WATER MANAGEMENT AND CONSERVATION PLAN

Coburg, Oregon

BEI Project 23-004E

EXPIRES: 12/31/26

Prepared for

The City of Coburg
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March 23, 2026

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LIST OF ACRONYMS

AAGR	=	Average Annual Growth Rate
ADD	=	Average Day Demand
CFS	=	Cubic Feet per Second
CIP	=	Capital Improvement Project
CUS	=	Coburg Urbanization Study
EWEB	=	Eugene Water and Electric Board
GPCD	=	Gallons per Capita per Day
GPD	=	Gallons per Day
GPM	=	Gallons per Minute
SWVGMA	=	Southern Willamette Valley as a Groundwater Management Area
SWVGMAAP	=	Southern Willamette Valley Groundwater Management Area Action Plan
MDD	=	Maximum Daily Demand
MG	=	Million Gallons
MGD	=	Million Gallons per Day
MMD	=	Maximum Monthly Demand
OAR	=	Oregon Administrative Rule
ODEQ	=	Oregon Department of Environmental Quality
OWRD	=	Oregon Department of Water Resources
PHD	=	Peak Hourly Demand
PVE	=	Pioneer Valley Estates
PVC	=	Polyvinyl Chloride
QQ	=	Quarter-Quarter Section
SCADA	=	Supervisory Control and Data Acquisition
TRS	=	Township Range Section
UGB	=	Urban Growth Boundary
WMCP	=	Water Management and Conservation Plan
WSMP	=	Water System Master Plan

EXECUTIVE SUMMARY

INTRODUCTION

The City of Coburg is submitting this Water Management and Conservation Plan (WMCP) as an update to the City's 2012 WMCP. When the last WMCP was approved, the City was preparing for anticipated population growth and increased demand on its water and wastewater systems. Since then, the City has added groundwater supply capacity with an additional well, Stallings Well No. 1, and has implemented a targeted pipe replacement program drawn from the 2016 Water System Master Plan Capital Improvement Projects (CIP) list that will move into the new CIP for the FY2027 to FY2032 planning period.

The purpose of this WMCP is to evaluate current and future water availability by assessing water rights, water production, and water use. Water rights define the legal quantity of water the City is authorized to withdraw. Water production reflects the capacity of the City's infrastructure to access, treat, and deliver that water. Water use represents actual demand, including residential, commercial, industrial, and non-revenue uses such as system losses. Water availability is governed by the interaction of these factors and may be limited by legal, physical, or demand-related constraints.

The WMCP includes the following four elements:

1. Water Supplier

This section describes the City's current sources of water, service area, water distribution system, service population/customer base, and water use characteristics with a focus on assessing the system adequacy and reliability. Also included in this section are current water rights held by the City, production capacity, current system demand, and water loss estimates

2. Water Conservation

This section includes a progress report identifying conservation measures from the 2012 WMCP, which measures have been implemented, which measures have not been implemented, and reasoning for why measures were not implemented. The City's water use measurement and reporting program, and conservation measures currently utilized or planned for implementation are described.

3. Water Curtailment

This section establishes procedures for managing water shortages during drought, system failure, or other supply limitations. The curtailment element functions as an emergency contingency plan and identifies three stages of alert for potential shortages or water service difficulties, and the triggers for implementing each stage.

4. Water Supply

This section evaluates the adequacy of the City's water sources to meet current and projected demand. This includes an assessment of water rights, source reliability, and water production capacity relative to anticipated water use, identifying potential supply limitations and future needs. Projected water demand for 10 and 20 years is provided and compared to current production capacity and limitations of current water rights.

This WMCP intends to satisfy Oregon Administrative Rules 690-315 and 690-086. A checklist is provided at the beginning of each chapter highlighting the required information and which section to find it in.

REPORT SUMMARY

The City serves the residential population, approximately 1,456 people according to the Portland State University (PSU) Population Research Center (PRC), a substantial industrial district, and a subdivision one mile north, Pioneer Valley Estates (PVE). Residential water users, including those located in PVE constituted an average of 51%, commercial and industrial water users constituted an average of 46%, and government water users an average of 3% of metered water use over the last 10 years. The high commercial and industrial water use is attributed to the transient population, or the shift workers commuting into the City

daily. According to a 2024 Worksource Oregon report, there are 2,032 people making up the transient population, making almost 1.5 transient workers for each resident in the City.

The City population is expected to grow at an Average Annual Growth Rate (AAGR) of 1.6% over the next 20 years. An employment growth rate of 2.3% is used to estimate transient population growth, taken from the 2010 Coburg Urbanization Study. These growth rates are used in forecasting water use for the 10-year and 20-year planning periods.

The City obtains all municipal water from groundwater sources, with two municipal water supply wells in regular use, and one new supply well anticipated to be connected to the system this year. Two of the wells (Bottom Loop Well No.1 and No. 2) are just southwest of town on Funke Rd and the third well (Stallings Well No. 1) is located on the northwest side of town along Stallings Lane. The new pump station and treatment works for Stallings Well No. 1 are currently under construction and the transmission line connecting Stallings Well No. 1 to the waters system is also planned for construction in 2026.

The City has sufficient water rights for the 20-year planning period. The City will concentrate on both real and apparent water losses moving forward by continuing their targeted pipe replacement program, testing large meters for malfunction, and investigating system use methodologies for potential miscalculations. Using these methodologies, the City plans to reduce water losses from an average of 22% over the last 10 years to below 10%.

Additionally, with the development of Stallings Well No. 1, the City will be implementing a new Supervisory Control and Data Acquisition (SCADA) system, and the City has future plans to upgrade existing reservoirs, construct a new elevated storage tank, and rehabilitate the two older wells. The city will also continue to engage the community with water conservation tools and conservation awareness, as well as implement enhanced rate design.

As part of the City's attempt to meet increased demand, this WMCP was developed to identify strategies to reduce water use. System upgrades are underway, with a new well, Stallings Well No. 1, being added to the system and the system upgrades outlined above. The SCADA system upgrade is the primary change that will aid the City in monitoring the water system to identify water savings opportunities, as well as improve annual audits, or the water balance comparing water produced to water consumed. The pipe replacement program combined with meter testing and other system investigations has the potential to create an estimated savings of 37,000 GPD or more, reducing water loss to below 10%.

The City's curtailment plan outlines three alert stages with triggering events described to address potential causes of shortage including mechanical failure, groundwater contamination, and a supply main break. The curtailment plan includes ordinances developed for the City Council to pass should a water shortage occur.

The City added the new well, Stallings Well No. 1 to two of the existing water rights, with final orders approving the transfers in 2022. Based on an analysis of the Coburg water system capacity by Consor Engineers (found in Appendix G of this document) and the forecasting in this document, the water demand will surpass the source capacity (including the conservative estimated productivity of Stallings Well No. 3) in approximately 5 years with the current trends in productivity, water losses, and conservation measures. With additional planned system upgrades and plans to reduce water loss, water demand is anticipated to surpass source capacity in approximately 10 years. Recommendations in this document include adding redundancy to the water system by connecting all wells to all water rights, and to develop a new source of water within 5 years. These recommendations are based on projections made in the Consor analysis and in the forecasting portion of this document.

Once the capacity of Stallings Well No. 1 is analyzed, recommended actions will be reassessed and the timeline for constructing an additional water source will be adjusted as needed. A regional connection to the Eugene Water and Electric Board (EWEB) is a future possibility, and one that would need an updated feasibility study and an outside source of funding. However, the City plans to continue developing the two wellfields in the meantime. Table 1 shows a summary of planned water rights actions.

Table 0.1: PROPOSED ACTIONS ON CITY'S WATER RIGHTS (20-YEAR PLAN)

APPLICATION / PERMIT NUMBER	CERTIFICATE NUMBER	SOURCE1	USE	PRIORITY DATE	RATE (CFS)	PROPOSED ACTION/ COMPLETION YEAR
G1726/ G1580 T13889	37211 (cancelled)	Bottom Loop Wells 1 and 2, Stallings Well 1	Municipal	4/19/1960	0.31	Transfer/ 2027
G4283/G4032 T13888	44837 (cancelled)	Bottom Loop Wells 1 and 2, Stallings Well 1	Municipal	3/18/1968	0.1	Transfer/ 2027
G4284/G4033	44838	Bottom Loop Well No. 1	Municipal	3/18/1968	0.3	-
G13877/G13183 T11252	-	Bottom Loop Well Nos. 1 and 2	Municipal	11/16/1994	2.0	Transfer/ 2030
G17403/G16857	-	Well No. 3	Pollution Abatement	6/25/2010	0.28	2016 (Claim of Beneficial Use submitted)

Note: Well numbering history is obscure. As of this document, Well No. 1 and Well No. 2 have been renamed as Bottom Loop Well No. 1 and Bottom Loop Well No. 2.

DIVISION 86 COMPLIANCE

In Oregon, major water suppliers are required to complete WMCPs. Historically, municipal water suppliers were issued water right permits for the amount of water that could reasonably be needed for the next 50 years or more. New rules now require that municipalities permit water rights only for demand expected in 20 years.

The rules regarding WMCPs are covered under Oregon Administrative Rule (OAR) 690-086. This is directly related to the rules regarding water right permit extensions contained in OAR 690-315. The rules contain requirements for the contents of a WMCP. This report is structured to address these requirements. Below is an overview of the structure of this WMCP.

- Overview – An introduction to the city of Coburg, location, and intent of plan
- Description of Coburg's Water System –A description of Coburg's water system, operation, service area, and demand characteristics
- Water Conservation –Coburg's plan to reduce demand through conservation measures. See Table 2 below.
- Water Curtailment Plan – Details the three stages of alert during water shortages, triggers, and curtailment actions that will be taken.
- Water Supply –Outlines projected future water demand with conservation measures in place. It also details necessary future water rights actions.

PROPOSED CONSERVATION PROGRAM

The primary goal of this WMCP is to identify ways the City can improve conservation measures and reduce water loss. The City has recently replaced meters and has a plan to replace meters as they fail and to test large meters on a schedule consistent with current industry standards. Additionally, the City has undertaken pipe replacement projects outlined in the 2016 Water System Master Plan (WSMP), focusing on aging infrastructure to minimize system leaks. The pipe replacement program will continue, with future projects outlined in the CIP for FY2027 to FY2032.

Efforts will be made to add new programs, but these efforts will be constrained by the city's limited staff and financial resources. Existing programs will be improved and updated. Basic conservation measures are in practice in the City, and improvement to bring water losses below the required threshold will be the target of conservation measure improvements or expansions. Table 2 summarizes the expected timeline for the remaining conservation measures to be implemented.

Basic conservation measures required of all water suppliers and implemented by the City include the following.

- Annual water audit
- Full metering of system
- Meter testing and maintenance program
- Rate structure based on metered water
- Leak detection program
- Public education program

The 2012 WMCP identified additional conservation measures including installing new source meters, upgrading the booster pump station, testing and replacing customer meters, and non-potable water reuse. This WMCP is focused on meeting all basic conservation measures required of all water suppliers, with additional measures expected to be considered in the future based on feasibility. A conservation measure progress report can be found in Section 3.2, and current conservation benchmarks are provided in Section 3.4 of this plan.

CHAPTER 1: OVERVIEW

1.1 INTRODUCTION

The City of Coburg is located north of the Eugene-Springfield Metropolitan, along Interstate-5. Anticipated growth in the City and the need to correct deficiencies in the system prompted an update to Coburg's WSMP in July 2016. A number of system upgrades and expansions were outlined in the WSMP including a waterline improvement plan and development of additional water sources for increased supply and redundancy. The City has undertaken the replacement of older pipes in the City as one method to reduce system leaks and conserve water.

The primary municipal water sources for the City are three wells, two wells located southwest of town, and a third well located northeast of town. There is a current production capacity of 550 GPM for Bottom Loop Well No.1 (previously referred to as Well No. 1) and 450 GPM for Bottom Loop Well No. 2 (previously referred to as Well No. 2) identified in a system analysis performed by Consor Engineers in 2024. A copy of this document is in Appendix G. The third well, Stallings Well #1, is located northwest of town. Stallings Well No. 1 was drilled in 2023 with the pump and treatment works currently under construction, with an expected completion date in 2026.

The City has a total of 0.71 cfs of certificated water rights and another 2 cfs in permitted water rights. Details of the water rights are given in Section 2.5 of this report.

This WMCP will identify current water use patterns, assess the City's water system, and identify further opportunities and strategies to conserve valuable water resources.

1.2 PLANNING AREA

The City of Coburg, Oregon is located in Lane County approximately five miles north of the city of Eugene, at Exit 199 off Interstate 5. The city has a rich history showcased by a National Historic District and a number of annual festivals. The first settlers arrived in 1847 and the city was incorporated in 1906. It is surrounded by flat, arable land and the Coburg Hills rise over 1,000 feet in elevation immediately to the east. A location map of Coburg is provided in Figure 1.1 below.

Figure 1.1: Location Map of Coburg, Oregon

1.3 STUDY OBJECTIVES

Coburg is a historic town with an aging water system in the older areas of town. The purpose of this plan is to continue developing and expanding water management and conservation measures in water system development planning.

1.4 FUTURE SUBMITTALS

The city of Coburg plans to update this WMCP in 10 years, in 2035. This is the requirement under OAR 690-86. In addition, a progress report will be submitted in 5 years, in 2030, to detail progress in conservation efforts and system upgrades.

1.5 ADDITIONAL TIME TO IMPLEMENT CONSERVATION BENCHMARKS

New benchmarks for all conservation measures are provided in Section 3.4 and a conservation measure progress report is provided in Section 3.2 of this document. The current focus is on reducing water loss through continuing a pipe replacement program the City has implemented in recent years, meter testing, and performing other system investigations.

1.6 DATA SOURCES

Most data in this report were obtained through City records or the City's WSMP. Additional data and information were obtained through the Lane Council of Governments. Population information is from Portland State University. Consor Engineers performed a system analysis in 2024 to perform hydraulic modeling and determine system capacity in relation to bringing Premier RV Resort into the City's distribution system. This analysis relied partly on data from the 2016 WSMP but provides important information about current system capacities. New production and use data are used in this report in lieu of data from the 2016 WSMP when possible. The City's SCADA system is scheduled to be upgraded in 2026, which will allow for the City to collect better and more complete data about water use and system function.

