Public Health Division

Center for Health Protection, Drinking Water Services



Tina Kotek, Governor

April 8, 2025

Timothy Gross, PE
tgross@civilwest.net
Civil West Engineering Services, Inc.
409 SW 10th St.
Newport, OR 97365

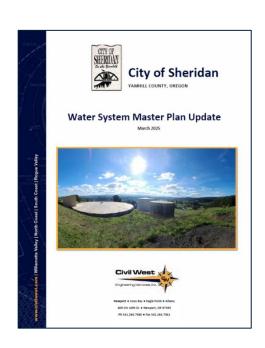
Sent by email only

Re: March 2025 Master Plan Update (PR#176-2024)

City of Sheridan (PWS ID#00811)

Master Plan Approval

Dear Mr. Gross:



Thank you for your submittal to the Oregon Health Authority's Drinking Water Services (DWS) of plan review information for the Water System Master Plan for the City of Sheridan. On December 3, 2024, our office received a copy of the *Water System Master Plan Update* dated December 2, 2024. A plan review fee of \$4125 was received on December 24, 2024. Comments on the master plan sent December 27, 2024 noted that the master plan lacked any information on the Water Management and Conservation Plan (WMCP) among a few other minor edits. A revised Water System Master Plan Update dated March 2025 was received on March 26, 2025, which included the WMCP as Chapter 8, minor corrections, and added in the Sheridan Road water project and looping to Jefferson Street.

The Master Plan represents a 20-year planning horizon out to the year 2044. The plan includes system goals and description, future demand estimates, engineering evaluation, evaluations of options to meet future demand, financing, and list of recommended projects and cost estimates. A seismic risk assessment and mitigation plan is required and was also included in the master plan update.

Preceding this master planning process, a Water System Master Plan dated March 2007, a Water Source/Supply Facility Plan dated February 2000, and an Addendum No. 1 to the Water/Source Supply Plan dated July 2002, were prepared by Murray, Smith, & Associates,

Inc. This Water System Master Plan Update references those previous documents throughout the plan.

Upon review of the March 2025 Master Plan Update, it appears the elements required in Oregon Administrative Rules (OAR) 333-061-0060(5) have been addressed, however, I have a couple of comments, and I found a few typographical errors that you may want to resolve.

1. There is a missing reference in section 7.2 as shown below.

7.2 Capital Improvement Plan

The various water distribution system, treatment, storage and raw water supply, and booster pump station improvements recommended in this Master Plan for the 20-year planning period are summarized below in Table 6-1 with opinions of probable costs and a summary map of projects is provided as Figure 7-1Error! Reference source not found. Refer to Sections 4 and 5 for detailed breakdown and justification for the specific recommended improvements.

2. Section 3.4 indicates that alum is used for a coagulant. I believe the current coagulant is PASS-C (polyaluminum chloride). I also do not believe that potassium permanganate and polymer are used. Fluoridation was also recently discontinued.

3.4 Water Treatment Facilities

Water from the South Yamhill River requires treatment prior to distribution. The City operates a conventional water filtration plant located on NW Evans Street on the hillside in the northerly portion of the City. One packaged treatment system was constructed in 1982 with a 340 gpm (0.5 MGD) design capacity. In 1990 a second treatment unit with a design capacity of 560 gpm (0.8 MDG) was added. The system as a whole, which includes the river intake pump station, delivers a maximum single day capacity of 900 gpm (1.3 MGD).

The major treatment plant facilities and structures include:

- 8-inch diameter raw water pipeline
- Chemical feed (alum, soda ash, polymer, potassium permanganate (KMnO4), chlorine, fluoride

Fluoride is referenced in three other sections shown below. Fluoridation was recently discontinued.

4.3 Stoney Mountain Reservoir, Springs, and Transmission Pipeline

Before the Stoney Mountain Reservoir was constructed, all spring water was directed to the spring transmission line. Reservoir construction changed how spring water is captured and directed. See Figure 4-2 for a site plan of the Stoney Mountain Reservoir site.

Kegbine Springs #1 and #2, and New Wells #1 and #2 are always discharged directly to the reservoir. Big and Little La Toutena Mary Springs and the East and West Forks of Baltimore Creek are directed to a spring box. From this spring box the springs can be directed either to the reservoir or to the transmission line. Pumper Springs and Wells #1-4 are down gradient from the reservoir and always discharge to the transmission main. See Figure 4-2.

