Times: https://www.latimes.com/local/lanow/la-me-lake-county-fire-epicenter-20180814-story.html
[2] From the Press Democrat: https://www.pressdemocrat.com/news/8475008-181/wildfire-a-frequent-and-familiar?gallery=8479208&sba=AAS

Table 1. Lake County Fires (2012-present)[3]

2018
Ranch Fire: 51,539 acres between Highway 20 and the Mendocino National Forest, including Blue Lakes, Witter Springs, Bachelor Valley, Upper Lake, Lucerne and Nice.
River Fire: 28,869 acres, 10 structures destroyed near Kelseyville and other communities.
Pawnee Fire: 13,000 acres, 22 structures destroyed in Spring Valley.
2017
Sulphur Fire: 2,207 acres, 162 structures destroyed, mostly homes.
2016
Clayton Fire: 4,000 acres, 300 homes and business in greater Lower Lake.
2015
Rocky Fire: 69,000 acres, 43 homes, 53 outbuildings east of Clear Lake.
Jerusalem Fire: 25,000 acres, six homes, 21 outbuildings northeast of Middletown.
Valley Fire: 76,000 acres, 1,300 homes, 27 multi-family buildings, 66 businesses and 581 outbuildings. The fire, which stretched from Cobb Mountain to Hidden Valley Lake, killed five people.
2012
Wye-Walker Fire: 8,000 acres, two homes east of Clear Lake.
Scotts Fire: 4,700 acres, Cow Mountain, five injuries.

[3] From the Press Democrat: https://www.pressdemocrat.com/news/8584552-181/top-10-largest-wildfires-in?sba=AAS

Figure 1. Lake County Fires (2015-2018)[4]

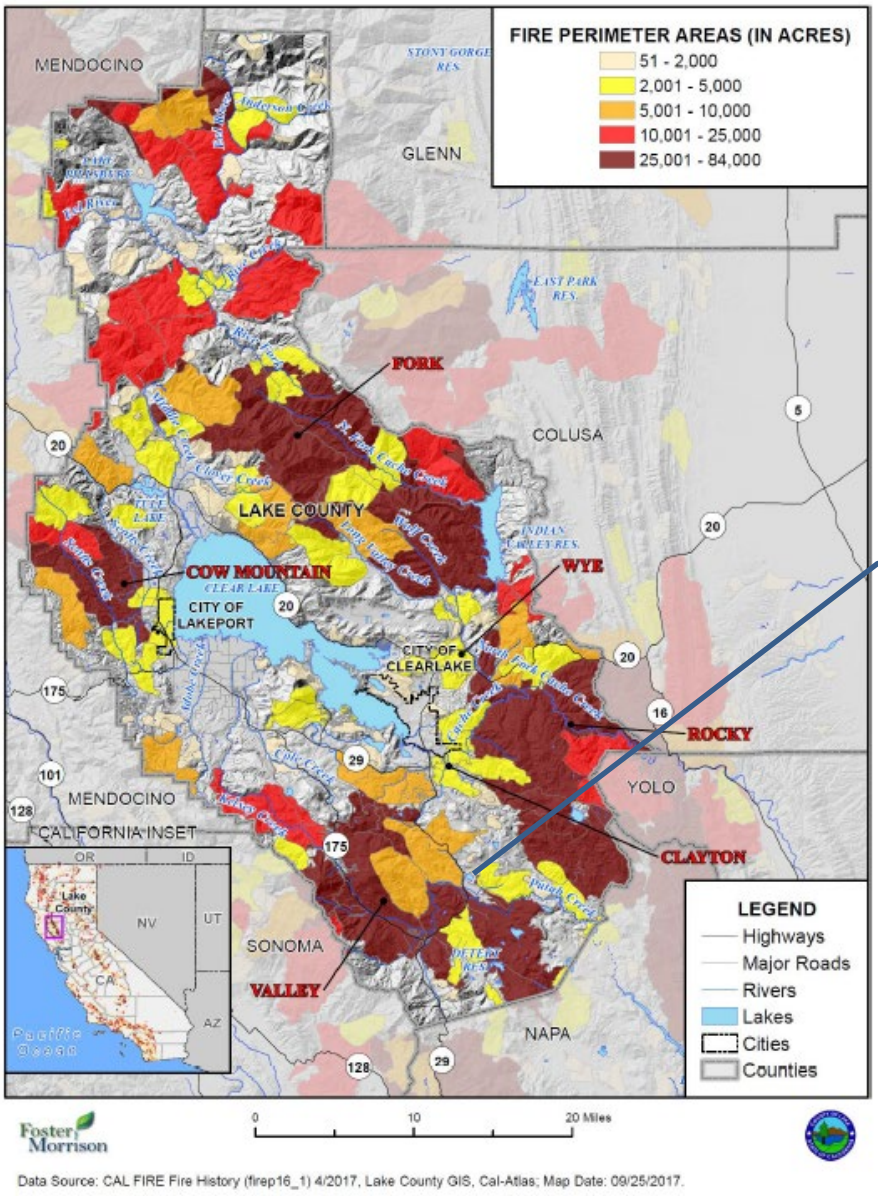


Since 1985, FEMA has made 8 disaster declarations for Lake County due to wildfire, five of which occurred since 2015.[5]

The burn scars from recorded Lake County fires are shown in Figure 2.

[4] County of Lake, Major Fires 2015 to 2018, print date 10/11/18.
[5] Lake County Hazard Mitigation Plan Update, 2018. Pg. 4-138.

Figure 2. Lake County Wildfire History – 1950 to 2016[6]



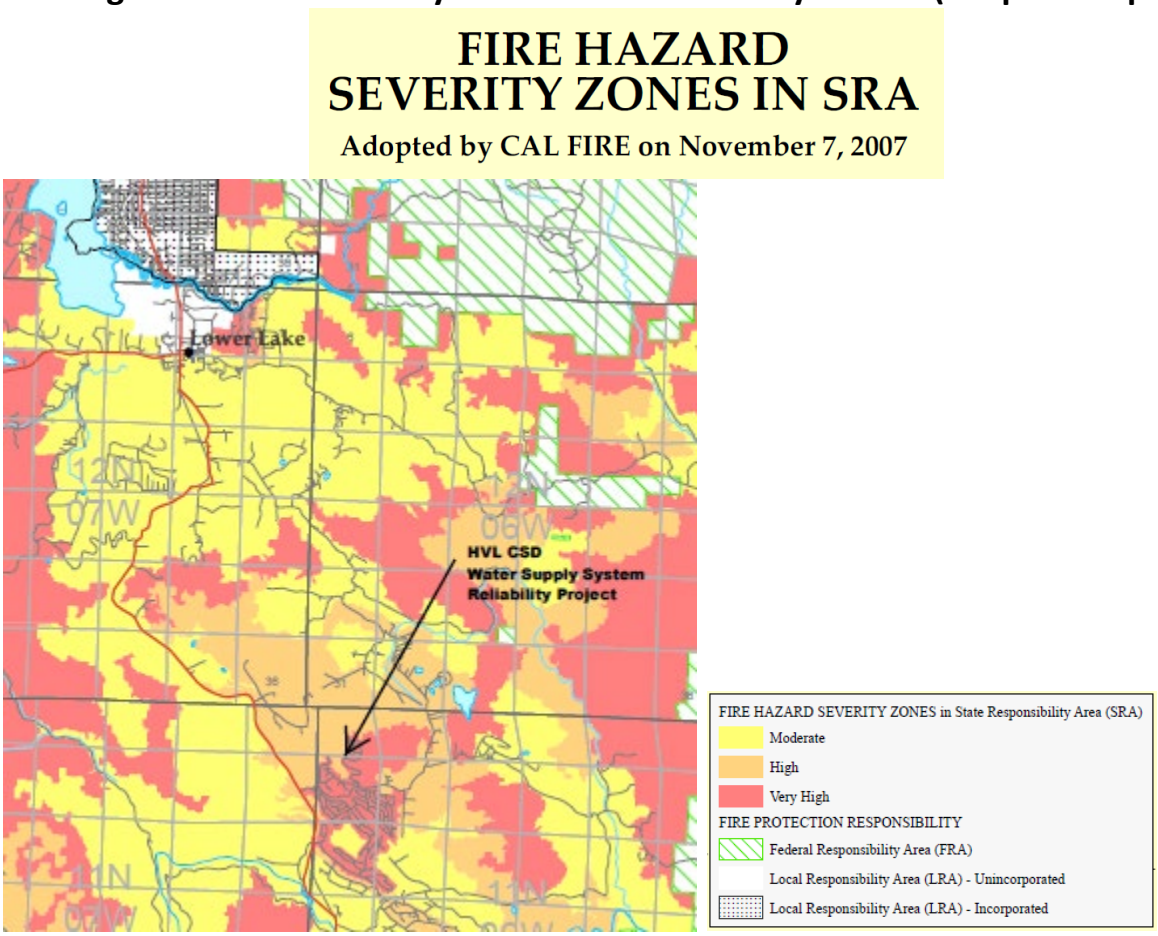
The Likelihood of Future Occurrence

As shown in Figure 3, CalFire has designated Hidden Valley Lake as a "High Severity" fire risk zone.

[6] Lake County Hazard Mitigation Plan Update, 2018. Pg. 4-140.

"From May to October of each year, Lake County faces a serious wildland fire threat. Fires will continue to occur on an annual basis in the Lake County Planning Area. The threat of wildfire and potential losses are constantly increasing as human development and population increase and the wildland urban interface areas expand. Due to its high fuel load and long, dry summers, most of Lake County continues to be at risk from wildfire."[7]

Figure 3. Lake County Fire Hazard Severity Zones (Map Excerpt)



Climate Change and Wildfire

"Warmer temperatures can exacerbate drought conditions. Drought often kills plants and trees, which serve as fuel for wildfires. Warmer temperatures could increase the number of wildfires and pest outbreaks, such as the western pine beetle. Cal-Adapt's wildfire tool predicts the potential increase in the amount of burned areas for the year 2085, as compared to recent (2010) conditions. Based on this model, Cal-Adapt predicts that wildfire risk in lake County will increase slightly in the near term."[8]

[7] Lake County Local Hazard Mitigation Plan Update, 2018, pg 4-147.
[8] Lake County, 2018, pg. 4-147.

Hidden Valley Lake
Community Services District

19400 Hartmann Road
Hidden Valley Lake, CA 95467
707.987.9201
707.987.3237 fax
www.hvlcsd.org

March 1, 2021

Re: Eight day loss of function as illustrated by the Valley Fire experience

I. Introduction

Based on our experience, a wildfire of the magnitude of the Valley Fire would cause an eight-day loss of function for potable water services. This was our experience during the Valley Fire of September 2015, and is based on two primary determining factors, our relative rural location, and the topology of our community. After the power panel for our production wells ***melted*** during the Valley Fire[1], it took us eight days to fully restore service, only thanks to the heroic efforts of our staff and some amazing vendors.

Figure 1 - New Power Panel

[1] Figure 1, Wellfield power panel

Hidden Valley Lake
Community Services District

19400 Hartmann Road
Hidden Valley Lake, CA 95467
707.987.9201
707.987.3237 fax
www.hvlcsd.org

II. Rural

The rural nature of our community means there may be many miles in a number of directions of densely forested wildlands. The intense heat and speed of travel of these recent major wildfires has shown us that by the time a wildfire reaches our perimeter, the flames have been fanned and fueled up to a fever pitch, and intensely hot. The juxtaposition of this thickly settled area with wildlands underscores our vulnerability within Hidden Valley Lake[2].

The reliable water availability of HVLCSD amidst this expanse of wildfire fuel is significant to water treatment and delivery professionals. This means that we are the most robust water source in the area for our residents as well as fire-fighters. When a major wildfire erupts during the Diablo wind season like they have for the last seven consecutive years, surrounding towns and communities look to HVLCSD for water. We are simply the best water source around. The responsibility of protecting the health and safety of not only the immediate community, but the surrounding areas as well, became quite apparent during the Valley Fire and is something we do not take lightly.

III. Topology & Repair Chronology

HVLCSD serves potable water to residents at 900 ft mean sea level (MSL), and all the way up to 2100 MSL. The mechanisms to facilitate lifting of water to all residents is no small matter. In fact, the level of experience and energy needed to keep this water treatment and distribution system successfully running was highlighted during the Valley Fire. As previously mentioned, the wells that provide water to the community were rendered inoperable when the power panel completely ***melted*** (See Figure 1). We were unable to deliver water to residents, which would have represented a complete service disruption. At CalFire's behest, HVLCSD Field Operators were allowed into the community while it was still burning, to get the water running again. With the ingenuity that comes from many years of experience with this particular water system, staff was able to get power to the wells, and start pumping water again. As it turns out, this was only the first of many obstacles staff would face given the need to push the water uphill and reach every household.

While the wells were without power, all the water was drained from the water distribution system. Water tanks, water mains, and pressure reducing valves all depend on water being in the system to operate properly. In the absence of water, a condition called back-siphonage was created inside the distribution system. The back-siphonage condition permanently but silently damaged key elements of the water distribution system.

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[2] Appendix A "Clear Lines of Communication" Oct 2, 2015

Hidden Valley Lake
Community Services District

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Once on-site, the HVLCSD Field Operations staff developed a stop-gap solution with a portable generator to get power back to the wells. This solution solved one problem, but also demonstrated that it was not the only problem to getting water to all households.

In order to reliably deliver water to every elevation within this system, HVLCSD operates and maintains thirty-one miles of water mains, eight water storage tanks, eleven pressure reducing valves (PRV), three booster pump stations, and eight pressure zones.

Many PRVs were damaged due to the back-siphonage effect. For the first four days, staff was forced to run the water system manually, chase down open connections, and only deliver water to one pressure zone by operating 24 hours a day, alternating 12-16 hours shifts.

By the fifth day (9/16/15), PRVs were repaired[3] from the back-siphonage damage and staff was able to pump into a second pressure zone. As soon as the supply arrived, however, the demand surpassed it. The fire was still burning. Again, our staff of **six** was maxed out with manual water system operation and chasing down open connections all the way to the top of the community. Our CERT certified Directors and Administrative staff worked together to develop Boil Water Notices and deliver them to every front door in the community.

It wasn't until the seventh day (9/18/15) that the telemetry was repaired enough to automatically pump and fill water tanks, a more efficient method to get, and keep, those tanks across the hilly landscape filled[4]. Staff was re-directed to now making that water potable. In addition to customary bacteriological samples, water tests for fuels and pesticides were initiated in recognition of the dangerous back-siphonage condition and its possible damaging effects.

On the eighth day (9/19/15) the lab results indicated that our water distribution system was producing potable water, and we shared this information at the very next emergency operations meetings. A re-population order was granted for the next afternoon. Boil-Water RESCISSION Notices were handed out as the residents filed back into the community[5].

[3] Appendix B Pace Invoice Valley Fire
[4] Appendix C Telstar Invoice Valley Fire
[5] Appendix D "Clear Lines of Communication" Sept 19, 2020

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IV. Summary

It is my intent with this memo to explain how a wildfire that enters our community and damages our infrastructure would cause an interruption of service of at least eight days.

The production of safe, reliable drinking water is of paramount importance to HVLCSD. Hopefully this recap of our eight-day service interruption helps illustrate the urgent need we face to mitigate our vulnerabilities. We want to ensure there is a community to come back to. Without water, this would be difficult.

Sincerely,

Dennis White
General Manager
Hidden Valley Lake Community Services District

Oak Woodland Assessment
for the
Hidden Valley Lake Defensive Space Ignition Resistant Construction Project

Lake County, California

Prepared For:

Hidden Valley Lake Community Services District

Prepared By:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS
2525 Warren Drive
Rocklin, California 95677

March 17, 2023

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LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
DBH	Diameter at breast height
Project	Hidden Valley Lake Defensive Space Ignition Resistant Construction Project
Study Area	Tank 4, Wellfield, Little Peak infrastructure improvement sites, and five staging areas
USGS	U.S. Geological Survey
CEQA	California Environmental Quality Act

1.0 INTRODUCTION

ECORP Consulting, Inc. conducted an arborist survey for the Hidden Valley Lake Defensive Space Ignition Resistant Construction Project (Project), located in Lake County, California. The purpose of this survey was to identify, map, and assess the general condition of all trees within the Study Area in accordance with the General Grading Questionnaire, the Oak Tree Removal, and the Resolution 1995-211 documents collectively referred to as County Guidelines (L. Hall, personal communication 2022).