1.7 DOCUMENT ORGANIZATION/CHECK LIST

Table 1.1 provides a summary of the required elements of this plan and the locations of the information in this document. This Water Management and Conservation Plan is organized as follows:

Chapter 1: Overview

Chapter 2: Description of Coburg's Water System

Chapter 3: Water Conservation

Chapter 4: Water Curtailment Plan

Chapter 5: Water Supply

Table 1.1: CHECKLIST OF REPORT REQUIREMENTS AND REFERENCE SECTIONS

	ITEM	OAR	REFERENCE SECTION
	Water Supplier Description		
	Description of supplier's source(s)	690-086-0140 (1)	2.3
	Delineation of current service area	690-086-0140 (2)	2.2
	Assessment of adequacy and reliability of existing supplies	690-086-0140 (3)	2.4
	Quantification of present and historic use	690-086-0140 (4)	2.6
	Summary of water rights held	690-086-0140 (5)	2.5
	Description of customers served and water use summary	690-086-0140 (6)	2.7
	Identification of interconnections with other suppliers	690-086-0140 (7)	2.2
	System schematic	690-086-0140 (8)	Figure 2.1
	Quantification of system leakage	690-086-0140 (9)	2.9
	Water Conservation Element		
	Current conservation measures	690-086-0150 (1) and (3)	3.2
	Water use measurement and reporting program	690-086-0150 (2)	3.3
	Required conservation programs	690-086-0150 (4)(a-f)	3.4
	Expanded use under extended permits	690-086-0150 (5)	3.5
	Additional conservation measures	690-86-0150 (6)	3.6
	Water Curtailment Element		
	Assessing your water supply	690-086-0160(1)	4.2
	Stages of alert	690-086-0160(2)	4.3

Triggers for each stage of alert	690-086-0160(3)	4.3
Curtailment actions	690-086-0160(4)	4.3
Water Supply Element		
Delineation of current and future service areas	690-086-0170 (1)	5.2
Population projections for service area	690-086-0170 (1)	5.2.1
Prepare schedule to fully exercise each permit	690-086-0170 (2)	5.5
Prepare demand forecast	690-086-0170 (3)	5.3
Comparison of projected need and available sources	690-086-0170 (4)	5.4
Analysis of alternative sources	690-086-0170 (5) and (8)	5.4
Quantification of maximum rate and monthly volume	690-086-0170 (6)	5.3
Mitigation actions under state and federal laws	690-086-0170 (7)	5.4
List of affected local governments and their comments	690-086-0125 (5)	1.6
Date for submittal of next update	690-086-0125 (6)	1.4
Documentation, where additional time is requested to meet previous benchmarks or metering	690-086-0125 (7)	1.5

1.8 AUTHORIZATION

The City of Coburg initially authorized this Water Management and Conservation Plan in February 2006, with subsequent authorizations in 2012 and 2023. This study was funded by the City of Coburg Water Fund. Branch Engineering, Inc. extends its gratitude to the City staff for their dedicated efforts in compiling the data necessary to complete this study.

CHAPTER 2: DESCRIPTION OF COBURG'S WATER SYSTEM

2.1 INTRODUCTION/CHECKLIST

The City of Coburg distributes water to residents and businesses within the city limits and to the PVE. PVE is a 16.4-acre subdivision approximately one mile north of the Coburg city limits. PVE is part of Coburg's "municipal water system" as defined by the water resources department and is considered an out-of-town user. The two systems were previously independent and separate but were connected in 2004. The PVE well was contaminated with nitrates and fecal bacteria and is no longer in service.

Two wells located southwest of the city supply the system's water. A third well was constructed in 2023 to provide for system redundancy. There are no elevated reservoirs to pressurize the system, thus the city relies on well pumps and booster pumps to pressurize the system. An overview map is shown in Figure 2.1 detailing the current water system and service area. Table 2.1 shows the requirements under Division 86 rules for this chapter and the section where the information is located.

Table 2.1: CHECKLIST OF CHAPTER REQUIREMENTS AND REFERENCE SECTIONS

DESCRIPTION OF COBURG'S WATER SYSTEM		
ITEM	OAR	REFERENCE SECTION
Description of supplier's source(s)	690-086-0140 (1)	2.3
Delineation of current service area	690-086-0140 (2)	2.2
Assessment of adequacy and reliability of existing supplies	690-086-0140 (3)	2.4
Quantification of present and historic use	690-086-0140 (4)	2.6
Summary of water rights held	690-086-0140 (5)	2.5
Description of customers served and water use summary	690-086-0140 (6)	2.7
Identification of interconnections with other suppliers	690-086-0140 (7)	2.2
System schematic	690-086-0140 (8)	Fig 2.1
Quantification of system leakage	690-086-0140 (9)	2.9

2.2 SERVICE AREA

Coburg's water service area is shown in Appendix A. It includes the area within the city's urban growth boundary (UGB) and PVE which is outside the UGB. The city limits and UGB both encompass approximately 750-acres. The city owns and operates the PVE water system. PVE is not an interconnected "municipal water supply provider" but part of the city of Coburg's water supply system. The City acquired PVE's water system in 1963 and operated the two independently until 2004 when the two systems were connected with an 8" PVC Waterline. PVE's well and hydropneumatic tank were disconnected at that time. PVE is permanently part of the city's water system and considered an out-of-town water user.

2.3 WATER SOURCE AND TREATMENT

The source of Coburg's water supply is two wells located southwest of the city off Funke Road. These wells are designated Bottom Loop Well No. 1 and Bottom Loop Well No. 2. Bottom Loop Well No. 2 was constructed in early 1977. Bottom Loop Well No. 1 was first dug in 1940 and deepened in the 1950's or 60's. Each is located in a separate building, approximately 300-feet apart. Bottom Loop Well 1 has a production capacity of approximately 550 GPM and Bottom Loop Well 2 has a production capacity of approximately 450 GPM. Their combined production is approximately 1000 GPM.

Well Building No.1 contains Bottom Loop Well No. 1 and the mechanical, electrical, metering, and chlorination facilities for both wells. A pipeline connects Bottom Loop Well 2 to Well Building 1. Both master meters, instrumentation, and chlorine dosing equipment are also located in this building. The two master meters were replaced in 2019, and the Bottom Loop Well 2 pump and motor were replaced in 2024. A third well, Stallings Well No. 1, was constructed in late 2023 northwest of town, on Stallings Lane. The pump house and treatment system for Stallings Well No. 1 are under construction and planned for completion in 2026. The transmission line is planned for construction in 2026, also.

Disinfection is accomplished by dosing chlorine prior to entering a 1,360-ft section of 24-inch diameter transmission line. The transmission line doubles as the chlorine contact chamber. The specifications for Bottom Loop Well 1 and Bottom Loop Well No.2 are summarized in Table 2.2. Partial specifications for Stallings Well No. 1 are also provided in Table 2.2.

Table 2.2: WELL AND PUMP SPECIFICATIONS

WELL	BOTTOM LOOP WELL #1	BOTTOM LOOP WELL #2	STALLINGS WELL #1
Location (TRS QQ)	16S3W32 NESE	16S3W32 NESE	16S3W29 NESW
Depth	200 ft.	200 ft.	140 ft.
Casing diameter	10 in.	10 in.	12 in.
Screened interval	85 ft. – 99 ft. 120 ft. – 167 ft.	110 ft. – 167 ft.	72.5 ft. – 128 ft.
Aquifer description	Gravel, sand, small cobbles Gravel, sand, blue clay	Gravel, sand, blue clay	Cemented gravel, brown sand cemented, gravel and sand, fractured soft and hard brown claystone
PUMP			
Type	Vertical Turbine	Submersible	Not installed at this time
Year installed	1975	2024	-
Rated Capacity	550 GPM	550 GPM	-
Rated Power	50 hp	50 hp	-

2.4 WATER SUPPLY ASSESSMENT

The water surface depth in the wells is recorded daily to monitor well performance. The data show that static water levels are relatively constant over time, save for seasonal fluctuations due to wet and dry weather seasons. This indicates that the aquifer water supply is ample.

Coburg's two wells provide sufficient supply for the current demand. However, both wells must run to meet Maximum Daily Demand (MDD) during peak seasons. The system therefore lacks the redundancy necessary to remove one well from service for maintenance or redevelopment. Coburg's WSMP calls for the addition of one or more wells at this wellfield to increase redundancy. A third well, Stallings Well No. 1 was constructed in 2023 on Stallings Lane northwest of the city. Anticipated productivity of this third well is between 100 and 175 gpm, according to the 2024 Consor analysis.

Water infrastructure projects related to the City's water supply include the completion of the Stallings Well No. 1 (Well 3) water treatment equipment, controls, building, and transmission line to the distribution system, which is planned for completion in 2026. Other water supply improvement projects mentioned in the WSMP include the rehabilitation of Bottom Loop Wells 1 and 2 and SCADA system upgrades, projects that are contingent on additional future funding.

Well tests for Stallings Well No. 1 show a lower than planned production capacity, and recent capacity analyses performed by Consor Engineers predict the need for an additional supply source by 2030. The capacity analysis predicts a supply deficit of approximately 313 GPM in the year 2036 based on demand trends identified in the WSMP, and accounting for the City's plan to bring Premier RV Resort into the City's distribution system and to deliver water to a 107-acre undeveloped lot in southeast Coburg that was recently annexed into the City. As a result, the City has conducted preliminary discussions with the EWEB Engineering staff to evaluate the possibility of a wholesale water contract. Developing a regional connection to the EWEB system will require a new feasibility study and an outside funding source.

In 2004, the Oregon Department of Environmental Quality (DEQ) designated a portion of the Southern Willamette Valley as a Groundwater Management Area (SWVGMA) due to excessive levels of Nitrate. The City of Coburg is located in the southeastern area of the SWVGMA. The final Southern Willamette Valley Groundwater Management Area Action Plan (SWVGMAAP) was developed on November 9, 2006. The action plan has a number of goals for public water agencies; the goals and strategies of the plan have been addressed in this report and are incorporated as relevant to achieve the plan's objectives.

Coburg's Bottom Loop Wells 1 and 2 are 200 feet deep and have elevated nitrate levels. However, nitrate levels are always measured below drinking water standards and don't appear to be an immediate threat to the water supply. Nitrate test results for Bottom Loop Wells 1 and 2 are reported to the Oregon Health Authority Drinking Water Services annually. Results from 2013 through 2024 average 4.38 mg/L, with a maximum value of 6.77 mg/L in 2020, with all test results falling below the Maximum Contaminant Level (MCL) of 10 mg/L. According to the SWVGMAAP, the majority of nitrate contamination is concentrated from the surface down approximately 20 to 40 feet; Coburg's wells generally draw from the deeper levels of the aquifer and are less susceptible to nitrate contamination than shallow wells.

2.5 WATER RIGHTS

Coburg's current water rights are summarized in Table 2.3. There are enough water rights to cover current use. The current peak hour demand (PHD) is estimated to be 1,843,000 GPD, or 2.85 cfs based on the peaking factor used in the WSMP of 2.5. The full rate allowed from the City's water rights and permits is 2.99 cfs. The previous WMCP recommended transferring water rights from abandoned wells to the City's primary supply wells. This has largely been accomplished, with the authorized point(s) of appropriation for all municipal water rights being a combination of the Bottom Loop Wells 1 and 2, and Stallings Lane Well No. 1. See Table 2.3 for additional information about the City's water rights and Table 2.4 for the City's water use by water source. See Appendix C for a full tabular water rights summary.

Table 2.3: SUMMARY OF CITY'S WATER RIGHTS

APPL. #/ PERMIT NUMBER	CERT. NUMBER	SOURCE1	USE	PRIORITY DATE	AUTHORIZED MAX. RATE (CFS)	MAX RATE DIVERTED TO DATE (CFS)
G 1726/ G 1580	37211 (Cancelled) T 13889	Bottom Loop Wells No. 1 & 2 (City/New Wells 1 & 2) Stallings Well No. 1 (New Well 3)	Municipal	4/19/1960	0.31	0.31
G 17403/ G 16857	-	Well No. 3	Pollution Abatement	6/25/2010	0.28	0.28
G 4283/ G 4032	44837 (Cancelled) T 13888	Bottom Loop Wells No. 1 & 2 (City/New Wells 1 & 2) Stallings Well No. 1 (New Well 3)	Municipal	3/18/1968	0.1	0.1
G 4284/ G 4033	44838	Bottom Loop Well No. 1 (City/New Well 1)	Municipal	3/18/1968	0.3	0.3
G 13877/ G 13183	-	Bottom Loop Wells No. 1 & 2 (City/New Wells 1 & 2)	Municipal	11/16/1994	2.0	2.0

1.) *Note: Well numbering history is obscure. Some wells have been renumbered and abandoned wells are no longer permitted by the City's water rights. The current well naming convention is provided with the best understanding of the current nomenclature in water rights documentation provided in parentheses.*

Table 2.4: SUMMARY OF CITY'S WATER USE BY WATER SOURCE

		PREVIOUS YEAR		PREVIOUS 5 YEARS AVERAGE	
Source[2]	Max Annual Volume Diverted to Date (MG) [1]	Avg Daily Diversions (kGals)	Avg Monthly Diversions (MG)	Avg Daily Div. (kGals)	Avg Monthly Div. (MG)
Well No. 3[3]	0	0	0	0	0
Well No. 4[3]	0	0	0	0	0
Bottom Loop Well No. 1 (City Well 1, LANE 68362)	78	176	5	191	5
Bottom Loop Well No. 2 (City Well 2, LANE 7553)	153	115	3	108	3
Stallings Well No. 1 (New Well 3, LANE 79226)[4]	0	0	0	0	0

1) *Based on Oregon Water Resources Department required annual water use reporting data.*
2) *Note: Well numbering history is obscure. Some wells have been renumbered and abandoned wells are no longer permitted by the City's water rights. The current well naming convention is provided with the best understanding of the current nomenclature in water rights documentation provided in parentheses.*
3) *Abandoned/Unused well.*
4) *Stallings Well No. 1 is constructed, but not yet in use.*

Permit G 13183 has been extended twice with the most current extension completion date being October 1, 2030. This extension allows for the full development of Bottom Loop Wells No. 1 and 2 and allows for a permit amendment to add Stallings Well No. 1 to the permit. The full rate allowed under Permit G 13183 has been appropriated from a combination of Bottom Loop Wells 1 & 2. There is no greenlight water available from the City permits.

2.6 DISTRIBUTION FACILITIES DESCRIPTION

2.6.1 FINISHED WATER RESERVOIRS

The two 0.5 MG water storage reservoirs are located on Sarah Lane in northeast Coburg adjacent to the booster pump station. The south tank, Tank 1, was built in 1975, and the north tank, Tank 2, was built in 1977. Under present operation, water enters the reservoirs through a 6-inch pipe via a 6-inch altitude valve when well pumps run. Water exits the reservoirs and re-enters the distribution system via booster pumps. They are both self-anchored ground-level tanks with the following specifications.

