WATER STORAGE IMPROVEMENT PROJECTS

Project Update | March 2021

eweb.org/waterstorage

Building Strong, Safe Water Storage

Over the next decade, EWEB plans significant upgrades to the existing water storage systems at College Hill and Hawkins Hill, and a new water storage facility near East 40th Avenue and Patterson Street. The proposed projects will be built to robust seismic standards, providing 45 million gallons of resilient, safe water storage to Eugene residents.

Although these water storage facilities are located in the hills of south Eugene, they serve the entire community – approximately 200,000 people, hundreds of businesses, 50 schools, 20 urgent care and hospital facilities and more than 100 parks.

E. 40th Project Overview

In mid-2021, EWEB will start construction on a partially-buried water tank on an undeveloped property near East 40th Avenue and Patterson St. New water storage tanks are one of several investments EWEB is making to ensure that we can meet critical community needs in the event of an earthquake, including having water available for fire suppression and drinking water distribution points.

The property, which EWEB purchased in the 1950s specifically for this use, is more than 10 acres and approximately 2.5 acres will be used for water storage. The rest of the property will remain in its current natural state or be enhanced.

While this project benefits all Eugene residents, it will have direct impacts on surrounding neighbors.

Throughout planning, construction and restoration, EWEB will be transparent and communicate regularly with neighbors, as well as listen to input from community members on matters that are within their influence.

EWEB Board of Commissioners tour the site to discuss details of the project.

Important Considerations

Building a water storage facility is complex under the best of circumstances. Building in the middle of an established neighborhood on a site that is home to multiple wildlife-habitats is an enormous challenge. There are no simple solutions.

EWEB has invested more than a year in the research and planning process.

We have collected neighbor input on their uses, concerns, priorities, and observations of unique or highly valued wildlife and habitat features on the property.

We hired an ecological consultant to complete a habitat survey, conducted multiple geotechnical evaluations to better understand the underlying soil and rock characteristics of the site, and worked with an arborist to create a detailed tree inventory map that identified individual trees by species and size. We also contracted with an outside engineering firm to develop a Triple Bottom Line (TBL) assessment that evaluates site layout configurations considering social, environmental and financial considerations.

The research and planning process has been invaluable to our ability to make a well-informed and sustainable decision for the entire community that we serve.

Here are some of the considerations that have gone into the design of the E. 40th water storage facility:

Drinking water safety and quality

This is paramount. All final decisions around aesthetics and public access must ensure that drinking water and the facilities/equipment that distribute that water are secure and protected from contamination and service disruptions.

Engineering and construction

Elevation - the top of the water surface must be at 607 feet above sea level and the tank height must match other planned and existing tanks to meet the hydraulic pressure requirements of gravity-supplied drinking water storage.

Access - adequate access is required for maintenance and emergency vehicles.

Future planning – site layout must accommodate one additional tank in the near term, and space for future replacement in 50+ years.

Neighbors

Proximity to residences - to the extent possible, maximize the distance between construction and location of tanks and neighbors' property lines.

Viewsheds - minimize permanent visual impacts by preserving trees and minimizing the number of neighbors who have changes to their viewscapes.

Truck traffic - minimize construction truck trips generated by the removal of mass excavation spoils and the import of backfill material.

Construction duration - minimize temporary visual impacts, construction traffic, noise, dust, vibration and disruption on Patterson Street during utility installation.

Environmental

Habitat - minimize impacts to Strategy Habitats (according to Oregon Department of Fish and Wildlife's Oregon Conservation Strategy) that are of greatest conservation need and provide important benefits to Strategy Species.

Equipment emissions - minimize CO2 emissions from construction equipment and trucks.

Trees - minimize the removal of trees overall and remove trees only when it is necessary to do so.

Financial

Comparative Construction Costs - All EWEB customers will bear the cost of these improvements. As always, we seek to be efficient and manage operating costs for the benefit of all customers and without creating inequity or disparities across geographic or income groups.

There are 11 Strategy Habitats within the Oregon Conservation Strategy, including Oak Woodlands such as those present on the site.

Ecological Inventory Report

EWEB hired DOWL Environmental Specialists to develop a detailed description of the site so that ecological values can be factored into final tank siting decisions. DOWL's review included a review of published materials, information solicited from neighbors, and field investigations.