2.0 SITE DESCRIPTION

The Project consists of the Tank 4, Wellfield, Little Peak infrastructure improvement sites, and five staging areas (collectively Study Area) located in Lake County, California (Figure 1). The 10.25-acre Study Area corresponds to a portion of Section 6, Township 11 North, Range 6 West (Mount Diablo Base and Meridian) and a portion of the Unsectioned Rancho Guenoc Land Grant of the "Middletown, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1998). The approximate center of the Study Area is located at 38.796408° North and -122.548707° West within the Upper Putah Watershed (Hydrologic Unit Code #18020162; Natural Resources Conservation Service et al. 2019). The Study Area is composed of chaparral, native mixed oak woodland, and annual grassland.

3.0 METHODS

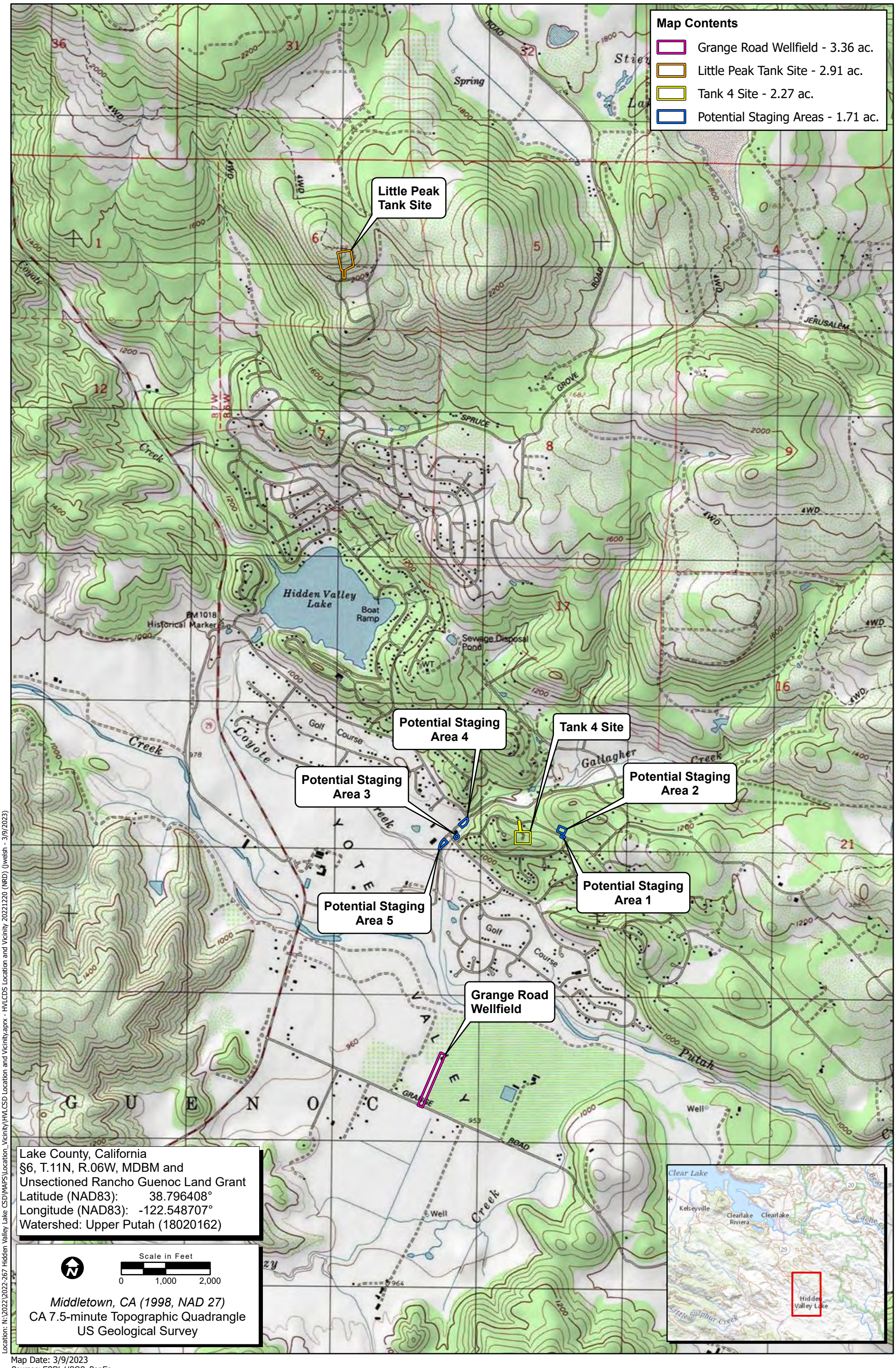
ECORP arborist Jennifer West (International Society of Arboriculture Certification #WE-14444A), with ECORP biologists Gabby Attisani and Levon Bajakian, conducted the field survey on January 30 and 31, 2023 by walking the Study Area during the field survey and recording data using a submeter capable Global Positioning System unit.

ECORP surveyed all trees with trunks or a portion of their dripline radius in the Study Area. Tree tags were not installed on trees that were inaccessible or were located on private property; however, they were assigned numbers 1000 to 1016. The following term was gathered from the County Guidelines:

- **Oak Woodland Assessment**: a report that identifies 1) the species, 2) diameter at breast height (DBH), and 3) overall health of the trees to be removed, and includes photos and a map of the site that identifies the trees by species and size.

- **Tree:** All native oak trees (that are 5-inches DBH and larger.

The surveyors collected data that included species, tree tag number, DBH, dripline radius, health, and structure. The survey results are intended for general Project planning purposes only; therefore, these results should not be considered a detailed tree analysis (i.e., results do not include hazard assessment, tree health diagnosis, preservation/removal recommendations, or pruning advisement). The terms are defined below:



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Map Date: 3/9/2023

Sources: ESRI, USGS, BenEn

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Figure 1. Location and Vicinity

2022-267 Hidden Valley Lake CSD

- **DBH:** Measured diameter of the trunk at 54 inches above grade; if other than DBH, then alternate measurement height must be identified. If the tree is multitrunked, include the diameter of all stems that are 1-inch DBH and larger. Size must be rounded to the nearest inch. For multitrunked trees, this report lists total aggregate diameter along with each trunk's diameter.

- **Dripline:** A circle with the radius being the measurement of the length of the distance from the trunk to the end of the longest limb.

- **Health:** A measure of overall vigor and vitality of the tree and rated as good, fair to good, fair, fair to poor, or poor based on an assessment of crown density, leaf color and size, active callusing, shoot growth rate, extent of crown dieback, cambium layer health, and tree age.

- **Structure:** A measure of the tree's structural stability and failure potential and rated as good, fair to good, fair, fair to poor, or poor based on assessment of specific structural features (e.g., decay, conks, codominant trunks, included bark, abnormal lean, one-sided canopy, history of failure, prior construction impact, pruning history).

4.0 RESULTS

ECORP inventoried a total of 250 trees in the Study Area consisting of 184 blue oak (*Quercus douglasii*), 30 interior live oak (*Quercus wislizeni*), 21 valley oak (*Quercus lobata*), and 15 coast live oak (*Quercus agrifolia*). A map depicting the locations of the inventoried trees is included as Appendix A. Detailed tree survey data for each tree are included as Appendix B. Representative site photographs are included as Appendix C. There were duplicate tag numbers on a few trees, so Appendix A and B show this differentiation with either an "a" or a "b" following the tag number that is on the tree.

5.0 CONCLUSIONS

A total of 250 trees were inventoried within the Study Area. If any trees are to be removed, Lake County needs to review whether their removal is significant and determine mitigation consistent with the Oak Woodland Conservation Act. However, the Hidden Valley Lake Community Service District plans to seek an Emergency Exemption; therefore, the Lake County review may not be required. Impacts to trees within the Study Area will be determined by Forest Resource Solutions and Technologies Corporation in the Vegetation Thinning and Maintenance Plan that is in progress.

6.0 REFERENCES

Hall, Laura, Lake County. 2022 Email message to Krissy Walker-Berry, ECORP Consulting, Inc. September 22.

Natural Resources Conservation Service, U.S. Geological Survey (USGS), and U.S. Environmental Protection Agency. 2019. Watershed Boundary Dataset for California. Available online: https://datagateway.nrcs.usda.gov.

U.S. Geological Survey (USGS). 1998. "Middletown, California" 7.5-minute Quadrangle.

LIST OF APPENDICES

APPENDIX A

Arborist Survey Results

Map Contents

Project Area

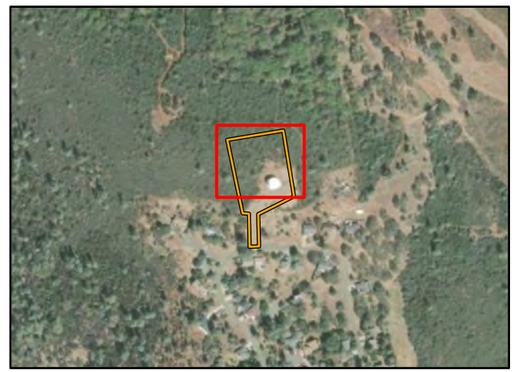
Little Peak Tank Site - 2.91 ac.

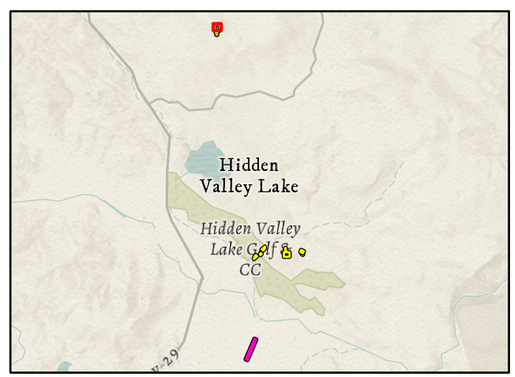
Tree Species (250)

Interior Live Oak (30)

Sources: Maxar (10/19/2022), ESRI, Lake County (7/15/2022)

The information depicted on this graphic represents a preliminary wetland assessment. The assessment was not conducted in accordance with the Corps of Engineers Wetland Delineation Manual and Sacramento District Minimum Standards. The project boundaries, wetland boundaries, and acreage values are approximate.
The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.





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Map Date: 3/9/2023

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Scale in Feet
0 20 40

Map Contents

Project Area

Tank 4 Site - 3.98 ac.

Tree Species (250)

Valley Oak (21)

Sources: Maxar (10/19/2022), ESRI, Lake County (7/15/2022)

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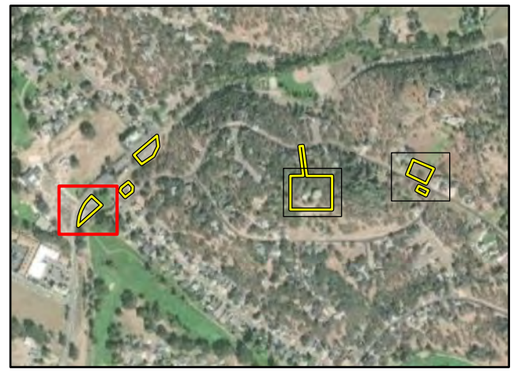

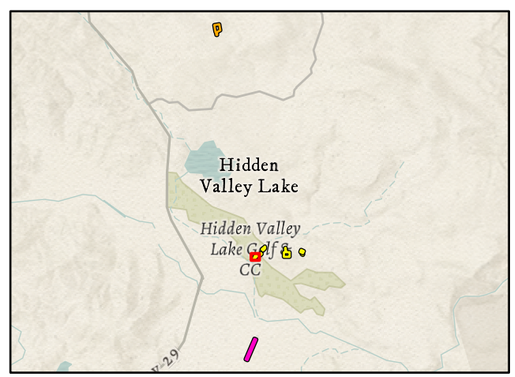

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Map Date: 3/9/2023

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Scale in Feet
0 20 40

Appendix A. Arborist Survey Results

2022-267 Hidden Valley Lake CSD

Map Contents

Project Area

Tank 4 Site - 3.98 ac.

Tree Species (250)

- Blue Oak (184)
- Coast Live Oak (15)
- Interior Live Oak (30)

Sources: Maxar (10/19/2022), ESRI, Lake County (7/15/2022)

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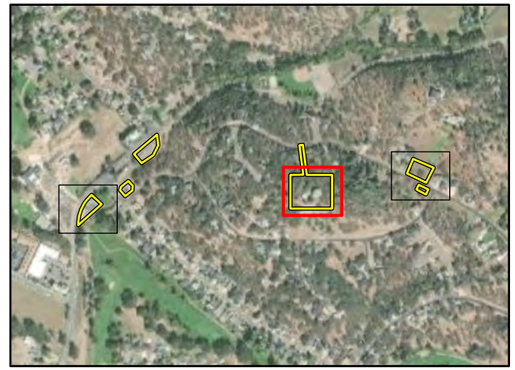

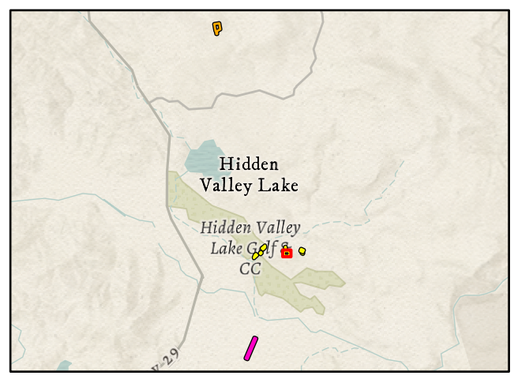

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Map Date: 3/9/2023

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Scale in Feet
0 20 40

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Tank 4 Site - 3.98 ac.

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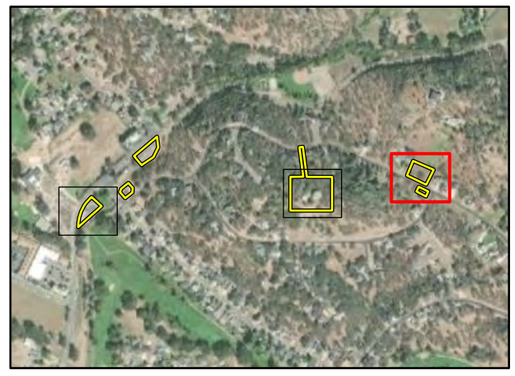

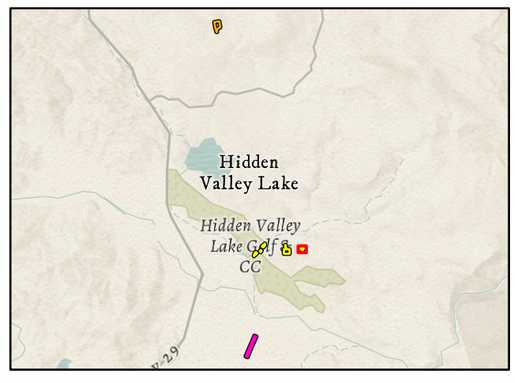

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Map Date: 3/9/2023

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Scale in Feet
0 20 40

Map Contents

Project Area

Grange Road Wellfield - 3.36 ac.

