



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg
FROM: Deborah Hart, Chief Financial Officer; Adam Rue, Fiscal Services Supervisor;
Timothy Poublon, Senior Financial Analyst
DATE: March 30, 2022
SUBJECT: Annual Report on Power Trading Compliance
OBJECTIVE: Information Only

Issue

Board policy SD8, governing Power Risk Management, requires the Chief Financial Officer to present a report to the Board at least annually that covers trading and contracting compliance. This backgrounder provides information for calendar year 2021.

Background

Oregon statutes stipulate the appropriate scope for a governmental agency's investment of "surplus funds." Accordingly, EWEB's activities in the power markets must be associated with the provision of electricity to meet anticipated sales and generation forecasts. The Power Risk Management Committee (RMC) is responsible for oversight and compliance with Board policy SD8. This governance body sets limits and establishes Power Risk Management Procedures (Procedures) for power trading operations to protect the utility from financial instability and unacceptable risk.

Discussion

The eight specific responsibilities of the RMC outlined in Board policy SD8 are listed below with a characterization of compliance status and instances in which compliance was maintained through exception.

Anti-speculation Statutes: In Compliance

Compliance with Board policy and anti-speculation statutes is maintained through megawatt limits on market positions to monitor and limit opportunities for speculation and exposure to price volatility. However periodic changes to forecasts, load, and/or generation can at times result in position limits being exceeded. In those events, the Procedures require positions to be brought back into compliance no later than the next trading day, unless approved by the Fiscal Services Supervisor and Power Planning Supervisor. EWEB maintained compliance with this procedure in 2021, which includes forward market positions from 2021 through 2025.

Development of Detailed Control Procedures: In Compliance

SD8 requires that the RMC establish and maintain Power Risk Management Procedures. Within these Procedures, processes are defined that govern roles and responsibilities, daily trade activity, and exception authorization. In early 2021, staff met with internal stakeholders to review the Procedures and make recommended edits for clarification and to reflect evolving business practices. The RMC unanimously approved updated Procedures on August 27th, 2021.

Notification of changes to compliance limits: In Compliance

No changes to compliance limits were recommended by staff or approved by the RMC during the 2021 calendar year.

Oversee control infrastructure and monitor compliance: In Compliance

The RMC meets monthly to monitor and review compliance limits and is notified of the status of Short-Term compliance measures at a minimum of weekly to provide insight in both current compliance status and market trends that may influence future compliance periods.

Authorize and monitor risk reports for financial results, market positions and credit exposure:

In Compliance

RMC meetings are held monthly. Prior to each meeting, voting members receive up to date compliance reporting materials that provide the basis for monitoring financial results and compliance with market position limits and credit. In 2021, RMC meetings were held monthly via video conference.

In March a counterparty's exposure approached their RMC approved credit limit due to high market prices from February. An exception to temporarily increase their credit limit by \$250,000 was requested to allow continued trading activity and was approved by the Fiscal Services Supervisor, Power Planning Supervisor, and Chief Financial Officer. The counterparty's original credit limit was restored 2 days later.

In December the Fiscal Services Supervisor approved exceptions to extend the documentation schedules for six counterparties between 1 and 92 days to better align with the release of financial statements and to balance the timing of reviews with staff workloads. These exceptions to the documentation schedules were reported at the following RMC.

Review and approve contracts which impact EWEB's power portfolio: In Compliance

The RMC provides cross-functional oversight and review of any contracts that may have an impact on EWEB's portfolio to ensure that the Board mandate of risk mitigation and financial stability are maintained. Where contracts require Board approval, the RMC provides direction and preliminary review in advance of Board action. No contracts requiring Board approval under SD8 were executed in 2021 and no changes to the approval thresholds are being requested.

In 2021, the RMC approved three contracts that did not require Board approval:

- In May the RMC approved a power scheduling services agreement for a two-year term. The agreement required RMC approval as the value of the contract exceeded \$150,000.
- In June the RMC approved an operating reserves contract for a two-year term. The agreement required RMC approval as the length of the contract exceeded one-year.

- In November the RMC approved the sale of a bundled energy and Renewable Energy Certificate (REC) transaction for a two-year term. The transaction did not meet the requirements of SD8 to require Board approval as this is an indexed-based trade that does not create market exposure; however, the Procedures require RMC approval of the transaction and to report transactions with a term of greater than one-year to the Board.

Recommendation and Requested Board Action

This item is information only and no Board action is requested.



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

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TO: Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg
FROM: Megan Capper, Energy Resources Manager
DATE: April 5, 2022
SUBJECT: 2022 Power Market, Budget Hedging, and Generation Update
OBJECTIVE: Information Only

Issue

The purpose of this backgrounder is to provide an annual update of wholesale power markets and a generation resource outlook.

Background

The Power Planning and Trading Operations sections manage EWEB's power supply and wholesale market activities consistent with utility financial objectives, in accordance with Board Policy contained in SD8, and as further described in the EWEB Energy Risk Management Procedures. Generation manages EWEB's owned generation assets.

Summary

Due to increases in the cost of natural gas, and changes to the makeup of the regional resource mix, spot market electricity prices are both lifting, and becoming more volatile, relative to recent market experience. As a result, the 2021 spot market average price finished at the highest level since 2008. These changes to spot market drivers are also lifting forward electric market prices, and given the current natural gas price outlook, staff anticipates this shift in market dynamics may persist for at least the next couple of years. This is having an impact on EWEB's financial outlook as it effects both wholesale revenue and purchased power costs. This shift in markets, as well as the region's ongoing work to develop an RA program, are informing a new effort to modernize the approach EWEB takes to balance its portfolio.

Maintenance and repairs continue at several EWEB generation facilities. Where necessary, repairs are being coordinated with FERC. The Leaburg power canal and powerhouse remain offline due to ongoing dam safety concerns, a strategic evaluation is underway, and results will be presented to the Board by the end of 2022. Relicensing work continues at the Carmen-Smith project, but with some work plan changes, due to the 2021 discovery of sinkholes and ongoing dam safety investigations. Oregon hydrologic conditions are expected to trend below normal conditions for McKenzie areas below Trailbridge and at Vida, which may result in a low flow operation at Walterville this summer. Non-McKenzie projects continue to operate as expected.

This update for markets and generation is reflected in our current financial projections.

Discussion

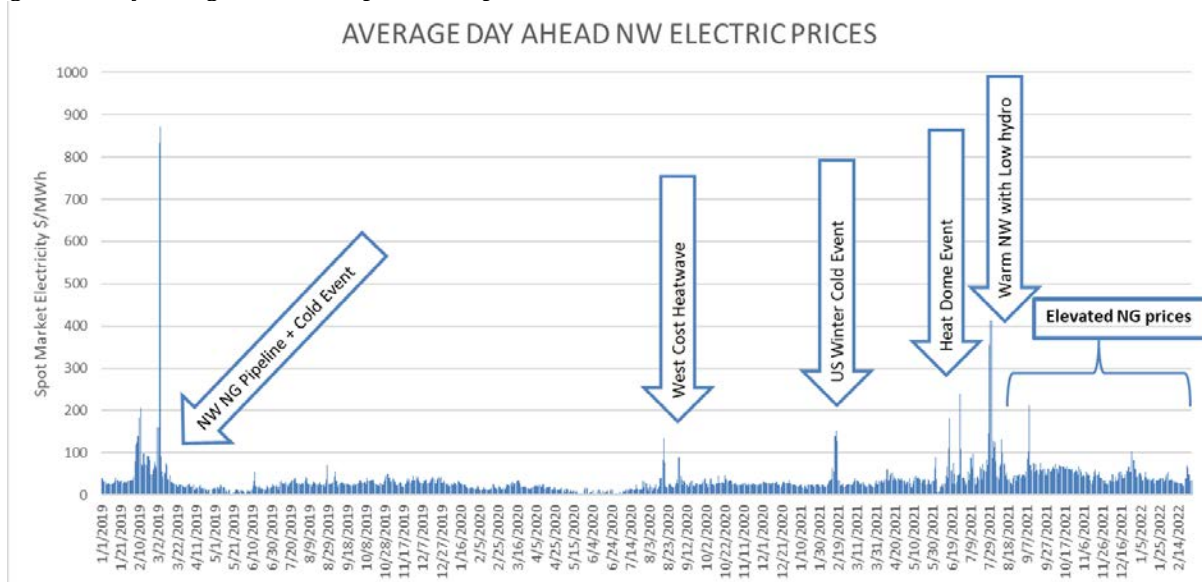
Market Price Update

Wholesale energy markets can generally be described as either near term “spot markets” or longer term “forward markets”¹. For spot markets, prices are impacted by weather (e.g., temperature and precipitation), fuel costs, and operational phenomena (e.g., generation and transmission availability), while forward markets tend to reflect longer term market expectations of energy supply and consumer demand. Both forward and spot markets can influence the cost of balancing EWEB’s energy portfolio in annual, monthly, daily, and hourly time frames.

Spot Markets

Over the last couple years, the WECC² region, including the PNW, have seen continued generation additions from renewable resources like wind and solar, and incremental retirements of conventional, thermal resources like coal and nuclear. This shift in the makeup of the regional generation stack has increased the abundance of low/zero cost marginal energy while, at the same time reducing the amount of controllable capacity resources available to meet demand during high load periods³. This has resulted in recent spot markets that can be characterized as long periods of generally low/stable prices, interspersed with short, intense periods of extremely high and volatile pricing. Because the northwest is interconnected with other parts of the WECC Region (e.g., California) and experiencing similar changes in regional supply mix⁴, it is exhibiting similar trends in local spot market and forward market pricing.

Figure 1: Daily average, Northwest spot market prices since 2019



¹ Spot markets typically refer to markets where commodities are traded for immediate (next day, next hour) delivery, whereas forward markets imply markets where the traded commodity is delivered in a future period.

² Western Electricity Coordinating Council.

³ Market penetration of capacity only resources (ie batteries) is growing, but still limited. As such, the current fleet of renewable resources can only replace a portion of the effective capacity of now retired thermal resources.