- Type: welded steel
- Base elevation: 397.5'
- Max water surface elevation: 429.5'
- Outer Diameter: 52-ft

2.6.2 BOOSTER PUMP STATION

The pump station building is approximately 1,000 square feet and houses pumps, pump controls, pump control valves, an altitude valve, pressure relief valve, and associated piping. There are three 75-hp Variable Frequency Drive pumps that serve both daily demand and fire flows, and a generator to maintain pressure in the event power service is interrupted.

The pump station controls the filling and drawdown of the two 0.5 MG reservoirs. When the wells run, water enters the reservoirs via the distribution system. The booster pumps provide system pressure when the wells shut down. An altitude valve is used to control reservoir filling. The control system shuts the wells down and pumps down the reservoirs routinely to maintain water quality. The pump station undergoes regular maintenance, but the configuration has not changed since the previous WMCP. SCADA system upgrades are planned for 2026-2027 to provide additional functionality including trending data, daily reporting, and data management.

2.6.3 PIPING

The city's piping system is comprised of typical 6-inch, 8-inch, and 12-inch pipes interconnected within city streets. Recent improvement projects have led to the installation of larger diameter piping and replacement of leaking pipes. A number of different pipe materials have been used to develop the water system over time but the piping primarily consists of asbestos cement and PVC. Several new subdivisions have been constructed since the last WMCP, each requiring an addition to the City water system. Several other large waterline replacement and expansion projects have also been constructed recently including the replacement of approximately 1,300 feet of the 12-inch asbestos cement Van Duyn waterline with PVC, the replacement of the waterline down the full length of Coleman Street, and the installation of a 12" PVC waterline beneath Interstate-5 to allow for the connection of the Premier RV Resort to the City water system and the development of the 107-acre property on the east side of the freeway that was recently annexed into the city. Recent pipe improvement projects are given in Table 2.5, below.

Table 2.5: RECENT PIPE IMPROVEMENT PROJECTS

WATERLINE LOCATION	YEAR OF CONSTRUCTION	LENGTH (FT)	DIAMETER	MATERIAL
Coleman Street (entire length)	2023	689 1505	12-inch 8 -inch	PVC
Thomas Street	2022	555	8-inch	PVC
Harrison, Macy, and Willamette	2023	1180	8-inch	PVC
I-5 Bore (including east and west extensions)	2020	1056	12-inch	PVC
Van Duyn Street	2019	1300	12-inch	PVC

Additional waterline replacement and extension projects are planned for future development, but rising costs in recent years have limited the water system improvement projects, with many projects being postponed until further funding is available. The WSMP CIP list for pipe replacement has been the guiding document water system improvements, with older pipes in town prioritized for replacement. Moving forward, the CIP for FY2027 to FY2032 will be used in lieu of the WSMP CIP list. An existing water main summary is provided in Table 2.6 below.

Table 2.6: EXISTING WATER MAIN INVENTORY

PIPE DIAMETER (IN)	LENGTH (FT)	PERCENT OF TOTAL
24	1,357	2.4%
12	19,197	35.3%
8	22,215	40.8%
6	8,463	15.5%
4	282	0.5%
3	1,653	0.3%
2 & smaller	1,163	0.2%
	Total: 54,330 ft	Total: 100%

2.7 WATER USAGE

Master meter records for the City of Coburg, including the PVE demand were provided from year 2012 through year 2025. From 2012 to 2019, the data show a general increasing trend, with a couple of spikes in water use during 2013 and 2016 of 12 percent and 10 percent, respectively. During the COVID Pandemic water demand rose and production rose with it as individuals were home more, with 2020 showing a jump of 10%. Water use declined after COVID measures were removed. Table 2.8 summarizes annual water production data below.

TABLE 2.7: ANNUAL COBURG AND PVE WATER PRODUCTION: 2012-2023

COBURG MASTER METER RECORD (GALLONS)	
2012	82,484,989
2013	92,405,616
2014	88,437,004
2015	91,402,002
2016	100,462,000
2017	98,601,001
2018	104,396,999
2019	103,284,999
2020	107,542,997
2021	114,574,002
2022	102,506,997
2023	98,532,000
2024	104,045,000
2025	113,725,000

Demand for 2021, 114,574,002 gallons, was the highest recorded annual quantity diverted to date. The COVID-19 pandemic is considered to have influenced the data for 2021 and 2020. As a result, the data from this time is excluded from the calculations of peaking factors. Data from 2018, 2019, 2023, 2024, and 2025 is considered representative for planning purposes and will be used for these calculations. Data for

2018, 2019, and 2023 were collected by the City during winter and summer, as the two seasons combined provide a good picture of each year's water use. Data was collected year-round for 2024 and 2025. 2022 is excluded due to missing data during the summer season.

The MDD/ADD peaking factor ranged from 2.1 to 2.8 for these years, with the average peaking factor from these years of 2.6 used to determine the MDD for the remaining years. This factor falls within the middle of the typical range for public water systems of 1.2 to 3.0. The years prior to 2017 have only partial daily data recorded, as shown in Table 2.9.

The 2024 Consor system analysis uses the MDD from the 2016 WSMP and shows early MDD estimates for this WMCP that have since been updated with two additional years of data. Additionally, consistent with the 2016 WSMP, the PHD is assumed to be 2.5 x MDD for equivalent water use, or water used by the residential population and the workforce. The PHD peaking factor typically ranges from 3.0 to 6.0 but is a modified factor in this report that accounts for the larger than normal workforce to resident ratio. The SCADA system upgrades will improve daily data tracking.

TABLE 2.8: CITY OF COBURG WATER DEMAND 2012-2023

YEAR	ADD (1,000 GPD)	MDD (1,000 GPD)	PEAK SEASONAL DAY USE (1000 GPD)	ESTIMATED PHD (1,000 GPD)
2012	Incomplete Data			
2013	Incomplete Data			
2014	Incomplete Data			
2015	Incomplete Data			
2016	Incomplete Data			
2017	324	842	446	2105
2018	324	842	466	2105
2019	332	863	466	2156
2020	327	850	442	2125
2021	343	892	485	2230
2022	Incomplete Data			
2023	335	871	489	2178
2024	285	741	486	1853
2025	311	809	504	2023

2.8 WATER USE BY CUSTOMER SERVED

The total current number of water users in Coburg is given in Figure 2.1.

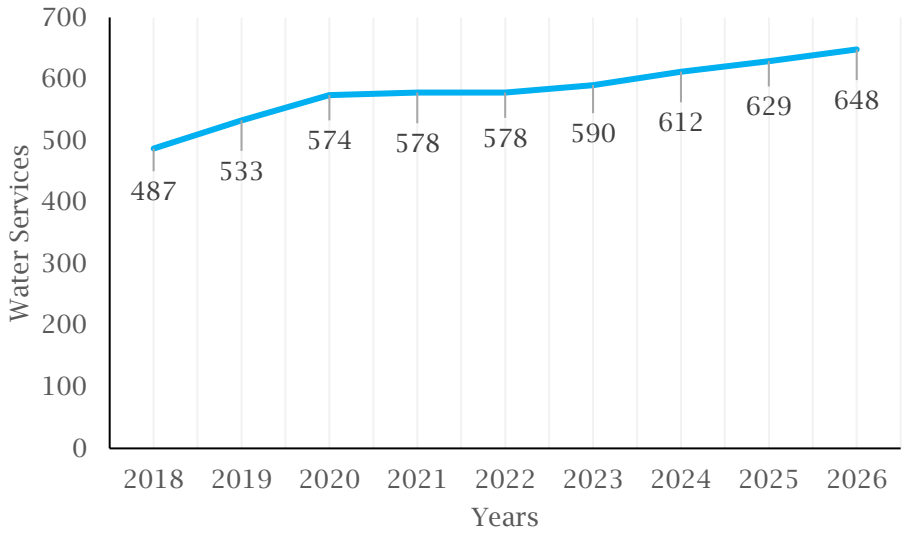


Figure 2.1: City of Coburg Water Account Totals by Year

Coburg has the following customer types:

- Residential
- Industrial/Commercial
- Government/Public

Residential and industrial/commercial water use is metered and tracked monthly to calculate bills and usage. Residential water use includes residential meters within city limits, outside city limits, and PVE water use. Government and public metered uses include park restrooms and irrigation, city hall water use, City construction water use, hydrant flushing, and fire district water used on district properties.

The percentages of total demand for each customer type were determined annually by analyzing water billing records. This data is provided in Tables 2.7 - 2.9 for 2.14 through 2.25.

TABLE 2.9: WATER USE FROM RESIDENTIAL ACCOUNTS

RESIDENTIAL USERS			
Years	**Annual Usage**	**ADD (gallons)**	**% Total Use**
2014	35,596,063	97,523	0.51
2015	34,535,326	94,617	0.47
2016	34,220,648	93,499	0.44
2017	34,492,255	94,499	0.45
2018	39,635,473	108,590	0.47
2019	40,875,672	111,988	0.51
2020	47,309,552	129,261	0.56
2021	48,918,669	134,024	0.52
2022	42,408,062	116,186	0.55
2023	46,052,520	126,171	0.58
2024	45,646,386	124,717	0.56
2025	48,697,605	133,418	0.51

TABLE 2.10: WATER USE FROM COMMERCIAL/INDUSTRIAL ACCOUNTS

COMMERCIAL/INDUSTRIAL			
Years	**Annual Usage**	**ADD (gallons)**	**% Total Use**
2014	30,247,474	82,870	0.43
2015	35,163,450	96,338	0.48
2016	41,389,428	113,086	0.53
2017	40,472,201	110,883	0.52
2018	42,016,925	115,115	0.50
2019	36,736,337	100,647	0.46
2020	35,028,660	95,707	0.41
2021	41,570,930	113,893	0.45
2022	32,961,981	90,307	0.42
2023	29,913,261	81,954	0.38
2024	33,880,495	92,570	0.41
2025	43,630,780	119,536	0.46

TABLE 2.11: WATER USE FROM GOVERNMENT/PUBLIC ACCOUNTS

GOVERNMENT/PARKS			
Years	**Annual Usage**	**ADD (gallons)**	**% Total Use**
2014	3,715,032	10,178	0.05
2015	3,296,144	9,031	0.05
2016	3,001,836	8,202	0.04
2017	2,535,466	6,946	0.03
2018	2,852,266	7,814	0.03
2019	2,743,499	7,516	0.03
2020	2,387,923	6,524	0.03
2021	2,791,873	7,649	0.03
2022	2,438,742	6,681	0.03
2023	2,822,398	7,733	0.04
2024	2,599,981	7,104	0.03
2025	3,097,416	8,486	0.03

2.9 NON-REVENUE WATER

Non-revenue water, or the difference between the total water produced by the City's water sources and the total amount metered on the consumer side provides the City with data necessary to evaluate the effectiveness of the system and methodology used to track consumer water use, as well as a starting place for evaluating the causes of water loss.

Common non-revenue water include physical losses and apparent losses. Physical losses include waterline breaks and infrastructure leaks. Apparent losses include meter malfunction, unauthorized use, and data or software errors.

Current waterline replacement projects were expected to reduce non-revenue water volumes by replacing older, potentially leaking waterlines, but have not resulted in significant changes in non-revenue water volumes. Additional system investigations into apparent losses will be performed and the pipe replacement program will be continued in accordance with the Capital Improvements Program for fiscal year (FY) 2027 to 2032 to meet State requirements as a leakage assessment program. Table 2.10 summarizes non-revenue water use.

TABLE 2.12: NON-REVENUE WATER 2014-2025

YEAR	PERCENTAGE NON-REVENUE WATER
2014	21%
2015	16%
2016	23%
2017	23%
2018	21%
2019	23%
2020	22%
2021	22%
2022	22%
2023	25%
2024	24%
2025	18%

2.10 Environmental Concerns

The City does not have any surface water rights, so none of the water rights have any sensitive, threatened, or endangered species present in the source, and the sources are not identified on the 303(d) list of water quality limited sources.

The City's ground water sources are not located within the designated boundaries of a Critical Groundwater Area or Groundwater Administrative Area established by OWRD; however, they are within the designated boundary of ODEQ's Southern Willamette Valley Ground Water Management Area.

CHAPTER 3: WATER CONSERVATION

3.1 INTRODUCTION/CHECKLIST

This section outlines numerous water conservation measures that will be taken to reduce wasted and inefficient use of water. Because of Coburg's small size and limited resources, efforts will be focused on required and easy to implement measures. This will be Coburg's third WMCP, so this plan will build upon successful programs already implemented and expansion where feasible. The plan outline described in the following sections will satisfy OAR 690-086-150.

TABLE 3.1: CHECKLIST OF CHAPTER REQUIREMENTS AND REFERENCE SECTIONS

WATER CONSERVATION		
ITEM	OAR	REFERENCE SECTION
Current conservation measures	690-086-0150 (1) and (3)	3.2
Water use measurement and reporting program	690-086-0150 (2)	3.3
Required conservation programs	690-086-0150 (4)(a-f)	3.4
Expanded use under extended permits	690-086-0150 (5)	3.5
Additional conservation measures	690-86-0150 (6)	3.6

3.2 CURRENT CONSERVATION MEASURES

Several of the conservation measures from Coburg's 2012 WMCP are ongoing, but some of them were not practicable considering City resources. The following is a summary of Coburg's 2012 WMCP Conservation Measures. A progress report on these conservation measures is provided in Table 3.2.