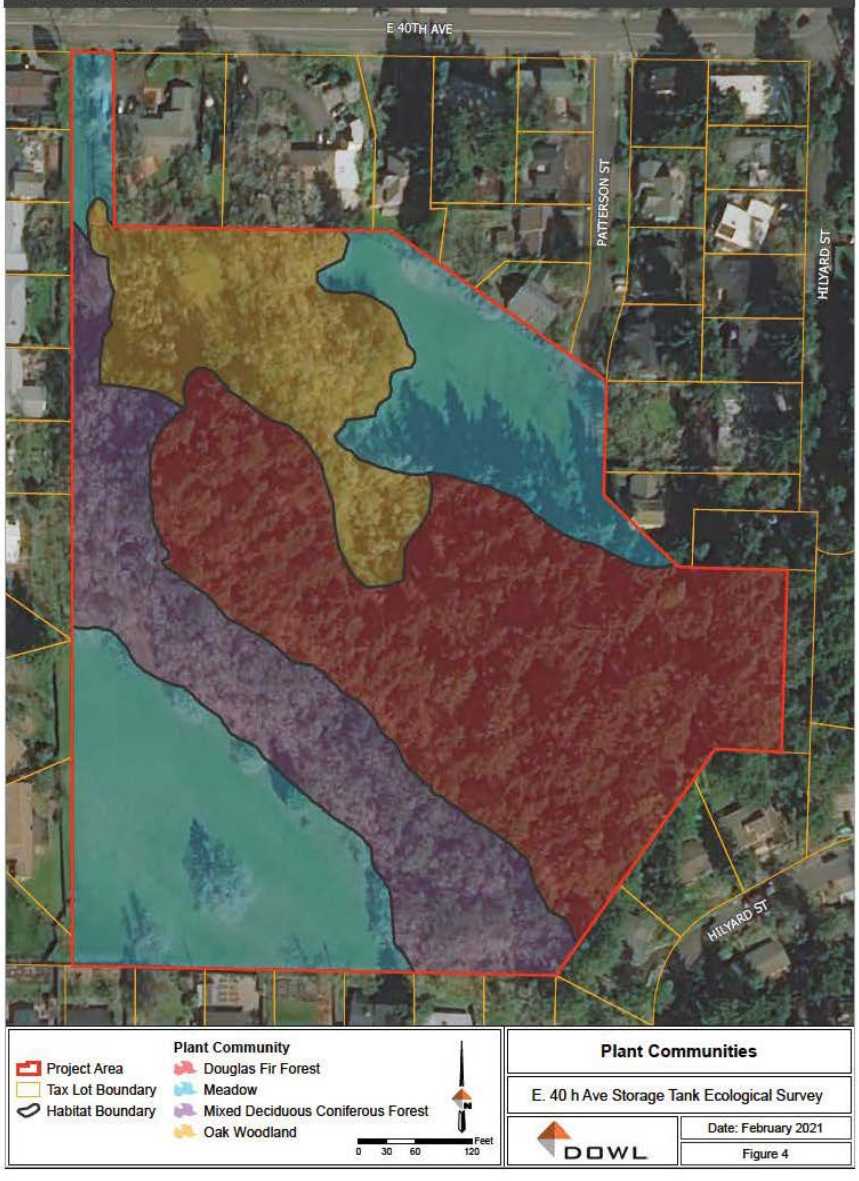
In their report, DOWL concluded that several habitats exist on the site and the site is dominated mostly by native plants. No threatened or endangered species are known to occupy the site. However the white-breasted nuthatch and the western gray squirrel, which are both recognized as sensitive species by ODFW, were observed on site in October 2020, and the site provides nesting habitat for birds protected under the Migratory Bird Treaty Act of 1918.

The report notes that several large Douglas fir trees live on top of the ridge, and concludes that this forested community does not provide "high habitat value" when compared with the adjacent on-site oak woodland. Oak woodlands were once common in the Willamette Valley but are now relatively rare and have been identified by state and local resource protection agencies as priority habitats for protection and restoration.

During their next phase of work, DOWL will identify and quantify the potential impacts to onsite natural resources and work with EWEB to identify impact avoidance, minimization, and restoration opportunities, which could include:

- Removing ivy, poison oak and conifers that are currently shading the edges of the oak woodland.
- Repurposing felled trees as snags
- Enhancing the meadow area to provide pollinator habitat, and potentially recreate an oak savanna habitat.

FIGURE 4: PLANT COMMUNITY MAP



The full Ecological Inventory Report is posted on the project website, eweb.org/waterstorage.