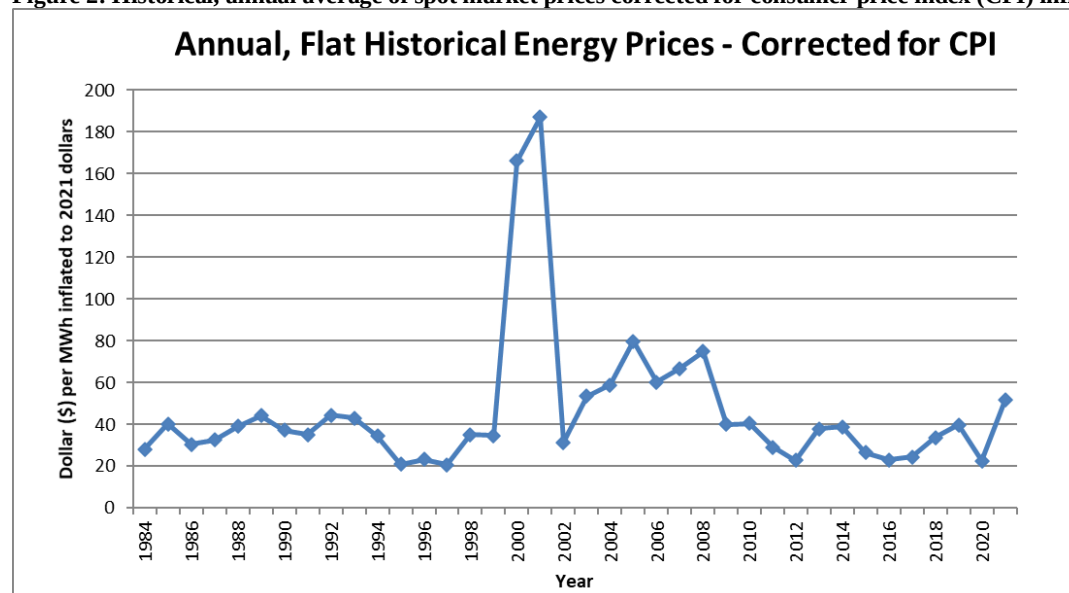
⁴ <https://www.nwccouncil.org/energy/energy-topics/power-supply>

In 2019, a cold weather event drove up retail energy demand during a period where natural gas⁵ storage and transmission were constrained. This led to relative shortages in natural gas availability for both electric generation and direct retail use, which caused a rapid increase in spot market electric prices, culminating in a brief period of day ahead prices trading near \$900/MWh. After this winter event, spot market prices returned to forecasted levels and were more stable for the remainder of the year. Overall spot market prices in 2019 were approximately \$37/MWh.

2020 didn't include a major disruptive gas event like 2019, but a historic west coast heatwave occurred in August, which resulted in rolling blackouts in California for the first time since the 2001 energy crisis. The event occurred over several days during which northwest day-ahead prices peaked at \$136/MWh. Aside from this event, spot market prices in 2020 were relatively stable. The 2020 average, annual spot market price finished near historical lows at approximately \$21/MWh, substantially below the 2019 settled average.

2021 experienced a variety of load and resource factors, which resulted in general increases to both the average price and price volatility. In February, prices surged during a nation-wide cold weather event, which drove up demand for energy while limiting the supply of natural gas. This resulted in a week-long price event, causing electricity markets to jump from approximately \$25/MWh to over \$150/MWh. After February, a prolonged period of drought diminished the supply of hydro generation available to serve both the northwest and California for the anticipated summer period. In June, the PNW experienced an unprecedented heat dome event, where high loads and limited hydro resulted in average day ahead prices that peaked at \$239/MWh. Similar drivers led to a July price spike near \$412/MWh, though lifting natural gas prices were also an influencing factor. After July, the west coast experienced relatively mild weather for the remainder of the year, though electricity prices remained elevated, primarily due to increases in natural gas commodity pricing. The 2021 average, annual spot price finished near \$49/MWh, which is the highest settled price since 2008.

Figure 2: Historical, annual average of spot market prices corrected for consumer price index (CPI) inflation



Forward Markets

⁵ Natural gas generally determines the marginal cost of electric generation used to serve demand. Increases in natural gas costs drive increases in electricity pricing in both spot and forward markets.

Forward market prices for 2022 are currently trading above 2021 spot market prices at close to \$53/MWh for the year. The shift appears to be driven primarily by the lingering increased cost of natural gas that started in the summer of 2021. This shift in natural gas market prices can be attributed to many factors, including reduced supply, given lagging natural gas production investment and natural gas production supply chain concerns. Further, there is increased demand for natural gas due to coal generation replacement, post-COVID economic recovery, and increased levels of global LNG exports. These LNG exports are effectively connecting US natural gas markets to the rest of the world, including Europe, which also experienced high energy prices last summer and is currently grappling with the impacts of war between Russia and the Ukraine. It's too early to know the long-term impact of this crisis, but it is likely to resonate within US energy markets. As of January 14th, the U.S. Energy Information Administration ("EIA") forecasted that Henry Hub⁶ natural gas commodity prices will stay relatively flat through 2022, and slightly decline in 2023⁷.

In addition to gas costs, the market is anticipating a warmer than normal summer⁸, and potential underperformance of NW hydro generation⁹ given residual drought conditions. The combination of these factors may lead to additional periods of price volatility. Current forward markets show the highest prices during summer (\$155/MWh for Aug '22 Peak¹⁰) and winter (\$76/MWh Dec '21 Peak) months. This shape in seasonal pricing largely mirrors the spot market history experienced over the last couple of years, though trading at elevated levels.

Though average electric prices may decline with decreases in the price of natural gas, price volatility is expected to continue with ongoing decarbonization efforts. In 2020, renewable resources became the second most abundant source of electric generation in the United States¹¹, surpassing sources of controllable thermal energy like coal and nuclear. Variable must-run energy resources like wind and solar typically lack the capability to shape or store energy. In regions with high levels of renewable penetration, market prices can experience drastic swings with changes in the level of renewable energy production. Renewable buildout is expected to continue as more regulators adopt new clean energy standards¹² and utilities work to decarbonize generator fleets.

Forward markets do not account for emergent policy issues like the development of new, complementary markets such as energy imbalance, capacity, and carbon, which are expected to trade outside of traditional energy markets. The value of these emergent markets to EWEB will largely be a function of implementation. As such, staff continue to take a proactive advocacy role in all relevant regional conversations.

Finally, forward market prices are subject to change with emergent conditions. Some recent factors that are driving market uncertainty include electrification efforts (e.g., transportation and

⁶ Henry hub (located in Louisiana) is the physical delivery point for natural gas traded on the NYMEX and ICE. As such, it generally serves as the primary benchmark reference for US natural gas commodity prices.

⁷ <https://www.eia.gov/todayinenergy/detail.php?id=50898>

⁸ https://www.cpc.ncep.noaa.gov/products/predictions/long_range/t05.2c.gif

⁹ <https://www.eia.gov/todayinenergy/detail.php?id=51378>

¹⁰ Generally, "Peak" or "on-Peak" refers to a daily 16-hour period that coincides with the greatest amount of electrical energy usage, and the highest marginal cost of energy.

https://www.naesb.org/pdf/weq_iptf050504w6.pdf

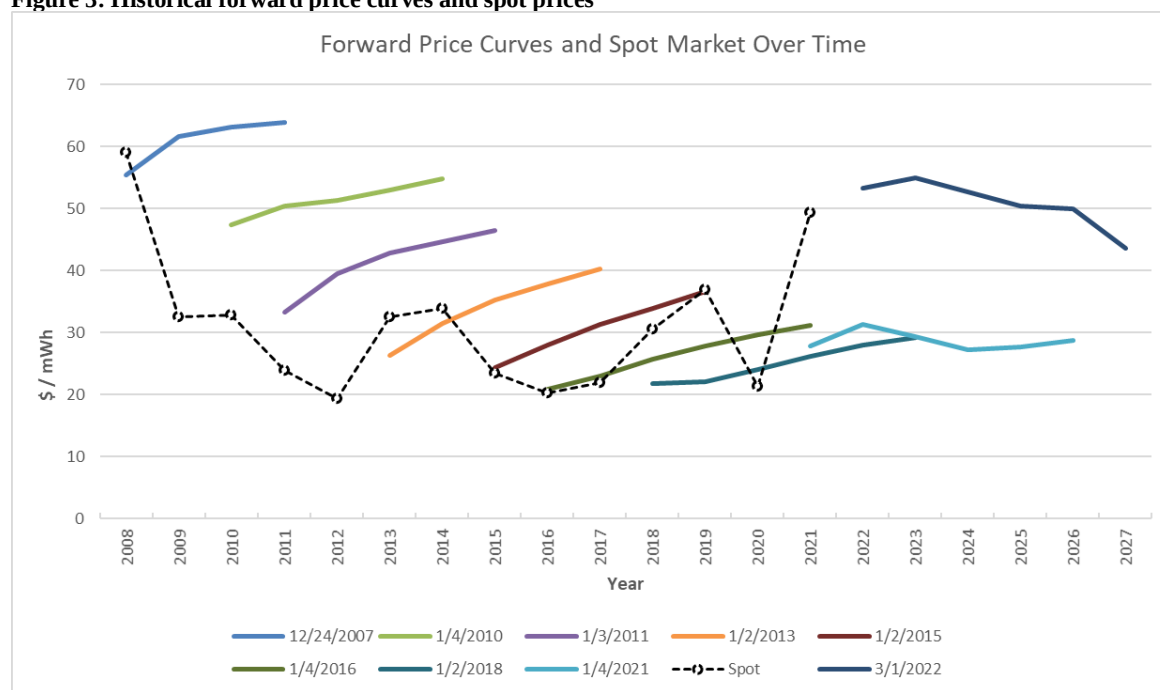
¹¹ <https://www.eia.gov/todayinenergy/detail.php?id=50622>

¹² <https://www.eia.gov/todayinenergy/detail.php?id=51118>

space heating), the strength of the US economy, the ongoing recovery from the COVID pandemic, domestic natural gas production investments, and US exports of liquified natural gas¹³ and global uncertainty.

Figure 3, below, shows both forward market price curves, and spot market prices, over time. A forward curve reflects prices for future periods of delivery, which can be traded today. The first blue line on the left reflects a forward curve taken at the end of 2007. The subsequent lines reflect changing forward price curves for the years that followed. Since 2008, forward market price curves experienced a period of consistent declining value. With recent changes in natural gas pricing forward market curves have jumped drastically, and now reflect some of the highest pricing seen in the last decade. The 3/1/2022 curve reflects this elevated pricing, but with a slope that is declining as it moves to the right. This shift mirrors current expectations that natural gas prices will trend down after 2023, which should in turn reduce electric energy prices.

Figure 3: Historical forward price curves and spot prices



¹³ <https://www.eia.gov/todayinenergy/detail.php?id=51358>

Resource Adequacy

EWEB continues to actively participate in the Western Power Pool (WPP) effort. Having established a shared set of standards in Phases 2A&B, now during Phase 3A the organization is focused on obtaining FERC approval of a regional, voluntary RA program designed to promote cost effective resource adequacy for the entire region.

Questions have arisen as to whether the WPP RA program will mean the region will avoid the kind of supply disruptions and customer outages that California experienced in the summer of 2020, and that Texas experienced the following winter. The direct answer is “not necessarily.” The WPP RA program is intended to serve the region’s capacity critical load hours more cost-effectively, assuming 1-year-in-10 peak weather events. California and Texas experienced *very* extreme weather events (extreme heat in California, and extreme cold in Texas) over consecutive days that resulted in inadequate supply given the associated demand. No utility plans its system to serve loads under all circumstances. Therefore, all regional grids are vulnerable to extreme weather events, which seem to be more frequent with climate change. The WPP RA program is one of several actions the region is pursuing to improve market depth, and to help reduce the impact of such widespread disruptions in the future.