- Meter Testing and Replacement Program
- Annual Water System Audit
- Leak Detection and Repair
- Public Education
- Technical and Financial Assistance
- Retrofit and Replacement Assistance
- Water Reuse, Recycling, and Non-Potable Water Opportunities

TABLE 3.1 CONSERVATION MEASURE PROGRESS REPORT

	CONSERVATION MEASURE	2012 BENCHMARK	2025 BENCHMARK UPDATE
1	**Meter Testing and Replacement Program**	In 2012, the City had recently replaced source meters and committed to installing individual meters on all existing and future sources. Calibration and testing was planned for every 5 years or earlier if a problem is suspected. Customer side meters were only replaced when malfunction was detected. It was estimated that over 20% of unaccounted for water was due to under-reading meters. The City committed to a customer meter testing and replacement program starting in 2012 with a goal of replacing all meters 20 years old or older, and replacing all meters every 12 years.	All sources are individually metered. Customer use is also metered. The Meter Testing and Replacement Program has continued from the 2012 WMCP with testing and calibration occurring at five-year intervals, or earlier, when necessary, with the goal of replacing all meters over 3-inches every 12 years. A major meter replacement project took place between 2019 and 2024. The City anticipates needing to bench test meters over 1-inch to better evaluate water losses, and to continue the previous testing and replacement schedule.
2	**Annual Water System Audit**	In 2012, the City had just completed improvements to the system controls and data acquisition technology with the anticipation that this would improve audit performance. Audits were planned for each subsequent year, with efforts to determine where unaccounted water losses occurred.	The City water source data has had gaps in data collection over the last years, due to a combination of staffing shortages and available funding resources. The City meters park irrigation, City construction water use, hydrant flushing, and fire district water used on district properties. The City plans to start quantifying water loss from system breaks, investigating losses attributed to meter malfunctions, and any miscalculation occurring through system use methodology.
3	**Leak Detection and Repair**	In 2012, un-accounted for water was over 20%, a loss greater than 10%, requiring a leak detection and repair program. The City did not have a comprehensive leak detection program in place. The benchmark for an initial leak assessment was set for 2012, with additional assessments when audits show water loss greater than 10%.	Leak detection and repair has been an ongoing process for the City, mostly performed during pipe replacement projects. The City is prioritizing older pipes in town for leak detection and replacement from the WSMP CIP list for pipe replacement. In addition to testing large meters for malfunction, adding additional quantification of non-revenue water use, and investigating system use methodologies for potential

			miscalculations, the City will continue the leak detection program to meet State requirements.
4	**Public Education**	The City planned for adding a conservation flyers to the City's billing inserts as the easiest strategy for public outreach, with a plan to add OWRD brochures on the City website, and to create a personalized newsletter if staffing becomes available.	Public education is currently provided through access to water conservation methods and information on the City website, including a water conservation pamphlet and water conservation tips. The water conservation pamphlet is available in Appendix E.
7	**Water Reuse, Recycling, and Non-Potable Water Opportunities**	The 2012 WMCP also proposed an alternate strategy of focusing resources on constructing the wastewater treatment plant, constructing a non-potable water reuse system, promoting the reuse system, and working to expand the reuse system once it is installed. The benchmark for this plan was 2013 with the plan to distribute information about the plan annually.	While the City wastewater treatment plant was constructed in 2012, the City has found that the capital cost of constructing a non-potable water reuse system is not feasible at this time but is of interest to the City to pursue in the future.
	Water Rate Increases	The 2012 WMCP stated that Coburg rates were some of the highest in the area at the time, and the inverted block rate structure the City uses encourages conservation. Rate increases were included in planned new conservation activities.	The City considers price signaling to be a good conservation tool and plans to adjust the rate structure to separate base costs and variable costs. The City plans to have 4 rate tiers designed for conservation and revenue needs. Rate redesign will be conducted within the next couple of years.

3.3 WATER USE MEASUREMENT AND REPORTING PROGRAM

The City maintains a water use measurement and reporting program in compliance with OAR Chapter 690, Division 85. Water use records are publicly available on the Oregon Water Resources Department (OWRD) website (OWRD Water Use Reports).

The City currently tracks water use on the customer side during the billing process and water production at the source meters manually. Source meters are totalizing flow meters and record water production continuously. The City replaced source meters at the two wells as part of a water meter replacement project performed between 2019 and 2024 to bring all meters in the City to current standards The water use measurement and reporting program includes the City collecting water production data from the source meters, compiling it into monthly summaries, which are then submitted as annual water use reports to the OWRD. The upcoming SCADA system upgrade, scheduled for fiscal year 2026-2027, will aid the City in monitoring the water system and will automate tracking water production. Manual recording will be replaced by automated water production tracking, with access to data including well flowrates total volumes produced. This will improve the accuracy of the water use reporting program and remove the potential for scrivener's errors.

3.4 REQUIRED CONSERVATION MEASURES

The City is focusing on implementing and expanding programs to meet the Basic Conservation requirements identified in OAR 690-86. These include the following measures:

- Annual water system audit
- Full metering of system
- Meter testing and maintenance program
- A rate structure based, at least in part, on quantity of water metered
- Leak detection program (if system leakage exceeds 10 percent)
- A public education program on efficient water use and low water use landscaping

3.4.1 ANNUAL WATER SYSTEM AUDIT

OAR 690-089-0030(10) defines a water audit as meaning "an analysis of a municipal water supply system that includes a thorough accounting of all water that enters and exits the system." Water audits are helpful in detecting leaks and determining where repairs are necessary. Performing effective audits involves staff commitment to collecting accurate data manually or data tracking system upgrades.

Daily data tracking at the well site and booster station has improved since 2016, which also improves the City's ability to perform water audits. The City currently tracks water use on the customer side during the billing process and water production at the source meters manually. The manual nature of tracking water use at the source meters is not conducive to annual water auditing. The SCADA system upgrades planned for fiscal year 2026 - 2027 will improve water production tracking, which will improve the annual water system audit process.

What water system audits typically identify:

- Real losses: Leaks in mains, service lines, and storage tanks
- Apparent losses: Meter inaccuracies, billing errors, unauthorized consumption
- Operational inefficiencies: Overflows, flushing, and other avoidable losses

Audits will be performed in the spring when the previous year's billing and estimated unmetered uses will be available. The audit will include at a minimum: total water production, total metered volume from billing records, and estimated unmetered uses. If significant discrepancies are discovered in production

volumes versus billing and estimated volumes combined, efforts will be made to determine where unaccounted for water losses are occurring with a goal of estimating potential leakage in the water supply system. The City will report the results of the annual water audits in its WMCP progress report in 2031 and the WMCP update in 2036. The City's average water loss over the last 10 years is 22%, which means the City will plan and implement a leak detection program.

Five Year Benchmark: The City will continue to perform annual audits.

3.4.2 FULL METERING OF SYSTEM

OAR 690-089-0150(4)(b) requires that water systems be fully metered with all service connections metered. OAR 690-089-0030(5) defines metering as "using water meters or other continuous recording devices to measure and to maintain a record of all water diverted and delivered."

Water sources are individually metered with electromagnetic totalizing flow meters. The City replaced water meters at the two wells as part of a water meter replacement project performed between 2019 and 2024 to bring all meters in the City to current standards. These meters will be tested on a schedule that aligns with current industry standards and will be replaced as needed.

All customer service connections in the City of Coburg and PVE are metered and all new connections are metered. Meters are read once a month by city staff for billing purposes. Customer meters were replaced as part of the meter replacement project performed between 2019 and 2024. As the City reads customer meters, discrepancies will be noted, and meters will be replaced as necessary and on a schedule that aligns with current industry standards.

Five Year Benchmark: The City will continue to require that new service connections be metered.

3.4.3 METER TESTING AND MAINTENANCE PROGRAM

OAR 690-086-0150(4)(c) requires municipalities to have a meter testing and maintenance program in place. The City Meter Testing and Replacement Program has continued from the 2012 WMCP with testing and calibration occurring at five-year intervals, or earlier, when necessary, with the goal of replacing all meters over 3-inches every 12 years. A major meter replacement project took place between 2019 and 2024. Currently, the City anticipates needing to bench test meters over 1-inch to better evaluate the source of water losses, and then the City expects to continue the previous testing and replacement schedule.

Five Year Benchmark: The City will continue to test, calibrate, and replace meters on their existing schedule with additional investigations performed as necessary to resolve questions regarding causes of water loss.

3.4.4 RATE STRUCTURE BASED ON METERED WATER USE

OAR 690-086-0150(4)(d) requires municipalities to implement a rate structure that is based, at least in part, on volume of water metered at service connections. The City of Coburg rate structure is based on fixed operating costs for the water system and the costs of treatment and delivery. It includes a base fee and a two-tiered consumption fee with calculations taking into account the different customer classes and water use. The City Council approved water rate increases effective April 1, 2026 via resolution 2026-02. The increase is based on customer consumption and detailed in Table 3.2 below.

Five Year Benchmark: The city will continue to have rate studies and evaluate the benefit of adjusting rates annually, with the goal of defining a new rate structure for more effective price signaling by 2028.

TABLE 3.3: CURRENT (2026) CITY OF COBURG WATER RATES

METER SIZE	BASE FEE	PRICE TIER #1*	PRICE TIER #2**
5/8"-3/4" Residential	$63.83	$4.28	$4.28
5/8"-3/4" Commercial	$63.83	$4.28	$4.75
1" Commercial	$114.42	$4.28	$4.75
1-1/2" Commercial	$198.72	$4.28	$4.75
2" Commercial	$301.10	$4.28	$4.75
3" Commercial	$537.16	$4.28	$4.75
4" Commercial	$876.80	$4.28	$4.75
6" Commercial	$1,435.65	$4.28	$4.75
Outside City Limits	$72.27	$4.28	$4.28
¾ Residential PVE	$134.40	$3.98	$3.98

Note: Price Tiers are above base consumption, or in addition to the base rate.

** Price Tier #1 comes into effect for consumption within the range of 700-10,000 cubic feet and is billed per 100 cubic feet of usage.*

*** Price Tier #2 comes into effect for consumption above 10,000 cubic feet and is billed per 100 cubic feet of usage.*

3.4.5 LEAK DETECTION AND REPAIR PROGRAM (CONDITIONAL)

OAR 690-086-0150(4)(e) requires municipalities to enact a leak detection program when system water losses exceed ten percent. This requirement includes providing a description and analysis within 2 years of the WMCP approval identifying potential factors for the loss and selected actions for remedy. Additionally, if the identified actions do not reduce water losses to 10 percent or less within five years of the WMCP approval, municipalities have two options for developing more detailed plans.

1. Develop a regularly scheduled and systematic program to detect and repair leaks in the system or develop a detailed line replacement program detailing size and length of pipe to be replaced annually.
2. Develop and implement a water loss control program consistent with the American Water Works Association's standards.

Leak detection and repair has been an ongoing process for the City, mostly performed during pipe replacement projects because the City does not have the funding for advanced leak detection technology. The City has prioritized older pipes in town for leak detection and replacement using the WSMP CIP list as guidance. The City received a loan through the Safe Drinking Water Revolving Loan Fund managed by Business Oregon in 2018, which allowed the City to focus on water infrastructure projects from 2018 through the writing of this plan. These projects include pipe replacement projects from the WSMP list of CIPs, with specifics of projects identified in Table 2.5. This list is driven, in part, by the need to replace old pipes, but also by evidence of pipe leaks.

Older pipes in town will be prioritized in future pipe replacement project plans to improve city infrastructure and target likely locations of leaks. The City will continue the pipe replacement program, using the current Capital Improvements Plan for FY2027 to FY2032 as guidance, which includes pipe replacement projects anticipated to be funded with water rate revenues. The City also plans to upgrade the SCADA system in 2026-2027, which will provide instantaneous access to source meter data, improving the City's ability to troubleshoot system performance. These efforts will help identify leaks in the system and narrow down the origin of the leak.

Five Year Benchmark: The City will continue the current pipe replacement program and provide detailed documentation of the size and length of pipe to be replaced annually.

3.4.6 PUBLIC EDUCATION

OAR 690-086-0150(4)(f) requires municipalities to implement a public education program commensurate to the size of the Water Supplier to encourage efficient indoor and outdoor water use that includes regular communication of the City's water conservation activities and schedule to customers.

Public education has been a continuous goal in the City, with a water conservation pamphlet, provided in Appendix E, being readily available on the City website. The pamphlet includes general water saving tips as well as guidelines for indoor water savings and low water use landscaping practices. The guidelines for indoor water use include conservation measures for kitchen, bathroom, and laundry functions, recommendations for appliance and fixture upgrades during remodeling, and how to manage fixture leaks. The low water use landscaping practices include general tips for plant selection, lawn care, planted bed care, and statewide watering guides.

Five Year Benchmark: The City will continue to provide water conservation information to the public and look for additional ways to educate the public about water conservation.

3.5 EXPANDED USE UNDER EXTENDED PERMITS

The City does not intend to expand or initiate diversion of water under an extended permit for which resource issues have been identified under OAR 690-086-0140(5)(i). No greenlight water is being requested with this document.

3.6 ADDITIONAL CONSERVATION OPPORTUNITIES

As noted in the previous WMCP, water reuse is a promising opportunity in Coburg. This is an option Coburg hopes to explore in the future, which brings the possibility of many benefits. Coburg's wastewater treatment plant was constructed in 2012-2013 and produces effluent of sufficient quality that it can be used for non-potable water reuse. A "purple pipe" system, a network of purple-colored pipes used for distributing recycled water, can distribute this water to large irrigation demands such as parks, schools, and some industrial facilities. Future development could also include non-potable water systems.

Non-potable water reuse can significantly decrease summer peak demand as many large irrigation demands and new developments utilize non-potable water instead of city drinking water. This could have positive effects on the Southern Willamette Valley aquifer and substantially meet the goals of the SWVGMAAP. There are many exciting future possibilities for the non-potable water including use as industrial process water, vehicle wash water, construction water, toilet flush water, and much more! The City will revisit the use of recycled water in future conservation efforts.

3.7 CONSERVATION SAVINGS

The implementation of the City's capital improvement pipe replacement project has likely resulted in a gradual reduction in water use by reducing water loss, as older pipes in the City have been replaced. The continued replacement of older pipes will cause additional reduction in water use.

The City estimates 3-5% of current water losses may be apparent losses, rather than real losses, and may be correctible by testing large meters for malfunction and investigating system use methodologies for potential miscalculations.

Additionally, the EPA's Drinking Water State Revolving Fund Green Project Reserve Business Case Examples demonstrate that pipe replacement programs focusing on old water infrastructure or high-failure areas can cut water losses in half.

These methods combined have the potential to reduce water losses to below 10%, creating an estimated savings of 37,000 GPD or more. The effectiveness of a pipe replacement project in reducing water loss depends on several factors including the size of the system, infrastructure age, system pressure, and current system efficiency. A conservative 13% savings from a pipe replacement program combined with meter testing and other system investigations are applied to 2025 water production in Figure 3.1, demonstrating the effect conservation savings would have on seasonal water use throughout the year. Projected water use and the estimated effect of conservation savings on future projections is provided in Table 5.5 of this document.

Tracking water conservation savings to determine the volume of water conserved with the implementation of additional conservation measures will be made more efficient once the SCADA system upgrades are complete.