Tree Species (250)

Valley Oak (21)

Sources: Maxar (10/19/2022), ESRI, Lake County (7/15/2022)

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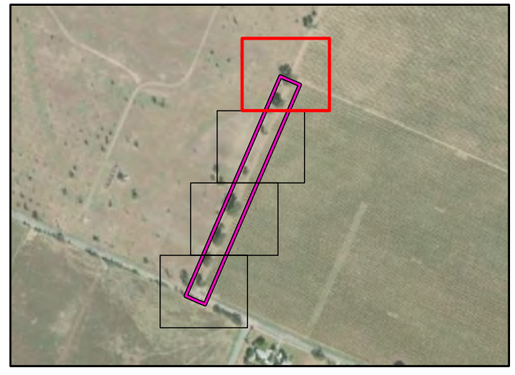

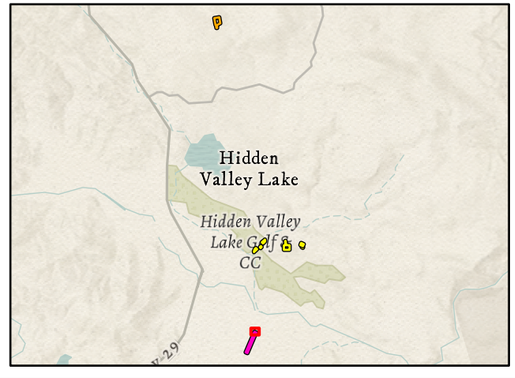

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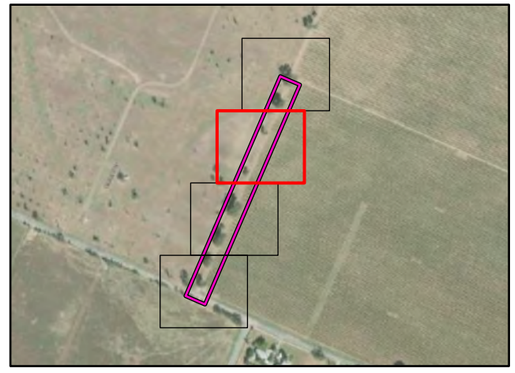

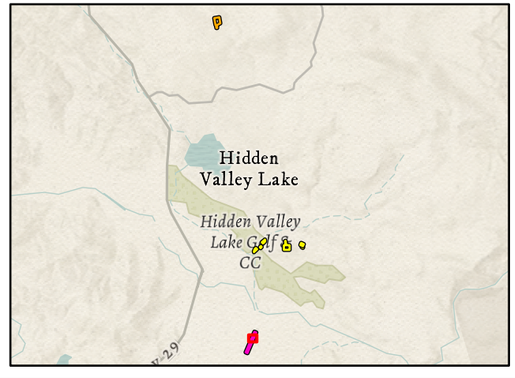

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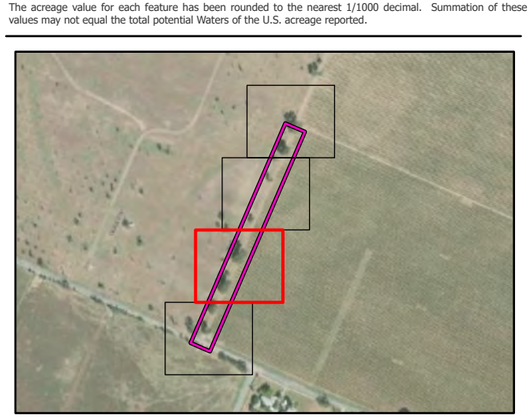

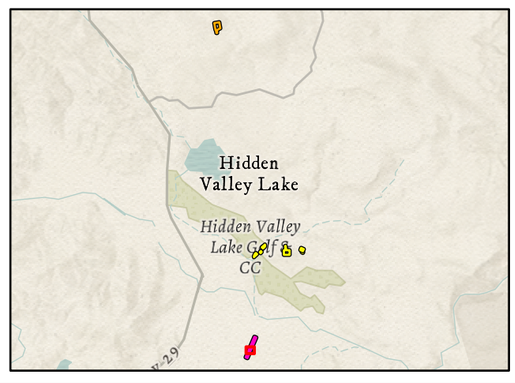

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Map Date: 3/9/2023

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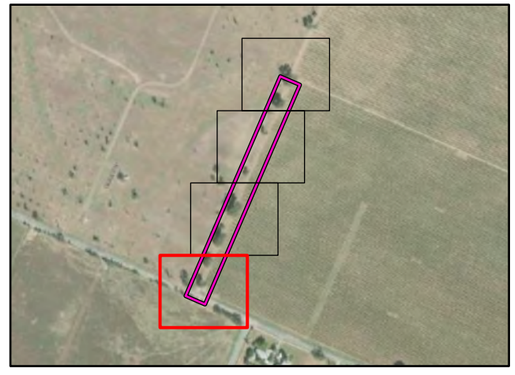

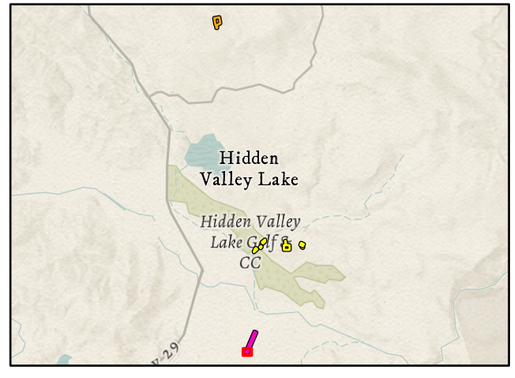

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Map Date: 3/9/2023

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Scale in Feet
0 20 40

APPENDIX B

Tree Survey Data (January 30 and 31, 2023)

Hidden Valley Lake CSD Project
Tree Data (January 30 and 31, 2023)

Tree Tag #	Common Name	Scientific Name	DBH (inches)	Dripline (feet)	Structure	Health	Stem Description (if multiple)	Field Note
1	Blue Oak	*Quercus douglasii*	16.6	18	Good	Good		
2	Blue Oak	*Quercus douglasii*	7	10	Good	Fair		
3	Blue Oak	*Quercus douglasii*	6.1	15	Fair	Fair		
4	Blue Oak	*Quercus douglasii*	13.3	13	Fair to Good	Fair		
5	Coast Live Oak	*Quercus agrifolia*	41.7	30	Fair	Fair	10.2,7,5.4,6.6,12.5	
6	Blue Oak	*Quercus douglasii*	9.3	12	Fair	Fair		
7	Blue Oak	*Quercus douglasii*	9.8	12	Fair	Fair to Poor		
8	Interior Live Oak	*Quercus wislizeni*	8.8	17	Fair to Good	Fair to Good		
9	Interior Live Oak	*Quercus wislizeni*	16.3	18	Poor	Fair	9.3,7	Heart rot in both stems
10	Blue Oak	*Quercus douglasii*	10.5	14	Fair	Fair to Poor		
11	Blue Oak	*Quercus douglasii*	36.5	22	Poor	Fair to Poor		
12	Blue Oak	*Quercus douglasii*	8.2	15	Fair	Fair		
13	Interior Live Oak	*Quercus wislizeni*	7.3	12	Fair	Fair to Good		
14	Interior Live Oak	*Quercus wislizeni*	5.8	15	Fair	Fair	3,1.8,1	
15	Interior Live Oak	*Quercus wislizeni*	5	10	Fair	Fair	2.5,1.5,1	
16	Interior Live Oak	*Quercus wislizeni*	25.4	22	Fair	Fair	14.2,11.2	
17	Coast Live Oak	*Quercus agrifolia*	27.8	24	Fair to Poor	Fair to Poor	14.2,13.6	
18	Interior Live Oak	*Quercus wislizeni*	18.6	10	Poor	Poor		
19	Blue Oak	*Quercus douglasii*	15.5	18	Fair	Fair		
20	Interior Live Oak	*Quercus wislizeni*	12.5	10	Fair to Poor	Fair		
21	Blue Oak	*Quercus douglasii*	27.5	20	Fair	Fair		
22	Blue Oak	*Quercus douglasii*	16	21	Fair	Fair		
23	Blue Oak	*Quercus douglasii*	13	14	Fair	Fair		
24	Blue Oak	*Quercus douglasii*	14.7	15	Fair	Fair	7.7,7	
25	Blue Oak	*Quercus douglasii*	10.7	15	Fair	Fair		
26	Blue Oak	*Quercus douglasii*	24.2	22	Fair	Fair	11.9,12.3	
27	Blue Oak	*Quercus douglasii*	15.6	26	Fair	Fair		
28	Blue Oak	*Quercus douglasii*	14.8	15	Fair	Fair		
29	Blue Oak	*Quercus douglasii*	12.8	16	Fair	Fair to Poor		
30	Blue Oak	*Quercus douglasii*	20.5	24	Fair	Fair		
31	Blue Oak	*Quercus douglasii*	25.5	25	Fair to Poor	Fair		Exfoliating bark at base
32	Blue Oak	*Quercus douglasii*	13.3	14	Fair	Fair		
33	Valley Oak	*Quercus lobata*	9.7	10	Fair to Good	Fair		
102	Valley Oak	*Quercus lobata*	20.2	22	Fair	Fair to Poor		
103	Valley Oak	*Quercus lobata*	5.3	6	Good	Fair to Good		
104	Valley Oak	*Quercus lobata*	9.9	10	Fair to Poor	Fair to Poor		
105	Valley Oak	*Quercus lobata*	26.9	22	Fair to Poor	Fair		
106	Valley Oak	*Quercus lobata*	10.4	23	Fair to Poor	Fair		
107	Valley Oak	*Quercus lobata*	21.6	20	Fair	Fair		
108	Valley Oak	*Quercus lobata*	10.4	18	Fair	Fair to Poor		
109	Valley Oak	*Quercus lobata*	6.4	3	Poor	Poor		
111	Valley Oak	*Quercus lobata*	19.2	20	Fair	Fair		
112	Valley Oak	*Quercus lobata*	6.5	8	Poor	Fair to Poor		
113	Valley Oak	*Quercus lobata*	8.2	10	Fair	Poor		
116	Valley Oak	*Quercus lobata*	33.1	25	Fair	Fair		
117	Valley Oak	*Quercus lobata*	25.4	22	Fair to Good	Fair		
118a	Blue Oak	*Quercus douglasii*	7.3	8	Poor	Poor		
118b	Valley Oak	*Quercus lobata*	7.6	8	Fair	Fair to Poor		
119a	Blue Oak	*Quercus douglasii*	8.7	15	Fair	Fair		
119b	Valley Oak	*Quercus lobata*	10.7	10	Fair	Fair	9.2,1.5	
120a	Blue Oak	*Quercus douglasii*	11.3	12	Fair	Fair		
120b	Valley Oak	*Quercus lobata*	8.6	8	Fair	Fair		

Hidden Valley Lake CSD Project
Tree Data (January 30 and 31, 2023)

Tree Tag #	Common Name	Scientific Name	DBH (inches)	Dripline (feet)	Structure	Health	Stem Description (if multiple)	Field Note
121a	Blue Oak	*Quercus douglasii*	20.6	19	Fair	Fair	11.8,8.8	
121b	Valley Oak	*Quercus lobata*	8.1	8	Fair	Fair to Good		
122a	Blue Oak	*Quercus douglasii*	6.8	10	Fair to Poor	Fair to Poor		
122b	Valley Oak	*Quercus lobata*	13.3	15	Fair	Fair		
123	Blue Oak	*Quercus douglasii*	8.7	17	Fair to Poor	Fair to Poor		
124a	Blue Oak	*Quercus douglasii*	13.9	17	Fair to Good	Fair to Good		
124b	Valley Oak	*Quercus lobata*	35.1	30	Fair	Fair		
125	Blue Oak	*Quercus douglasii*	11.2	14	Fair to Poor	Fair to Poor		
126a	Blue Oak	*Quercus douglasii*	9.7	15	Fair	Fair		
126b	Valley Oak	*Quercus lobata*	45.5	32	Fair	Fair		
130	Blue Oak	*Quercus douglasii*	7.4	17	Fair	Fair to Poor		
132	Blue Oak	*Quercus douglasii*	8.1	16	Fair	Fair		
134	Blue Oak	*Quercus douglasii*	9.4	24	Fair	Fair		
135	Blue Oak	*Quercus douglasii*	12.5	23	Fair	Fair		
136	Blue Oak	*Quercus douglasii*	8.9	18	Fair	Fair		
137	Blue Oak	*Quercus douglasii*	10.7	21	Fair	Fair to Poor		
139	Blue Oak	*Quercus douglasii*	12.6	17	Fair	Fair	6.6,6	
140a	Blue Oak	*Quercus douglasii*	11.2	14	Fair to Good	Fair		
140b	Interior Live Oak	*Quercus wislizeni*	13	10	Fair	Fair to Good	4.2,5.3,3.5	
141	Blue Oak	*Quercus douglasii*	11.4	12	Fair	Fair		
142	Blue Oak	*Quercus douglasii*	8.8	20	Fair	Fair		
143	Interior Live Oak	*Quercus wislizeni*	14.9	18	Fair	Fair	12.6,2.3	
144	Coast Live Oak	*Quercus agrifolia*	27.3	28	Fair	Fair		
145	Blue Oak	*Quercus douglasii*	16.8	16	Good	Fair to Good		
146	Blue Oak	*Quercus douglasii*	9.2	15	Fair	Fair		
147	Blue Oak	*Quercus douglasii*	8.1	8	Fair	Poor		
148	Blue Oak	*Quercus douglasii*	6.3	10	Poor	Poor		
149	Blue Oak	*Quercus douglasii*	6.6	8	Good	Fair		
150	Blue Oak	*Quercus douglasii*	5.9	8	Fair	Poor		
152	Blue Oak	*Quercus douglasii*	11.6	12	Good	Fair		
153	Blue Oak	*Quercus douglasii*	11	15	Fair to Poor	Fair		
154	Blue Oak	*Quercus douglasii*	9.1	17	Fair	Fair to Poor		
155	Blue Oak	*Quercus douglasii*	6.2	8	Fair	Fair		
156	Blue Oak	*Quercus douglasii*	7.9	12	Fair	Fair		
157	Blue Oak	*Quercus douglasii*	7.8	12	Fair to Poor	Fair to Poor		
158	Blue Oak	*Quercus douglasii*	11.1	15	Fair	Fair		
159	Blue Oak	*Quercus douglasii*	11.4	15	Fair	Fair		
160	Blue Oak	*Quercus douglasii*	9.3	15	Poor	Fair to Poor		
161	Blue Oak	*Quercus douglasii*	7.6	12	Fair to Poor	Fair to Poor		
162	Blue Oak	*Quercus douglasii*	8.7	15	Fair	Poor		
173	Coast Live Oak	*Quercus agrifolia*	6.3	6	Good	Fair to Good		
175	Coast Live Oak	*Quercus agrifolia*	5.7	6	Good	Fair to Good		
176	Coast Live Oak	*Quercus agrifolia*	6.3	7	Fair	Fair		
178	Coast Live Oak	*Quercus agrifolia*	6.8	7	Good	Fair to Good		
179	Coast Live Oak	*Quercus agrifolia*	7.4	7	Good	Good		
181	Coast Live Oak	*Quercus agrifolia*	6.2	5	Good	Good		
182	Coast Live Oak	*Quercus agrifolia*	7.3	8	Good	Good		
184	Blue Oak	*Quercus douglasii*	13.6	17	Good	Good		
185	Blue Oak	*Quercus douglasii*	7.8	10	Fair to Poor	Fair to Poor		
186	Blue Oak	*Quercus douglasii*	13.6	13	Fair	Fair		
187	Blue Oak	*Quercus douglasii*	11.6	15	Fair to Poor	Fair to Poor	7.3,4.3	
189	Blue Oak	*Quercus douglasii*	14.2	18	Fair	Fair		

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Tree Data (January 30 and 31, 2023)