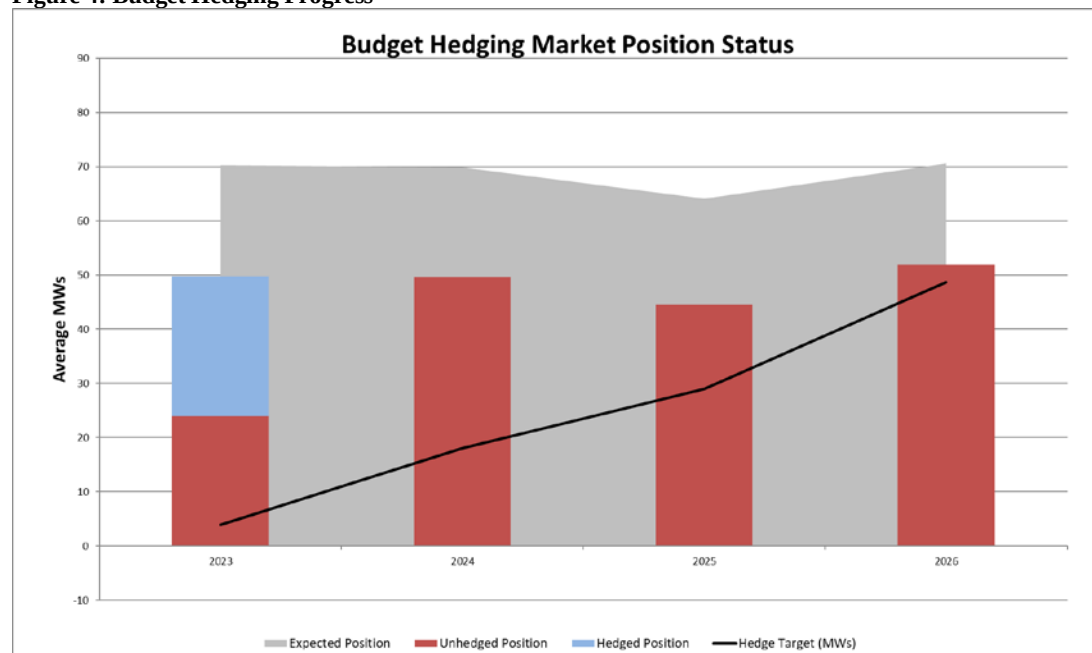
Surplus Position Hedging Update

In accordance with EWEB's Risk Management Procedures, staff hedges¹⁴ a portion of its surplus position¹⁵ up to five years in advance. In years past, this has provided two benefits: 1) it has reduced financial exposure related to market prices; and, 2) it has resulted in sales executed at various times which diversifies the sales price by "dollar cost averaging" through time. This strategy resulted in near-term years being fully hedged while year five is the least hedged, with interim years somewhere in between. Beyond five years EWEB does not hedge any surplus energy.

There is a current effort underway to modernize how EWEB approaches budget hedging and portfolio balancing activities. This effort recognizes that EWEB's portfolio needs are changing and that current market dynamics may require adjustment to existing hedging goals, requirements, strategies and metrics. Until this effort has completed, budget hedging activities will primarily be focused on years 2023 and 2024 only.

Figure 4, below, shows EWEB's surplus market position for 2023-2026 based on the budget hydro assumption which is 90% of expected hydro generation. The top of each stacked column indicates EWEB's original surplus market position; i.e., the amount of forecasted generation EWEB expects to realize in excess of that which is forecasted as being necessary for reliable load service. The blue bar represents the volume of energy hedged by staff. The red bar represents the remaining unhedged surplus. The black line reflects the desired pace of hedging activity the Risk Management Committee (RMC) would like to achieve over time. The gray area behind the stacked columns reflects EWEB's expected surplus, without the budget hydro assumption.

Figure 4: Budget Hedging Progress



EWEB Owned-Generation Update

¹⁴ A hedge is a trade or set of trades that reduces the market price exposure risk inherent in EWEB's portfolio length. EWEB hedges to provide greater wholesale revenue certainty.

¹⁵ Surplus position is an amount of energy that staff forecasts will not be needed to serve EWEB's customers and is therefore exposed to changes in market price. For 2023-2026 there is about 50 aMWs of surplus compared to EWEB's load of about 265 aMWs

The Leaburg power canal and powerhouse remain offline due to dam safety concerns identified in late 2018. Following a Semi-Quantitative Risk Analysis (SQRA) in 2020, EWEB's Board of Commissioners indicated their support for a parallel path approach to implement near-term risk reduction measures while performing a strategic evaluation of return-to-service versus decommissioning alternatives. Selected risk reduction concepts are progressing forward and the strategic evaluation is underway. Staff will provide the Board with a recommended strategic direction for Leaburg by the end of 2022.

The Walterville power canal and powerhouse continued to operate reliably in 2021, managing to continue operation through the late summer and early fall despite lower river flow conditions. Investigations to support updated dam safety analyses progressed well in preparation for the 5-year safety inspection which will be performed by an independent consultant and reviewed by the FERC in 2022.

At the Carmen-Smith Project, 2021 saw the deployment of significant environmental and recreational improvements including reconstruction of the Chinook Salmon Spawning Channel below Trail Bridge Dam, relocation of a portion of the transmission line out of Deer Creek and installation of bird flight diverters on over-water transmission spans, and completion of approximately 80% of the improvements to Trail Bridge Campground. Following delays to Carmen power plant work in 2020, refurbishment of the first turbine-generator unit started in summer 2021. Completion of the second Carmen unit is expected by the end of 2023. At the Trail Bridge power plant, reliability improvements are expected to start and complete in 2022. Recent major work plan changes at Carmen-Smith relate to the discovery of sinkholes on the bottom of the reservoir in May 2021. The sinkhole discovery triggered urgent investigation to determine root cause, with substantial geophysical studies completed in 2021 and subsurface drilling work anticipated in 2022. Findings from these efforts will help ensure that there are no adverse effects on or from the sinkholes associated with the planned fish passage improvements, which have been delayed while the dam safety investigations proceed.

Following a wet and cold early January, the 2022 hydrologic year for the Oregon Cascades, which will affect EWEB's owned hydroelectric resources, is forecasted to trend below average this spring/summer on the McKenzie below Trail Bridge and at Vida. Recent changes to planned operations at the Army Corps' Cougar reservoir are anticipated to result in lower-than-normal summertime flows in the lower McKenzie, affecting expected generation at the Walterville Project. Staff will continue to monitor conditions through mid-April in order to determine the appropriate flow guidance to operate the Walterville facility, though it is likely that low flow mode operations will be required. An update to the Board will be included in the May Board meeting materials.

EWEB's other owned generation facilities (Stone Creek Hydroelectric and Harvest Wind) continue to operate normally and are expected to do so throughout 2022. Harvest Wind is scheduled to have typical maintenance outages throughout the year. Following high priority repairs to the Stone Creek transmission line in 2020 due to the Riverside Fire, the outstanding replacement of 31 fire damaged poles will be completed in 2022. EWEB will take advantage of the required outage to also perform annual plant maintenance and inspection activities.

Requested Board Action – None



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

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TO: Commissioners Brown, Carlson, Barofsky, McRae, and Schlossberg
FROM: Jason Heuser, Public Policy and Government Affairs Program Manager
DATE: March 18, 2022
SUBJECT: 2022 State Legislative Session Summary

Issue

The 2022 State Legislative Session convened January 31st and adjourned on March 4th. This memo is to apprise the Board of the final status of issues key to EWEB's adopted 2022 legislative agenda or principles.

Background

Prior to the start of each legislative session, the Board adopts general policy directives for advocacy at the Capitol, which guide the work of EWEB's lobbying activities. When political considerations test the applicability of those directives, the General Manager decides as to whether a fundamental shift in direction is required. The Board may be asked to reaffirm its policy or direct staff to make necessary adjustments.

Discussion

EWEB Water Resiliency Funding Request – SUPPORT – PARTIALLY FUNDED -- \$375,000

In the omnibus budget bill, HB 5002, the legislature approved \$375,000 was EWEB's Powder Activated Carbon Treatment Project that will improve EWEB's ability to treat water for taste and odor issues resulting from ongoing impacts from the September 2020 Holiday Farm Fire. EWEB submitted a request for \$22.5 million in state matching funds to support the construction of a new EWEB water treatment plant on the Willamette River as well package of smaller water transmission and resiliency projects, including the Powder Activated Carbon Treatment Project. The request to the Joint Ways and Means Committee was sponsored by local Senator James Manning and EWEB staff completed project applications that were submitted to the Legislative Fiscal Office tasked with processing funding requests. EWEB staff testified twice in support of our request at the Senate Veterans and Emergency Preparedness Committee as well as the Capital Construction Subcommittee of the Joint Ways and Means Committee.

SB 1536/HB 4058 – Emergency Cooling – SUPPORT – PASSED

This bill will direct \$5 million to the Oregon Health Authority to create an emergency distribution program that would deliver air conditioners and air filters to homes in need during extreme heat events like the 2021 June "Heat Dome" in which 100 Oregonians perished from heat-related causes. The bill will also allocate \$10 million to the Oregon Department of Energy to create an incentive program to make it easier for vulnerable households to purchase energy-efficient heat pump cooling systems. This program will be available to EWEB customers and complement existing EWEB programs. Staff provided written testimony in support of HB 4058 which was approved by the

House Energy Committee and referred to the Joint Ways and Means Committee where it was amended into SB 1536 nearly verbatim.

ALERTWildfire Camera Network Funding – SUPPORT – APPROVED \$4.5 million

ALERTWildfire is a proven system of high quality, directional cameras that enables real-time and time-lapse views of the camera feeds to critical service providers like utilities, emergency responders and the public. EWEB provided written testimony in support of a \$4.5 million funding proposal for further buildout of the system. EWEB is working with the Oregon Hazards Lab to install an ALERTWildfire camera on Smith Ridge in the upper McKenzie Valley. This funding request was approved and included in the omnibus budget bill HB 5002.

Recommendation/Requested Board Action

No action is recommended. This memo is an informational update on issues identified in EWEB's 2022 State Legislative Agenda or principles.



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD



TO: Commissioners Brown, Carlson, Barofsky, McRae, and Schlossberg
FROM: Deborah Hart, CFO and Jason Heuser, Policy and Government Program Manager
DATE: March 30, 2022
SUBJECT: Grant Opportunities
OBJECTIVE: Information

Issue

EWEB staff have identified opportunities to procure grant funding for a variety of projects across both the Water and Electric utilities. The Infrastructure Investment and Jobs Act (IIJA), represents some of the largest opportunities, however other grant funding and low-cost borrowing may also be available to the utility.