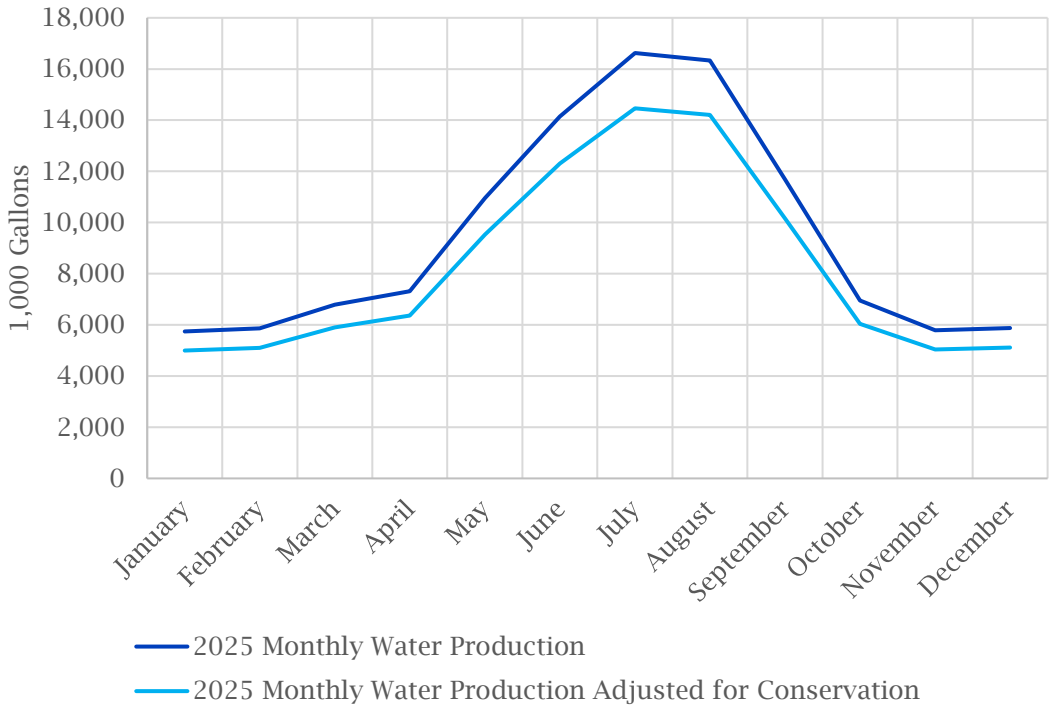


Figure 3.1: Water Conservation Savings Applied to 2025 Water Production

CHAPTER 4: WATER CURTAILMENT PLAN

4.1 INTRODUCTION/CHECKLIST

Coburg's water source has historically been very reliable. The primary circumstances that would limit the City's ability to meet demand are mechanical failure, a break in the supply main, or groundwater contamination. The City does not currently have a water curtailment ordinance activated. The City will implement water curtailment stages upon determination that a water shortage emergency condition exists. This will involve the adoption of two water emergency declaration Ordinances, drafts of which are included in Appendix F. The City municipal code

TABLE 4.1: CHECKLIST OF CHAPTER REQUIREMENTS AND REFERENCE SECTIONS

WATER CURTAILMENT		
ITEM	OAR	REFERENCE SECTION
Water supply assessment and description of past deficiencies	690-086-0160(1)	4.2
Stages of alert	690-086-0160(2)	4.3
Triggers for each stage of alert	690-086-0160(3)	4.3
Curtailment actions	690-086-0160(4)	4.3

4.2 SUPPLY DEFICIENCY HISTORY

The existing water system was designed to accommodate population growth that hasn't occurred yet. Therefore, a significant amount of capacity remains. Circumstances that require the simultaneous use of the two wells to meet demand generally occur during the summer months, when demand is high. The new supply well, Stallings Well No. 1, was drilled in 2023 to expand the City's supply and meet growing demand, with pump and water treatment works to be completed in 2026.

Within the last 10-year period, only one instance with the potential to cause a deficiency occurred. The Bottom Loop Well No. 2 pump failed, putting this well out of use for three to four days during the summer of 2024 until the pump was replaced.

In the past 20 years, Coburg has not experienced a supply deficiency. Each well penetrates 200 feet into alluvial sediments with very high production capabilities. Aquifer levels in the area are stable and are affected little by drought conditions.

4.3 STAGES OF ALERT

Upon occurrence of a water shortage emergency condition, the two Ordinances, provided in Appendix F, will be brought to the City Council to be formally adopted. Implementation of curtailment measures shall be based on the analysis of City water demand, and the capacity of the three City wells.

The City will terminate waste prohibitions or water curtailment stages upon determination that a water shortage emergency condition no longer exists. Such determination shall be based upon factors listed in Table 4.2 of this section and the billing cycle. The termination shall be effective until the next meeting of the City Council following the determination, at which time the City Council shall either ratify or invalidate the determination.

When the City implements water curtailment stages, this will include developing new Ordinances that modify the WMCP draft Ordinances to address nonessential water use. The draft Ordinances are included

in Appendix F. The draft Ordinances define nonessential water uses and use limitations by volume and customer class that implement stages of the Curtailment Plan. These Ordinances will be updated within the next 5-year benchmark period to include language specifically identifying methods and triggers for enacting them.

TABLE 4.2: OUTLINE OF CURTAILMENT PLAN

STAGE	TRIGGER	INTENT	IMPLEMENTATION ACTION
1 "MILD"	Consumption exceeds 80% of production capacity	Public awareness and 5% reduction in consumption	• Declare a "Stage 1 Water Shortage" • Ask for voluntary water use curtailment • Disseminate information regarding shortage and suggested voluntary conservation methods in local media. • Distribute brochures or newsletter outlining basic conservation measures. • Post updates and brochures in conspicuous places such as bulletin boards, schools, and local businesses. • Maintain City website with latest news, conservation reference materials, and links to other helpful resources. • Flush water lines for essential needs only. • Voluntary irrigation schedule. Odd number addresses irrigate on odd number days even addresses on even days.
2 "MODERATE"	Consumption exceeds 90% of production capacity	10% Reduction in Water Use	• Continue with Stage 1 measures except where noted below: • Mandatory irrigation schedule • Eliminate line flushing (except to preserve public health) and city park irrigation • Non-essential residential water use prohibited: i.e. vehicle washing, washing of outside surfaces, filling pools or ponds. • Non-essential commercial water use prohibited: i.e. scenic water features, construction purposes, dust control. • No new water service connections to be approved
3 "CATASTROPHIC"	Catastrophic loss or reduction of supply	Reserve water for health, sanitation, and emergency use	• Continue with Stage 1 and 2 measures except where noted below: ○ All outdoor irrigation banned. ○ Mandatory water use allotment for each user ○ Declared reservation of water resources for critical human use.

CHAPTER 5: WATER SUPPLY

5.1 INTRODUCTION/CHECKLIST

Future water supply assumptions are based on numerous interrelated planning efforts. Coburg's Comprehensive Plan was adopted in 2005 and amended in 2018. Coburg has also updated the City's Vision Statement in 2017 and the Urbanization Study in 2010. In 2017, the State approved a light industrial urban growth boundary expansion on the east side of Interstate 5. Water demand is expected to increase once this area is developed.

TABLE 5.1: CHECKLIST OF CHAPTER REQUIREMENTS AND REFERENCE SECTIONS

WATER SUPPLY		
ITEM	OAR	REFERENCE SECTION
Delineation of current and future service areas	690-086-0170 (1)	5.2
Population projections for service area	690-086-0170 (1)	5.2.1
Schedule to fully exercise each permit	690-086-0170 (2)	5.5
Demand forecast	690-086-0170 (3)	5.3
Comparison of projected need and available sources	690-086-0170 (4)	5.3
Analysis of alternative sources	690-086-0170 (5) and (8)	5.4
Quantification of maximum rate and monthly volume	690-086-0170 (6)	5.3
Mitigation actions under state and federal laws	690-086-0170 (7)	5.4

5.2 FUTURE SERVICE AREA

5.2.1 POPULATION

The Portland State University Population Research Center's certified estimate for the City of Coburg population in 2025 is 1,456 residents. The City of Coburg is expected to have an Average Annual Growth Rate (AAGR) of 1.6% over the next 20 years. The forecasted population growth for 2020 to 2045 within Coburg is expected to have an AAGR of 1.6% with a forecasted population of 1,783 in 2035. Table 5.2 shows the population forecast for additional years. The population is expected to increase at a steady pace according to these numbers.

TABLE 5.2: CITY OF COBURG POPULATION PROJECTION

YEAR	POPULATION
2030	1,615
2035	1,783
2040	1,945
2045	2,101
2050	2,253

Source: 2025 data from Portland State Annual Population Forecasts

5.2.2 EMPLOYMENT

According to a 2024 labor study performed by the Worksource Oregon Employment Department, there are far more workers commuting into the City for work (2,032) than there are local workers. Although earlier forecasts, such as those from the 2004 Coburg Urbanization Study compiled by ECONorthwest, projected only a modest 2.4% increase in employment from 2002 to 2025, the current job availability surpasses past expectations. This indicates stronger-than-anticipated economic resilience and underscores the city's importance as a regional employment center.

Coburg has historically maintained a high ratio of employees to residents. These shift workers coming into the City are called the transient population. In 2005, the city had approximately three employees for every full-time resident. Recent data reflects a slight shift in this trend, with 2,032 transient workers, almost 1.5 transient workers for each resident in the City. As of 2025, Coburg has a population of 1,456 and 524 employees residing in the City, 488 of which commute out of the City. While this indicates lower economic activity than twenty years ago, Coburg continues to function as an employment hub relative to its size.

5.2.3 LAND USE DEVELOPMENT

Land use in Coburg currently consists of a mix of residential, commercial, and industrial properties with a block of agricultural zoned land at the far eastern side of the UGB. Existing land use is defined as the current developed area within the study area while future land use is defined as the full build-out of land within the UGB. The City of Coburg currently has seven zoning districts. In January 2017, the State Court of Appeals decided to allow a light industrial urban growth boundary expansion on the east side of Interstate 5. This expansion added approximately 105 acres of buildable land zoned light industrial to the City buildable lands inventory. The current zoning and existing land use designations are shown in Table 5.3, with areas provided by the City during an evaluation of Land Use Policy performed in 2018.

TABLE 5.3: LAND USE SUMMARY 2025

ZONING	NUMBER OF	ACREAGE	MIN LOT	MAX LOT
Highway Commercial	25	93.88	0.17	16.66
Light Industrial	58	240.38	0.05	64.5
Parks/Recreation	2	28.8	3.93	24.88
Public Facility	2	52.9	1.53	51.3
Campus Industrial District	1	105.7		
Central Business Districts	63	19.16	0.011	2.33
Traditional Medium Residential	2	2.1	N/A	N/A
Traditional Residential	470	195.32	0.000524	14.37

5.3 WATER DEMAND FORECAST

The approach used to estimate future water use includes estimating current per capita daily usage and extrapolating future usage proportional to population growth. The underlying assumption when basing water demand on population is that the entire community's water use is proportional to the number of residents. Coburg is very non-traditional, having a much higher employee-to-resident ratio than most cities. The workers coming into the City each day are considered the transient population. The total population of the City can be adjusted to account for this transient population when forecasting future water use. This equivalent population assumes that each worker spends one third of the day in the City.

Population growth projections are based on the PSU AAGR rate of 1.6% for 2020-2045, and the 2010 Coburg Urbanization study employment growth rate of 2.3% estimated for 2008-2031.

As noted previously, Consor Engineers completed a system analysis for the City in 2024 using MDD data from the 2016 WSMP and preliminary data for this plan. That dataset has since been updated with additional years of information. The ADD and MDD values used here to represent current demand and serve as the projection baseline are based on the most recent City data and may differ from those used in the Consor analysis.

ADD and MDD per capita values and MMD values are based on the average of five years of water data, 2018, 2019, 2023, 2024, and 2025. These years of data show consistent water use and are considered reliable data while 2020 and 2021 are excluded due to changes in water use attributed to COVID-19, and only partial data was available from 2022. The MMD for these five years of 16.6 MG occurred in July of 2024. The ADD per capita water use is 156 GPCD and the MDD per capita water use is 410 GPCD. These values are then used with the future population estimates to project future water use. Table 5.4 shows the projected future permanent population, transient population, and equivalent population. Table 5.5 shows the estimated future water use, including estimated future ADD taking into account potential savings from additional conservation measures.

TABLE 5.4 POPULATION PROJECTIONS

YEAR	POPULATION	TRANSIENT POPULATION	ADJUSTED TRANSIENT POPULATION	EQUIVALENT POPULATION
2030	1,615	2,271	757	2,372
2035	1,783	2,538	846	2,629
2040	1,945	2,837	946	2,891
2045	2,101	3,171	1,057	3,158
2050	2,253	3,544	1,181	3,434

TABLE 5.5 FUTURE WATER USE

YEAR	EQUIVALENT POPULATION	MDD (1000 GPD)	ADD (1000 GPD)	PHD (1000 GPD)	ADD W/ CONSERVATION SAVINGS	MDD W/ CONSERVATION SAVINGS
2030	2,372	973	370	2,433	322	847
2035	2,629	1,079	410	2,697	357	938
2040	2,891	1,186	451	2,965	392	1,032
2045	3,158	1,296	492	3,239	428	1,127
2050	3,434	1,409	535	3,523	466	1,226

Figure 5.1 gives the 20-year water use forecast for ADD and MDD with and without conservation savings. Additionally, the current well capacity and projected well capacity with the addition of Stallings Well No. 1 are shown, along with the capacity of the groundwater rights. Well capacity values are taken from the Consor analysis, with the values shown in Table 5.6 taken from the Consor analysis. This gives a well capacity after Stallings Well No. 1 is in use of 1100 GPM for the low estimate of well production.

TABLE 5.6 WELL CAPACITY

Bottom Loop Well #1 =	550
Bottom Loop Well #2 =	450
Stallings Well Well #1 (low estimate) =	100
Stallings Well #1 (high estimate) =	175

Without considering conservation measures, the anticipated MDD is expected to surpass the well capacity in 2031, when assuming Stallings Well No. 1 will have a conservative 100 GPM productivity. This is consistent with the Consor analysis. Our projected MDD is very close to the MDD Consor found in their analysis. With the anticipated effect of conservation measures, the MDD is expected to surpass the well capacity in 2036, also when assuming Stallings Well No.1 produces at a conservative 100 GPM.