Final Site Design

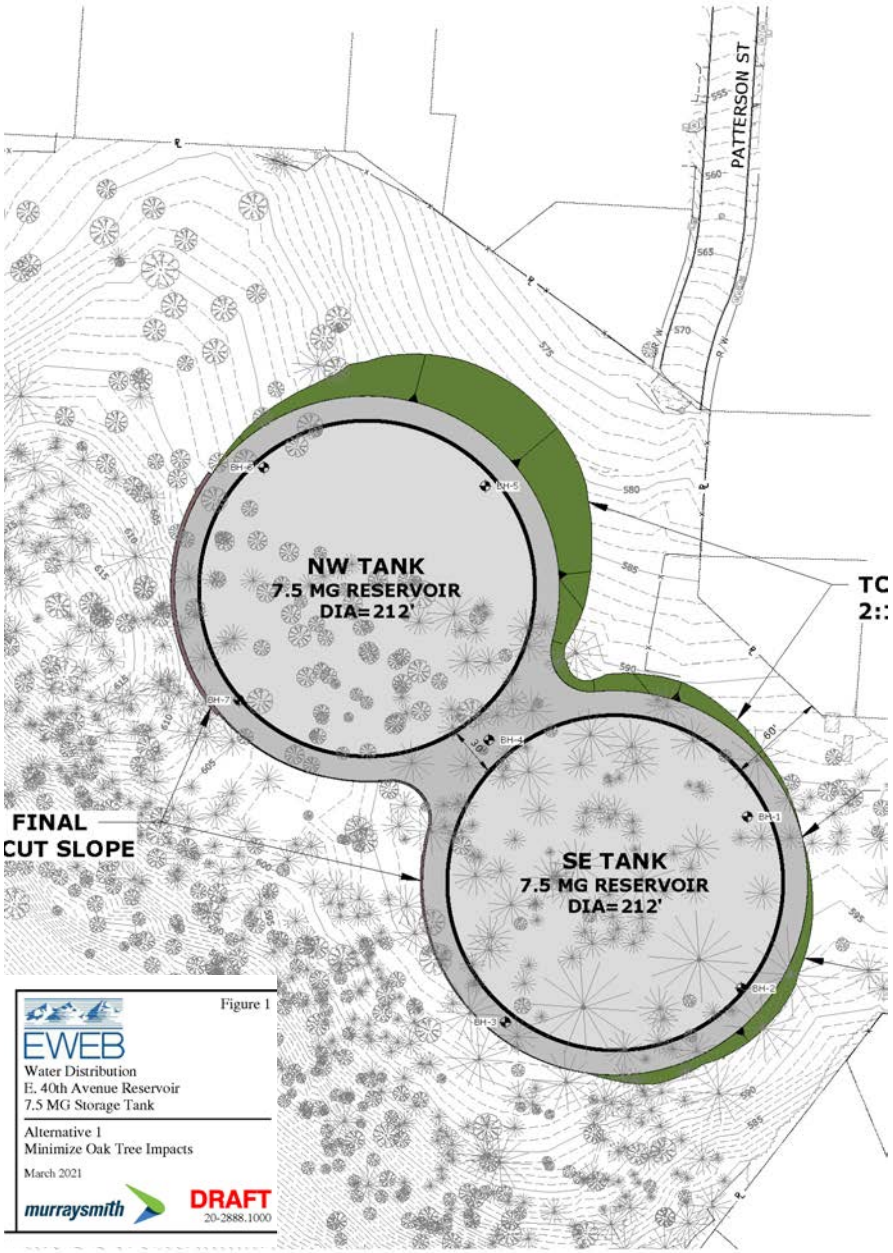
As part of the Triple Bottom Line (TBL) assessment, we considered all feasible locations for the two new water tanks.

Siting drinking water storage tanks requires numerous technical considerations including tank elevation and dimensions, associated improvements such as piping, access roads and stormwater management, as well as constructability issues.

In addition to complex engineering and construction constraints, the final site design takes into consideration impacts to trees, neighbors living adjacent to the site, and costs.

After weighing all criteria, EWEB has determined the tanks will be sited on the eastern-most portion of the site.