Background

Since 2020, EWEB has been awarded \$5.3 million in grant funding. The majority of this was from the Federal Emergency Management Agency (FEMA) for damage done to our infrastructure during the wildfires, however \$1.9 million has been awarded from other sources and is primarily for source protection. The most significant award was for \$1.3 million from the Oregon Office of Emergency Management (OEM) to offset the 25% required cost share for three FEMA watershed/floodplain grants for which EWEB has applied. The OEM cost sharing grant will offset expenses that would have otherwise been funded by EWEB. In addition to the grants awarded to date, EWEB has nearly \$12 million in applications pending, including a \$4 million grant for the Middle McKenzie floodplain restoration which already has been earmarked for EWEB but still requires a robust application and budget be developed outlining the use of funds. The application process will be completed by March 31, 2022. Attachment 1 includes a complete list of awards and active applications.

Discussion

In order to facilitate the procurement of funds, EWEB hired a grants specialist in October of 2021. To support that work, a team from across the utility is taking shape to act as an intake hub for grant opportunities ("Grant Clearinghouse" Team) and to navigate respective logistics. Staff specializing in energy and telecommunications as well as watershed protection and working lands carbon sequestration are consistently consulted. In addition, an executive committee provides oversight and direction to the work.

EWEB staff have taken steps to establish an internal process to track and evaluate grant funding opportunities and announcements. An email address (grants@eweb.org) has been established to engage EWEB employees and departments to funnel grant funding opportunities they identify through

the Grant Clearinghouse Team. This serves as a platform to both spread awareness of grant funding internally at EWEB, and to ensure EWEB is adhering to any eligibility, application, reporting, and compliance requirements associated with a grant and capable of executing the project associated with the funding.

Additional reconnaissance activity has EWEB employees participating in webinars and other education offerings through industry trade associations, as well as federal and state agencies to learn of coming funding opportunities. Recent research is largely resulting from passage of IIJA, however there are significant resources and opportunities being explored, or already applied, through agencies including ODF, DEQ, and OWEB. EWEB staff are cross checking the capital improvement plan and strategic plan with federal and state funding opportunity announcements to assess alignment with future EWEB projects, as well as updating EWEB's existing grants policy. Grant funding also provides opportunities to collaborate and expand relationships with local and regional stakeholders on grant-funded projects, promoting resource and cost sharing and increasing community impact.

Since the September 2020 wildfires, existing FEMA programs continue to be a funding pipeline for wildfire recovery as well as future pre-disaster mitigation. Information on distribution of the IIJA funding is starting to be announced by state agencies and industry partners, with official guidance for grant programs and RFPs slated to be released throughout 2022 and into early 2023. Oregon's new Clean Electricity Standard legislation established new funding programs to deploy renewable energy resiliency projects. Most recently, the Oregon legislature allocated much of the state revenue surplus toward resiliency and wildfire recovery through disbursement across multiple state agencies. Finally, for the first time in over a decade, the United States Congress has reintroduced limited "targeted spending" requests at the discretion of members of Congress.

IIJA funding announcements are expected to increase in Q3 and Q4 of this year. Many IIJA provisions require new programs to be created through staffing and rulemaking with funds coming available over the next 6 years. Previous federal stimulus spending packages, such as the American Rescue Plan Act, were designed to spur immediate economic gains and job creation, prioritizing "shovel readiness". The IIJA is intended to deliver benefits over a longer time frame and strives to evaluate projects for "shovel worthiness". For EWEB projects that show alignment with funding opportunities, fall within the scope of EWEB resources and readiness, and promise to be competitive regionally or nationally, staff will be taking steps to develop effective project narratives, gather any measurable data that support project outcomes, cultivate relationships with state and federal funding program managers, and perform outreach to build community support for projects. \$50 billion of the IIJA is focused on water infrastructure funding, including \$20 billion to safe drinking water, \$12 billion to clean water for communities, and \$1.8 billion to protect regional waters. These are significant opportunities for EWEB.

In addition to the IIJA, other funding sources are coming available. The FEMA Building Resilient Infrastructure and Communities (BRIC) will provide annual funding opportunities for hazard mitigation projects, reducing the risks faced from disasters and natural hazards. The USDA will offer Climate Smart Commodities grants for forest landowners that use climate-smart practices to measure and verify greenhouse gas benefits. More recently, the Oregon Department of Energy announced programs that could provide up to \$100,000 and 100% of eligible costs for planning a renewable energy project or planning a renewable energy project with a resilience component. Up to \$1 million and 50% of eligible costs for construction grants for renewable energy projects may be available, while construction grants for resilience projects can cover up to 100% of eligible costs. Awards will be made

on a competitive basis, and priority will be given to projects that support energy resilience and that serve qualifying communities, including communities of color, low-income communities, Tribes, rural areas, and other traditionally underserved groups.

EWEB staff are mindful that while a number of grant programs could benefit the utility and our customer-owners, there are criteria and prioritizations that may not apply to EWEB. For example, the IIJA incorporates principles and objectives that prioritize projects benefitting disadvantaged, low-income, or rural communities. Additionally, some funding areas will be highly competitive relative to the funds allocated and may be “oversubscribed” in a given year. If a project application is unsuccessful, it is plausible that it may be resubmitted successfully in a future year, depending on the program. In response to the IIJA’s priorities, EWEB grants staff are developing internal resources such as local demographic data, regional statistics, community profiles, feasibility studies, and statements of need in order to have a robust applicant profile that can be applied to a variety of funding opportunities as they become available.

Recommendation and Requested Board Action

This item is information only and no Board action is requested.

Attachment 1- 2020 – 2022 Grant Funding

Attachment 1

2020 - 2022 Grant Funding

Awarded Grants					
Granting Agency	Project Description	EWEB Dept.	Year Awarded	Awarded Amount	EWEB Cost Share
ARPA	Finn Rock Reach Phase I (reimbursement for funds supplied to MRT)	Water Quality	2021	\$ 325,000	\$ -
ODF	McKenzie Subbasin Forest Fuels Reduction Treatment	Water Quality	2022	\$ 300,000	\$ 75,000
OEM	FEMA HMGP 4562 Local Cost Sharing (Watershed and Floodplain)	Water Quality	2022	\$ 1,301,750	\$ -
FEMA	2020 Wildfires: Debris	Electric Operations	2021	\$ 208,866	\$ -
FEMA	2020 Wildfires: Power Distribution Damage	Electric Operations	2021	\$ 2,868,381	\$ 956,127
FEMA	2020 Wildfires: Electrical Distribution System	Electric Operations	2021	\$ 223,106	\$ 74,369
FEMA	2020 Wildfires: Mt Hagan Communications Equipment	Communications	2022	\$ 187,500	\$ 62,500
FEMA	2020 Wildfires: Hayden Bridge Water Filtration	Water Quality	2021	\$ 66,021	\$ -
Total				\$ 5,257,518	\$ 1,093,627

Grants pending outcome/award					
Granting Agency	Project Description	EWEB Dept.	Date Applied	Funder Share	EWEB Cost Share
FEMA	2020 Wildfires: Stone Creek Generation Facility	Generation Engineering	2021	\$ 1,696,399	\$ 565,466
FEMA	McKenzie Watershed Fire Recovery and Restoration	Water Quality	1/28/2022	\$ 423,000	\$ -
FEMA	Middle McKenzie Floodplain Restoration Planning and Design	Water Quality	1/28/2022	\$ 735,000	\$ -
FEMA	Middle McKenzie Floodplain Restoration	Water Quality	1/28/2022	\$ 2,988,000	\$ -
FEMA	Day Island Water Line Crossing Feasibility Study	Water Engineering	1/28/2022	\$ 770,666	\$ 192,667
FEMA	Willamette Knickerbocker Bridge Water Line Crossing Feasibility Study	Water Engineering	1/28/2022	\$ 504,000	\$ 126,000
FEMA	Eugene Wildfire Risk Assessment	Strategic Programs	2/25/2022	\$ 270,000	\$ 90,000
OEM	FEMA HMGP 4562 Local Cost Sharing (Day Island/Knickerbocker)	Water Engineering	3/15/2022	\$ 318,666	\$ -
DEQ	Repair, replacement, and evaluation of old septic systems upriver	Water Quality	2/15/2022	\$ 1,767,500	\$ -
OWEB	Middle McKenzie Floodplain Restoration	Water Quality	3/31/2022	\$ 4,000,000	\$ -
Total				\$ 11,776,832	\$ 408,667

Granting Agency Key:

ARPA American Recovery Plan Act - Federal funds
 DEQ Department of Environmental Quality
 FEMA Federal Emergency Management Administration
 ODF Oregon Department of Forestry
 OEM Oregon Office of Emergency Management
 OWEB Oregon Water Enhancement Board



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg

FROM: Lisa Krentz, Electric Generation Manager; Mark Zinniker, Generation Engineering Supervisor; and Jeremy Somogy, Generation Engineering Planner IV

DATE: April 5, 2022

SUBJECT: Goal #3(a): Leaburg Canal Triple Bottom Line (TBL) & Strategic Assessment Update

OBJECTIVE: Information and Board Feedback

Issue

This memo provides an update on our progress toward achieving the 2022 EWEB organizational goal #3(a) to work in collaboration with the Board and the McKenzie Valley Community to set the direction of the Leaburg Hydro Electric Project toward either a power producing asset or a storm water conveyance asset. This memo provides updates to the Triple Bottom Line analysis of EWEB's long-term options, as well as our near-term risk mitigation efforts.

Background

The Leaburg Canal has been operating as a stormwater conveyance facility since October 2018, when observations of internal erosion of the canal embankments prompted EWEB to dewater the canal and cease power generation until the dam safety issue could be resolved. Following subsequent findings that some canal embankments may also present earthquake safety risks, EWEB initiated a comprehensive risk assessment of the entire canal to better understand the level of investment that would be required to ensure long term safe and reliable operation. This assessment indicated that the necessary level of investment would be considerable and the Net Present Value (NPV) for the Leaburg Project would be substantially negative with less than 20 years remaining on the FERC operating license. Based on this understanding, the Board determined that pursuing a rapid return-to-service was not appropriate in the short term. Instead, the Board directed staff to pursue near term risk reduction measures for safe stormwater conveyance while, in parallel, performing a Triple Bottom Line (TBL - social, environmental, and economic) analysis of long-term options. The fundamental long-term options are to pursue a return-to-service/relicensing of the Project or move toward permanent decommissioning of the Project.

EWEB staff continue to advance the development of near-term risk reduction measures, which are needed to ensure safe operation until a long-term plan is implemented. We are working with the consultant team that performed the risk assessment, led by Cornforth Consultants, as discussed below.

In order to provide the Board with information to make an informed selection on the most appropriate long-term path forward by the fourth quarter of 2022, EWEB staff retained a consulting team (led by GEI Consultants) to assist in developing detailed analyses of the social, environmental, and financial impacts of various scenarios. Progress on this effort is detailed in this memo.