As recommended in the Consor analysis, the City should monitor water demand and well production capacity over the next few years. The City should consider adding an additional water source in approximately 5 years. This will require completing and submitting a transfer application, allowing time for the OWRD to review and approve the application, and time for the design and development of a new source. The City should also consider a permit amendment to add Stallings Well No. 1 to Groundwater Permit G13183 and a water right transfer to add Bottom Loop Well No. 2 and Stallings Well No. 1 to Permit G4033. Connecting all wells to all water rights improves system redundancy. If the City decides to move forward with an additional source well, adding the new source to the City's existing water rights should be considered and can be done at the same time as other permit amendments or transfers.

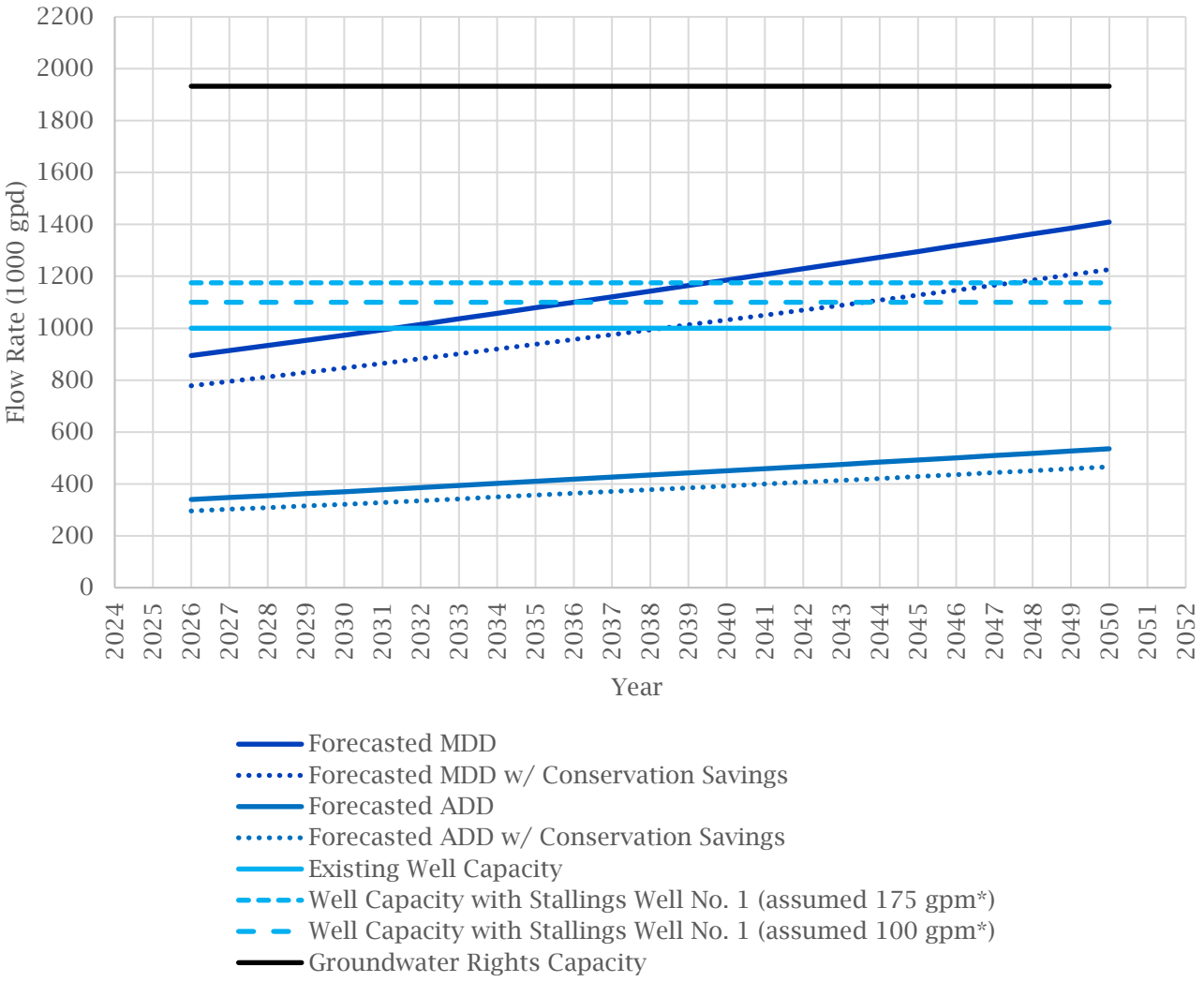


Figure 5.1 City of Coburg 20-Year Water Demand Forecast and Capacity

TABLE 5.7: SUMMARY OF WATER SYSTEM DESIGN PARAMETERS

		DESIGN PARAMETERS (1,000 GPD)			PEAKING FACTORS	
	YEAR	ADD	MDD	PHD	MDD/ADD	PHD/MDD
Without Conservation	2026	340	895	2,236	2.6	2.5
	2036	418	1,100	2,749	2.6	2.5
With Conservation	2026	296	778	1,946	2.6	2.5
	2036	364	957	2,392	2.6	2.5

5.4 NEW SOURCE DEVELOPMENT

The City is not expanding or initiating diversion of water allocated under existing permits and is not required to provide an analysis of alternative sources of water. With planned conservation, Coburg's existing wells are sufficient to meet demand for the next 10 years, but the City will need an additional water source within the 20-year planning period. No new Water Rights are necessary within the 20-year planning period. However, an additional well will be necessary to continue to fully utilize the City's existing water rights and provide system redundancy.

Alternative sources are listed and discussed below.

- Develop additional well(s) at existing wellfields
- Connect to nearby EWEB system
- Distribute non-potable water city wide to increase potable water conservation
- Build a Water Treatment plant on the McKenzie River

The 2016 WSMP included a feasibility analysis of the EWEB intertie connection option. The capacity and need for a storage reservoir and booster pump station, the ability of an intertie to allow for groundwater conservation, and the potential cost of the intertie were all considered. This option was considered infeasible unless outside funding is obtained by the City. Potential quantities of water that could be obtained through an intertie connection were not calculated since the City is not requesting greenlight water or actively pursuing this option.

The overall cost comparison and ease of implementation for the last two alternatives are similar to ten years ago. The McKenzie River treatment plant was analyzed for the previous WMCP and determined to be less advantageous due to its higher costs and additional difficulties in implementation. The non-potable water conservation option has more uncertainty, technical barriers, and financial obstacles; a feasibility analysis indicated that water from conservation from an expanded non-potable system could provide water at a similar cost as a new wellfield, but the regulatory and implementation uncertainties of an expanded reuse system outweighed the cost benefits. Potential quantities of water that could be obtained through either a McKenzie River treatment plant or through development of non-potable water facilities were not calculated since the City is not requesting greenlight water and is not pursuing these alternatives.

Future demand will already be reduced by conservation efforts outlined in this plan; more extensive conservation does not currently appear to be a cost-effective long-term supply strategy for the city. Long term water demand will likely be met by additional development of the new Stallings wellfield, or in the existing Bottom Loop wellfield. Additional analysis of the likely productivity of new wells in either aquifer would be required to determine the feasibility of further development in either wellfield.

Additional conservation measures and the associated costs and estimated volumes were not evaluated since the City is not requesting greenlight water. Mitigation actions were also not evaluated for any of the options mentioned in this section because the City is not requesting greenlight water.

Since Coburg is located within a groundwater limited area, the long-term reliability of any future source the City considers needs to be considered. Any additional water supply will need to take into consideration the SWVGMA. Coburg actively monitors the wells for nitrates in its drinking water to be in compliance with the Safe Drinking Water Act. The average nitrate concentration in Wells 1 and 2 for the period from 2013 to 2024 is 4.4 mg/L. The highest recorded nitrate level during this period was 6.77 mg/L in 2020, well below the MCL for nitrate. Additionally, the SWVGMAAP goals include reducing nitrate levels to less than 7 mg/L throughout the region. The low average nitrate levels are in line with this goal. However, if nitrate levels increase, the wells may need to be re-screened, deepened, or alternate sources developed.

5.5 WATER RIGHTS SCHEDULE

The City obtained transfers to add Stallings Well No. 1 to Permits G4032 and G1580. The City also received an extension in 2024 for Permit G13183 extending the C-Date to 2030. This WMCP is a condition of the extension of the city's permit. Although this permit has been extended, there is no available greenlight water. The full permitted rate was perfected prior to the permit extensions. Table 5.7 shows the current City water rights.

Once Stallings Well No. 1 is in use and productivity is evaluated, the need for an additional supply source can be evaluated. Based on projections, the need for a new source is likely, but will be confirmed once production rates are established for Stallings Well No. 1.

This well will not require new water rights since it has been added to existing water rights. The City should consider adding Stallings Well No. 1 to Permit G13183 with a permit amendment in the future to allow for flexibility in the use of sources. With the development of new sources of water in the future, the City should also consider adding new sources to existing permits and potentially obtaining additional water rights after this planning period.

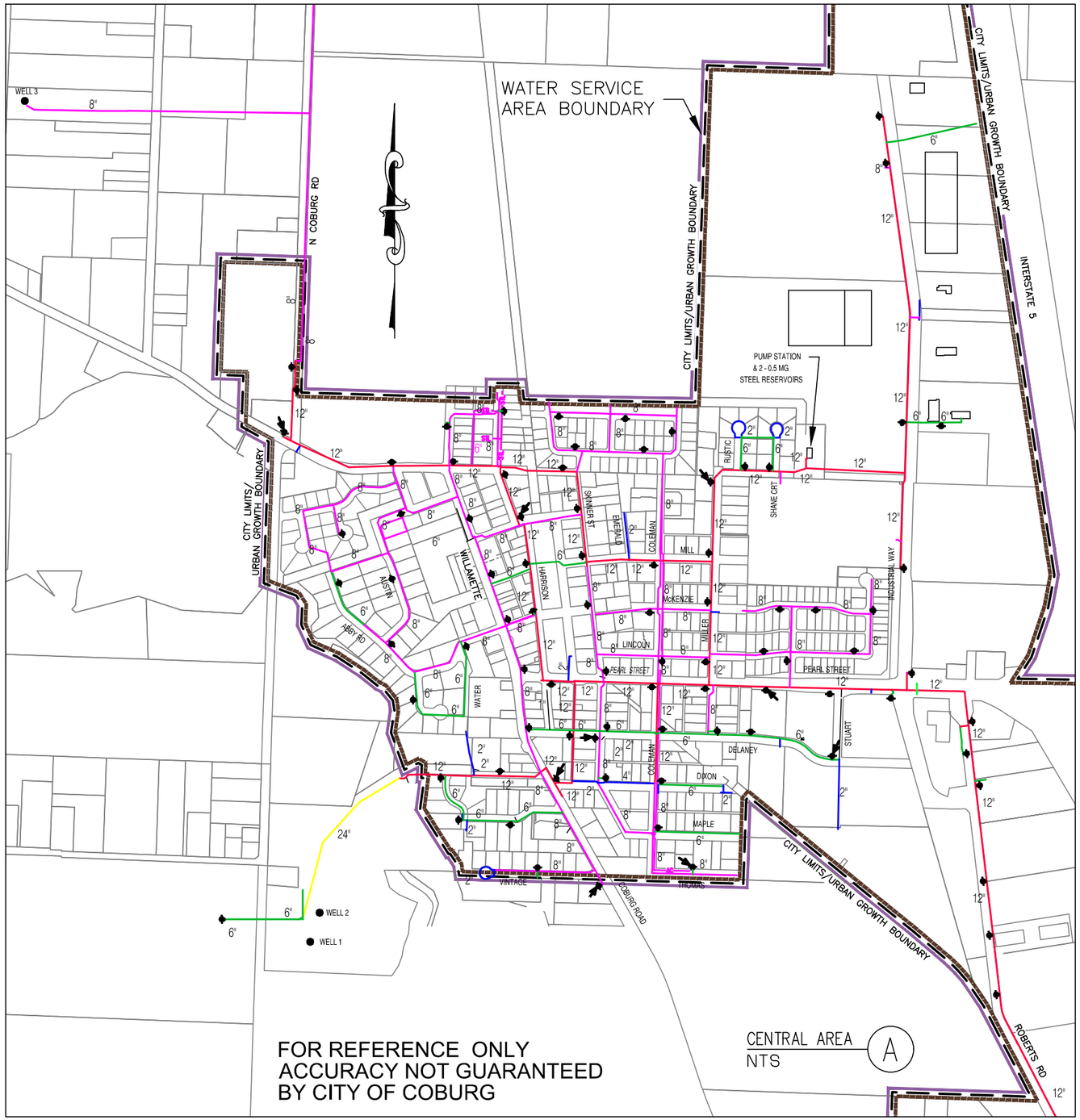
TABLE 5.7: SCHEDULE OF WATER RIGHTS ACTIVITIES

Application/ Permit Number	Certificate Number	Source	Use	Priority Date	Proposed Rate (CFS)	Proposed Action/ Completion Year
G1726/ G1580	37211	Bottom Loop Well No. 1 (LANE 68362) Bottom Loop Well No. 2 (LANE 7553) Stallings Well No. 1 (LANE 79226)	Municipal	4/19/1960	0.31	2027
G4283/ G4032	44837	Bottom Loop Well No. 1 (LANE 68362) Bottom Loop Well No. 2 (LANE 7553) Stallings Well No. 1 (LANE 79226)	Municipal	3/18/1968	0.1	2027
G4284/ G4033	44838	Bottom Loop Well No. 1 (LANE 68362)	Municipal	3/18/1968	0.3	none
G13877/ G13183	none	Bottom Loop Well No. 1 (LANE 68362) Bottom Loop Well No. 2 (LANE 7553)	Municipal	11/16/1994	2	2030

APPENDIX A

City of Coburg Distribution Map

WATER PIPE SIZES
CITY OF COBURG
DISTRIBUTION SYSTEM MAP



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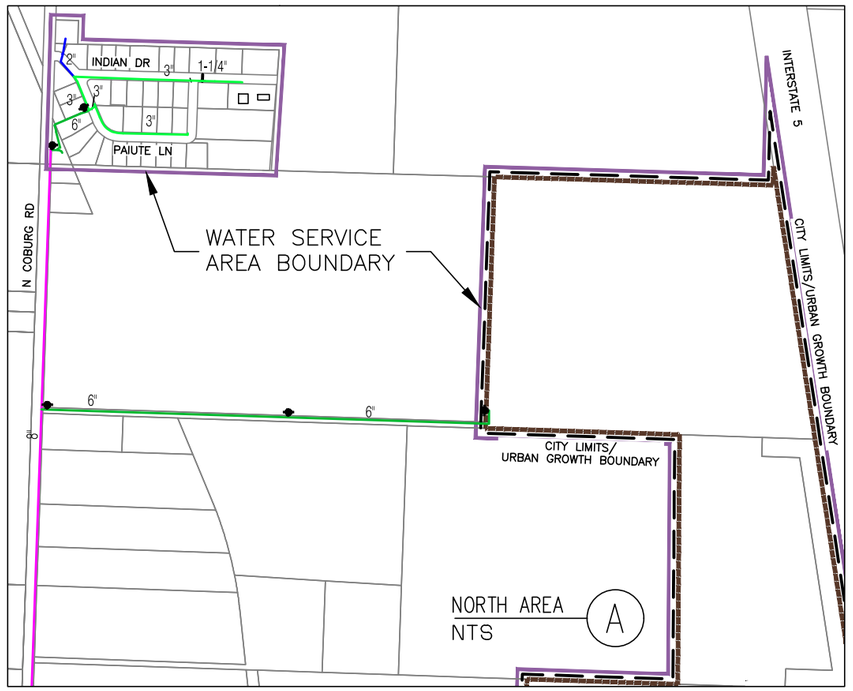