Tree Tag #	Common Name	Scientific Name	DBH (inches)	Dripline (feet)	Structure	Health	Stem Description (if multiple)	Field Note
191	Blue Oak	*Quercus douglasii*	15.7	17	Fair	Fair	7.5,8.2	
194	Blue Oak	*Quercus douglasii*	7.7	13	Fair	Fair		
195	Blue Oak	*Quercus douglasii*	11.9	18	Fair to Poor	Fair		
196	Blue Oak	*Quercus douglasii*	22.8	18	Fair to Poor	Fair	7.4,8.2,7.2	
197	Blue Oak	*Quercus douglasii*	10.3	12	Fair to Good	Fair		
198	Blue Oak	*Quercus douglasii*	5.8	12	Poor	Fair to Poor		
199	Blue Oak	*Quercus douglasii*	6.6	8	Fair	Fair to Poor		
200	Blue Oak	*Quercus douglasii*	8.1	12	Fair to Good	Fair		
201	Blue Oak	*Quercus douglasii*	6.8	10	Fair	Fair		
202	Blue Oak	*Quercus douglasii*	8.7	10	Fair	Fair to Poor		
203	Blue Oak	*Quercus douglasii*	9.6	12	Fair	Fair		
204	Blue Oak	*Quercus douglasii*	5.3	3	Fair	Poor		
205	Blue Oak	*Quercus douglasii*	6	12	Fair	Fair		
206	Blue Oak	*Quercus douglasii*	15.8	12	Fair to Poor	Fair	7.5,8.3	
208	Blue Oak	*Quercus douglasii*	7.6	12	Fair	Fair		
209	Blue Oak	*Quercus douglasii*	9	15	Fair	Fair		
210	Blue Oak	*Quercus douglasii*	8.8	15	Fair	Fair		
211	Blue Oak	*Quercus douglasii*	10.4	13	Fair	Fair		
212	Blue Oak	*Quercus douglasii*	5.8	10	Fair	Fair		
213	Blue Oak	*Quercus douglasii*	6	10	Fair	Fair to Poor		
214	Blue Oak	*Quercus douglasii*	15.2	15	Fair to Poor	Fair	9,6.2	
215	Blue Oak	*Quercus douglasii*	16.7	13	Fair to Poor	Poor	7.4,9.3	
216	Blue Oak	*Quercus douglasii*	18	13	Fair	Fair	10.6,7.4	
217	Blue Oak	*Quercus douglasii*	8.6	12	Fair	Fair		
218	Blue Oak	*Quercus douglasii*	9	12	Fair	Fair		
219	Blue Oak	*Quercus douglasii*	16.2	15	Fair	Fair	6.8,9.4	
221	Blue Oak	*Quercus douglasii*	11.6	15	Fair to Good	Fair		
223	Blue Oak	*Quercus douglasii*	12.9	15	Fair to Good	Fair		
224	Blue Oak	*Quercus douglasii*	8.1	10	Fair	Fair	4.6,3.5	
225	Blue Oak	*Quercus douglasii*	13.2	15	Fair to Good	Fair		
226	Blue Oak	*Quercus douglasii*	8.3	12	Fair	Fair to Poor		
227	Blue Oak	*Quercus douglasii*	6.1	8	Fair to Good	Fair		
228	Blue Oak	*Quercus douglasii*	5.8	10	Fair to Good	Fair		
229	Blue Oak	*Quercus douglasii*	6.9	5	Fair	Fair		
231	Blue Oak	*Quercus douglasii*	6.3	8	Fair to Good	Fair to Poor		
232	Blue Oak	*Quercus douglasii*	6.5	8	Fair to Good	Fair to Poor		
233	Blue Oak	*Quercus douglasii*	6.9	10	Fair to Poor	Fair to Poor		
234	Blue Oak	*Quercus douglasii*	8.8	13	Fair	Fair		
235	Blue Oak	*Quercus douglasii*	8.9	15	Fair to Good	Fair		
236	Blue Oak	*Quercus douglasii*	7.8	18	Fair to Poor	Fair		
238	Blue Oak	*Quercus douglasii*	8.6	12	Fair to Good	Fair		
239	Blue Oak	*Quercus douglasii*	12.5	13	Fair to Good	Fair		
240	Blue Oak	*Quercus douglasii*	16.6	20	Fair to Poor	Fair	8.5,8.1	
244	Coast Live Oak	*Quercus agrifolia*	12.9	12	Fair	Fair		
245	Coast Live Oak	*Quercus agrifolia*	13.1	12	Fair	Fair to Good		
247	Coast Live Oak	*Quercus agrifolia*	11.8	12	Good	Good		
248	Coast Live Oak	*Quercus agrifolia*	8.4	10	Fair to Poor	Fair to Good		
250	Blue Oak	*Quercus douglasii*	20.2	20	Fair	Fair		
251	Interior Live Oak	*Quercus wislizeni*	11	18	Fair to Good	Fair		
256	Interior Live Oak	*Quercus wislizeni*	13.5	16	Fair	Fair	7.1,3.8,2.6	
257	Blue Oak	*Quercus douglasii*	15	18	Fair to Good	Fair		
276	Blue Oak	*Quercus douglasii*	8.3	10	Fair	Fair to Poor		

Hidden Valley Lake CSD Project
Tree Data (January 30 and 31, 2023)

Tree Tag #	Common Name	Scientific Name	DBH (inches)	Dripline (feet)	Structure	Health	Stem Description (if multiple)	Field Note
278	Blue Oak	*Quercus douglasii*	11.1	12	Fair to Good	Fair to Poor		
279	Blue Oak	*Quercus douglasii*	6.7	12	Fair	Fair to Poor		
281	Blue Oak	*Quercus douglasii*	12.2	17	Fair to Good	Fair to Good		
282	Blue Oak	*Quercus douglasii*	9.7	13	Fair to Good	Fair		
285	Blue Oak	*Quercus douglasii*	8.9	10	Fair to Poor	Fair	4.6,4.3	
287	Blue Oak	*Quercus douglasii*	8.5	15	Fair	Fair		
288	Blue Oak	*Quercus douglasii*	9.6	12	Fair to Poor	Fair		
290	Blue Oak	*Quercus douglasii*	11.1	10	Good	Fair to Good		
292	Blue Oak	*Quercus douglasii*	7.1	12	Fair	Poor		
293	Blue Oak	*Quercus douglasii*	13	18	Fair to Good	Fair		
294	Blue Oak	*Quercus douglasii*	13.1	20	Fair to Poor	Fair		
297	Blue Oak	*Quercus douglasii*	8.3	15	Fair	Fair to Poor		
298	Blue Oak	*Quercus douglasii*	8.3	17	Fair to Poor	Fair		
299	Blue Oak	*Quercus douglasii*	9.4	22	Fair to Poor	Fair		
300	Blue Oak	*Quercus douglasii*	5.3	5	Fair	Fair to Poor		
302	Blue Oak	*Quercus douglasii*	9.3	13	Fair to Poor	Fair		
303	Blue Oak	*Quercus douglasii*	12.6	14	Fair	Fair		
304	Blue Oak	*Quercus douglasii*	9.4	8	Fair to Good	Fair to Poor		
305	Blue Oak	*Quercus douglasii*	16.2	22	Fair	Fair		
306	Blue Oak	*Quercus douglasii*	7.1	10	Fair	Fair		
309	Blue Oak	*Quercus douglasii*	10.1	17	Poor	Fair		Basal scar
310	Blue Oak	*Quercus douglasii*	14.5	20	Fair	Fair		
311	Blue Oak	*Quercus douglasii*	10.6	14	Fair to Good	Fair		
312	Blue Oak	*Quercus douglasii*	10.8	18	Fair	Fair to Poor		
313	Blue Oak	*Quercus douglasii*	7.8	20	Fair to Poor	Fair to Poor		
314	Coast Live Oak	*Quercus agrifolia*	16.4	18	Poor	Poor		Main trunk cavity
315	Blue Oak	*Quercus douglasii*	6.9	17	Fair	Fair		
319	Blue Oak	*Quercus douglasii*	5.3	8	Fair	Fair to Poor		
321	Blue Oak	*Quercus douglasii*	11.4	12	Fair to Good	Fair to Poor		
326	Blue Oak	*Quercus douglasii*	6.6	12	Fair	Fair		
327	Blue Oak	*Quercus douglasii*	8.2	15	Fair	Fair		
328	Blue Oak	*Quercus douglasii*	6.6	12	Fair	Fair		
329	Blue Oak	*Quercus douglasii*	9.5	15	Fair	Fair		
330	Blue Oak	*Quercus douglasii*	5.6	12	Fair	Fair		
331	Blue Oak	*Quercus douglasii*	6	12	Fair	Fair		
332	Blue Oak	*Quercus douglasii*	7.3	16	Fair	Fair		
333	Blue Oak	*Quercus douglasii*	11.8	14	Fair	Fair		
334	Blue Oak	*Quercus douglasii*	9.7	15	Fair to Good	Fair		
336	Blue Oak	*Quercus douglasii*	10.3	10	Fair	Fair		
337	Blue Oak	*Quercus douglasii*	9.1	12	Fair	Fair to Poor		
338	Blue Oak	*Quercus douglasii*	11.4	14	Fair	Fair		
339	Blue Oak	*Quercus douglasii*	27.3	24	Fair to Poor	Fair to Poor		Basal rot
340	Blue Oak	*Quercus douglasii*	8.8	18	Fair	Fair		
341	Blue Oak	*Quercus douglasii*	10.2	18	Fair to Good	Fair		
342	Blue Oak	*Quercus douglasii*	7.9	13	Fair to Good	Fair		
343	Blue Oak	*Quercus douglasii*	8.5	15	Fair	Fair to Poor		
344	Blue Oak	*Quercus douglasii*	12.4	16	Fair to Good	Fair		
345	Blue Oak	*Quercus douglasii*	9.5	15	Fair	Fair		
346	Blue Oak	*Quercus douglasii*	10.3	14	Fair	Poor		
347	Blue Oak	*Quercus douglasii*	12.5	12	Fair	Fair		
349	Blue Oak	*Quercus douglasii*	11	8	Fair	Fair		
350	Blue Oak	*Quercus douglasii*	8.1	12	Fair	Fair		

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Tree Data (January 30 and 31, 2023)

Tree Tag #	Common Name	Scientific Name	DBH (inches)	Dripline (feet)	Structure	Health	Stem Description (if multiple)	Field Note
351	Blue Oak	*Quercus douglasii*	14.9	20	Fair	Fair	5.5,9.4	
352	Blue Oak	*Quercus douglasii*	18.1	20	Fair	Fair		
353	Blue Oak	*Quercus douglasii*	7.3	10	Fair to Good	Fair		
354	Blue Oak	*Quercus douglasii*	8	6	Fair	Poor		
355	Blue Oak	*Quercus douglasii*	10.3	12	Fair	Fair		
356	Blue Oak	*Quercus douglasii*	5.8	10	Fair to Good	Fair		
357	Blue Oak	*Quercus douglasii*	6.7	14	Fair	Fair		
358	Blue Oak	*Quercus douglasii*	12.5	22	Fair	Fair		
359	Blue Oak	*Quercus douglasii*	11.8	28	Fair	Fair		
360	Blue Oak	*Quercus douglasii*	17.2	20	Fair to Good	Fair		
363	Blue Oak	*Quercus douglasii*	7.6	15	Fair to Poor	Fair to Poor		Basal rot
364	Blue Oak	*Quercus douglasii*	13.7	23	Fair	Fair		
365	Blue Oak	*Quercus douglasii*	24.2	25	Fair to Poor	Fair	12.8,11.4	
366	Blue Oak	*Quercus douglasii*	14.7	30	Fair	Fair		
367	Blue Oak	*Quercus douglasii*	10.1	18	Fair	Fair		
368	Blue Oak	*Quercus douglasii*	28.9	20	Fair	Fair	13.7,5.2,10	
383	Blue Oak	*Quercus douglasii*	8.4	14	Fair	Fair		
384	Blue Oak	*Quercus douglasii*	22.1	22	Fair	Fair		
401	Interior Live Oak	*Quercus wislizeni*	18	20	Fair	Fair		Heart rot at base
402	Blue Oak	*Quercus douglasii*	7.5	13	Fair	Fair to Poor		
403	Blue Oak	*Quercus douglasii*	11.7	20	Fair	Fair		
408	Blue Oak	*Quercus douglasii*	12.7	24	Fair	Fair		
409	Blue Oak	*Quercus douglasii*	11	20	Fair	Fair		
410	Blue Oak	*Quercus douglasii*	12	16	Fair to Poor	Fair		Wound at base
411	Blue Oak	*Quercus douglasii*	10	18	Fair	Fair		
1000	Interior Live Oak	*Quercus wislizeni*	11.5	8	Fair to Poor	Fair to Poor	1.5,2.5,1.5,3,3	
1001	Interior Live Oak	*Quercus wislizeni*	11.5	7	Fair to Poor	Fair to Poor	4,3,3,1.5	
1002	Interior Live Oak	*Quercus wislizeni*	7	6	Fair	Fair	2,2,2,1	
1003	Interior Live Oak	*Quercus wislizeni*	5	6	Fair	Fair	1.5,1.5,2	
1004	Interior Live Oak	*Quercus wislizeni*	8.5	6	Fair	Fair	2,2,2.5,2	
1005	Interior Live Oak	*Quercus wislizeni*	5.2	6	Fair	Fair	3,2.2	
1006	Interior Live Oak	*Quercus wislizeni*	9.1	6	Fair to Poor	Fair	2.5,1.5,2.7,1.4,1	
1007	Interior Live Oak	*Quercus wislizeni*	13	6	Fair	Fair	3,2.5,2,1.5,2,2	
1008	Interior Live Oak	*Quercus wislizeni*	8.5	6	Fair	Fair	2.5,2.5,2,1.5	
1009	Interior Live Oak	*Quercus wislizeni*	18	8	Fair	Fair	4,3,2,2,4,2,1	
1010	Interior Live Oak	*Quercus wislizeni*	8	6	Fair	Fair	3,2,2,1	
1011	Interior Live Oak	*Quercus wislizeni*	10	6	Fair	Fair	3,2,2,1,2	
1012	Interior Live Oak	*Quercus wislizeni*	24	12	Fair to Poor	Fair	6,5,4,2,2,1,4,	
1013	Interior Live Oak	*Quercus wislizeni*	25	10	Fair	Fair	4,6,5,3,2,2,1,2	
1014	Interior Live Oak	*Quercus wislizeni*	10	10	Fair	Fair	6,4	
1015	Interior Live Oak	*Quercus wislizeni*	8	8	Fair	Fair	3,3,2	
1016	Interior Live Oak	*Quercus wislizeni*	17	8	Fair	Fair	4,3,2,2,2,4	

APPENDIX C

Representative Site Photographs

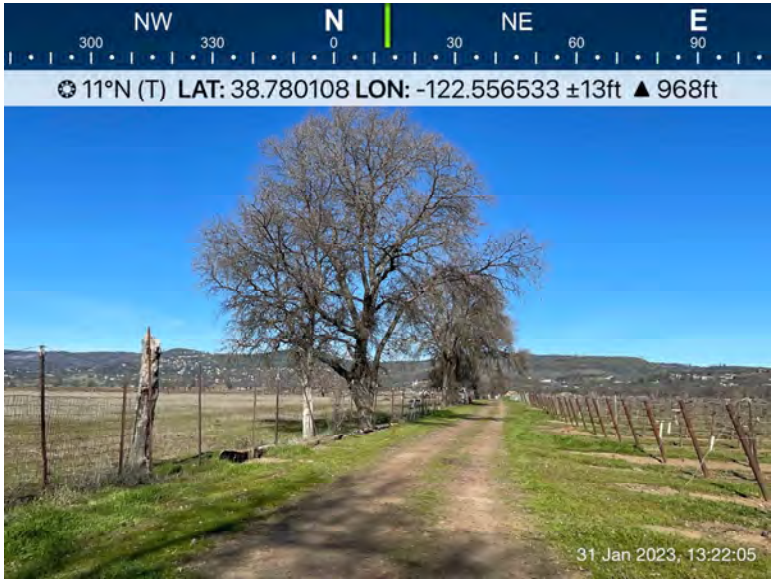

Photo 1. Grange Road, facing north. Photo taken January 31, 2023.

Photo 2. Grange Road, facing southwest. Photo taken January 31, 2023.

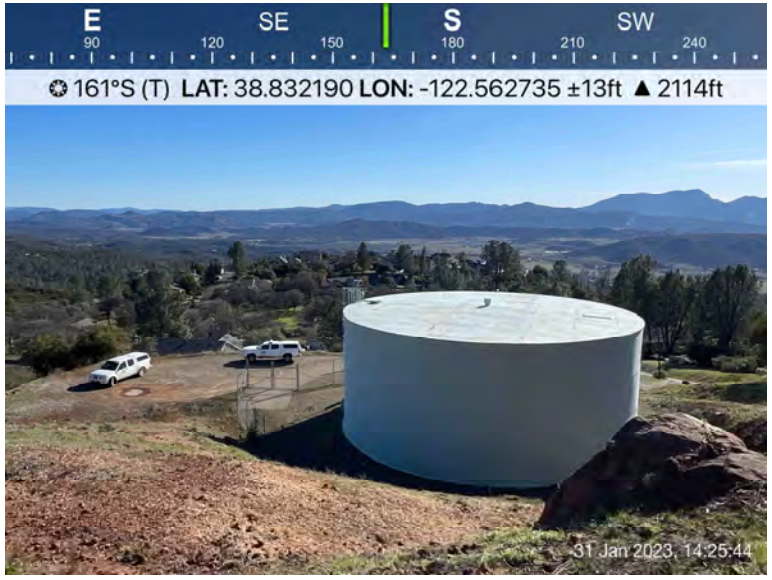

Photo 3. Little Peak Tank site, facing south. Photo taken January 31, 2023.

Photo 4. Little Peak Tank Site, facing northwest. Photo taken January 31, 2023.

Photo 5. Tank 4 site, facing east. Photo taken January 31, 2023.

Photo 6. Tank 4 site, facing northeast. Photo taken January 31, 2023.

Photo 7. Tank 4 site, facing east. Photo taken January 31, 2023.

Photo 8. Staging area one, facing west. Photo taken January 31, 2023.

Photo 9. Staging area two, facing east. Photo taken January 31, 2023.

Photo 10. Staging area three, facing east. Photo taken January 31, 2023.

Photo 11. Staging area four, facing northeast. Photo taken January 31, 2023.