Near Term Risk Mitigation Action Plan

Although ceasing operation for power generation at the Leaburg Project has greatly reduced canal safety risks, potential failure modes (PFMs) remain while the canal operates as a stormwater conveyance facility. Due to this, near term risk reduction measures are being developed that focus primarily on addressing the PFMs associated with hydraulic loading from tributary creeks during the wet weather season and storm events. For example, risk reduction measures that address high flows from the larger tributary creeks, such as Johnson Creek and Cogswell Creek, are of particular interest.

Because the ultimate decision on the long-term use of the Leaburg Canal remains under evaluation, near-term risk reduction measures are intended to be flexible by providing value and reducing risk regardless of the ultimate fate of the Leaburg Project, whether it is returned to service or decommissioned and used solely for stormwater conveyance.

The prioritization of near-term risk reduction alternatives is nearly complete and will be finalized in Q2 of 2022. Risk reduction measures will include reversible canal configuration changes, such as isolating portions of the canal from the high flow creeks, and canal-wide efforts, such as proactive removal of unstable upslope vegetation that may obstruct the canal if it were to fall during a storm. In support of risk reduction scenario refinement, EWEB staff and the consultant team are also working on the development of a Drilling Program Plan (DPP) to evaluate critical subsurface conditions. This information will assist with confirming feasibility and necessary scope of design. These geotechnical findings will be of value to both near-term and long-term solutions. The DPP is expected to be completed and submitted to the FERC in late Q3 of 2022.

The value of purchasing “selective” properties adjacent to portions of the canal that provide benefit for future construction associated with both the near-term and long-term risk reduction efforts was also identified in the analysis. EWEB staff will prioritize, monitor, and evaluate if specific property purchases can provide benefit to the implementation of future risk reduction work.

Leaburg Canal Long Term Strategic Evaluation

In tandem with the near-term risk mitigation planning, EWEB staff is continuing to partner with a consultant team to identify and develop feasible long-term alternatives to be evaluated using the TBL criteria. We are considering four (4) alternatives for in-depth analysis, bookended by completely renovating the facility in its existing configuration and decommissioning the facility to pre-project conditions.

EWEB staff and the consultant team completed two (2) workshops to develop, refine, and short-list potential alternatives. Eleven (11) alternatives were initially identified and ultimately narrowed to four (4) options that will be fully evaluated using the TBL and key decision parameters.

The four alternatives that have been selected for further evaluation and will presented to the Board during subsequent progress updates are:

- Decommission by returning site to pre-construction conditions.
- Full facility restoration of existing power generation configuration.
- New hydro powerhouse at Luffman Spillway and conversion to stormwater conveyance downstream of the proposed powerhouse.
- Decommissioning with a combination of storm water conveyance and return to pre-project conditions, including a new spillway at Johnson Creek and modification to the Luffman spillway. This alternative converts short-term risk reduction measures into a long-term solution.

Please see Appendix A for a more detailed description of the above noted alternatives, as well as the alternatives that were not selected for further evaluation.

The consultant team will be developing detailed planning level cost estimates for the short-listed alternatives, and an analysis of triple bottom line considerations for each alternative. Cost estimates will be accompanied by conceptual system layouts and operational descriptions.

Additionally, EWEB's Financial and Power Planning teams are providing critical analysis of the selected alternatives that will better inform the Board's decision. They will build upon consultant-provided information, including operation and maintenance costs, power generation estimates, capital cost ranges, and schedule inputs. The Finance Team will provide a summary of discount rate rationale, recommendations for sensitivity analysis, rate impact estimates, price of power production, and NPV for all scenarios. The Power Planning Team will develop a range of future power pricing for NPV sensitivity, a summary of replacement power considerations for the TBL analysis, and Integrated Resource Plan (IRP) considerations.

Outreach Phases, Communications Channels & Project Timeline

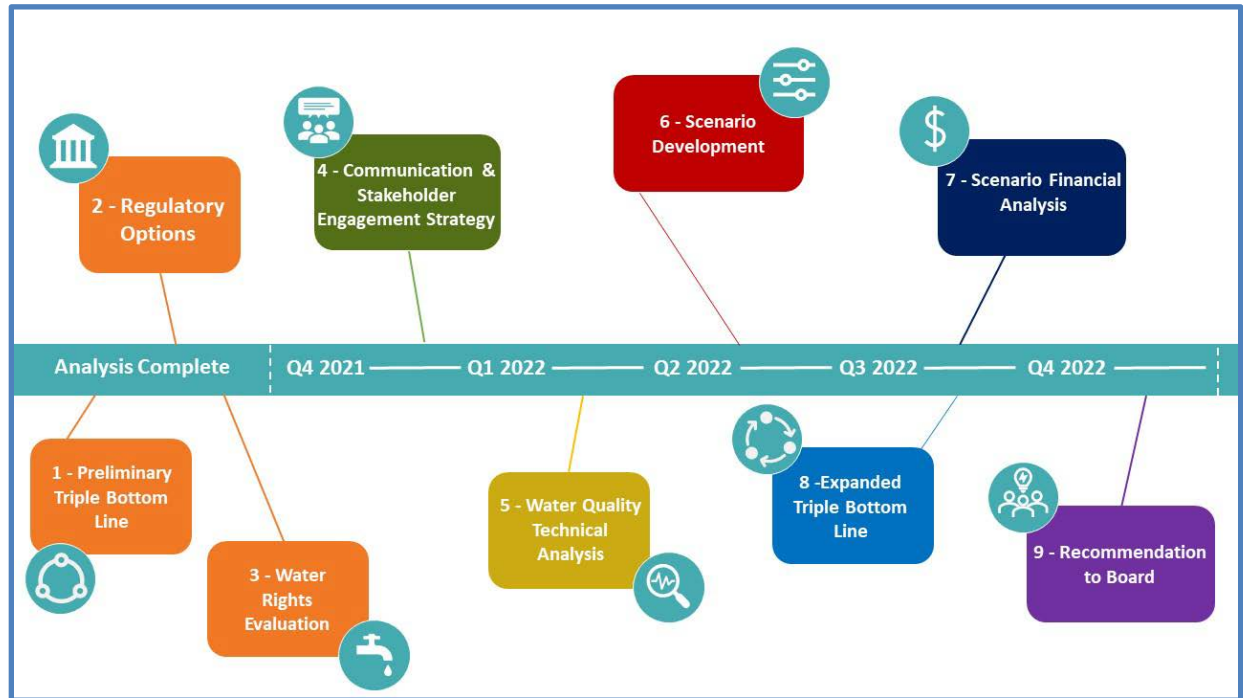
EWEB staff will continue to communicate findings from the strategic evaluation throughout the remainder of 2022. Q2 will focus on in-person meetings to present background information to key stakeholders and gather feedback, as well customer surveys on how they would prioritize the anticipated social impacts. In Q3, we will begin to report back the findings of the expanded TBL assessment and social impact surveys, and in Q4 we will work with the Board to make a decision and determine next steps. The following are highlights of recent and forthcoming outreach efforts:

- EWEB Employee News update – March 17, 2022
- McKenzie River Reflections Advertisement for Upriver Board Meeting – March 17, 2022
- Launch Leaburg Canal Strategic Evaluation Website – March 23, 2022
- Letter to Canal Neighbors providing current update – March 24, 2022
- Email update to river guides and irrigators – March 24, 2022
- McKenzie River Reflections Advertisement for Upriver Board Meeting – March 31, 2022
- Status update press releases to McKenzie River Reflections and Register Guard – April 6, 2022
- McKenzie River Reflections Advertisements for Upriver Board Meeting – April 7th & April 14th
- McKenzie River Reflections advertisement to thank the residents who attended the Upriver Board Meeting and to provide links to the website and presentations – April 21, 2022

In addition to the public outreach effort detailed above, EWEB staff will provide the Board with routine status updates and TBL analysis for the selected alternatives. We will ask the Board for feedback, questions, and comments at the following Board meetings:

- Upriver Board Meeting – April 19, 2022: Similar update as presented in the April 5th Board Memo.
- Special Meeting/Work Session – June 21, 2022: Preliminary TBL results.
- Board Meeting - August 2, 2022: Rough Order of Magnitude costs.
- Board Meeting - October 4, 2022: Summary of draft report.
- Board Meeting - December 6, 2022 (tentative as required): Final report and recommendation.
- Special Meeting/Work Session December 20, 2022 – Board action.

Project Timeline:



The above pictorial depicts the Leaburg Strategic Evaluation Project timeline at a high level, with the following specific project milestones:

- Scenario Development Workshop – Completed on December 17, 2021
- Scenario Refinement Workshop – Completed on March 9, 2022 (4 alternatives selected)
- Preliminary Cost Review Workshop – May 9, 2022*
- Preliminary TBL from Consultant – June 8, 2022
- Final Report due from Consultant – November 4, 2022
- Special Board Meeting & Board Action – December 20, 2022

*Workshop date subject to minor adjustment based on stakeholder schedules

Requested Board Action

No Board action is requested at this time, but we request feedback from both the Board and the public on the proposed approach and information provided to date.

Please contact Lisa Krentz, Mark Zinniker, or Jeremy Somogy with questions.

Appendix A

Alternative Scenario Descriptions

Description of Alternatives Selected for Further Consideration

The primary considerations that were used to select the alternatives for further evaluation are as follows:

- Upfront capital investment.
- Operational & maintenance (O&M) costs.
- Potential power generation revenues vs. investment and O&M costs.
- Likelihood of economic and regulatory feasibility.
- Preliminary TBL considerations.
- Flexibility to incorporate near-term canal modifications into long-term solution(s) with minimal re-work.
- Retention of hydroelectric generation water rights and the FERC operating license.
- Bookended alternatives that will help define the maximum base-line scenarios from cost, regulatory compliance, and complexity perspectives.

Decommission by returning the site to pre-construction conditions (Bookend Scenario): This alternative was selected for further evaluation and consists of returning the site to “pre-construction conditions” to the extent necessary to meet FERC decommissioning and all other regulatory requirements. The Project features, including the dam, canal, and power generating facilities would be entirely removed, and the pre-construction drainage patterns intercepted by the canal would be re-established. The consultant team estimates that there are 8 to 11 drainage pathways that would be routed directly to the river, many of which would require crossing Highway 126. A new access bridge would be required to be constructed in place of Leaburg Dam to provide access to the south side of the river.

Full facility restoration of existing power generation configuration (Bookend Scenario): This alternative was selected for further evaluation and consists of a “full facility renewal” to the extent necessary to meet FERC and all other regulatory requirements. The Project features, including the dam, canal intake, canal, and power generating facilities would be rehabilitated and remediated to meet required specifications. The rehabilitated canal embankment would include lining alternatives to reduce seepage and improve slope stability where necessary. Certain reaches, such as the Ames and Cogswell reaches, would be entirely removed and reconstructed to mitigate the identified seismic liquefaction and internal erosion issues. The canal would continue to function as a full-length power canal and the existing intake at the upstream end of the canal would be rehabilitated and maintained.