The City does not currently use water from the reservoir although it is connected to the transmission main. Instead, the City bypasses the reservoir and sends water from La Toutena springs and Baltimore Creek directly to the transmission main to join water from Pumper Springs and Wells #1-4. As spring water, filtration is not required by OHA, and the City only adds chlorine and fluoride at the NE Rock Creek Rd. Injection Station before the water is distributed to customers.

8.3 Water Supplier Description (OAR 690-086-0140)

The municipal water supplier element of a water management and conservation plan shall include at least the following:

 A description of the supplier's source(s) of water including diversion, storage and regulation facilities, exchange agreements, intergovernmental cooperation agreements, and water supply or delivery contracts.

The City of Sheridan gets its water from two main sources: 4.15 CFS of water rights from several groundwater springs at Stoney Mountain located approximately 9 miles from the City limits, and 8 cfs of surface water rights from Willamina Creek and the South Yamhill River. The point of diversion for the surface water rights is located at the South Yamhill Intake Station located at the southeast corner of Bridge Street and Business 18 in Sheridan. Annually, on average about two-thirds of the City's water supply comes from the Stoney Mountain Springs.

Spring water from Stoney Mountain is either sent to the Stoney Mountain Reservoir or the transmission line. The City of Sheridan has a 276-acre-feet/year storage right in the Stoney Mountain Reservoir. Spring water that is not stored in the reservoir does not require filtration. The Oregon Health Authority (OHA) requires filtration for surface water, but the City doesn't currently have the capability to filter surface water from the Stoney Mountain Reservoir, so spring water is primarily bypassed directly to the transmission main.

The City has two water treatment facilities; a conventional rapid sand filtration plant located on NE Evans Street and an injection station which adds chlorine and fluoride to the spring water in the transmission line. located at SE Rock Creek Road.

1.9.1 Stoney Mountain Reservoir and Transmission Main

The City currently does not use the Stoney Mountain Reservoir and bypasses spring water directly to the transmission main. Filtration is not required by OHA for spring water and the City only adds chlorine and fluoride at the NE Rock Creek Rd. Injection Station before the water is distributed to customers.

4. Indexing CIP cost estimates can help with future updates as mentioned in Section 7.1. I recommend identifying such an index either in the Master Plan (e.g. Engineering News Record's 20-City Construction Cost Index) or in an addendum. Here is an article from the Environmental Finance Center at UNC you may be interested in regarding using cost indices for future CIP updates. This article describes ENR cost indices: https://www.enr.com/economics/faq.

Example: To update costs using the Engineering News Record Construction Cost Index (ENR CCI), the formula is:

Updated Cost = Original Cost * (Current ENR CCI / Base Year ENR CCI)

Where:

- ✓ Original Cost = the cost at the base year (e.g., costs included in the master plan),
- ✓ Current ENR CCI = the current index value (e.g. today's index value), and
- ✓ Base Year ENR CCI = the index value at the time the original cost was established (e.g., the ENR CCI included in the master plan).

CIP cost estimates did include an additional percentage added for engineering, legal, admin & contingency as follows:

ENG/LEGAL/ADMIN(22%): CONTINGENCY (30%):

Except as noted in project 7-4 in which the engineering/legal/admin was 20% for increasing the size of the water transmission ma in for the Stoney Mt. Springs.

No.	Description Unit Qty UNIT PRICE							
1	MOBILIZATION, BONDING AND INSURANCE	LS	1	11%	*1,654,240			
2	CONSTRUCTION FACILITIES AND TEMP. CONTROLS	LS	1	3%	\$451,156			
3	DEMOLITION AND SITE PREP	LS	1	3%	\$451,156			
4	MISC. METAL FITTINGS/ADAPTERS	LS	1	1.25%	\$178,401			
5	FITTINGS AND BENDS	EA	147	\$4,000	\$588,101			
6	16" GATE VALVE	EA	37	\$17,300	\$643,560			
7	16" DI PIPE	EA	37200	\$348	\$12,938,243			
8	AIR RELIEF VAULT ASSEMBLY	EA	50	\$4,400	\$218,240			
9	PRESSURE REDUCING VALVE	EA	4	\$118,000	\$472,000			
		SL	JBTOTA	L (rounded):	\$17,600,000			
		ENG/I	LEGAL/	ADMIN(20%):	\$3,520,000			
		CC	ONTING	ENCY (30%):	\$5,280,000			
		ENG/I	LEGAL/A	ADMIN(20%):	\$3, \$5,			

- 5. Although CIP alternatives did not seem to require a detailed comparison of O&M costs associated with the alternatives as they were mostly waterline improvements, I recommend evaluating the differences in O&M costs among the alternatives. An effort should also be made to account for O&M costs and needed operating revenue when addressing rate increases.
- 6. The Master Plan referenced the following planning documents:

Murray Smith & Associates, Inc. (2000). Water Source/Supply Facility Plan.