- The tanks will be 212 feet in diameter, round, concrete, and surrounded by wrought-iron fence.
- The tanks will be partially buried and have vegetative screening to blend in as much as possible with the existing landscape.
- The top surface of the water will be 607 feet above sea level to match other existing and planned reservoirs in the EWEB's service area.
- The footprint of the improvements will be approximately 2.6 acres or 24% of the total site.
- In addition to the new tank(s), the project includes construction of a new 36-inch diameter water transmission main between West Amazon Street and the intersection of East 40th Avenue and Patterson Street.



PLAN
SCALE: 1"=40'

Why This Location?

The TBL assessment revealed there was approximately $1 million difference in construction costs between various tank location options, and no significant difference in construction process or total number of trees impacted.

However, the selected location came out ahead in all TBL criteria evaluated, and has a few distinct advantages:

- Minimizes impacts to an Oregon Strategy Habitat
- Requires the least amount of rock excavation, minimizing the duration, noise and cost of construction
- Impacts the viewshed for the fewest neighbors

Facts about final tank location:

- The tanks will be located at least 60 feet from the closest property to provide distance for construction excavation and shoring and to mitigate visual impacts to the closest neighbors.
- Approximately 9 neighbors to the east, north and west will be able to see the above-ground portions of one or both tanks.
- Construction will require removal of 38 Douglas firs and 8 oaks over 24 inches in diameter at breast height (DBH).

CAMERON McCARTHY 40TH AVENUE RESERVOIR - VIEW 08 - RESERVOIR OVERALL VIEW

CAMERON McCARTHY

40TH AVENUE RESERVOIR - VIEW 01 - ENTRY ROAD VIEW

CAMERON McCARTHY

40TH AVENUE RESERVOIR - VIEW 03 - ENTRY FIELD VIEW

CAMERON McCARTHY

40TH AVENUE RESERVOIR - VIEW 07 - AERIAL FOREST VIEW

CAMERON McCARTHY

40TH AVENUE RESERVOIR - VIEW 06 - SOUTH HILLSIDE VIEW

Clearing, Preparing & Excavating the Site

Based on the geotechnical investigation and preliminary grading plans, constructing the tanks will require a large quantity of deep rock excavation and a high volume of truck traffic during construction. The rock is solid and blasting will be required for economical and efficient rock removal.

The site will be cleared and prepared once for construction of both tanks.

	Clearing and preparing site	**Excavating site**
Description	Remove trees that are within the tank perimeter construction zone. Use controlled blasting to fracture the underlying rock for excavation. Topsoil is left in place and/or backfilled.	Use heavy equipment to remove soil and rock from the site.
Timing	Mid-2021 for both tanks. Will take 4-6 months.	Mid-2021 for tank #1 Date TBD for tank #2

Use of blasting

Controlled blasting is necessary due to the geology of the site.

Contrary to common perception, blasting is generally less disruptive than mechanical excavation. We will have more information about blasting in the coming months, and neighbors will be given three months' notice prior to any construction activity at the site.

- We will be very proactive in informing and preparing neighbors with information about when, where, and how blasting will take place.
- Blasting is highly regulated and only proven and safe methods will be used.
- Steps will be taken to prevent damage and minimize impacts on neighbors and the environment.

Examples of tank construction in Mt. Vernon WA (6 MG) and West linn OR (4 MV)

Construction Planning & Mitigation

During Spring 2021, EWEB will begin the public bidding process to hire tree removal, earthwork and construction contractors. The selected construction contractor will submit a construction schedule, and we will once again meet with neighbors to discuss the construction process and schedule in detail.

We also will develop and share a Construction Mitigation Plan, which is a combination of diagrams, documents, drawings, and specifications that clearly define the steps that will be taken to minimize impacts to neighbors. The plan will cover things like dates and hours of construction, steps to protect neighboring properties, fencing plans, construction traffic control, erosion control, dust and noise mitigation requirements, and more.

Protecting & Enhancing Habitat

The property, which EWEB purchased in the 1950s specifically for this use, is more than 10 acres and only around 2.5 acres will be used for the tanks. The rest of the property will remain in its current natural state or enhanced. Our goal is to improve the safety, reliability, and resiliency of our community's drinking water, while designing a space that fits the neighborhood and aligns with broader community needs.

We are committed to preserving trees and to maintaining or improving the health of the site.

- For trees that are on the margin of the construction zone, we will conduct critical root zone assessments to determine if the trees could potentially survive the disturbance and could therefore be left in place.
- When possible, we will create snags for birds and other wildlife to use for nests, nurseries, storage areas, and perching.
- We will continue to work with Friends of Trees and others on replanting and restoration projects, with a focus on species that are consistent with the oak and prairie-dominated habitat that historically characterized the area.
- We will be delaying mowing until mid-July this year in strategic locations to allow native plants to become better established and to create opportunities for native plant seed collection.