New powerhouse near the Luffman Spillway and conversion to stormwater conveyance downstream of the proposed powerhouse: This alternative was selected for further evaluation and consists of a new powerhouse constructed near the Luffman Spillway (Sta. 66+00), with rehabilitation of the upstream length of the canal to the new powerhouse. The canal downstream of the new Luffman Spillway powerhouse location would be remediated to allow for stormwater conveyance. Due to identified seismic stability and seepage issues, certain reaches like the Cogswell and Ames reaches would be modified to provide adequate stability for stormwater conveyance. Leaburg Dam would be

maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be rehabilitated and maintained.

Decommissioning with a combination of stormwater conveyance and return to pre-project

conditions: This alternative includes construction of a new spillway at Johnson Creek and modifications to the Luffman spillway. The canal downstream of Luffman spillway would be modified to allow for tributary isolation and stormwater conveyance. Due to identified seismic stability and seepage issues, the Cogswell and Ames reaches would be modified to provide adequate stability in those reaches for stormwater conveyance. Leaburg Dam would be removed, and the McKenzie River would be restored to a "pre-construction" configuration. A new access bridge would replace Leaburg Dam to provide access to the south side of the river. This alternative is a flexible option that converts short-term risk reduction measures that are under consideration into a long-term solution.

Description of Alternatives Not Selected for Further Consideration

In addition to the primary considerations identified above for the selected alternatives, the following issues were also considered when determining which alternatives will not be further evaluated:

- The certainty that doing nothing would be unacceptable to EWEB, the public, and all regulatory stakeholders.
- The presence of significant slope instability and potential land-slide risk near the prospective powerhouse location at Hansen Creek which would require extensive mitigation.
- The limited power production revenues vs. overall investment and O&M cost for the close-coupled power generation alternatives.
- The high uncertainty of accomplishing intergovernmental partnerships for funding, obtaining the necessary non-hydroelectric water rights, and successfully completing a jurisdictional transfer of the canal to another entity for use as an environmental amenity.
- The high likelihood that long term use of portions of the canal system for stormwater conveyance will be regulatorily acceptable/preferred over returning the Project to pre-construction conditions.

Do Nothing: Taking no action and leaving the project facilities in their current condition was not selected as an alternative for further evaluation as it does not meet the requirements of EWEB organizational goal #3 to *work in collaboration with the Board and the McKenzie Valley Community to set the direction of the Leaburg Hydro Electric Project toward either a safe and reliable power producing asset or a safe and reliable stormwater conveyance asset.*

New powerhouse at Luffman Spillway and canal returned to pre-construction conditions

downstream of the proposed powerhouse: This alternative consists of a new powerhouse constructed at Luffman Spillway (Sta. 66+00), with rehabilitation of the upstream length of the canal to the new powerhouse and full decommissioning of the canal length downstream of the new powerhouse. The portion of canal extending downstream of the newly constructed powerhouse would be entirely decommissioned, i.e. cut and filled to match the grade adjacent to the canal, to the extent possible, prior

to construction, and the pre-construction drainage patterns intercepted by the canal would be re-established. There are 6 to 9 drainage pathways that would be routed directly to the river, many of which would require crossing Highway 126. Leaburg Dam would be maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be rehabilitated and maintained.

New powerhouse at Hansen Creek and stormwater conveyance downstream of the proposed powerhouse: This alternative consists of a new powerhouse constructed at Hansen Creek (Sta 151+60), with rehabilitation of the upstream length of the canal to the new powerhouse. The canal downstream of the new powerhouse will remain in service to allow for stormwater conveyance. The rehabilitated canal embankment upstream of the new powerhouse at Sta 151+60 would include lining alternatives to reduce seepage and improve slope stability. The portion of canal extending downstream of the newly constructed powerhouse would be maintained to be used for stormwater conveyance. Due to identified seismic stability and seepage issues, the Cogswell and Ames reaches would be modified to provide adequate stability in those reaches for stormwater conveyance. The Cogswell Reach would be reconstructed and lined upstream of the new powerhouse. Leaburg Dam would be maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be rehabilitated and maintained.

New powerhouse at Hansen Creek and canal returned to pre-construction conditions downstream of the proposed powerhouse: This alternative consists of a new powerhouse constructed at Hansen Creek (Sta 151+60), with rehabilitation of the upstream length of the canal to the new powerhouse. The portion of canal extending downstream of the newly constructed powerhouse would be entirely decommissioned, i.e. cut and filled to match the grade adjacent to the canal, to the extent possible, and the pre-construction drainage patterns intercepted by the canal would be re-established. Leaburg Dam would be maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be rehabilitated and maintained.

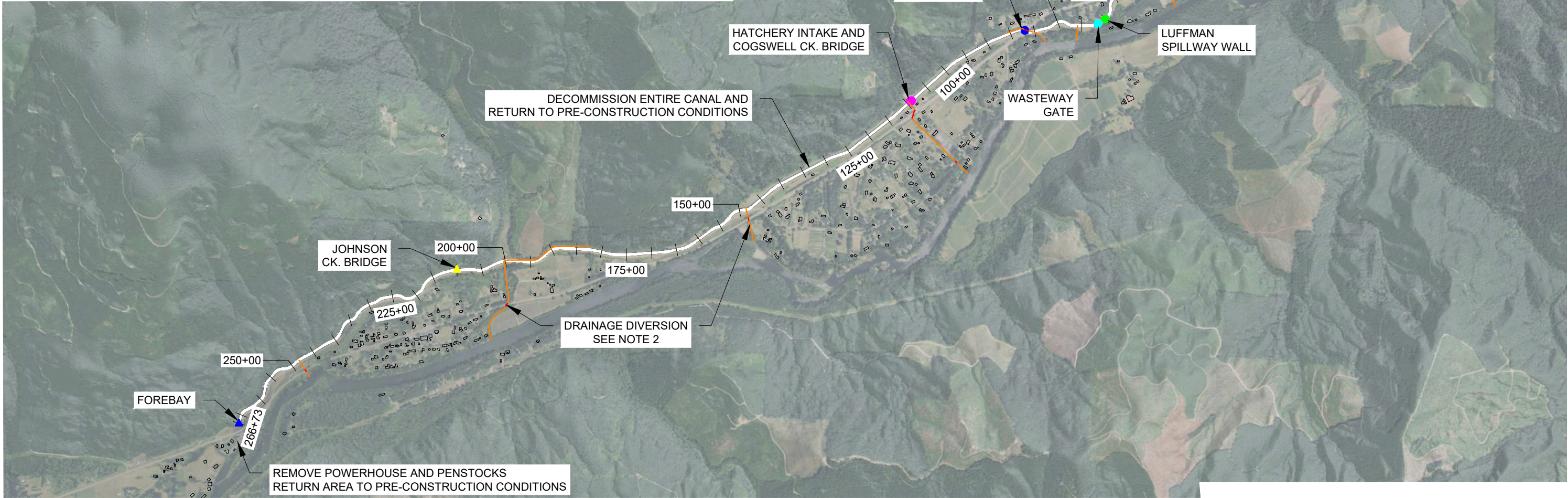
Close-coupled powerhouse at Leaburg Dam with stormwater conveyance downstream of the proposed powerhouse: This alternative consists of a new close-coupled powerhouse constructed at Leaburg Dam, with rehabilitation of the immediate upstream length of the canal to the new powerhouse. The remaining portion of the canal downstream of the new powerhouse will be modified to allow for stormwater conveyance. Due to identified seismic stability and seepage issues, the Cogswell and Ames reaches would be modified to provide adequate stability in those reaches for stormwater conveyance. Leaburg Dam would be maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be rehabilitated and maintained.

Close-coupled powerhouse at Leaburg Dam with canal returned to pre-construction conditions downstream of proposed powerhouse: This alternative consists of a new close-coupled powerhouse constructed at Leaburg Dam and decommissioning of the canal length downstream of the new powerhouse. The portion of canal extending downstream of the newly constructed close-coupled powerhouse would be entirely decommissioned, i.e. cut and filled to match the grade adjacent to the canal, to the extent possible, prior to construction. A drainage plan would be developed for this

alternative to allow for previous runoff into Leaburg Canal to return to the McKenzie River. There are 8 to 11 drainage pathways that would be routed directly to the river for this alternative, many of which would require crossing Highway 126. Leaburg Dam would be maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be rehabilitated and maintained.

Canal converted into an environmental amenity: This alternative consists of the canal being converted into an environmental amenity through removing the existing powerhouse and penstocks and rehabilitating portions of embankment along the length of the canal. The existing powerhouse and penstocks located at the end of Leaburg Canal would be removed or decommissioned. The remaining existing canal would be maintained to continue to route runoff and convey a limited amount of flow from the McKenzie River (less than 100 cfs compared to up to 2,500 cfs for power generation). Due to identified seismic stability and seepage issues, certain reaches such as the Cogswell and Ames reaches would be removed and reconstructed to provide adequate stability. No lining alternatives would be constructed within the canal. Leaburg Dam would be maintained to continue controlling Leaburg Lake at current levels. The existing intake at the upstream end of the canal would be modified for the proposed use as a low flow diversion. This alternative would allow for continued water conveyance to the McKenzie fish hatchery and irrigators as well as other environmental uses of the canal, such as serving as a fish rearing habitat and possibly spawning habitat. This alternative would require a highly unlikely permanent transfer of the canal to a partnering State or Federal agency for ongoing operation and maintenance.

OVERVIEW TABLE						
REACH	START STA.	END STA.		MAJOR STRUCTURES	STA.	INDICATION
LEABURG INTAKE	1+66	9+00		CANAL INTAKE	1+66	
LURE LN.	9+00	61+00		FISH SCREENS	6+00	
MONTGOMERY CREEK	61+00	82+00		LUFFMAN SPILLWAY WALL	65+00	
WARD CREEK	82+00	103+00		WASTEWAY GATE	66+75	
COGSWELL CREEK	103+00	125+00		OR 126/WARD BRIDGE	82+00	
GREENWOOD	125+00	147+50		HATCHERY INTAKE	109+00	
HANSEN CREEK	147+50	186+00		COGSWELL CREEK BRIDGE	109+25	
JOHNSON CREEK	186+00	208+00		JOHNSON CREEK BRIDGE	210+00	
AMES	208+00	247+50		FOREBAY	266+70	
FOREBAY	247+50	266+70				



- NOTES:**
- PROJECT FUNCTIONS AS A NATURAL DRAINAGE WITH CANAL GRADING RETURNED TO PRE-CONSTRUCTION CONDITIONS. REMOVE POWERHOUSE AND PENSTOCKS AND RETURN AREA TO PRE-CONSTRUCTION CONDITIONS. DECOMMISSION ENTIRE CANAL AND RETURN TO PRE-CONSTRUCTION CONDITIONS. NO LINING OF CANAL. REMOVE DAM AND RESTORE RIVER TO "PRE-CONSTRUCTION" CONFIGURATION. CONSTRUCT BRIDGE TO PROVIDE ACCESS. REMOVE INTAKE AND RESTORE TO PRE-CONSTRUCTION CONFIGURATION.
 - SEE FIGURES 14 AND 15 FOR A DETAILED LAYOUT OF THE DRAINAGE DIVERSION FOR A FULL CANAL DECOMMISSION.