Murray Smith & Associates, Inc. (2002). Addendum No. 1 to the Water Source/Supply Facility Plan.

7. Section 8 of the master plan addressed the Water Management and Conservation Plan as required under OAR 690-086-00100 & OAR 333-061-0060(5) and as a condition of the surface water right S-13862. It appears that there is a progress report for the Water Management and Conservation Plan (WMCP) due 3-20-2027 as shown below:

A	oplication: S 17897									
Pe	ermit: S 13862 <u>document</u> , <u>paper map</u>									
Þ	Signature: 10/20/1939									
	Process Step	Date Completed	Result	Completed By						
	Completion Date [C Date]	10/1/1992								
	Extension Application Received	6/25/2004		ANN REECE						
	Extension Comment Period Ends	7/6/2004		ANN REECE						
	Extension PFO 315 Issued	5/31/2011	Propose to Approve	JERRY GAINEY						
	Extension PFO Protest Period Ends	7/15/2011		JERRY GAINEY						
V	Extension FO Issued	8/4/2011	Approved	JERRY GAINEY						
	WMCP FO Issued	3/28/2025	Approved	KERRI COPE						
	WMCP Progress Report Due	3/20/2027		KERRI COPE						
	WMCP Due Date (WMCP FO)	9/20/2029		KERRI COPE						
	WMCP In Effect Until	3/20/2030		KERRI COPE						
	Extended Completion Date [Extension C Date]	10/1/2100		ANN REECE						

Source: https://apps.wrd.state.or.us/apps/wr/wrinfo/wr_details.aspx?snp_id=39734

8. Demand estimates appear to be calculated as shown below.

4	А	В С			D		E	F	G					
							2029		2034	2039	2044			
		Peaking F	actor	2024		D2=-FV(0.007,5,0,C2)		E2=-FV(0.007,10,0,C2)	F2=-FV(0.007,15,0,C2)	G2=-FV(0.007,20,0,C2)				
1	Demand Parameter (gal/day)	(PF)		=PF x (614,366)			D3=-FV(0.007,5,0,C3)		E3=-FV(0.007,15,0,C3)	F3=-FV(0.007,15,0,C3)	G3=-FV(0.007,20,0,C3)			
2	Average Day Demand (ADD)	1		6	14,366		636,172		658,752	682,133	706,345			
3	Max. Day Demand (MDD)	1.90697	5646	1,1	71,581		1,213,164		1,256,224	1,300,812	1,346,982			
4	Peak Hour Demand (PHD)	2.86046	2656	1,7	1,757,371		1,819,746		1,884,335	1,951,217	2,020,472			
5	Max. Month Demand (MMD)	1.29999	8698	7:	98,675		827,023		856,377	886,772	918,247			
6	The 2024 MDD, PHD, and MMD w	ere calcula	ated by mu	ılitiplying tl	ne 2024 AD	D by peak	ing factors (PF) for each dema	and parameter					
7	The future demands were calcul	ated using	a formula	for future v	alue with	an annual	growth rate	of 0.7% (0.007) p	er the generic excel formula	"= - FV(rate , nper, pmt, [pv	, [type])			
8	where rate = 0.007 , nper = $\#$ of ye	ears since 2	2024, pmt =	= 0, pv = the	demand in	n 2024, ty	pe = not use	d)						
9	TABLE 2-7 F	ROJECTED	WATER D	EMAND (GA	LLONS/DAY	Y)		- 242 Eutu	ro Domando					
11	Demand Parameter (gal/day)	- Factor												
13	Average Daily Demand (ADD)	1	614,366	636,172	658,751	682,133	706,344	demand quantities were projected using an annual growth rate of 0.7 percent Table 2-7 shows summary of the projected future demands for the City.						
14	Max. Day Demand (MDD)	2	1,171,581	1,213,164	1,256,224	1,300,81	1,346,982		projected rature demands	ioi die oitji				
15	Peak Hour Demand (PHD)	2.9	1,757,371	1,819,747	1,884,336	1,951,217	7 2,020,473							
16	Max. Monthly Demand (MMD)	1.3	798,675	827,023	856,377	886,773	918,247							

Based on these calculations, it was relatively easy to compare values used in the storage needs analysis as shown below.