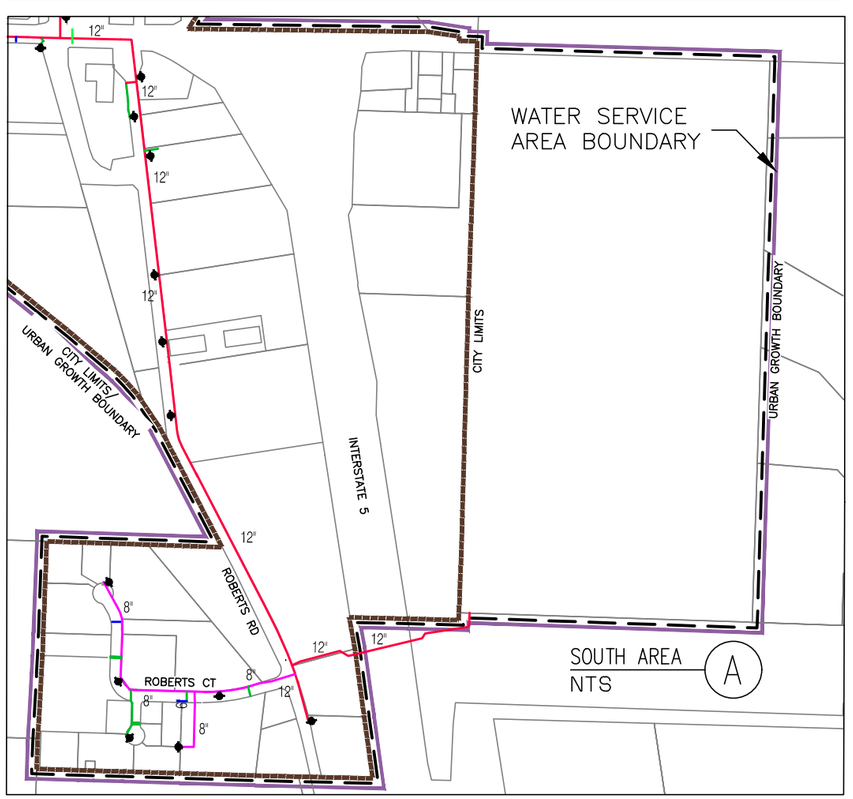

WATER PIPE SIZES

24" 12" 8" 6" 4" 3" 2" 1"

LEGEND

HYDRANT & HYDRANT NUMBER

HYDRANT TEST LOCATION
2-1/2" PORT (PVE ONLY)

Branch ENGINEERING Inc.
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WATER MANAGEMENT & CONSERVATION PLAN

CITY OF COBURG
91136 N WILLAMETTE STREET
COBURG, OR 97408

revisions:

date: JULY 30, 2024
drawn by: VJ
designer: VJ
project no: 23-004E

FIGURE 2.1

sheet:

Z:\2023\23-004E City Of Coburg Water Management And Conservation Plan\Drawings\EXISTING WATER SYSTEM - ZONING - HYD TESTING.dwg 3/18/2026 3:41 PM ANANDA

APPENDIX B

Letter to Local Affected Government

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March 20, 2026

Lane County Land Management Division
3050 N. Delta Hwy
Eugene, OR 97408
Sent via Email: Amber.Bell@lanecountyor.gov

RE: City of Coburg 2025 Water Management and Conservation Plan Update
Branch Engineering Project No. 23-004E

To Amber Bell,

The Oregon Water Resources Department has required an updated Water Management and Conservation Plan (WMCP) for the City of Coburg (City) due to the Final Order approving the City's previous WMCP on March 21, 2013. As required by the OAR Chapter 690, Davison 86, the City of Coburg is making the attached draft WMCP available for review by Lane County. We request that the County provide comments relating to the consistency of the WMCP with the County comprehensive land use plan within the required 30-day review period. Any comments will be included in the final WMCP, as required by OAR Chapter 690, Davison 86.

Please do not hesitate to let me know if I can provide any further information or clarifications.

Sincerely,

Julie Leland, P.E.
Coburg City Engineer
Branch Engineering, Inc.

APPENDIX C

Water Supplier Description Table

Water Supplier Description
Water Rights Summary

Appl. No.	Permit No.	Certificate No.	Priority Date	Source	Use	Allowed Rate (cfs)	Actual Diversion				Authorized Completion Date	Notes *(Facility Name, Resource Issues or Problems, Etc.)*
							Maximum Instantaneous Rate Diverted to Date (cfs)	Maximum Annual Quantity Diverted to Date (MG)	Average Monthly Diversion (MG)	Average Daily Diversion (Gallons)		
G 13877	G 13183 T 11252	-	11/16/1994	Bottom Loop Well No. 1 (LANE 68362) Bottom Loop Well No. 2 (LANE 7553)	Municipal	2	2	231	8.2	138,545	10/1/2001 Extended twice, C-Date: 10/1/2030	No greenlight water available
G 4284	G 4033	44838	3/18/1968	Bottom Loop Well No. 1 (LANE 68362)	Municipal	0.30	0.30	78	5.1	169,200	-	
G 4283	G 4032 T 13888	44837 (Cancelled)	3/18/1968	Bottom Loop Well No. 1 (LANE 68362) Bottom Loop Well No. 2 (LANE 7553) Stallings Well No. 1 (LANE 79226)	Municipal	0.10	0.10	231	8.2	138,545	10/1/2027	
G 1726	G 1580 T 13889	37211 (Cancelled)	4/19/1960	Bottom Loop Well No. 1 (LANE 68362) Bottom Loop Well No. 2 (LANE 7553) Stallings Well No. 1 (LANE 79226)	Municipal	0.31	0.31	231	8.2	138,545	10/1/2027	
G 17403	G 16857	-	6/25/2010	Well No.3 (LANE 69599)	Pollution Abatement	0.28	0.28	44	2.5	81,584	7/22/2016	CBU received by department on 6/2/2014, Certificate not issued yet.

Note: Data in this table from OWRD annual reported water use.

APPENDIX D

Monthly Meter Logs for Water Diverted

2015	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	192000	3480000	3672000
February	0	3758000	3758000
March	252000	4385000	4637000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	10245000	201000	10446000
July	10016000	1277000	11293000
August	10777000	1302000	12079000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	53581166	36786111	90367277

2016	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	40000	4389000	4429000
February	102000	4054000	4156000
March	42000	4513000	4555000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	42000	4513000	4555000
July	11607000	966000	12573000
August	12506000	1718000	14224000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	58568179	32896099	91464277

2017	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	37000	5221000	5258000
February	82000	5031000	5113000
March	150000	5129000	5279000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	3786000	7313000	11099000
July	5520000	9497000	15017000
August	13194000	2085000	15279000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	33845104	60805188	94650292

2018	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	0	4509000	4509000
February	177000	4193000	4370000
March	505000	4317000	4822000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	11442000	1110000	12552000
July	13151000	2909000	16060000
August	11589000	2676000	14265000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	61960186	38139116	100099303

2019	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	188000	3237000	3425000
February	76000	4354000	4430000
March	0	5298000	5298000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	11161000	2389000	13550000
July	12002000	3026000	15028000
August	11879000	3019000	14898000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	76070235	29587092	105657327

2020	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	0	5407000	5407000
February	Missing Data	Missing Data	0
March	181000	5917000	6098000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	9092000	569000	9661000
July	12146000	2905000	15051000
August	13089000	2872000	15961000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	63414195	38321117	101735313

2021	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	24000	5390000	5414000
February	0	4903000	4903000
March	375000	5393000	5768000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	11143000	1619000	12762000
July	13565000	2625000	16190000
August	13154000	2548000	15702000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	78317242	36833112	115150354

2022	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	134000	5497000	5631000
February	242000	4622000	4864000
March	240000	5473000	5713000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	Missing Data	Missing Data	Missing Data
July	Missing Data	Missing Data	Missing Data
August	Missing Data	Missing Data	Missing Data
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	54441165	42795133	97236298

2023	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	1000	5403000	5404000
February	21000	5135000	5156000
March	196000	5409000	5605000
April	Missing Data	Missing Data	Missing Data
May	Missing Data	Missing Data	Missing Data
June	11710000	1178000	12888000
July	13727000	2532000	16259000
August	13352000	2473000	15825000
September	Missing Data	Missing Data	Missing Data
October	Missing Data	Missing Data	Missing Data
November	Missing Data	Missing Data	Missing Data
December	Missing Data	Missing Data	Missing Data
Annual Volume	65437199	37462112	102899311

2024	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	2789000	3632000	6421000
February	4695000	0	4695000
March	4142000	954000	5096000
April	0	5208000	5208000
May	526000	7744000	8270000
June	5820000	7840000	13660000
July	12788000	3836000	16624000
August	11822000	2569000	14391000
September	10229000	1049000	11278000
October	6338000	1281000	7619000
November	32000	5503000	5535000
December	18000	5548000	5566000
Annual Volume	59199000	45164000	104363000

2025	Bottom Loop Well No. 1 Diverted, gallons	Bottom Well Well No. 2 Diverted, gallons	Total Volume, gallons
January	50000	5693000	5743000
February	57000	5810000	5867000
March	24000	6762000	6786000
April	82000	7238000	7320000
May	1153000	9806000	10959000
June	3868000	10277000	14145000
July	5000000	10906000	15906000
August	12239000	4089000	16328000
September	10110000	1566000	11676000
October	6933000	14000	6947000
November	895000	4897000	5792000
December	72000	5802000	5874000
Annual Volume	40483000	72860000	113343000

APPENDIX E

Sample Public Education Materials

Use Water Wisely…

Learn How Much is Enough

Depending on the weather, it's generally better to water about once a week and provide 1 inch to 1 1/2 inches of water. (If it's hot, you might have to water more often.)

Water early in the morning before 10:00 a.m. Watering in the heat of the day allows the water to evaporate and watering late in the day may promote fungus and other lawn diseases.

Time how long it takes to apply one inch of water by placing a flat-bottomed can about 6-ft. away from the sprinkler. Turn the water on and time how long it takes to fill the can with one inch of water. For the next watering, set a timer as a reminder to turn off or move the sprinkler.

Don't over water. Puddles of water and runoff definitely indicate too much water.

Puddles may also indicate your soil isn't able to absorb enough water and needs conditioning. Thatch and aerate the soil. To do any good, the water must be able to penetrate the soil.

You can put off watering another day if there is heavy dew on the grass.

Try Other Ways to Save Water Outdoors

- When you wash your car, use a bucket, sponge, and shut-off nozzle on the hose.
- Sweep sidewalks, driveways and patios instead of hosing.
- Restrict play in the sprinklers to when the lawn needs watering.
- Clean gutters and downspouts manually, without using a hose.

Water Conservation - Making the most efficient use of the state's most precious natural resource.

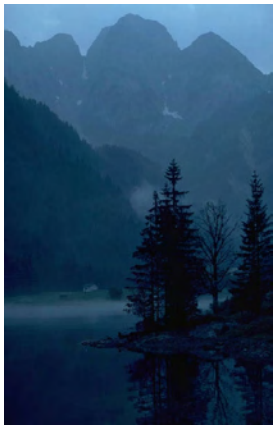
State of Oregon
WATER RESOURCES DEPARTMENT
725 Summer Street NE, Suite A
Salem, OR 97301-1271

Phone: 503-986-0900
Fax: 503-986-0904
Website: www.wrd.state.or.us

Water Conservation

Outdoor Water Use

A GUIDE TO WATER CONSERVATION



Use Water Wisely…

In the summer each of us uses about 250 gallons of water a day—that's more than twice what we use in the winter. And research suggests much of that extra use is simply wasted.

Nobody has enough water to waste. Please use what you need, but don't waste it.

Water conservation is not just for emergencies. Water conservation today saves you money on your next water bill, reduces the cost for developing new supplies, and leaves more water in the rivers for fish and recreation. Even if you're not connected to public water and sewer services, conservation is a good idea. You'll save money on water pumping and heating, extend the life of your well and septic system, and avoid depleting groundwater supplies.

This pamphlet provides a few tips on outdoor water use. For more information, please contact your local water utility, Extension agent or the Oregon Water Resources Department.

Choose the Right Plants

When landscaping, buy plants that are low water-users. A good nursery will be able to advise you.

Consider replacing turf with ground covers such as junipers or heathers.

Group high-water use plants and water them together by area.

Use the Right Equipment

A good stationary sprinkler or soil soaker will water a large area evenly. Avoid oscillating sprinklers since they tend to over-water at the ends when they reverse direction.

Check hoses for leaks and replace washers in hose connectors. Leaks will cost you more money and distribute water unevenly.

Use a hand-held sprayer to water shrubs and special plantings so you can control where the water goes.

Take Care of Your Lawn

Keep your lawn in good shape. Keep weeds down. They rob your lawn and plants of nutrients and water.

Mow your lawn regularly to the height recommended for the type of grass you have. Leave the clippings on the lawn as mulch if they aren't thick and matted.

Start a new lawn in early fall to take advantage of autumn rains and moderate temperatures.

Maintain Planted Beds

Cultivate the soil regularly so water can penetrate and develop a good root system.

Use mulch in rows and around plants to retain moisture.

Keep weeds down so they don't compete for water and nutrients.

Consider using a soaker hose or drip irrigation system instead of a sprinkler if your garden is large. These methods also help prevent evaporation of water from leaves and upper parts of plants.