Photo 12. Staging area five, facing southwest. Photo taken January 31, 2023.

SCOPE OF WORK

TASK 1 – PROJECT KICK OFF AND PROJECT MANAGEMENT

Coastland | DCCM will conduct an initial kick-off meeting with District staff and our project team to review assessment goals and to identify the types of mitigation projects that are likely to meet District needs as well as the HMGP funding criteria. We will review the critical water infrastructure with the District and take note of any facilities that are known to be particularly vulnerable.

Following the kick-off meeting, Coastland | DCCM will begin our background data and system risk assessment efforts, including the geotechnical studies and the environmental documentation. Throughout the project, we will provide status updates to District staff and coordinate work between the District and the project team. We have budgeted up to eight progress meetings with the District.

TASK 2 – WATER SYSTEM INVENTORY, CONDITIONS ASSESSMENT AND MAPPING

This task includes the preparation of an inventory and facility map of the District's water system, and a conditions assessment of the system elements based on District-provided information and the project's seismic assessment.

Coastland | DCCM will prepare an inventory of the District's water system infrastructure including wells, chemical treatment facilities, tanks, valves, hydrants and piping, and characterize their general service condition and age based on District-provided information including record drawings, reports, and maintenance logs. We will field verify the approximate locations of readily observable valves and hydrants and other above grade features (up to 80 staff hours). The provided data will be compiled into a database for District use. Where available, the data will include pipe lengths, pipe material, pipe diameter, installation dates, valve locations, valve types, hydrant locations, location(s) of previous breaks or point repairs, and any additional pertinent data reviewed. At the District's request we will provide unique identification number for each item in the inventory. This scope does not include GPS survey of facilities, locating lost or buried facilities, potholing, pipe location, or field verification of pipe diameters.

We will prepare a system-wide facility map of the District's water system. Features on this map will be based upon existing GIS data and shall be expanded to include all water system facilities as documented from field verification and from available as-builts and other District mapping. Features will be shown schematically with approximate locations only (not GPS located). Mapping shall include County parcel data, aerial imagery provided by County or open sources, and street names. Mapping will be prepared using AutoCAD Civil 3D with a scale of 1" = 500'. Data from AutoCAD mapping may be readily downloaded into GIS-compatible shapefiles at the District's request.

Once our team has completed the Seismic and Geologic Hazard Evaluation (as described in Task 4), we will identify specific components or regions within the District's water system that may be particularly vulnerable to seismic hazards. These findings will be incorporated into a Condition Summary Technical Memorandum which will identify portions of the District's water system that are at high-risk of damage during a seismic event.

Deliverables: District Water System Inventory (Excel and PDF versions), District Water System Mapping (AutoCAD Civil 3D and PDF versions, and GIS shapefile download), Condition Summary Technical Memorandum (PDF version).

TASK 3 – TOPOGRAPHIC SURVEY

Cinquini & Passarino, Inc. (CPI) will be retained to complete the topographic mapping required for the mitigation project and subsequent preliminary design & plan production. At this time, it is difficult to fully state what areas within the District will need to be surveyed as the background data, system assessment, and geotechnical studies will all inform the areas/project actions that will be considered for design. At this time we have allotted 8 full days of fieldwork and associated office setup, reduction, drafting and QC/QA of field data collected. This would be the level of effort associated with surveying approximately 6,000 lineal feet of a roadway corridor with the District.

CPI will conduct a topographic survey of the project area. The topographic survey will be at a drawing scale of 1 inch = 20 feet, with a one-foot contour interval.

The topographic survey will include the following:

- Topographic survey coverage area will include mapping a roadway from 10' beyond the edge of pavement to 10' beyond the edge of pavement. The roadway will be cross sectioned at intervals of 500 feet along tangents and 25 feet when the roadway is curve, sufficient to define the slope of the roadway.
- Topographic survey will include all necessary work to produce a topographic map, including features such as, but not limited to; building corners and elevations, curb lines, edges of pavement, grade breaks, water meters, sewer cleanouts, valves, manholes (including rim, invert and pipe information), culverts, utility markings on the pavement, utility poles, driveway locations, trees twelve (12) inches and larger, retaining walls, and any other pertinent information that could apply to the project during design.
- Topographic survey will be provided on North American Vertical Datum of 1988 as established by GNSS observations.
- Topographic map to horizontally relate to California Coordinate System of 1983 Zone II, Epoch 2017.50.

Deliverables: Sealed hardcopy of the Topographic Survey Map and an electronic file (.dwg) used to create the hardcopy.

TASK 4 – GEOTECHNICAL STUDY & SEISMIC HAZARD REVIEW

The geological and seismic hazard assessment will be a critical aspect of this water distribution reliability project. Our project team includes RGH Consultants as geotechnical engineers.

RGH will review selected published geologic and seismic hazard mapping, LiDAR (if available), and our previous work in the Hidden Valley Lake area. Their engineers and geologists will perform a surficial reconnaissance of the existing tanks and the distribution systems, as depicted in the RFP documents. The reconnaissance will generally consist of observing exposed topographic features, surface soils, rock outcroppings, cut banks, and potentially unstable areas with respect to fire damage.

Based on the geologic literature review and site reconnaissance, RGH will develop the following geotechnical information:

- A brief description of surface soil, geologic exposures and spring or seepage conditions observed during our reconnaissance;
- Distances to nearby faults;
- Discussion of seismic and geologic hazards that may affect the tanks and distribution systems;
- A map presenting the geology, seismic hazards, and geologic hazards;
- Possible mitigation measures for identified hazards; and
- Supplemental geotechnical engineering services.

This scope of services does not include site-specific exploration and laboratory testing, nor does it include the determination or evaluation of the presence or absence of hazardous materials, toxic mold or the corrosion potential of the site soils/rock. Extensive site exploration and sample collection throughout the District's region would be too large a cost for this project, but if a specific site or hazard is identified, additional investigation(s) may be warranted. At the conclusion of the initial investigation, the project team will determine if the findings warrant any additional site exploration, borings, or collection of soils samples for laboratory testing.

Coastland | DCCM will work with the geotechnical team to produce a Preliminary Geotechnical Memorandum that summarizes the findings and develop a geotechnical vulnerability matrix that tabulates the system components and what geotechnical risks are applicable throughout the region.

Deliverables: One (1) hard copy and one (1) electronic copy of the geotechnical report / memorandum.

TASK 5 – HYDRAULIC SYSTEMS MODELING

After completion of the background data and system risk assessment task, Coastland | DCCM will work to assemble a hydraulic model of the District's existing water distribution network. This hydraulic model will be assembled in WaterCAD and will be used to complete both steady state and extended period analysis for the system. This will enable an evaluation of any system deficiencies or vulnerabilities inherent within the existing system.

Calibration of the model will require hydrant flow test results at various points within the District's different pressure zones. We will review record data that is available, but pending how recent these tests were performed, and their relative locations within the pipe networks, additional flow tests and data collection may be needed. We understand that the District will conduct additional flow testing if needed to supplement the record data for model calibration purposes.

Another important aspect of this modeling effort will be to develop various operating scenarios that the network might realize during/after a seismic event. These hypothetical scenarios may range from assuming there are breaks in the main lines in various zones, to the catastrophic loss of booster pump stations, wells or tanks. By considering a variety of potential damage or failure schemes from a seismic event, we will work to identify critical actions the District could then take to bring the system back to full capacity as quickly as possible.

At the conclusion of our various modeling efforts, Coastland | DCCM will generate a Water Distribution Hydraulic Model Technical Memorandum that summarizes our findings. This will be used to define the scope of the design efforts for the preliminary engineering design.

Deliverables: One (1) hard copy and one (1) electronic copy of the Water Distribution Hydraulic Model Summary Technical Memorandum.

TASK 6 – ENVIRONMENTAL INVESTIGATIONS AND ENVIRONMENTAL DOCUMENTATION

WRA Environmental Consultants have joined the Coastland | DCCM team to address the Environmental Documentation effort for the project. WRA will also assist with the BCA effort and support the subapplication closeout effort. The sections below provide an overview of their anticipated tasks and scope.

PREPARE PROJECT DESCRIPTION FOR CEQA INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Once full project funding is awarded, WRA will prepare a draft Project Description for the California Environmental Quality Act (CEQA) Initial Study/Mitigated Negative Declaration (IS/MND) which will include

discussions of the following: 1) project area regional and local location, including photographs of representative project areas; 2) project objectives and goals; 3) project characteristics; and 4) a list of required approvals and regulatory permits.

PREPARE CEQA ADMINISTRATIVE DRAFT IS/MND

WRA will prepare a CEQA Administrative Draft IS/MND for the project that will include the project description, a completed environmental checklist form, an evaluation of impacts, and mitigation measures for any potentially significant impacts. WRA will cull excerpts from existing documents to the extent feasible, including the County of Lake's General Plan EIR, project geotechnical and hydraulic analyses, and other available reports prepared for District projects such as the Defensive Space Ignition Resistant Construction project. WRA has also retained Alta Archaeological Consulting (ALTA) to assist with Cultural Resources analysis. The Administrative Draft IS/MND and supporting technical studies and the FEMA EHP Checklist will also be used to support FEMA's environmental documentation pursuant to the National Environmental Policy Act (NEPA) including the potential need for the following agency coordination, permits and/or approvals:

- CWA Section 404/RHA Section 10
- Clean Water Act Section 401/402
- EO 11988 Floodplains 8-step Process
- EO 11990 Wetlands 8-step Process
- CZMA CC/Negative Determination
- Section 7 ESA
- NHPA Section 106
- FLPA Farmland Conversion Form AD-1006
- CAA General Conformity Determination
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- Magnuson-Stevens Fishery & Management Act

BIOLOGICAL RESOURCES ASSESSMENT

Desktop Research and Site Visit

Prior to the site visit, a search of the California Department of Fish and Wildlife (CDFW) Natural Diversity Data Base, the California Native Plant Society database, and the US Fish and Wildlife Service's (USFWS) County list will be conducted to determine which protected species, and/or critical habitat potentially occur in the vicinity of the project sites. Based on this search, and a review of other CDFW lists and publications, a list of potential species will be generated. In addition, available aerial photography, USGS maps, and other sources will be reviewed for the potential location of wetland, riparian, oak woodland, or other sensitive species for the area.

A non-protocol level survey will be undertaken of all project work areas and staging areas which will be traversed on foot and the habitats present assessed to determine suitability for special status wildlife and plants. Possible impacts to sensitive species located within the footprint of the project sites will be the focus of the site inspection; however, any potential indirect impacts from the project will also be assessed.

If the site inspections suggest that wetlands that may be present that are subject to state and/or federal jurisdiction, an assessment will be made to make a preliminary determination of the extent of any federal or state "waters". The field work will be conducted in conformance with criteria used to delineate wetlands using methods described in the appropriate federal and/or state guidance documents for the region. A map will be prepared to show the extent of any areas subject to the Clean Water Act (federal "waters"), the Porter Cologne Act (state "waters"), and the Fish and Game Code (Section 1600 waters). Additional documentation may be needed for permitting with the prospective agencies if activities are proposed in these areas.

Biological Letter Report

A technical report on biological resources will discuss the results of the literature search and field reconnaissance. The report will provide information on the known or potential use of the site by any sensitive species. Potential use will be ranked as either low, moderate, or high depending upon the suitability of the habitat or proximity of any known records uncovered in the database search. If any sensitive species are observed, they will be reported in the findings. Any sensitive habitats areas will also be described and mapped. If wetlands, streams, or ponds, are confirmed, a formal wetland delineation will be prepared at a later date pursuant to the RFP. An analysis of potential impacts and mitigation measures will also be prepared to address those issues.

CULTURAL RESOURCES ASSESSMENT

Background Research and Literature Review

Alta Archaeological Consulting (ALTA) will perform a records search at the California Historical Resources Information System, Northwest Information Center (NWIC) located on the campus of Sonoma State University. The Information Center is the primary repository for cultural resources information that covers an 18-county area including Lake County. The purpose of archival research is to identify any previously conducted archaeological surveys or known archaeological sites located on the project sites and within a one-half mile radius of the sites. In addition, ethnographic and historic literature will be reviewed to create background contextual information relevant to the project area.

Native American Outreach

Assembly Bill 52, which went into effect in July 2015, is an amendment to CEQA Section 5097.94 of the Public Resources Code. AB52 established a consultation process with all California Native American tribes identified by the Native American Heritage Commission (NAHC) with cultural ties to an area and created a new class of resources under CEQA known as Tribal Cultural Resource. ALTA will request the NAHC review the Sacred Lands Files for any resources that may be present within the project areas and to provide a list of local Native American tribes. ALTA will contact the Native American groups or individuals identified by the NAHC to inform them of the proposed project and solicit input from the tribe regarding their knowledge of cultural resources that may be within the project area. The letter will state that our outreach letter does not constitute AB52 consultation and that the Lead Agency should be contacted directly if the tribe would like to enter into consultation under AB52. The tribe may be invited to accompany the archaeological surveyor. Follow up phone calls may be made to ensure that letters were received and to discuss any potential concerns with the project. Comments and information provided by the Native American community and government agencies will be provided in the draft and final reports.

Field Survey

ALTA staff will conduct an on-site field reconnaissance of the project sites. The project sites will be intensively examined for cultural resources. A complete inventory entails systematic pedestrian examination of the ground surface. In accordance with established standards, field reconnaissance will be conducted using transects spaced no more than 10 meters apart. As this survey area is predominately urban, a geoarchaeological approach will be used to help direct field efforts. Transect interval spacing will be reduced in areas depending upon the sensitivity or the parcel. Systematic shovel scrapes will be performed to increase soil visibility. Areas of low sensitivity will be given cursory survey coverage. The field crew will maintain daily field notes and the findings will be made available immediately following the field investigation.

All resources identified within the project areas will be recorded using the standard State of California Department of Parks and Recreation Archaeological Site Forms. A cultural resource shall have a minimum age of 45 years. As cultural resources are located during survey, approximate boundaries will be delineated and the location of the resource plotted on topographic maps. GPS mapping of each site location will be undertaken. Site recordation will include site and feature mapping, completing site record forms, and photography. All photographs will be done in a digital format. A review of the potential impact agents will

be noted for each resource in the project area. As appropriate, a limited narrative will be provided to further describe the nature, extent, and location of resources.

Archaeological Survey Report
ALTA will prepare an Archaeological Survey Report (ASR) in accordance with the standard guidelines in Archaeological Resource Management Reports (1990). The ASR will include a summary of the identification efforts undertaken in the study, outreach with agencies and local governments, provide a summary of archaeological methods and findings, and make preliminary recommendations for appropriate treatment for any resources identified.

PREPARE CEQA SCREENCHECK DRAFT IS/MND

After providing the Administrative Draft Initial Study to the District for review, WRA will address the District's comments. WRA will prepare one electronic copy of a Screencheck Draft Initial Study/MND that the District can review to confirm that all comments have been addressed.

PUBLICATION OF THE DRAFT IS/MND

Upon approval of the Screencheck Draft IS/MND, WRA will reproduce additional copies of the Draft IS/MND for the District's use during the 30-day public review period. Additionally, WRA will coordinate with the District in providing web-ready documents for publication on the District's website. WRA will also produce and circulate the Notice of Intent (NOI), as well as any other CEQA noticing requirements, including the Notice of Completion (NOC) and Notice of Determination (NOD) to the County Clerk and the State Clearinghouse CEQANet portal. This proposal assumes the District will pay for the NOI to be posted in the local newspaper.

PREPARE RESPONSE TO COMMENTS AND FINAL IS/MND

Following completion of the 30-day public review period, WRA will respond to agency and public comments submitted on the Draft IS/MND. The extent of work necessary to complete the Final IS/MND is contingent upon the number and nature of public comments received after the Draft IS/MND is circulated. The Final IS/MND will include the response to comments, any edits required to the Draft IS/MND, and a Mitigation Monitoring and Reporting Program (MMRP). In addition to the kick-off meeting, this scope of work includes attendance at one public hearing. WRA will file the CEQA NOD with the County Clerk within five working days of project approval; a copy of the NOD will also be submitted to the State Clearinghouse CEQANet portal.

CLOSEOUT – PREPARE UPDATED BENEFIT COST ANALYSIS AND FINAL PROJECT SUBAPPLICATION

WRA will assist Coastland | DCCM and the District in updating the BCA as necessary and to complete the Subapplication for the project, including compilation of all memoranda, analyses, and documents for review by Cal OES and FEMA.