Project Process & Timeline

2019 – Preliminary Research and Design

Early work included a site survey and initial geotechnical exploration which allowed EWEB to create a preliminary site design.

2020 – Detailed Research and Public Engagement

In March 2020, EWEB began a public engagement process. We hosted a neighbor meeting, developed a project website, and delivered monthly project updates to adjacent neighbors. We also collected neighbor input about how the site is used, concerns, priorities, and observations of unique or highly valued wildlife and habitat features on the property.

To further inform a detailed site design, we hired an ecological consultant to complete a habitat survey, conducted additional geotechnical evaluations to better understand the underlying soil and rock characteristics of the site, and contracted with an outside engineering firm to develop a Triple Bottom Line (TBL) assessment that evaluates site layout configurations considering social, environmental and financial considerations.

2021 – Final Design and Construction

Using the information and input gathered throughout 2020, we have determined the site layout and are beginning planning for site clearing and construction.

We anticipate the first construction activities will begin mid-2021. This will include:

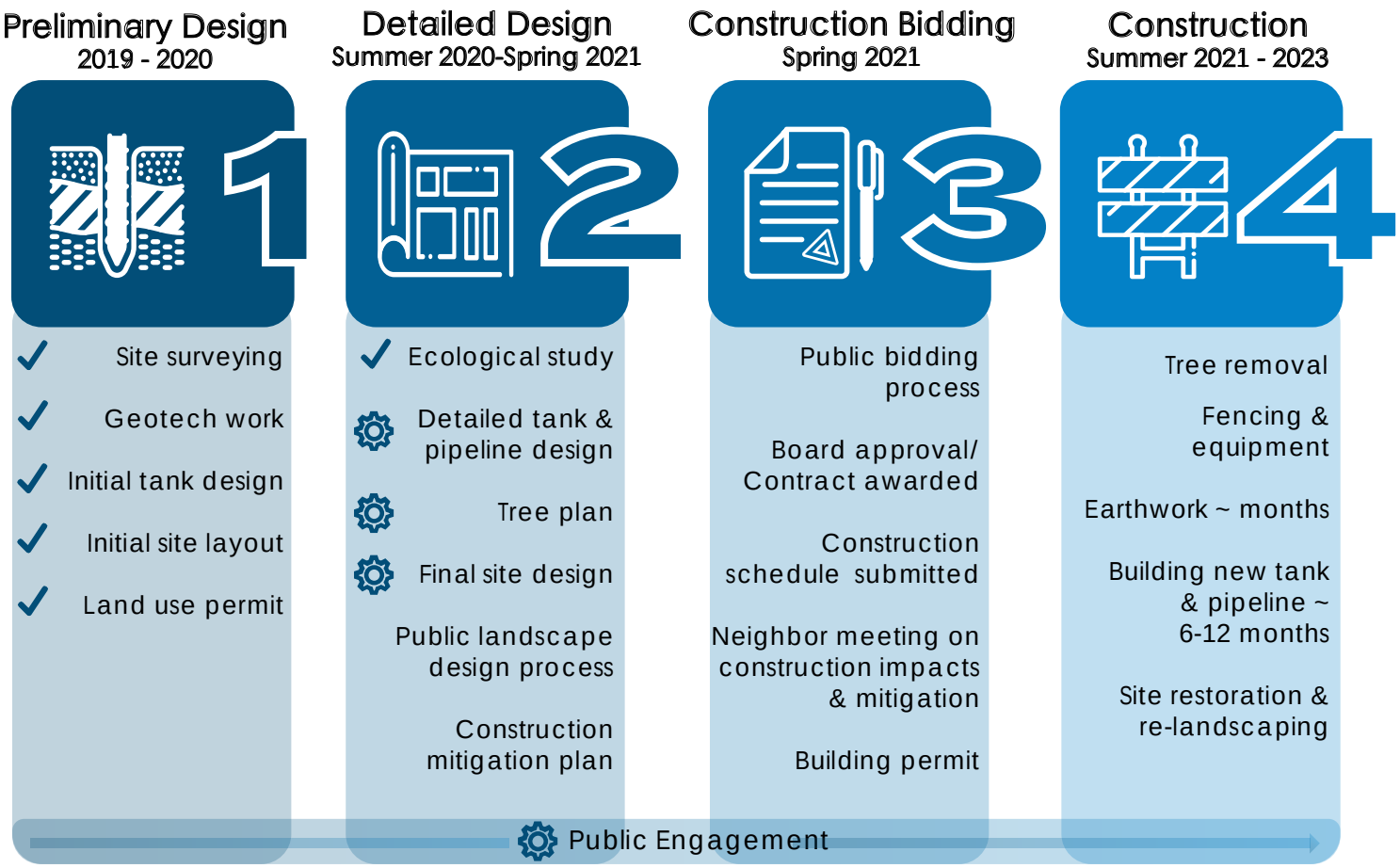
- Developing and sharing with neighbors a construction mitigation plan
- Fencing the site
- Preparing the ground for construction
- Earthwork
- Building the new tank and pipeline