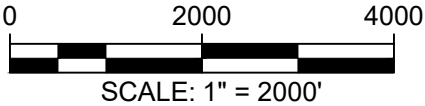
SOURCE:

- PLAN BASED ON MAP PREPARED BY CORNFORTH CONSULTANTS.

LEGEND:

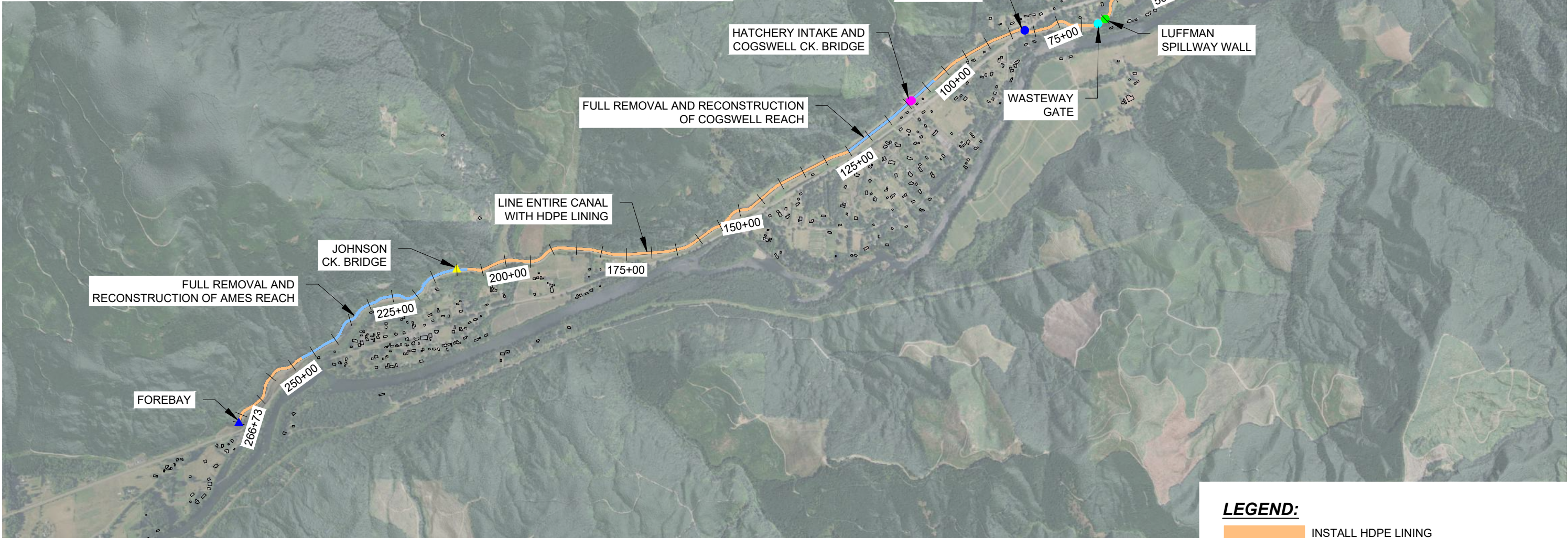
FULL CANAL REMOVAL

DRAFT
Not Issued for Construction



Strategic Evaluation of Leaburg-Walterville Hydroelectric Project Leaburg, OR Eugene Water & Electric Board Eugene, OR	 Project 2104273	ALTERNATIVE 1 RETURN SITE TO PRECONSTRUCTION	March 2022	Fig. 1

OVERVIEW TABLE						
REACH	START STA.	END STA.		MAJOR STRUCTURES	STA.	INDICATION
LEABURG INTAKE	1+66	9+00		CANAL INTAKE	1+66	●
LURE LN.	9+00	61+00		FISH SCREENS	6+00	●
MONTGOMERY CREEK	61+00	82+00		LUFFMAN SPILLWAY WALL	65+00	●
WARD CREEK	82+00	103+00		WASTEWAY GATE	66+75	●
COGSWELL CREEK	103+00	125+00		OR 126/WARD BRIDGE	82+00	●
GREENWOOD	125+00	147+50		HATCHERY INTAKE	109+00	●
HANSEN CREEK	147+50	186+00		COGSWELL CREEK BRIDGE	109+25	●
JOHNSON CREEK	186+00	208+00		JOHNSON CREEK BRIDGE	210+00	▲
AMES	208+00	247+50		FOREBAY	266+70	▲
FOREBAY	247+50	266+70				



NOTES:

1. PROJECT FUNCTIONS AS A FULL LENGTH HYDRO CANAL WITH STORMWATER DIVERSION CAPABILITIES. MAINTAIN EXISTING POWERHOUSE. FULL REMOVAL AND RECONSTRUCTION OF AMES AND COGSWELL REACHES. HDPE LINING OF CANAL. MAINTAIN DAM TO CONTROL LEABURG LAKE AT CURRENT LEVELS. MAINTAIN EXISTING INTAKE CONFIGURATION.

SOURCE:

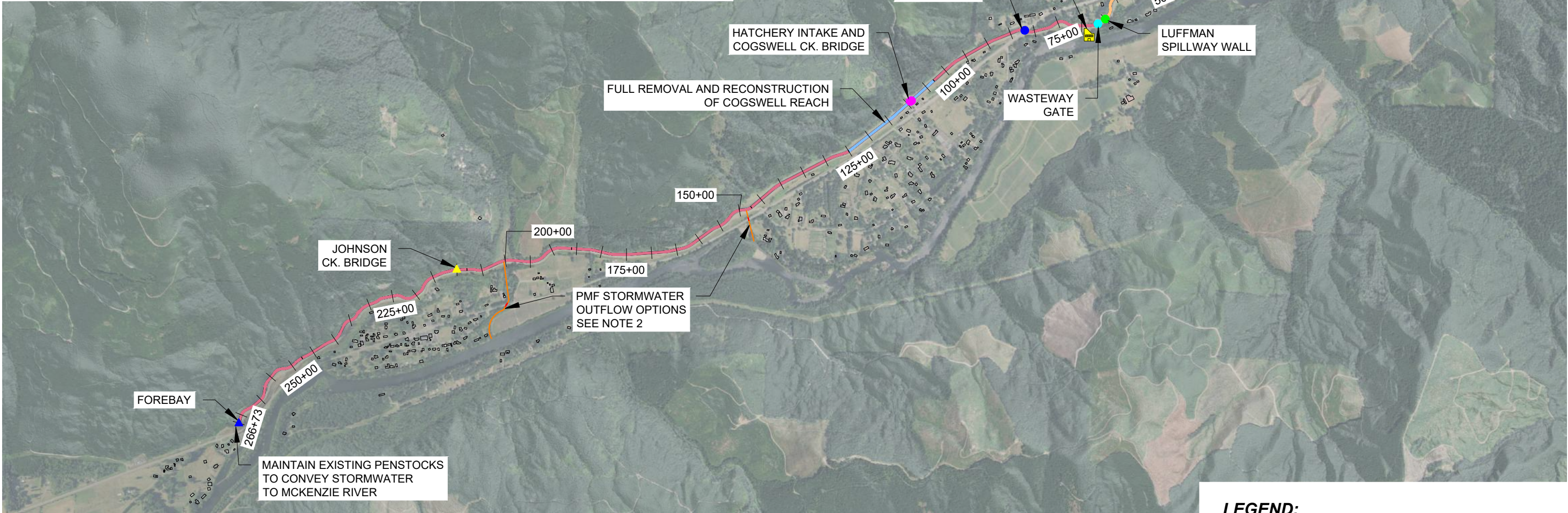
1. PLAN BASED ON MAP PREPARED BY CORNFORTH CONSULTANTS.

DRAFT - Not Issued for Construction

Strategic Evaluation of Leaburg-Walterville Hydroelectric Project Leaburg, OR			ALTERNATIVE 2 FULL FACILITY RENEWAL	
Eugene Water & Electric Board Eugene, OR			Project 2104273	March 2022

Fig. 2

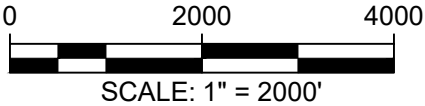
OVERVIEW TABLE						
REACH	START STA.	END STA.		MAJOR STRUCTURES	STA.	INDICATION
LEABURG INTAKE	1+66	9+00		CANAL INTAKE	1+66	●
LURE LN.	9+00	61+00		FISH SCREENS	6+00	●
MONTGOMERY CREEK	61+00	82+00		LUFFMAN SPILLWAY WALL	65+00	●
WARD CREEK	82+00	103+00		WASTEWAY GATE	66+75	●
COGSWELL CREEK	103+00	125+00		OR 126/WARD BRIDGE	82+00	●
GREENWOOD	125+00	147+50		HATCHERY INTAKE	109+00	●
HANSEN CREEK	147+50	186+00		COGSWELL CREEK BRIDGE	109+25	●
JOHNSON CREEK	186+00	208+00		JOHNSON CREEK BRIDGE	210+00	▲
AMES	208+00	247+50		FOREBAY	266+70	▲
FOREBAY	247+50	266+70				



- NOTES:**
- PROJECT FUNCTIONS AS A PARTIAL LENGTH HYDRO CANAL WITH STORMWATER DIVERSION CAPABILITIES. CONSTRUCT A NEW POWERHOUSE AT LUFFMAN SPILLWAY (STA. 66+00). LINE UPSTREAM PORTION OF CANAL TO NEW HYDRO TURNOUT. FULL REMOVAL AND RECONSTRUCTION OF COGSWELL REACH. HDPE LINING OF CANAL. MAINTAIN DAM CONTROL LEABURG LAKE AT CURRENT LEVELS. MAINTAIN EXISTING INTAKE CONFIGURATION AND REHABILITATE.
 - SEE FIGURES 14 AND 15 FOR A DETAILED LAYOUT OF ALL DRAINAGE OPTIONS.

SOURCE:

- PLAN BASED ON MAP PREPARED BY CORNFORTH CONSULTANTS.