Deliverables: One (1) hard copy and one (1) electronic copy of both the environmental and biological reports as well as environmental compliance documents. Draft Project Description, Initial Study, Mitigated Negative Declaration documents and checklist for review and coordination with team and District ahead of submission.

TASK 7 – PRELIMINARY ENGINEERING DESIGN

Once the background data, system risk assessment, geotechnical investigations, and hydraulic modeling tasks are complete, our team will develop a Mitigation Alternatives Memorandum that identifies potential projects for the preliminary engineering design. This technical memorandum will identify at least three project alternatives with a conceptual plan and order of magnitude cost estimate. These alternatives will be developed with careful consideration from District staff to ensure that they provide the best value and benefit

to the District and its stakeholders. After the District has reviewed the Mitigation Alternatives Memorandum, we will have a meeting at the District office to select the mitigation project(s) that will be developed for the 30% Design.

Once the District has selected the mitigation project(s) for design, Coastland | DCCM will provide the survey team with an overview of the work areas proposed, and further define the extent of the topographic mapping to be completed. This topographic mapping will be utilized to generate the initial 30% design plans & costs, as well as the subsequent refinement of these items during the 65% engineering design.

The preliminary 30% design package will include a set of plans and an estimation of the associated construction costs we anticipate. Coastland will review the 30% design package with the district before further refining these items as part of the 65% design effort. The preliminary 65% design package will include plans, technical specifications, and cost estimates sufficiently detailed as needed to inform the NEPA analysis and permit development as needed to support the proposed improvement actions.

Deliverables: Mitigation Alternatives Memorandum (PDF version), Preliminary 30% Design plans and probable cost estimate (PDF version). Preliminary 65% Design plans, probable construction cost estimate, project technical specifications (PDF version).

TASK 8 – BENEFIT COST ANALYSIS

Coastland | DCCM and our subconsultants utilize the FEMA BCA toolkit as needed to show that the proposed mitigation project achieves a benefic cost ratio greater than 1.0. As outlined in FEMA BCA Reference guide our effort will cover the four basic elements:

- Scope of Work
- Schedule
- Project Cost Estimate
- Cost Share Allocation as well as address

As well as address the following:

- Decision Making Process
- Damage History
- Property Data
- Facility Data
- Engineering Feasibility
- Cost Effectiveness
- Environment/Historic Preservation (EHP) compliance

TASK 9 – PROJECT CLOSEOUT AND SUBAPPLICATION PREPARATION

The final actions for this project will be to assemble all the documents and data from the preceding tasks and complete the subapplication for the Hazard Mitigation Grant Program. Coastland | DCCM will ensure that the award closeout process documents the scope of work has been completed and that all reimbursable costs are eligible. Coastland | DCCM will work to complete the Checklist for Hazard Mitigation Grant Program Subawards within 90 days of the end of the Period of Performance. This subapplication will be comprehensive to include all pertinent documents but we anticipate the following contents:

- Subapplication
- Scope of Work Narrative
- Design Plans, Specifications, and all Technical Memorandum
- Maps (seismic hazard maps, fire risk maps, etc)
- Photos of pertinent district areas (existing conditions)

- Project Schedules
- Probable Construction Cost Estimates
- Local Match Commitment Letter
- BCA Reports, Pre-Mitigation Damage Costs & Post-Mitigation Damage Cost
- Maintenance Considerations
- Environmental FEMA Checklist, Biological & Cultural Resources Memorandum
- Additional supporting documents pertinent to the application.

EXCLUSIONS

The following work is not included in our proposal, however, we would be pleased to provide a scope and fee for these services if the District desires:

- Meetings beyond those noted
- Permitting fees
- Permit applications with the Division of Drinking Water, CDFW, RWQCB, and the Army Corps of Engineers
- Construction management and inspection
- Geological field investigations or soil borings
- SCADA and telemetry software or hardware assessment
- Flow testing of hydrants
- GPS survey of water system facilities
- Field location of lost or buried valves, appurtenances or pipelines
- Field testing or operation of hydrants or valves
- Potholing or other field verification of pipe diameter or valve type or size
- Final design

PROJECT FEE

Attached as a separate file.

NHA | ADVISORS

4040 Civic Center Drive, Suite 200
San Rafael, CA 94903

Office: 415.785.2025
www.NHAadvisors.com

MEMORANDUM

Date: June 15, 2023

To: Dennis White, General Manager

From: Craig Hill/Leslie Bloom

RE: Hidden Valley Lake CSD – Water System Capital Projects Funding

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Background

The Hidden Valley Lake Community Services District (the "District") has identified water system capital improvement projects to be completed and has received grant funding awards from FEMA and DWR for several of the projects. Given higher than anticipated costs, the District anticipates needing additional funding sources to complete the projects. The District has engaged NHA Advisors, LLC ("NHA") to assist with the financing options and execution of a financing plan.

Analysis

The District has commenced several Water Improvement projects, including Tank 4, Tank 9, Generators, Mainlines and the AMI system. The total project expenses for the projects are anticipated to be about $9.38M through fiscal year 2025/26, while the expected grant reimbursements from FEMA and DWR are expected to be about $5.17M, leaving a shortfall of ~$4.21M. To fund this gap and leave a margin for increased costs, the District would like to pursue financing options for approximately $5M.

In preparing our financing capacity analysis, we focused on the ability of repayment and debt service coverage, considering the District's 2023 actual figures through May 30th as the base year for our 10-year projection. Our revenues growth assumption include rate increases consistent with the District's approved rate increases through FY 2024/25. In addition, we have assumed additional annual rate increases of **4%** for subsequent years (requiring a new rate study and public hearing process) through the balance of the projection period. In addition, operating revenues assume an annual growth factor of 0.25% through the projection period, consistent with the District's rate study.

For our expense projections, we have assumed the total of all budgeted expense categories to include an annual operating expense growth assumption of **4.6%**, based on 3-year historical average of CPI.

Based on these assumptions, net water revenues (before any debt service, depreciation, capital or reserve deposits) range from $1.34M (FY 2023-24, year 1 of the projections) to $2.06M (FY 2032-33, year 10 of the projections). The District currently has a 2002 CEIDB loan ("2002 Loan") outstanding with annual payments of ~$170,000. The 2002 Loan matures on February 1, 2032. Any new financing would be on parity with the 2002 Loan and net revenues would be covering both the 2002 Loan and 2023 financing. NHA proposes to have the 2023 financing structured to maintain level total debt service payments between the 2002 Loan and the 2023 financing.

Several financing options have been analyzed for the District, including bonds or a loan with maturities ranging from 15-years to 30-years. A 15-year maturity could be completed as a bank loan, as most banks do not offer loans beyond the 15-year timeframe. Any longer of a maturity will require the issuance of a water revenue bond.

A summary of the estimated ***total*** annual debt service payments (2002 loan + 2023 financing) are detailed in the following table.

	30-Year Public Offering	25-Year Public Offering	20-Year Public Offering	15-Year Bank Loan
Proceeds	$5 Million	$5 Million	$5 Million	$5 Million
Total Annual DS	**$430,000**	**$470,000**	**$535,000**	**$670,000**
Total Interest Cost	5.00%	4.88%	4.72%	4.87%

In addition, detailed below are the District's projected net revenues from operations for the 10-year projection period. The net revenues detailed are before debt service, pay-go CIP, reserves, etc.

	YTD through 5/30/23	YTD Annualized	Projected									
	2022-23 YTD	2022-23 Estimated Actual	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
Gross Revenues:				Final Year of Approved Rate Increases								
Water Rate Revenue	2,594,811	2,830,703	3,092,543	3,378,603	3,522,194	3,671,887	3,827,942	3,990,630	4,160,232	4,337,041	4,521,366	4,713,524
Other Operating Revenue	284,453	310,312	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Interest Income	2,084	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273
Total Gross Revenues	2,881,348	3,143,288	3,144,816	3,430,877	3,574,467	3,724,161	3,880,216	4,042,903	4,212,505	4,389,315	4,573,639	4,765,797
			9%	9%	4%	4%	4%	4%	4%	4%	4%	4%
Operating Expenses:[1]												
Salaries & Benefits	874,776	954,301	998,199	1,044,116	1,092,145	1,142,384	1,194,933	1,249,900	1,307,396	1,367,536	1,430,443	1,496,243
Water Rights	1,164	1,270	1,328	1,389	1,453	1,520	1,590	1,663	1,740	1,820	1,903	1,991
Repair & Replacement	117,153	127,803	133,682	139,831	146,263	152,991	160,029	167,390	175,090	183,144	191,569	200,381
Electricity	170,994	186,539	195,120	204,096	213,484	223,304	233,576	244,321	255,560	267,315	279,612	292,474
All Other Expenses	417,307	455,244	476,185	498,089	521,002	544,968	570,036	596,258	623,686	652,375	682,385	713,774
Total Operating Expenses	1,581,393	1,725,157	1,804,514	1,887,521	1,974,347	2,065,167	2,160,165	2,259,533	2,363,471	2,472,191	2,585,912	2,704,863
			4.60%	4.60%	4.60%	4.60%	4.60%	4.60%	4.60%	4.60%	4.60%	4.60%
Net Revenues (Revenues - Operating Expenses)	**1,299,954**	**1,418,132**	**1,340,303**	**1,543,355**	**1,600,120**	**1,658,993**	**1,720,051**	**1,783,371**	**1,849,034**	**1,917,124**	**1,987,728**	**2,060,934**
Debt												
2023 Financing[2]	0	0	76,959	266,369	266,119	265,869	265,619	265,369	265,119	264,869	264,619	424,369
2002 CIEDB Loan	170,075	170,075	169,721	169,355	168,976	168,585	168,179	167,760	167,326	166,877	166,411	0
Total Debt Service	170,075	170,075	246,679	435,723	435,095	434,453	433,798	433,129	432,445	431,745	431,030	424,369
Debt Service Coverage	**7.64**	**8.34**	**5.43**	**3.54**	**3.68**	**3.82**	**3.97**	**4.12**	**4.28**	**4.44**	**4.61**	**4.86**

[1] Excludes capital expenditures and non-cash items such as depreciation and amortization.

[2] 2023 Financing figures assume estimated 30-year debt service.

Based on the projections and assumptions used therein, the District has the capacity and necessary coverage to repay the estimated debt service figures corresponding with each of the proposed final maturities. However, the shorter repayment amortization increases the annual debt service payments providing less capacity for pay-go CIP, funding of reserves or flexibility for a future financing, if additional capital projects are needed. In addition, any financing options discussed would require the District to maintain a periodic rate study and rate increase program during the term of any outstanding obligations. As part of any financing, the District Board will covenant to increase water rates sufficient to meet minimum coverage calculations. The 2002 loan requires a 110% minimum coverage of net water revenues to total annual debt service.

Our projections work off the 2022/23 estimated annual figures. Validating actual financial figures for the 2022/23 year and reasonable estimated 2023/24 will affect projections and ability to repay and should be reviewed closely by District staff.

Next Steps

Based on Board direction, NHA will work with the District staff to execute a financing plan. The following key dates summarize the necessary steps for any financing option. If the District prefers a 15-year maturity structure, a direct loan with a bank would be selected which could condense the process approximately one month (September funding).

- **June 20th** - District Board provides direction of financing structure
- **Late June/Early July** - Secured other financing team members: Bond/Disclosure Counsel, Underwriter and Trustee
- **July/August** - Team prepares financing documents, completes rating process
- **September 19th** - Board Approval of Financing
- **Late September** - Underwriter markets and prices the bonds
- **Late September** - Bond Pricing (lock interest rates)
- **Early/Mid-October** - Closing (funds received)

NHA Advisors, LLC is registered as a Municipal Advisor with the SEC and Municipal Securities Rulemaking Board ("MSRB"). As such, NHA Advisors, LLC has a Fiduciary duty to the public agency and must provide both a Duty of Care and a Duty of Loyalty that entails 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 public agency with informed advice
c) make a reasonable inquiry as to the facts that are relevant to the public agency's determination as to whether to proceed with a course of action or that form the basis for any advice provided to the public agency; and
d) undertake a reasonable investigation to determine that NHA Advisors, LLC is not forming any recommendation on materially inaccurate or incomplete information; NHA Advisors, LLC must have a reasonable basis for:
    i. any advice provided to or on behalf of the public agency
    ii. any representations made in a certificate that it signs that will be reasonably foreseeably relied upon by the public agency, any other party involved in the municipal securities transaction or municipal financial product, or investors in the public agency securities; and
    iii. any information provided to the public agency or other parties involved in the municipal securities transaction in connection with the preparation of an official statement.

Duty of Loyalty

NHA Advisors, LLC must deal honestly and with the utmost good faith with the public agency and act in the public agency's best interests without regard to the financial or other interests of NHA Advisors, LLC. NHA Advisors, LLC will eliminate or provide full and fair disclosure (included herein) to Issuer about each material conflict of interest (as applicable). NHA Advisors, LLC will not engage in municipal advisory activities with the public agency as a municipal entity, if it cannot manage or mitigate its conflicts in a manner that will permit it to act in the public agency's best interests.

HIDDEN VALLEY LAKE CSD

WATER SYSTEM CAPITAL PROJECTS FUNDING

NHA | ADVISORS

Financial & Policy Strategies.
Delivered.

June 20, 2023

Background and Objective

- District Water System Improvements to be funded by grants, reserves and a potential financing (due to increased costs)
- District priority is water reliability
  - Staff previously identified capital projects in support of this priority
- In 2022, the District was awarded funding for identified projects by the Hazard Mitigation Grant Program, including Tank 4 Replacement, Tank 9 Replacement, Generators and Mainlines
  - District has procured design contracts for all four projects

Financing Needs

- Water System project costs will exceed project grant and FEMA reimbursements by $4.2M through Fiscal Year 2025-26
  - Includes Tank 4 Replacement, Tank 9 Replacement, Generators, Mainlines *and* AMI

Summary of Water System Expenses

	FY 2023-24		FY 2024-25		FY 2025-26		Total	
Project	**Expenses**	**Reimbursement Revenue (FEMA & DWR)**	**Expenses**	**Reimbursement Revenue (FEMA & DWR)**	**Expenses**	**Reimbursement Revenue (FEMA & DWR)**	**Total Expenses**	**Total Reimbursement**
Tank 4	$416,345	$130,933	$1,443,068	$458,615	$997,893	$1,346,976	$2,857,306	$1,936,523
Tank 9	3,184,850	1,415,777	334,805	225,963	0	0	3,519,655	1,641,741
Generators	2,130,880	1,145,606	0	0	0	0	2,130,880	1,145,606
Mainlines	294,000	148,818	220,500	148,818	147,000	148,818	661,500	446,453
AMI	191,437	0	0	0	0	0	191,437	0
SCADA	23,500	0	0	0	0	0	23,500	0
Total	$6,241,012	$2,841,133	$1,998,373	$833,396	$1,144,893	$1,495,794	$9,384,278	$5,170,323
Revenues over/(under) expenses		**-$3,399,879**		**-$1,164,977**		**$350,900**		**-$4,213,955**

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Financing Structures

- Funding for capital projects can be secured through a public bond offering ("Bond") or a direct private placement ("Loan")
  - **Public Bond Offering:** Sell bonds through underwriting firm to bondholders (multiple investors)
    - Bond offerings can be structured for any term (5-30 years)
  - **Direct Private Placement:** Single Financial Institution investor
    - Financial institutions typically offer shorter-term loans (5-15 years)
- Considerations for Each Method

Public Offering	Direct Placement
• Official Statement required • Credit rating required • Financing Term Flexibility	• Single Investor/Lender • No credit rating agency required • Shorter financing process • Financing Term <15 years