Construction will take approximately two years.

2023 – Site Restoration

Once construction is complete, we can begin re-landscaping the site to improve neighbor viewsheds and create public amenities that are appropriate to the neighborhood. Neighbors will be invited to participate in the landscape design process.

Site restoration also will include enhancing the oak, Douglas fir and meadow habitats on the property.



As of March 2021: ✓ Complete ⚙ In process

On March 3, 2021 contractors staked out the tank locations and installed a gravel pad at the terminus of Patterson Street, which will allow EWEB crews and contractors to park trucks on the site and reduce some of the impact to neighbors.

Friends of Trees helping with habitat restoration

One of the first site restoration projects took place February 27, 2021 when volunteers with Friends of Trees planted 18 native trees on the south side of the ridgeline.

The species selected by Friends of Trees included white and black oaks, valley ponderosa pine, incense cedar, pacific madrone, and Oregon myrtles -- species that are consistent with the oak and prairie-dominated habitat that historically characterized the area.

"By doing this project, we are taking this local treasure and trying to expand and enhance it by creating healthy oak savanna habitat for the future of Eugeneians and for the non-human creatures that benefit from it."

-Erik Burke, Eugene Director Friends of Trees

Because the species planted by Friends of Trees are more adaptable to fire and to warmer, drier climates, the habitat will be more acclimated to the future, which is important for wildlife and for the neighbors who live around the site.

In future phases, EWEB will work with Friends of Trees and other partners to plant native shrubs, wildflowers, and other understory plants at the site.

This project is critical to ourcommunity's drinking water reliability

We are fortunate in Eugene to enjoy remarkable drinking water. We have an exceptional watershed, abundant supply, and safe and reliable delivery to homes and businesses. None of this has happened by accident.

Generations before us made smart, sustainable decisions so that we can enjoy safe, clean drinking water today. And now we have the opportunity and responsibility to do the same for the next generation of Eugene residents.

Today, our community's drinking water is susceptible to threats such as earthquakes, wildfire, harmful algal blooms, and aging infrastructure. EWEB's drinking water resiliency efforts are helping to keep our water system prepared and adaptable to future changes.

We have been working for several years on projects to ensure safe, reliable water continues to flow in our community. In addition to programs aimed at protecting water at the source, over the past decade we have invested more than $30 million upgrading, expanding, and renovating our Hayden Bridge Water Filtration Plant. We are replacing water mains, improving water pump stations, and developing neighborhood emergency water stations.

These projects comprise the backbone of the water system that serves all of Eugene-200,000 people-and would be needed after an earthquake in order to meet critical community needs, including fire suppression, health and emergency response, and drinking water distribution points.

A Note to Site Neighbors

We know that a project of this scale and magnitude is going to be very disruptive to a quiet neighborhood and we appreciate that neighbors understand the need and value for water storage as these projects will be the backbone of a water system that will serve the entire Eugene community.

We also appreciate the constructive dialogue about ecological protection, public access, construction impacts and other topics. We are committed to open and frequent communication with all neighbors throughout the planning, construction and restoration process and we look forward to partnering with you during the landscape design process to determine plantings, walking paths and other features that are valuable to residents and appropriate to the neighborhood.

If you have questions or input, please don't hesitate to reach out to the project team at 541-685-7899 or water.storage@eweb.org. Emails sent to this address will reach:

- Laura Farthing, Project Manager/Senior Civil Engineer
- Jen Connors, Communications Supervisor
- Jeannine Parisi, Customer Relationship Manager
- Wally McCullough, Water Engineering Supervisor

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