DRAFT - Not Issued for Construction

Strategic Evaluation of Leaburg-Walterville Hydroelectric Project Leaburg, OR Eugene Water & Electric Board Eugene, OR	 Project 2104273	ALTERNATIVE 3 LUFFMAN SPILLWAY POWER- HOUSE & DOWNSTREAM RECONSTRUCTION March 2022	Fig. 3

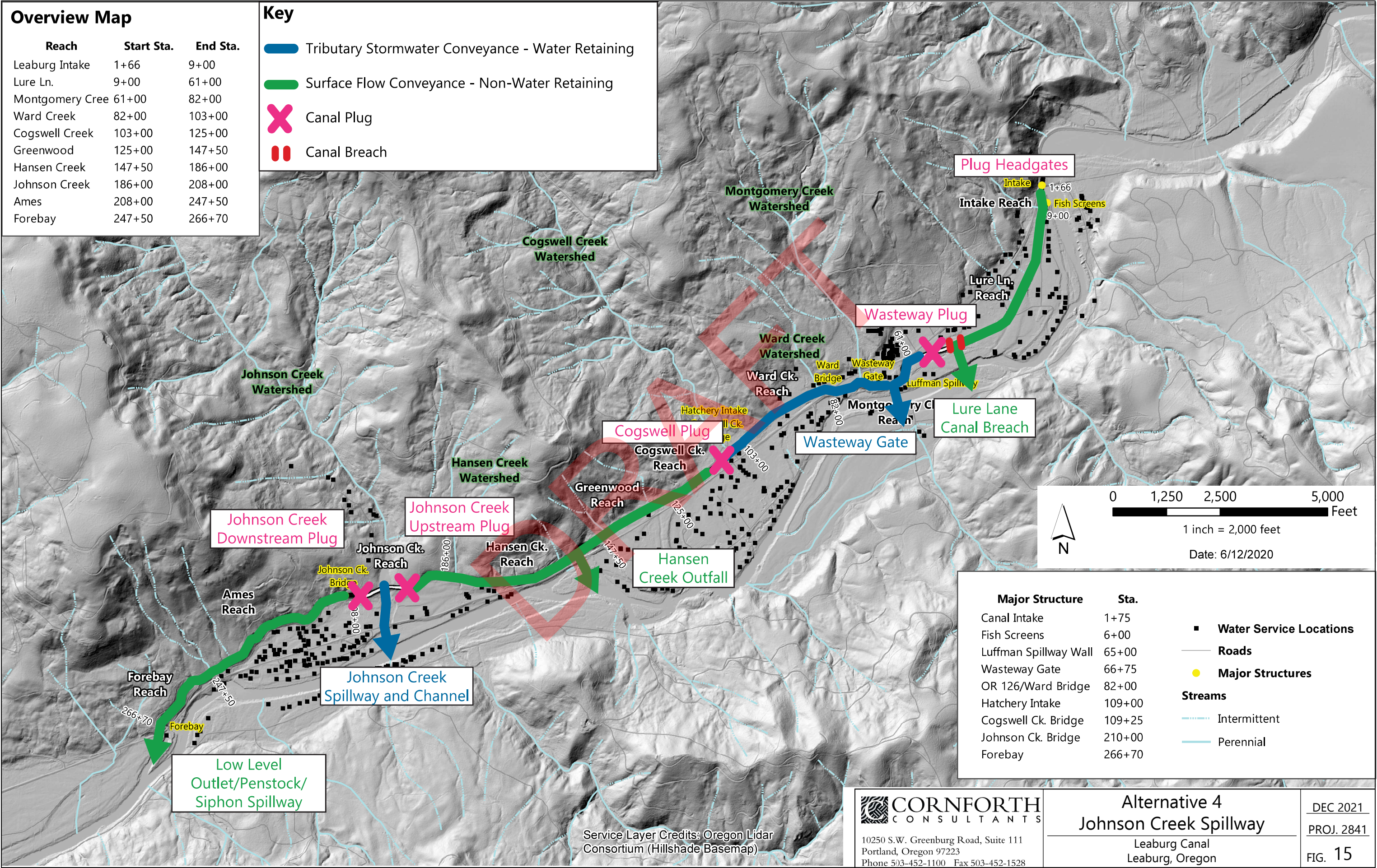
L:\01-Technical\2800\2841 - Leaburg-Waltermville Risk Assessment\90-Drafting\Illustrator\Dec 2021 - Fig 4 - Scenario Cai ebeyer 12/14/2021 9:17:15 AM

Overview Map

Reach	Start Sta.	End Sta.
Leaburg Intake	1+66	9+00
Lure Ln.	9+00	61+00
Montgomery Cree	61+00	82+00
Ward Creek	82+00	103+00
Cogswell Creek	103+00	125+00
Greenwood	125+00	147+50
Hansen Creek	147+50	186+00
Johnson Creek	186+00	208+00
Ames	208+00	247+50
Forebay	247+50	266+70

Key

- Tributary Stormwater Conveyance - Water Retaining
- Surface Flow Conveyance - Non-Water Retaining
- Canal Plug
- Canal Breach



Major Structure	Sta.
Canal Intake	1+75
Fish Screens	6+00
Luffman Spillway Wall	65+00
Wasteway Gate	66+75
OR 126/Ward Bridge	82+00
Hatchery Intake	109+00
Cogswell Ck. Bridge	109+25
Johnson Ck. Bridge	210+00
Forebay	266+70

- Water Service Locations
- Roads
- Major Structures
- Streams
 - Intermittent
 - Perennial

CORNFORTH
CONSULTANTS
10250 S.W. Greenburg Road, Suite 111
Portland, Oregon 97223
Phone 503-452-1100 Fax 503-452-1528

Alternative 4
Johnson Creek Spillway
Leaburg Canal
Leaburg, Oregon

DEC 2021
PROJ. 2841
FIG. 15

Service Layer Credits: Oregon Lidar Consortium (Hillshade Basemap)



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg
FROM: Frank Lawson, CEO & General Manager
DATE: April 4, 2022
SUBJECT: Northwest Natural Hydrogen Project Stakeholder Process
OBJECTIVE: Correspondence – Information/Guidance

Issue

As a partner with Northwest Natural (NWN) on the local hydrogen project, EWEB has been asked to provide support and testimony related to NWN's SB 844 Filing Process. Additionally, Commissioners recently requested a project update.

Background/Discussion

In 2018, EWEB began talking with NW Natural and other parties interested in exploring the development of a project in EWEB service territory that would produce "green" hydrogen through electrolysis, the process of splitting water into hydrogen and oxygen using electricity. EWEB's clean power portfolio that is approximately 90% carbon free is the basis for defining "green" in this project.

According to NWN, they are working with an Engineering, Procurement, and Construction (EPC) partner, with similar experience, to design a 1MW PEM electrolyzer for hydrogen production. This output will enable NWN a 10%vol blend of hydrogen after an initial period of 5%vol blending. No hydrogen storage is planned at this time. The project is expected to take 18 months after Regulator (PUC) approval. In parallel, NW Natural will be working with a third party to identify any system or procedural changes for hydrogen blending, and there will be provisions to expand the project by another MW on-site use should a business case exist for EWEB, NWN, or another partner in the future. Additional NWN operational objectives of the project include identification of any adjustments needed to operating procedures for gas distribution system, monitoring and documenting operations of downstream appliances at different blends, and increasing the understanding of electrolyzer capital and operational costs and construction nuances, including codes and permitting. EWEB is interested in identifying any grid benefits and value that could influence lower electricity rates (e.g., demand response).

NWN Regulatory Process

Senate Bill (SB) 844 established a voluntary emissions reduction program that permits Oregon natural gas utilities to invest in projects that reduce greenhouse gas emissions that they would not otherwise undertake in the normal course of business.

Before investing in a SB 844 project, a natural gas utility must file an application at the OPUC and obtain its approval. The application must describe how the project meets the SB 844 requirements,

including benefits to customers, rate impacts, and why the emissions reduction approach is appropriate, timely, and merits approval. For NWN's hydrogen blending project, or projects more than \$1 million or have cost of carbon greater than \$85/ton (Tier 2 projects), there is a formal 180-day process that allows for written testimony, a hearing, and a final order. Prior to a SB 844 filing, projects must be reviewed with stakeholders, including EWEB. NWN expects the SB 844 process to take 6-9 months to complete.

EWEB's Stakeholder Role

As part of the stakeholder process, EWEB's role will be the following:

- Participate in stakeholder meetings, answering questions as to EWEB's interests and impacts on EWEB customer-owners beginning Mid-April
- Provide a letter of support from EWEB's perspective
- Meet with Eugene Mayor and/or Councilors in tandem with NWN to answer questions as to EWEB's interests and impacts on EWEB customer-owners

In this role, EWEB will explain, and answer questions related to our specific role and interests as an electric utility as described below. The merits of using hydrogen to decarbonize the natural gas sector, along with natural gas customer impacts, will be NWN's responsibility.

EWEB's Project Role

Specific to the NWN hydrogen blending project and HB 844 filing, EWEB is participating as the electricity and water supplier similar to other customer requests for services, using standard published rates with no customer-owner subsidy. Additionally, EWEB is offering NWN a market-based lease arrangement for approximately ¼ acre at EWEB's Roosevelt and North Bertelsen Road location. This site is optimal for NWN based on proximity to an appropriately sized gas main for blending, and there is sufficient water and electric capacity. This is an optimal location for EWEB as it creates options for future expansion if EWEB decides to pursue hydrogen production and/or storage or wants to be an off-taker for other purposes. Finally, ancillary to the project, EWEB will use the project to investigate the potential customer benefit of creating a unique rate and/or contract terms for renewable or carbon reduction related services. For example, there could be a program similar Tacoma Power's Electrofuel Tariff that has a demand response component and leverages the utilities intermittent surplus position.

Summary of EWEB's Long-Term Interest(s)

To achieve the decarbonization of electricity, firm and/or dispatchable fossil-based electricity generators are, and will continue to be, replaced by intermittent renewable generation, primarily wind and solar. The replacement will not be one-for-one. In order to achieve similar reliability, firm and/or dispatchable generation will be replaced with greater "nameplate" amounts of intermittent resources. This larger buildout will add expense and create times of electricity surplus beyond the capabilities of battery storage.

Developing applications that take advantage of intermittent surplus electricity, like the electrolysis-formed "green" (depending on electricity mix) hydrogen, produces several potential benefits:

- Secondary market applications will create revenue during times of otherwise curtailed electricity, subsidizing further investment in renewable energy while mitigating consumer pricing impacts
- Other sectors, such as large commercial transportation, industrial, and natural gas uses, can further decarbonize as alternative fuels are developed including hydrogen, and methanated hydrogen (synthetic methane)

- Hydrogen fuel cells offer potential uses in backup power systems needed for resiliency and emergency response
- Hydrogen electricity generation (direct or fuel-cell), especially in distributed locations may create potent (high density) energy storage for use in demand response (load shifting, peak shaving), transmission optimization/capacity, and market arbitrage as generation-based scarcity and pricing volatility increases.

Recommendation

EWEB participate in NWN's SB 844 Stakeholder Process providing information and answering questions consistent with the descriptions above related to EWEB's project role and long-term interests as an electric utility.

Board Action

No formal Board Action is requested. Commissioner's feedback is requested.