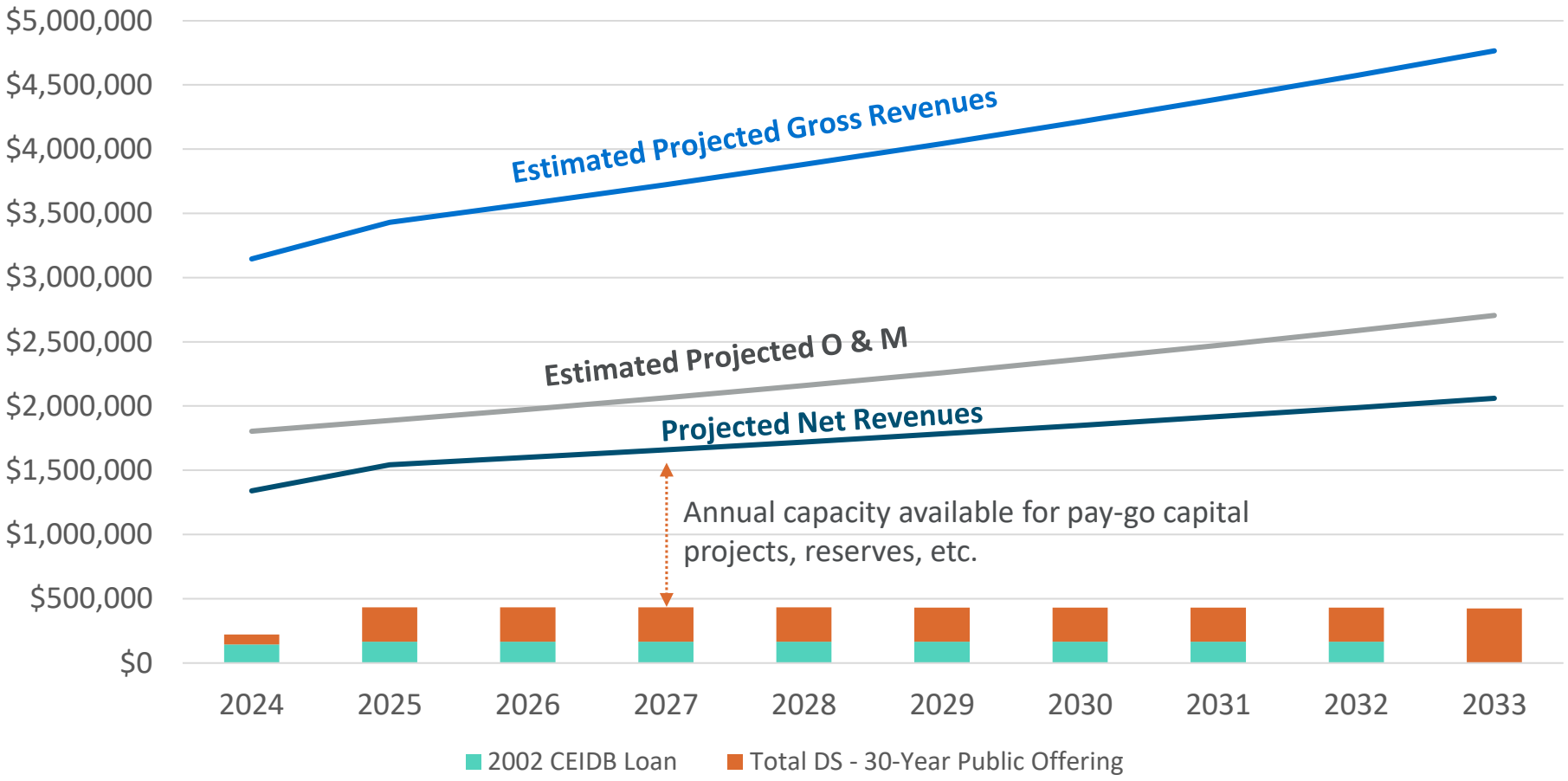
Financing Options

- Water System financing options assume $5,000,000 in proceeds

	30-Year Public Offering	25-Year Public Offering	20-Year Public Offering	15-Year Bank Loan
Proceeds	$5,000,000	$5,000,000	$5,000,000	$5,000,000
Total Annual DS	**$430,000**	**$470,000**	**$535,000**	**$670,000**
Total Interest Cost	5.00%	4.88%	4.72%	4.87%

All figures are preliminary estimates and will be based on market conditions at bond/loan pricing

Water System Cashflow Projections with 30-Year Financing



- Revenue projections assume annual rate increases per October 2020 rate study and 4%, thereafter; expense projections assume increase of 4.6% annually for all expense categories based on 3-year historical CPI.

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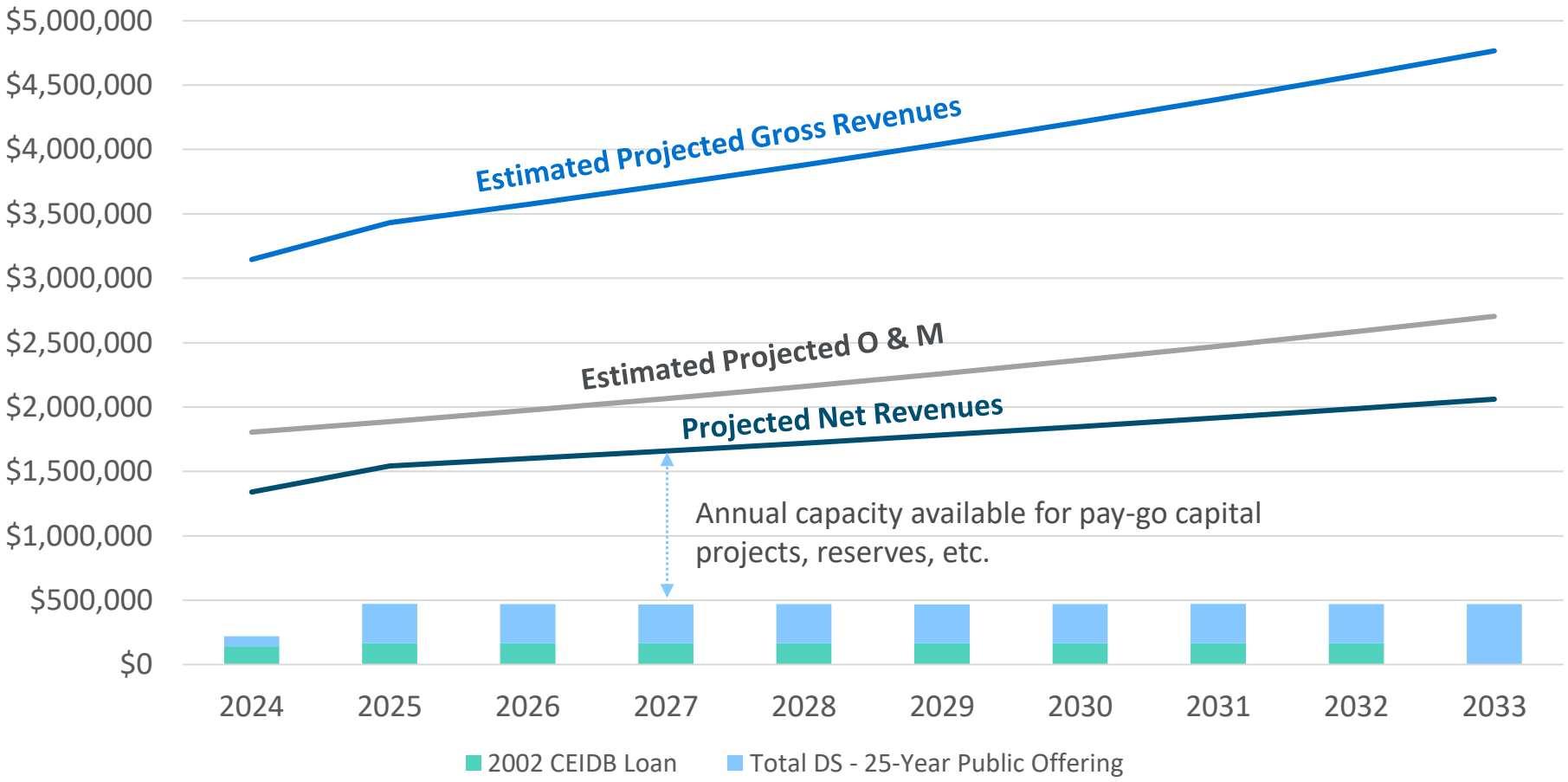
Water System Cashflow Projections with 25-Year Financing



- Revenue projections assume annual rate increases per October 2020 rate study and 4%, thereafter; expense projections assume increase of 4.6% annually for all expense categories based on 3-year historical CPI.

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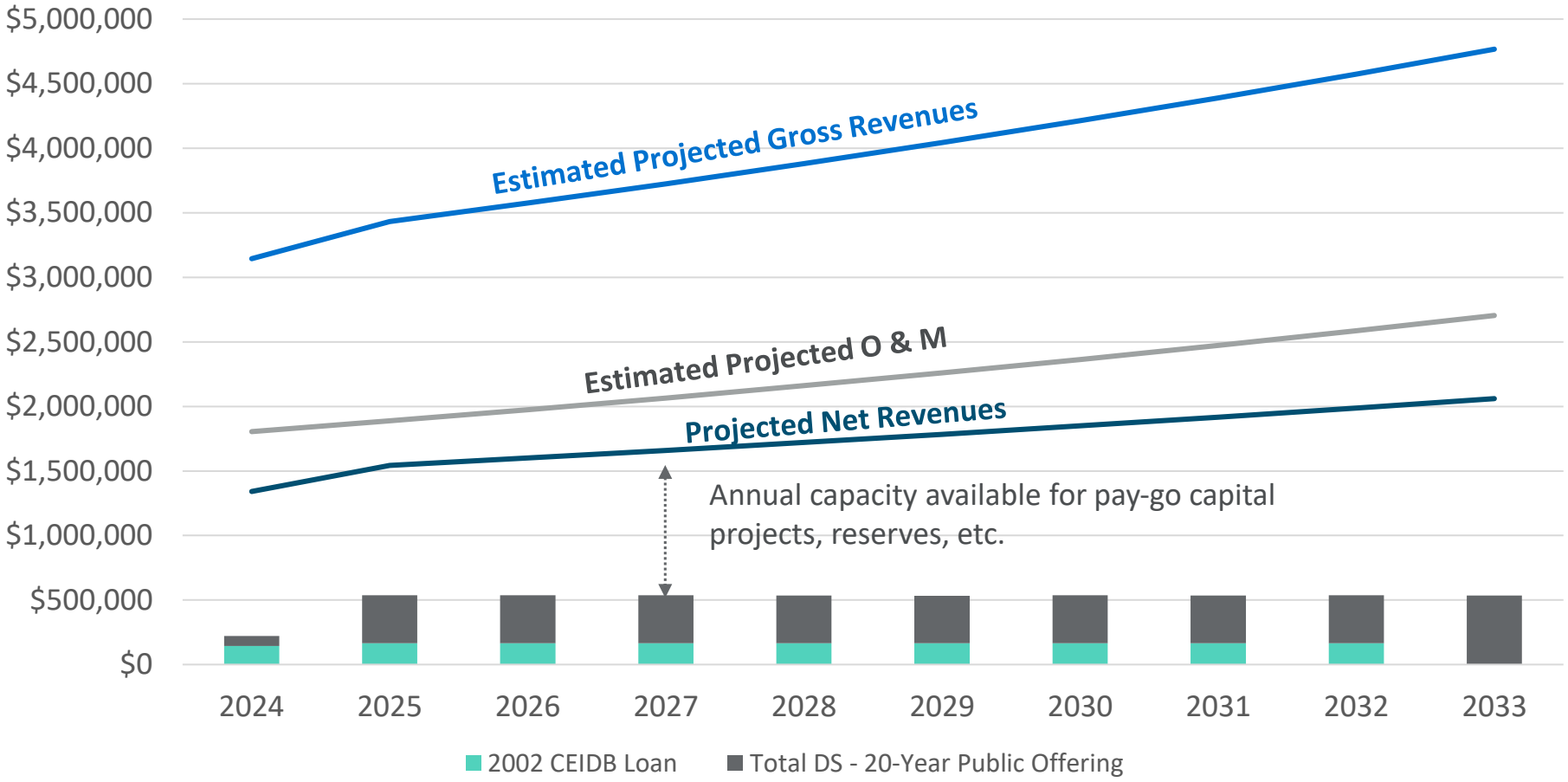
Water System Cashflow Projections with 20-Year Financing



- Revenue projections assume annual rate increases per October 2020 rate study and 4%, thereafter; expense projections assume increase of 4.6% annually for all expense categories based on 3-year historical CPI.

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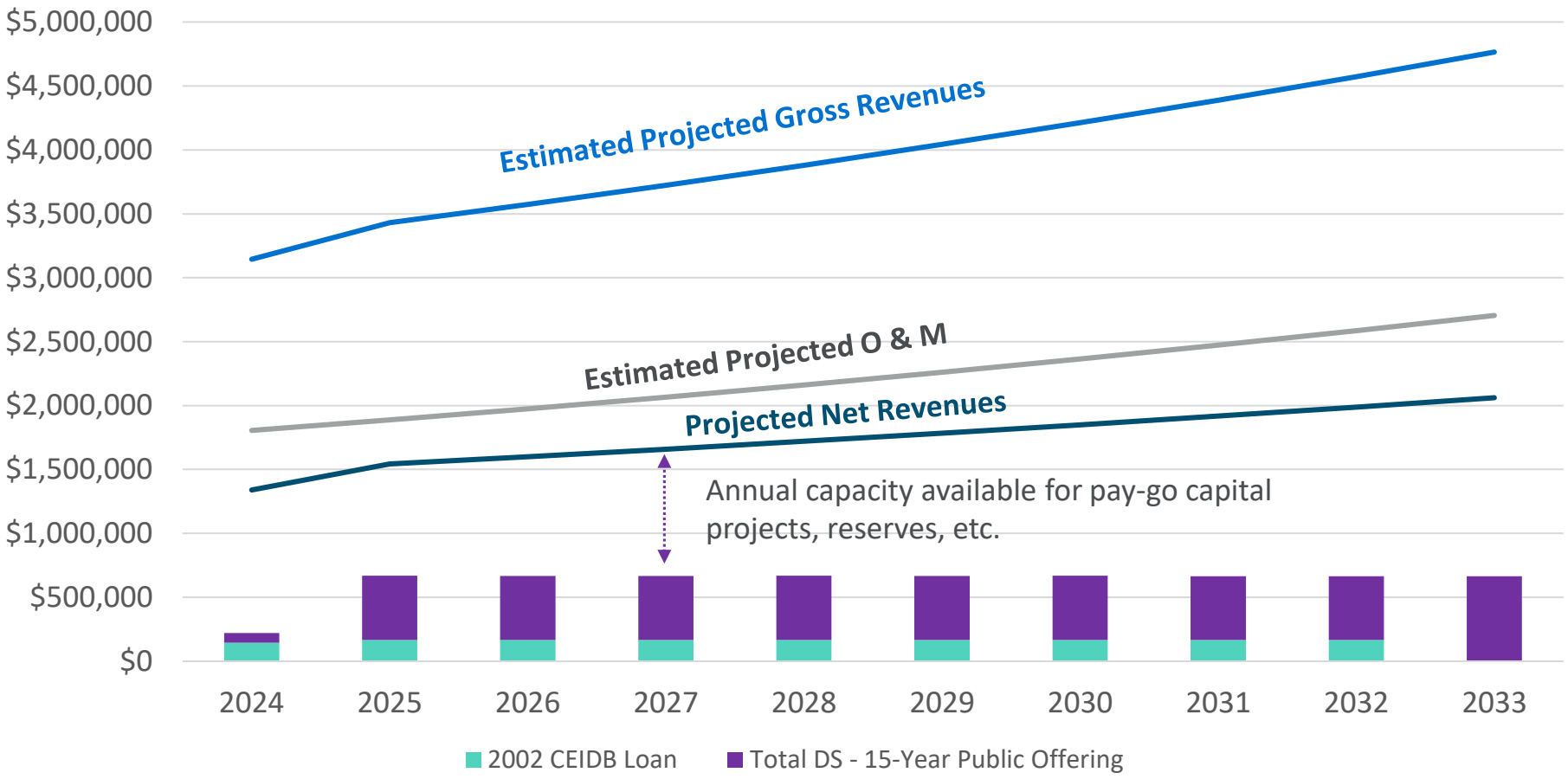
Water System Cashflow Projections with 15-Year Financing



- Revenue projections assume annual rate increases per October 2020 rate study and 4%, thereafter; expense projections assume increase of 4.6% annually for all expense categories based on 3-year historical CPI.

