

Water Committee financial report

May 4, 2023

Table 1. Operations account end-of-water-year balances.

	March 31, 2022	March 31, 2023
Carryover	\$ 6,508	\$16,532*
Emergency repairs reserve	<u>\$10,000</u>	<u>\$10,000</u>
Total	\$16,508	\$26,532*

* includes \$4,000 water assessment pre-payment, \$1,200 long-overdue payment, and \$1,849 committed but not billed yet. Minus the pre-payment, carryover is \$12,532.

Table 2. Operating budget line-item report for the past 12 months (April 1, 2022 to March 31, 2023).

Line item	Budgeted cost	versus	Actual cost and explanation
1. Two meter upgrades, completing the system-wide conversion to remote-read lead-free meters.	\$ 750	\$ 784	
2. Replace damaged valve in water main along Tamarack Road (from 3 years ago).	\$1,500	\$ 0	Deferred in favor of contract #2.
3. Contract to hydrogeologist/engineer.	\$1,000	\$1,000 for contract #1	Board approved \$3,375 for contract #2 in October: \$1,526 paid, \$1,849 committed (to be billed next water year). <i>See report on Justification for Contracts</i>
4. Install air horn for immediate notification of a low water alarm.	\$ 500	\$ 0	Cancelled. Expect that internet-enabled automated alerts to water operators will be part of the data management system purchased in 2023.
5. Three \$70 refunds to owners (for 1 hr labor to connect meter setter, per policy)	\$ 0*	\$ 210	* No budgeted cost one year ago due to oversight.
Planned projects subtotal (lines 1-5)	\$5,628**	\$3,520***	** Lines 1-5 equal \$3,750 but the maximum allowable of \$5,628 was approved one year ago in anticipation of funding follow-on work to contract #1. *** Does not include \$1,849 committed, to be billed next water year.
6. Base operations	\$ 2,252	\$2,322	(\$1,082 electricity, \$449 propane, \$333 meter to inventory, \$245 water analysis; \$213 OAWU, OHA, and Vanguard fees)
7. Unanticipated repairs	\$ 2,252	\$290	(two pressure transducers killed by lightning strikes)
8. Emergency repair reserve contribution	\$ 0	\$0	
9. Total ^	\$10,132	\$6,132	(does not include \$1,849 committed, to be billed next water year)

^ Does not include the \$10,129 capital reserve contribution because it is not part of the Operating budget.

Table 3. Operating budget request and revenue request for water year 2023/2024 (April 1, 2023-March 31, 2024).

Category	Amount
Planned projects	\$ 5,797*
Base operations	\$ 2,320*
Unanticipated repairs	\$ 2,320*
Emergency repair reserve contribution	\$ 0^
Operating budget request	\$10,437
Capital reserve contribution	\$10,433*
Total revenue request	\$20,870

* Dollar values based on 30-Year Plan which provides for a 3% annual inflation adjustment.

^ No contribution because this reserve is presently at the \$10,000 cap.

Table 4. Line item detail for the planned projects category in Table 3.

Line item	Budgeted cost	Notes
Equipment purchase	\$5,090	Well water level sensor, electronic flow rate & volume meter, data logger, telemetry to upload data to cloud, and controller upgrade to route reservoir level data to cloud.
Equipment installation	\$3,000	Earth and Water Works, Enterprise Electric
Contract #3 with geohydrologist/engineer	\$1,460	8.5 hrs to coordinate with 3 equipment vendors on equipment specifications to ensure integration, coordinate custom telemetry programming, facilitate install with installers & telemetry vendor, and correspondence with water committee.
Planned projects total	\$9,550	\$9,550 is \$3,753 more than the planned projects request of \$5,797 in Table 3; <u>\$3,753 overrun</u> to be provided from carryover.

Table 5. Carryover

	Amount
March 31, 2023 carryover (from Table 1 footnote)	\$ 12,532
Minus committed contract funds to be paid this water year	\$ - 1,849
Minus planned projects overrun	\$ - 3,753
Carryover remaining	\$ 6,930

Table 6. Update on other water-related projects.

Project	Estimated cost	Notes
Back-up power for well	\$16,000	Board approved this capital reserve project in 2022 using Capital Reserve Account funds. Actual cost was \$15,914.
Weir in stream and pipeline for ODF/USFS use during a wildfire	\$ 6,500	Board decided in 2021 that the General Account should fund the project, because it's not part of the potable water system. Board decided in 2022 to defer project in hope of receiving a grant within a couple years.

Justification for Contracts

The biggest wild card in trying to determine the appropriate size for the Capital Reserve is whether a second water well, or alterations to the current well (deepening or hydro-fracturing), is likely or unlikely to be needed in the future. A big step forward was made in 2019 by installing a real-time water level sensor/logger in the well. The data has been very useful, but has also raised questions that the water committee does not have the expertise to fully evaluate. The questions were: (a) Is gas in the water for 9 months per year a result of water cascading down the borehole (harmless) or pump-damaging cavitation? and (b) Can the well support future water demand as occupancy increases in the High Lostine? In 2022 the water committee endorsed and the Board approved a \$1,000 contract with a Portland-based geohydrologist/engineer to begin addressing these questions.

The technical report was delivered in July and forwarded to the Board in September. Aside from developing a conceptual model for the aquifer dynamics, the major findings were:

- 1) The manual data archiving and retrieval system is antiquated. The 51 archived files containing a total of two million measurements were cumbersome and time-consuming to integrate.
- 2) The rationale for control of pump operations is sound but short-comings in well instrumentation precluded an assessment of whether the operating conditions are causing cavitation.
- 3) Short-comings in well instrumentation limited the ability to accurately address whether the aquifer will support future water demand.

The top recommendations – in essence remedial actions – were:

- 1) Move the water level sensor to just above the pump and add an electronic flow rate and volume meter.
- 2) Develop a data management system that automatically collects and uploads all well data to the cloud, and allows query-based retrieval of data for input into hydrology mathematical software packages.

These remedial actions will allow modern analysis of well performance and allow the questions in paragraph one to be addressed.

Notwithstanding short-comings in well instrumentation, consultation with the geohydrologist allowed Fred to use extrapolation methods to calculate 4 million gallons (minimum) as the volume of water the pump has access to. This *preliminary estimate* is 4 to 5 times greater than the current annual water demand, and would be sufficient for full occupancy in the High Lostine.

On the other hand, on some days in July and August our water demand exceeds our maximum water supply, causing the reservoir level to drop even though the pump is working 100% of its allotted time. This is because current pump operation parameters – set to minimize potential pump damage and reduce water system residence time – limit the fraction of time the pump is on. As occupancy increases in the High Lostine, this over-demand will happen on more days and temporary water shortages could occur if the pump is not run more hours per day.

Pursuing the recommendations in the third paragraph will (a) either rule out pump damage is occurring or allow the pump to run more hours per day without damaging it (by triggering pump cycles off well water levels instead of using set time intervals), and (b) provide higher-quality data to hopefully confirm the aquifer will likely support future water demand, such that the Capital Reserve does not need to plan for an additional well or alterations to the current well.

Therefore, in October 2022 the water committee endorsed and the Board approved a second contract with the same geohydrologist/engineer. The \$3,375 contract is to (a) research and specify (with cost estimates) an integrated data acquisition/management and cloud-based archiving system that will function at our location, and (b) conduct a site visit to understand the physical and electronic features of the existing control system to ensure it will be compatible with the recommended new well instrumentation (per technical report #1) and the recommended data management and archiving system (technical report #2).

The site visit occurred in December. Technical report #2 was expected a couple months ago, but is now expected at approximately the time of the 2023 annual meeting.