4	Α	В	С	D	
7					
18	Storage Type	Description	2024 Capacity Needs (gal)	2044 Capacity Needs (gal)	
19	Equalization	25% of MDD	292,895	336,745	
20	Emergency	3 x ADD	1,843,098	2,119,034	
21	Fire Reserve	3,500 gpm x 3 hrs	630,000	630,000	
		Total Storage = 2,765,993		3,085,779	
22		Total Storage =	2,765,993	3,085,779	
22		Total Storage =	2,765,993	3,085,779	
23 24	TABLE 2	J	2,765,993 URE WATER STORAGE NEEDS		
23 24 25 26	TABLE 2 Storage Type	J			
23 24 25 26 27		2-8 CURRENT AND FUT	URE WATER STORAGE NEEDS 2024 Capacity Needs	S SUMMARY 2044 Capacity Needs	
23 24 25 26 27 28	Storage Type	Description	URE WATER STORAGE NEEDS 2024 Capacity Needs (gal)	S SUMMARY 2044 Capacity Needs (gal)	
23 24 25 26 27	Storage Type Equalization Storage Emergency Storage	Description 25% of MDD	URE WATER STORAGE NEEDS 2024 Capacity Needs (gal) 292,895	2044 Capacity Needs (gal) 336,745	

9. The master plan noted that the city has sufficient water rights and water availability to meet the projected maximum daily demand (MDD) at the end of the planning period. However, the infrastructure to capture, transfer and treat that water will need to be upsized to meet future demand.

- 10. The master plan noted that "Without the Ballston Tank, the City's total water storage capacity is only 2.58 MG. This does not meet either the 2024 or projected 2044 storage needs. It is imperative that the city repair the automated functioning of the Ballston Pump Station so that the water from the Ballston Tank is available for the main distribution system's needs."
- 11. In addition to the recommended capital improvements, additional action is recommended in section 5.4.1 of the master plan as follows:

The city does not have an up-to-date water distribution system map in either paper or electronic form. The lack of this information made the development of an accurate system model very difficult.

It is highly recommended that the City invest the time and funds to develop an accurate and up-to-date distribution system map that correctly shows:

- ✓ all pipe sizes, locations and connection configurations;
- √ valve locations:
- √ fire hydrant locations;
- ✓ and water meter connections.

This map can be created by using a summer intern or temporary employee to log infrastructure information in the field using a GPS unit. This information can be entered into either GIS or CAD based software.

The records that the city does have, combined with the institutional knowledge of the water distribution system workers, can be added to this electronic map to further improve accuracy.

This map is a living document and should be updated on a regular basis as new information is discovered that adds to or improves the accuracy of the map.

12. The master plan indicated that the city was required to submit plans to OHA by June 30, 2025 to address the city's first lead action level exceedance in 2023 as shown below.

4.5.3 Lead

On September 15, 2015, and again on June 25, 2023, the City recorded high lead concentration sampling results of 0.0134 and 0.0176 parts per million (ppm) respectively. The maximum contaminant level (MCL) for lead is 0.015 ppm. Consequently, OHA has required the City to conduct lead concentration reduction education and come up with a plan to implement lead reduction processes in the treatment process. The City must submit plans for implementing this process to OHA by June 30, 2025, and install the equipment by December 31, 2025.

Typically, water treatment plants control lead by adding chemicals such as soda ash or sodium hydroxide to reduce the acidity (increase pH) of the drinking water to reduce the leaching of lead from plumbing fixtures, thereby reducing the lead concentration in the water. Most lead in drinking water comes from older privately owned plumbing fixtures or older brass fittings which used to contain lead. Although these sources are almost always privately owned, it is the responsibility of the water provider to provide water that reduces the potential of these fixtures to leach lead.