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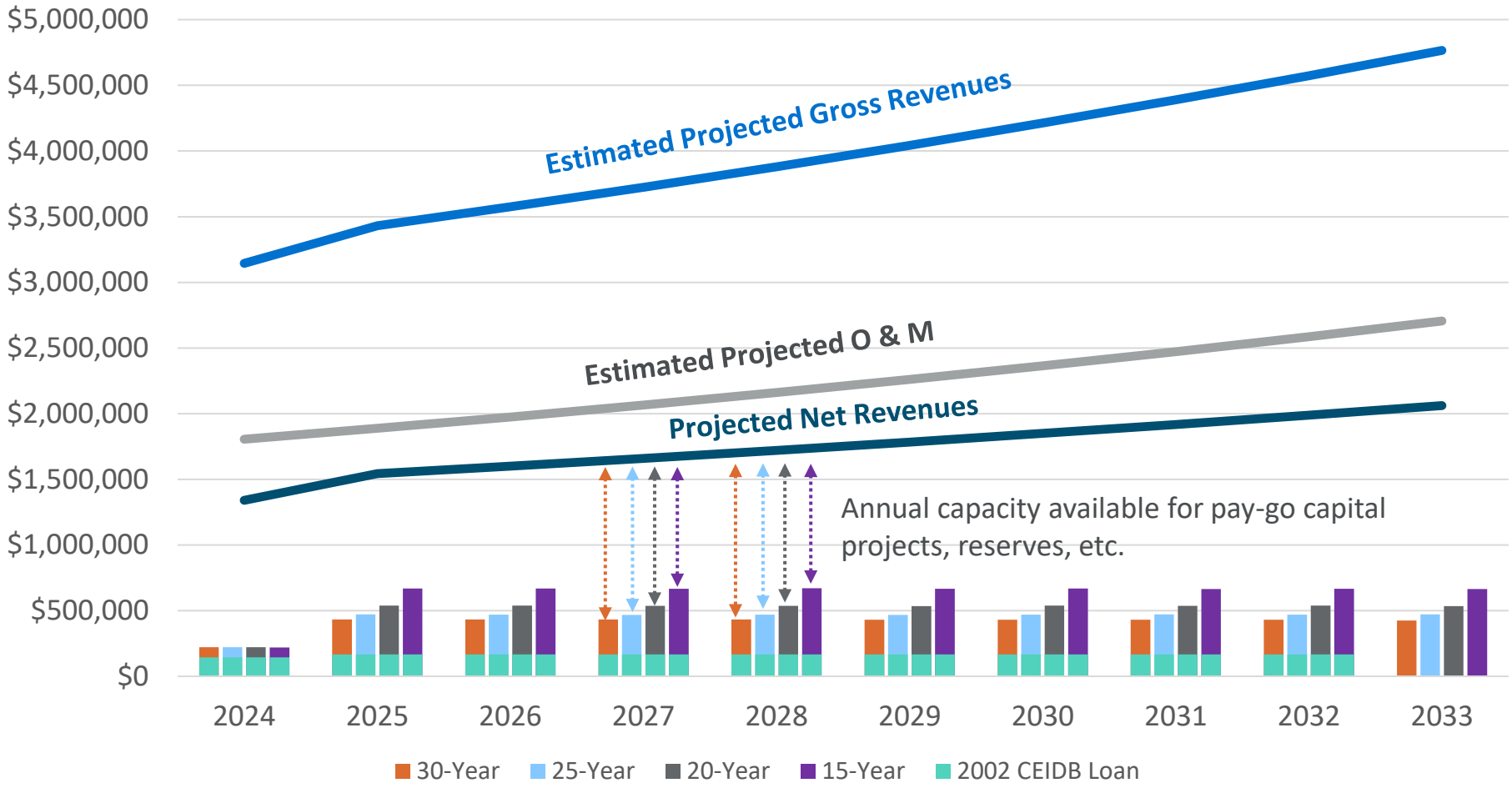
Water System Cashflow Projections with Four Financing Options



- Revenue projections assume annual rate increases per October 2020 rate study and 4%, thereafter; expense projections assume increase of 4.6% annually for all expense categories based on 3-year historical CPI.

Key Takeaways/Considerations

- Public offering currently provides lower interest rates than private placement
  - 25-to-30-year term provides affordable annual payment and aligns with useful life of project
  - Bonds can also be paid off early (starting in 9 to 10 years) with cash or be refinanced at lower rates
- Current CIEDB loan requires the District to maintain net system revenues equal to 110% of annual debt service
  - New financing would have similar covenant
  - Rate Study and future increases will be required through life of outstanding obligations
  - Project Funding amount will be determined at time of financing approval
- Process
  1. Select Financing Term (Amortization)
  2. Assemble financing team
  3. Financing approval brought back to Board in September

Next Steps / Tentative Financing Schedule

June 20th	District Board provides direction on financing structure and terms
Late June/Early July	Secure other financing team members: Bond/Disclosure Counsel, Underwriter and Trustee
July/August	Team prepares financing documents, completes rating process
September 19th	Board Approval of Financing
Late September	Underwriter markets and prices the bonds
Late September	Bond Pricing (lock interest rates)
Early/Mid-October	Closing (funds received)

APPENDIX A

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Water System Projections

	YTD through 5/30/23	YTD Annualized	Projected									
	2022-23 YTD	2022-23 Estimated Actual	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33
Gross Revenues:				Final Year of Approved Rate Increases								
Water Rate Revenue	2,594,811	2,830,703	3,092,543	3,378,603	3,522,194	3,671,887	3,827,942	3,990,630	4,160,232	4,337,041	4,521,366	4,713,524
Other Operating Revenue	284,453	310,312	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Interest Income	2,084	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273	2,273
Total Gross Revenues	2,881,348	3,143,288	3,144,816	3,430,877	3,574,467	3,724,161	3,880,216	4,042,903	4,212,505	4,389,315	4,573,639	4,765,797
			9%	9%	4%	4%	4%	4%	4%	4%	4%	4%
Operating Expenses:[1]												
Salaries & Benefits	874,776	954,301	998,199	1,044,116	1,092,145	1,142,384	1,194,933	1,249,900	1,307,396	1,367,536	1,430,443	1,496,243
Water Rights	1,164	1,270	1,328	1,389	1,453	1,520	1,590	1,663	1,740	1,820	1,903	1,991
Repair & Replacement	117,153	127,803	133,682	139,831	146,263	152,991	160,029	167,390	175,090	183,144	191,569	200,381
Electricity	170,994	186,539	195,120	204,096	213,484	223,304	233,576	244,321	255,560	267,315	279,612	292,474
All Other Expenses	417,307	455,244	476,185	498,089	521,002	544,968	570,036	596,258	623,686	652,375	682,385	713,774
Total Operating Expenses	1,581,393	1,725,157	1,804,514	1,887,521	1,974,347	2,065,167	2,160,165	2,259,533	2,363,471	2,472,191	2,585,912	2,704,863
			4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%
Net Revenues (Revenues - Operating Expenses)	**1,299,954**	**1,418,132**	**1,340,303**	**1,543,355**	**1,600,120**	**1,658,993**	**1,720,051**	**1,783,371**	**1,849,034**	**1,917,124**	**1,987,728**	**2,060,934**
Debt												
2023 Financing [2]	0	0	76,959	266,369	266,119	265,869	265,619	265,369	265,119	264,869	264,619	424,369
2002 CIEDB Loan	170,075	170,075	169,721	169,355	168,976	168,585	168,179	167,760	167,326	166,877	166,411	0
Total Debt Service	170,075	170,075	246,679	435,723	435,095	434,453	433,798	433,129	432,445	431,745	431,030	424,369
Debt Service Coverage	**7.64**	**8.34**	**5.43**	**3.54**	**3.68**	**3.82**	**3.97**	**4.12**	**4.28**	**4.44**	**4.61**	**4.86**

[1] Excludes capital expenditures and non-cash items such as depreciation and amortization.

[2] 2023 Financing figures assume estimated 30-year debt service.

ACTION OF

HIDDEN VALLEY LAKE COMMUNITY SERVICES DISTRICT

DATE: August 26, 2023

AGENDA ITEM: Consideration of Financing Structure for Upcoming Bond Issuance

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RECOMMENDATION: Provide direction on which financing structure to use for the upcoming bond issuance and authorize General Manager to act on recommendation.

FINANCIAL IMPACT:

1. Option (1): ~$10,000
2. Option (2): ~$17,500
3. Option (3): ~$1,000

BACKGROUND:

Initiated in 2018, NHA Advisors (the District's financial advisor), together with NBS, helped the District develop a Rate Study and rate structure that reflected the Board's priority of Infrastructure Improvements. Following the Proposition 218 process, a five-year rate structure was adopted and enacted on January 1, 2021. Simultaneous to this effort, District staff was also developing and submitting grant funding applications. Despite the increases in rates, grant status was unknown and projected net revenues did not appear to be able to completely cover the cost of needed improvements. In early 2022, NHA met with District staff to review the potential need for additional financing to meet the funding gap. After review, NHA presented their findings, which indicated that the District could sustain debt to pay for the needed projects. In late 2022, the federal Hazard Mitigation Grant Program (HMGP) awarded the District funding for four (4) distinct Water Reliability projects. The District began funding the Water Reliability projects with proceeds of water use fees and reserve funds. A few months later, District staff received news that the pre-COVID estimates for construction and non-construction project costs had increased by double, and in some cases triple the original costs of 2018. As a result, District staff again reached out to NHA to revisit the affordability of financing. At the June 20, 2023 Board meeting, the Board of Directors took action to "approve NHA to work with the District staff to execute a financing plan based on a 25-year term", by majority vote. NHA, working on behalf of the District engaged the services of Bond legal counsel and underwriter services. Cyrus Torabi from Stradling Law has put together several documents that are necessary to move the financing process forward. These documents consist of 1) A request for the District to select a Financing Structure (to be discussed at the August 26, 2023 Board workshop), 2) An "Intent to Issue" Resolution, with an explanatory Staff Report, and 3) a District Official

Statement (a securities disclosure which is required in order to issue debt in the public capital markets, to be approved later in the process).

For your review, Stradling Law will need to receive direction on which type of financing structure the District would like to pursue.

The District is currently undertaking water system capital improvement program on a pay-as-you-go basis, with costs paid from the Water Operations Fund and grant awards. The District desires to finance approximately $5 million of costs that exceed water use fees and grant awards. This financing will be realized by the sale of bonds in the public capital markets.

Stradling Yocca Carlson & Rauth, the District's bond counsel, has advised staff that, under the Community Services District Law, the District's bond obligation will need to be structured as an exercise of its contracting power, as has been the case in previous District financings, including the 2002 I-Bank loan. Under this approach, the District will enter into an Installment Purchase Agreement and "purchase" the capital improvements on an installment basis (much like a car loan or home mortgage) from a counterparty that can issue debt. The counterparty will appoint the District as its agent to construct the improvements, to which the District will have title immediately upon construction. The District's installment payments under the Installment Purchase Agreement will be assigned by the counterparty to a bond trustee and applied to pay bondholders, so the counterparty essentially serves as a "pass-through" entity.

Staff requests direction from the Board on *which counterparty to use* and has provided a table of the options as well as a narrative. The options are as follows:

SUMMARY OF OPTIONS

Option	***Upfront Cost***	***Third Party Involvement***	***Ongoing Administrative Burden***	***Separate Tax Returns Required***	***Other Considerations***
(1) District-Controlled Joint Powers Authority	~$10,000	Required	Annual meeting; biannual Secretary of State filing	No	Once established, available for future financings; future financings would not require additional fees
(2) Conduit Issuer	~$17,500 (assuming $5 million	Required	None	No	Legal fees due to conduit issuer; future financings

	bond issuance)				would require additional fees
(3) Financing Corporation	$1,000	None	Annual meeting; biannual Secretary of State filing	Yes	Once established, available for future financings

(1) (~$10,000) District-Controlled Joint Powers Authority. A Joint Powers Authority (a "JPA") is a public agency established under California Government Code Section 6500 *et seq*. that is comprised of two or more public agency members. A JPA is authorized to issue bonds without a ratepayer vote.

Under this option, the District would partner with another public agency such as California Statewide Communities Development Authority ("CSCDA") to form a new joint powers entity, a Financing JPA (a "Financing Authority") whose members would be the District and CSCDA. CSCDA frequently serves in this role for California public agencies. CSCDA would be a "silent partner" whose only role would be to serve as the second member of the Financing Authority in exchange for a $10,000 fee. CSCDA has confirmed that no additional amounts would be payable for any future bond issuances by the Financing Authority.

The Financing Authority's Board of Directors would consist of the District Board. Meetings of the Financing Authority Board of Directors would be held simultaneously with District Board meetings (or adjourned if there is no business).

The Financing Authority would be formed when a short (10 page) Joint Powers Agreement that Stradling Law will draft is approved by both the District and the second member of the Finance Authority, such as CSCDA.

The only requirements imposed upon the Financing Authority would be to: (i) hold a meeting at least once per year; and (ii) file a 2-page form with the California Secretary of State every other year. These two tasks will keep the Financing Authority in good standing.

The District's auditors will treat the Financing Authority as a "component unit" in the District's audited financial statements, but as a pass-through entity, the Financing Authority will not need to prepare separate audited financial statements.

If this option is chosen, Stradling Law suggests approving the Financing Authority's Joint Powers Agreement at one Board meeting and then having the Financing Authority approve the bond issuance at the next Board meeting. The time in between the District Board meetings can be used by the second member (such as CSCDA) to approve the Financing Authority's Joint Powers agreement at its own governing board meeting, at which time the Financing Authority will be established and ready to issue bonds.

A District-controlled Financing Authority could issue bonds anytime in the future for the benefit of the District's water or sewer systems should a future financing need arise. The counterparty to the Financing Authority, such as CSCDA, would *not* be paid an additional fee for future financings.

(2) (~$17,500) Conduit Issuer. CSCDA is itself a JPA that is authorized to issue bonds. If the District does not wish to be burdened with the administrative tasks associated with maintaining a District-controlled Financing Authority, the District could use CSCDA as a counterparty. Under this approach, CSCDA will issue bonds on the District's behalf in exchange for a fee of approximately $17,500 (including CSCDA's legal fees – the fee is 15 basis points for each dollar of principal of bonds issued (minimum of $10,000), plus $7,500 in legal fees). The District will approve bond documents at a single Board meeting and pay installment payments under an Installment Purchase Agreement with CSCDA.

In order to use a conduit issuer such as CSCDA, Stradling Law and CSCDA's counsel would need to draft legal documents to be approved at meetings of both the Board and CSCDA's governing board. CSCDA meets at least monthly, so the approval of the documents is not expected to cause delays in the proposed financing schedule compared to the other options presented.

(3) (~$1,000) Financing Corporation. This option does not require the involvement of any other entity. Under this approach, the District would establish a Nonprofit Public Benefit Corporation (a "Financing Corporation") under Section 5000 *et seq*. of the California Corporations Code to serve as the District's counterparty. Like a District-controlled Financing Authority, the Financing Corporation's Board of Directors would consist of the District Board. Meetings of the Financing Corporation Board of Directors would be held simultaneously with District Board meetings (or adjourned if there is no business).

The Financing Corporation would not technically issue "bonds." Instead, the District's installment payments under its Installment Purchase Agreement with the Financing Corporation would be "certificated" (meaning investors would hold participatory interests, also called Certificates of Participation, in the installment payments). Hilltop Securities, the District's underwriter, has advised staff that there is no material cost difference between bonds and Certificates of Participation for an issue of the size that the District is proposing.

The Financing Corporation would be established by the adoption of short Articles of Incorporation and Bylaws which Stradling Law will draft, as well as a filing with the California Secretary of State.

The only requirements imposed upon the Financing Corporation would be to: (i) hold an annual meeting; (ii) make a biannual filing with the California Secretary of State (called a Statement of Information); and (iii) file annual tax returns with the State of California and the Internal Revenue Service (because the Financing Corporation is not a public agency). As a pass-through entity, the Financing Corporation's tax returns are not anticipated to be particularly burdensome; many of the District's peer agencies handle the tax returns internally without using outside auditors. These two tasks will keep the Financing Corporation in good standing.

Like a District-controlled Financing Authority, the District's auditors will treat the Financing Corporation as a "component unit" in the District's audited financial statements, but as a pass-through entity, the Financing Corporation will not need to prepare separate audited financial statements.

If this option is chosen, Stradling Law suggests approving the Financing Corporation's Articles of Incorporation at one Board meeting and then having the Financing Corporation approve the bond issuance at the next Board meeting. The time in between the District Board meetings can be used to file the Articles of Incorporation with the California Secretary of State.

Like a District-controlled Financing Authority, the Financing Corporation could issue Certificates of Participation anytime in the future for the benefit of the District's water or sewer systems should a future financing need arise.

Summary of Options. If the District would like to receive proceeds from the bond sale as soon as possible, Option (3) is the quickest alternative.

If the District would like to incur the lowest upfront costs, Option (3) is the cheapest alternative.

If the District would like to have the lowest ongoing administrative burden, Option (2) is the easiest alternative.