The City has a robust chemical feed process at the water treatment plant that includes batch containers, mixers, and chemical feed pumps. Some of these units are redundant and could be used to implement the injection of pH chemical control with no infrastructure investment. The City should prepare a plan for implementing this process and submit that plan to OHA for their consideration as soon as possible.

On May 1, 2024 Gary Mathis emailed (enclosed) a revised list of lead and copper tap sample locations (14 Tier 1 sites and 46 Tier 3 sites).

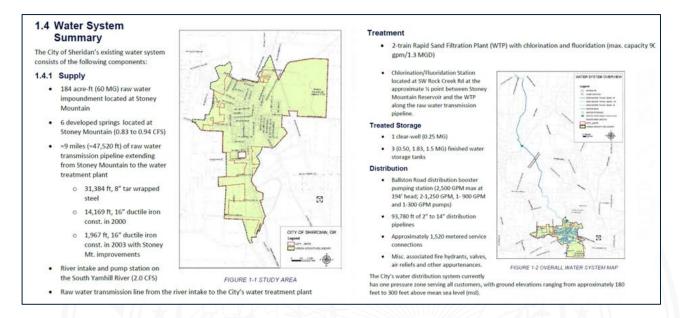
The list of sites was approved in an email from Evan Hofeld (OHA) dated May 31, 2024 (enclosed). The city was instructed in this email to complete two rounds of sampling from the new sites (40 samples per round) with the first round to be collected prior to June 30, 2024 and the second round completed between 7/1/24 and 12/31/24. Results shown below from these two rounds showed that the levels were below the action level for both lead and copper.

90th Percentile Summary Results

Sample Dates	Date Received	Sample Count	Frequency	Lead (mg/L)	Copper (mg/L)	Consumer Notice Date
7/1/2024 - 10/5/2024	10/28/2024	46	6 months	0.0014	0.529	
6/24/2024 - 6/29/2024	7/23/2024	40	6 months	0.0010	0.561	
7/7/2023 - 12/28/2023	1/2/2024	43	6 months	0.0020	0.485	
5/23/2023 - 6/28/2023	7/19/2023	40	6 months	0.0176	0.946	9/7/2023

Based on the results of these two rounds of sampling, the city may submit a plan to either actively treat for corrosion control or propose that the two rounds in 2024 demonstrate that corrosion control treatment is not required (an additional round taken between 1/1/25 and 6/30/25 is recommended but may not be required).

13. Overall, the master plan was well written and included a good system description at the beginning as shown below in the excerpts below.



Thank you for awaiting this letter and if you have any questions, please feel free to call me at 971-200-0288.

Sincerely,

Even Afrika

Evan Hofeld, Regional Engineer OHA-Drinking Water Services evan.e.hofeld@oha.oregon.gov

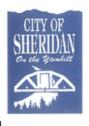
CC:

- Kie C, City of Sheridan: kiec@sheridanpw.com
- Yvonne Hamilton, City of Sheridan: <u>yhamilton@cityofsheridanor.com</u>
- Gary Mathis, City of Sheridan: garym@sheridanpw.com
- Kevin Shreeve, Civil West: <u>Kshreeve@civilwest.net</u>

Enclosures:

- December 28, 2023 letter from Gary Mathis regarding actions to address lead levels
- May 1, 2024 email from Gary Mathis with new lead and copper sample sites
- May 31, 2024 email from Evan Hofeld regarding lead and copper tap sampling sites

December 28, 2023 letter from Gary Mathis regarding actions to address lead levels



City of Sheridan

120 S.W. Mill Street • Sheridan, Oregon 97378 City Hall • Municipal Court (503) 843-2347 Police Department (503) 843-2431 Fax (503) 843-3661

December 28, 2023

Nicole:

Although we still believe the Lead & Copper exceedances in May of 2023 were due to an error in the collection and handling of the samples, we are proposing the following.

We add Soda Ash to our treatment process to better allow our coagulant to work to its potential. As you can see by the table below it appears that our coagulant is still using a fair amount of the natural alkalinity in the water. Thus, dropping the pH below 7.0 entering our distribution system. We are therefore going to be testing the addition of more Soda Ash to the process until we find the right amount for the reaction with our coagulant. This should bring the pH of the water entering our distribution system above 7.0.

pH Average Values:

	April	May	June	July	August	September	October	November
Spring	6.83	6.68	6.56	6.63	6.67	6.71	6.74	6.69
Plant	6.81	7.16	7.49	7.60	7.60	7.57	7.38	7.09
Distribution	6.77	6.63	6.69	6.67	6.65	6.41	6.62	6.61

If we still can't get the distribution pH above 7.0, we propose adding an additional amount of Soda Ash into the spring supply to offset the lowering of the pH of the water from the addition of chlorine and fluoride. The injection site would be at the plant site where both supply streams combine before entering the distribution system. It is our intention to have the distribution pH at a 7.2 or higher continuously.

Gary Mathis

City of Sheridan Water & Wastewater Director of Operations Cell 971-312-1892

May 1, 2024 email from Gary Mathis with new lead and copper sample sites

From: Gary Mathis <garym@sheridanpw.com>

Sent: Wednesday, May 1, 2024 3:30 PM

To: Hofeld Evan E < EVAN.E. HOFELD@oha.oregon.gov>

Cc: Brandon Owings <BrandonO@sheridanpw.com>; richard@waterdropconsulting.com; Joe Loiselle

<jloiselle@sheridanpw.com>
Subject: Lead & Copper Addresses

Think twice before clicking on links or opening attachments. This email came from outside our organization and might not be safe. If you are not expecting an attachment, contact the sender before opening it.

Good Afternoon Evan,

Here are the addresses we would like to get certified to use for lead & copper testing. Just to reiterate our phone call earlier today; there was not a lot of construction during the mid-80's in Sheridan so we were only able to find 14 Tier one sites, so we also included 46 Tier 3 sites. We have included the maps and the sample site identification & certification sheets. Please let us know if you have any questions or comments, we appreciate all of you help on this!

Thank you,

Gary Mathis Acting Public Works Director Sheridan Public Works 971-312-1892

May 31, 2024 email from Evan Hofeld regarding lead and copper tap sampling sites

Hofeld Evan E

From: Hofeld Evan E

Sent: Friday, May 31, 2024 3:18 PM

To: Gary Mathis

Cc: Brandon Owings; richard@waterdropconsulting.com; Joe Loiselle

Subject: FW: Lead & Copper Addresses and invalidation of Spring 2023 results for Sheridan

Attachments: SW City of Sheridan.pdf; NE City

2.pdf; NW City of Sheridan & SW Monroe.pdf; NW City of Sheridan #2.pdf; NW City of

Sheridan #3.pdf; NW City of Sheridan #4.pdf; Completed L&C.zip

Hi Gary,

Thank you for sending over the revised list of lead and copper tap sampling sites (14 Tier 1 sites and 46 Tier 3 sites (attached) per your email below from May 1st).

- We will need two rounds of samples from the new sites (40 samples per round).
- The first round will need to be collected prior to June 30, 2024 (results to be reported prior to 7/10/24 or a late reporting violation may be issued).
- The second round will need to be completed between 7/1/24 and 12/31/24 (results of the second round to be reported prior to 1/10/25).

I recommend providing the instructions we have on our website to the homeowners and having them complete the box at the bottom of these instructions as that will help you to validate how the samples were collected prior to submitting them to the lab for analysis. I also recommend having homeowners indicate who collected the sample and the street address of the sample site on the sample bottle/lab slips so you know who exactly collected the sample and so you can match the results to the address should questions arise about how the samples were collected.

- Directions for homeowner tap sample collection
- Directions for homeowner tap sample collection in Spanish

Additionally, the request to invalidate the sample <u>results from the spring of 2023</u> shown in the table below was rejected.

Sample ID	Sample Date	Received	WSF	Lead	Coppe
20230531-043	5/31/2023	6/16/2023	DIST-A	0.0176	0.9
20230531-026	5/31/2023	6/16/2023	DIST-A	0.0922	1.
20230531-028	5/31/2023	6/16/2023	DIST-A	0.0349	0.7
20230531-029	5/31/2023	6/16/2023	DIST-A	0.0243	0.2
20230531-031	5/31/2023	6/16/2023	DIST-A	0.0383	1

I hope you understand and thanks for your patience Gary in awaiting this information and please feel free to contact me at any time if you have any questions.

Evan Hofeld

Regional Engineer

OREGON HEALTH AUTHORITY - Public Health Division - Drinking Water Services

evan.e.hofeld@oha.oregon.gov

Cell: 971-200-0288 Fax: 971-673-0458 www.healthoregon.org/dwp