A GUIDE TO WATER CONSERVATION

State of Oregon
WATER RESOURCES DEPARTMENT
725 Summer Street NE, Suite A

Phone: 503-986-0900
Fax: 503-986-0904
Website: www.wrd.state.or.us

Statewide Watering Guides

	Average Water Depth in Cans (Inches) After 15 Minutes										
	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	1	1 ¼	1 ½
COASTAL AREAS											
	Number of Minutes to Water Twice Weekly										
SPRING	41	27	20	16	14	10	8	6	5	4	3
SUMMER	49	33	24	19	16	12	9	8	6	4	4
FALL	26	17	13	10	8	6	5	4	3	2	2
WILLAMETTE VALLEY											
	Number of Minutes to Water Twice Weekly										
SPRING	49	33	24	19	16	12	9	8	6	4	4
SUMMER	99	66	49	39	33	24	19	16	12	9	8
FALL	41	27	20	16	13	10	8	6	5	4	3
SOUTHWEST											
	Number of Minutes to Water Twice Weekly										
SPRING	57	38	28	23	19	14	11	9	7	5	4
SUMMER	115	77	57	46	38	28	23	19	14	11	9
FALL	42	28	21	17	14	10	8	7	5	4	3
CENTRAL AND EASTERN											
	Number of Minutes to Water Twice Weekly										
SPRING	66	44	33	26	22	16	13	11	8	6	5
SUMMER	115	77	57	46	38	28	23	19	14	11	9
FALL	46	30	23	18	15	11	9	7	5	4	3

Water Conservation - Making the most efficient use of the state's most precious natural resource.

FOR MORE INFORMATION
For more information on lawn-watering and other water conservation contact:

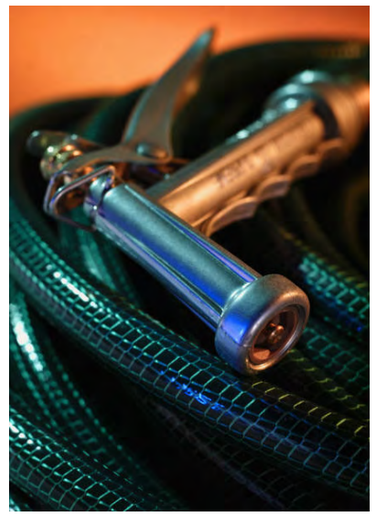
State of Oregon
WATER RESOURCES DEPARTMENT
725 Summer Street NE, Suite A
Salem, OR 97301-1271

Phone: 503-986-0900
Fax: 503-986-0904
Website: www.wrd.state.or.us

Water Conservation

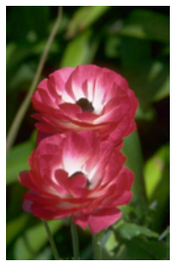
How To Produce A Lawn-Watering Guide

A GUIDE TO WATER CONSERVATION



Lawn-Watering Guides Are Necessary

During the summer, nearly half of all residential water in Oregon is used to irrigate landscape areas around homes. A significant reduction in water use can occur by informing residents about more efficient ways to maintain their lawns and gardens.



Many residential landscapes are over-irrigated by as much as 20 to 40 percent. Often, over-irrigation is due to lack of information about how much water the area actually needs. This information can be provided to customers as an easy-to-use lawn-watering guide.

With the basic information provided in this form, you can easily produce a lawn- watering guide, custom-made for your own distinct climate conditions.

The Benefits of a Lawn-Watering Guide

- Enhance customer relations
- Promote press coverage
- Ease peak-demand problems in the community
- Save your customers money on their water bills. Customers will spend less time watering the lawn and correct turf disease and other problems associated with over-watering.

The Lawn-Watering Guide

Evapotranspiration (ET) is the easiest way for your customers to determine if they are over-watering. ET, measured in inches or millimeters, is the amount of water that evaporates from the soil plus the amount of water that transpires through the leaves of a specific plant, in this case grass.

The following instructions will help you use ET information to prepare a lawn-watering guide for your customers.

Keep the instruction guide as simple as possible. If it's too complicated, the homeowner won't use it. The following are sample instructions that can be printed on the guide:

1. Set five flat-bottom cans or coffee mugs at various places on your lawn. Try to place them half way between the sprinklers or in areas that generally receive the least water. More than five cans may be necessary for large lawns.
2. Turn on your sprinkler for exactly 15 minutes.
3. Measure the depth of water in each can and determine the average water depth of the five cans.
4. Check the chart for the water depth in inches according to the season.
5. Read the number of minutes you should water about every third day and record the times for future reference.

NOTE: Use these times as a guide only. Your customers may need to water more when it's extra hot or less when it's cool or rainy.

Additional Water-Saving Tips You May Want to Include

General lawn watering tips you may want to include with the guide:

- Suggest the best watering times.
- Adjust to your guide recommendations gradually to allow the grass root system time to adjust to the change.
- Watch for visual signs of under-watering such as dry spots or wilting.
- If water is flowing off the grass into the gutter, divide the watering time into two blocks to allow the soil to accept the applied water.
- Increase the amount of water over the spring season to reach the summer water needs, and gradually decrease the amount of water in the fall as the winter rains approach.
- Reduce watering times by 20 percent of the time suggested in the guide if you have a Bermuda grass lawn or another type of low water-using grass.
- Water slightly more for small lawns surrounded by concrete or other heat-reflecting urban structures.

NOTE: A supplemental brochure on watering tips is recommended so that the lawn-watering guide will not be too cluttered.

Distribution of the Material

The material should be distributed in either a low-key, simple, mail-out approach, or in a highly visible, public relations manner.

The low-key approach would be to simply include the lawn watering guide in the customer's billing, along with the supplemental brochure.

The highly visible approach would be to promote the lawn watering guide to a greater extent. Getting local gardening clubs, civic organizations, county cooperative extension offices, schools, and the press involved would increase the effectiveness of the program.

The best time to implement either program is in the spring or summer when the public is thinking about lawn watering.

Customizing Your Guide

To customize a lawn-watering guide for your area, choose the appropriate data from the statewide watering guides overleaf. The sample below shows the data for the Willamette Valley.

Sample

WILLAMETTE VALLEY

	Number of Minutes to Water Twice Weekly										
SPRING	49	33	24	19	16	12	9	8	6	4	4
SUMMER	99	66	49	39	33	24	19	16	12	9	8
FALL	41	27	20	16	13	10	8	6	5	4	3

Use Water Wisely…

Shaving/Toothbrushing

Leave the water off when brushing your teeth or shaving. Turn it on again to rinse. A faucet left running wide open puts about 3 to 5 gallons a minute down the drain.

Kitchen

Make sure the dishwasher is full before you turn it on. For most dishwashers, you do not need to rinse the dishes first—just scrape them clean.

When you wash dishes by hand, don't leave the water running. Use a sink or dish pan full of wash water and one of rinse water.

Keep a jug of water in the refrigerator for drinking so you don't need to let the faucet run while waiting for the water to get colder.

When waiting for hot water from the faucet, save the cool water for other uses.

When preparing vegetables and foods, put a stopper in the sink instead of letting the faucet run.

Laundry

A washing machine can use 40 gallons of water or more– whether you wash a full load or one sock! Use water more efficiently by washing full loads.

Studies have shown that front-loading machines reduce water use by up to 40% or 16 gallons per load.

Save hot water and energy by using detergents formulated for cold water washing. Cold water is gentler on synthetics and delicate fibers.

Remodeling

If you are remodeling, shop for appliances that are designed to reduce water use. Many manufacturers offer washing machines, dishwashers, toilets and showerheads that can help you save water.

Water Conservation - Making the most efficient use of the state's most precious natural resource.

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Water Conservation

Indoor Water Use

A GUIDE TO WATER CONSERVATION

Use Water Wisely…

Most people use 70 to 90 gallons of water per day indoors. While it may be difficult to imagine how all that water is used, a quick look often shows that much is wasted due to leaks or careless habits.

From the kitchen, to the bathroom, to the laundry room, changing your habits can save money on your water, sewer and energy bill and help conserve a vital resource.

Water conservation is not just for emergencies. Water conservation today saves you money on your next water bill, reduces the cost for developing new supplies, and leaves more water in the rivers for fish and recreation.

This pamphlet provides a few tips on how to conserve water in your home. For further information on water conservation, please contact your local water utility, Extension agent or the Oregon Water Resources Department.

The key to using water efficiently is knowing your water use habits. Do you take long, hot showers? Do you leave the water running while brushing your teeth? Do you flush the toilet needlessly? Do you have plumbing leaks? Water conservation actions involve both changing habits and replacing old, inefficient plumbing fixtures.

Leaks

Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you will save almost 6,000 gallons a year.

Check for hidden leaks in your water system. Turn off all faucets in and around your house, then locate your water meter and check the reading. Wait 15 minutes without turning any water on, then check the meter again. If the reading has changed, you have a leak.

Showers and Baths

A 5-minute shower uses from 15 to 40 gallons of water. A low volume showerhead, however, uses only 12 to 15 gallons for a 5-minute shower. Low volume showerheads are inexpensive and can pay for themselves in water, sewer and energy savings in less than a year.

Shower or bath? It depends on how long you stand in the shower and how you fill the tub. A partially filled tub uses far less water than a long shower… and a short shower uses less than a full tub.

Toilets

Flush only when needed. Do not use the toilet for discarding tissue, gum wrappers, cigarette butts, spiders and so on.

Put a water displacement device inside the tank of every toilet. You can make one with a plastic bottle of water weighted down with pebbles.

Check your toilets for leaks. Drop a dye tablet or a teaspoon of food coloring in the tank. If the color appears in the bowl after 15 minutes, replace the "flapper" valve.

A GUIDE TO WATER CONSERVATION

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Website: www.wrd.state.or.us

FOR URBAN AND RURAL OREGONIANS

Saving

Water, Energy & Fish

During Dry Times (or anytime) in Oregon

THE OREGON PLAN
for salmon & watersheds

NRCS
Natural Resources Conservation Service

STATE OF OREGON
WRD
WATER RESOURCES DEPARTMENT

OREGON
DEPARTMENT OF
ENERGY

As Oregonians know, it doesn't always rain enough here, and snowpack levels don't always provide the amount of water we normally use over the summer for work and play. In dry times we all need to examine our water and energy use and make some changes.

Saving energy saves water. About half of our electricity comes from hydroelectric dams. **Saving water and energy also means saving salmon,** because fish need water year-round and to make their journey from streams to the ocean and back again. Together, we can get through dry times if we all pitch in – for our communities, for salmon and watersheds, and for our pocketbooks.

☑ **Check off the actions below that you will take.**
For starters, can you find 5 you will commit to now?

In the Home

1 Repair dripping faucets and leaking toilets, replace washers in hose connectors, and clean gutters and downspouts with a broom or brush, not a hose. A faucet dripping one drop per second wastes 2,700 gallons of water a year!

2 Wash only full loads in clothes washers and dishwashers and avoid using extra cycles. When washing clothes, wash in cold water using a cold water detergent, and consider the next tip below…

3 Buy energy-efficient appliances. Oregon offers a tax credit for qualifying models, including clothes washers that use 60% less energy and up to 40% less water and detergent than standard models, and dishwashers that use 20 to 25% less energy and save up to 800 gallons of water per year. For more information, visit www.oregon.gov/energy or call 1-800-221-8035.

4 Flush toilets only when needed. If your toilets were made before 1995, install a water displacement device in the tank and save about a gallon per flush. Some cities offer the devices free to their water customers. Not all devices work on all toilets. Replacing older toilets saves more – 10,000 gallons a year for the average household. Any model you buy

5 Make a family plan for saving electricity.

- Raise the thermostat on your air conditioner — each degree cuts your cooling bill 2%.
- Turn down the thermostat during the heating season — each degree saves you up to 3% on your bill.
- Set back your heating system to 55° overnight and when you're away from home.
- Set your water heater temperature to 120° to 130°.
- Insulate electric water heaters if they are in an unheated area.
- Turn off lights when they're not needed.
- Replace standard light bulbs with compact fluorescent bulbs. They use 25% of the energy and last 10 times as long. Use energy-efficient bulbs outdoors too (make sure they are rated for outdoor use if fixtures are exposed), or use motion sensors that turn on lights only when needed.

- See if you can get by without that second refrigerator.

today uses only about 1.5 gallons per flush instead of 3.5 to 7 gallons, and some models have 2 flush levels.

6 Call the utility that provides your heat for a free home energy audit. You'll learn which measures make the most sense for your home. You can get cash rebates and low-interest loans for weatherization and other conservation measures. If you heat with oil or wood, call the State Home Oil Weatherization Program at 1-800-452-8660.

7 Seal heating and cooling ducts, test and service heat pumps for peak efficiency, install highly efficient air conditioning systems or make electricity from the sun — and get a state tax credit. Call the Oregon Department of Energy for more information: 1-800-221-8035.

8 Install high-performance shower heads that give a powerful spray using far less water. They cost more, but can pay for themselves quickly in water, sewer and energy savings. Reduce your shower time to five minutes or less. A five minute shower uses only 12 to 15 gallons with a high performance shower head, but over 40 gallons with a standard model. Each person in your house can save over 10,000 gallons per year.

9 Waiting for hot water? Put a bucket or jug under the faucet or showerhead and save the cooler water for other uses like watering plants. Or install an ***on-demand*** hot water recirculation system (avoid continuous or timed systems which save water, but use more energy).

10 Turn the faucet off when brushing your teeth, shaving or when you hand-wash dishes. A faucet running wide open puts about 3 to 5 gallons a minute down the drain! Use garbage disposals sparingly.

11 Keep a container of cool water for drinking in the refrigerator instead of running the faucet. And keep the refrigerator door open only as long as needed.

12 Install aerators in bathroom and kitchen faucets. Aerators are easy to install, and they can save up to 5 percent on your indoor water use, enough to reduce your water heating bills.

Around the Home

13 Sweep sidewalks and driveways instead of hosing, and put the sweepings in the garbage. You'll save water and prevent pollutants and debris from entering streams from storm drains.

LAWN TIPS

14 Most lawns are watered about twice as much as needed. Lawns grow best when watered no more than one inch per week. Most lawns can't absorb more than 1/2 inch in an hour. Over-watering washes away nitrogen (turning your lawn brown) and washes fertilizers and weed killers into storm drains (which end up in streams). To find out how long you need to run your sprinklers, set out one or more empty tuna cans where you water and note the average time they take to fill one inch. That's how long to run sprinklers over a week. Split this watering time into two periods. For more terrific info, go to www.healthylawns.org.

15 Timing is everything! Water between 9 p.m. and 10 a.m. (Between 4 a.m. and 10 a.m. is even better to avoid growth of fungus.) Avoiding the hot, windy part of the day reduces evaporation losses and saves up to 30% on water use. If dew is heavy, you can put off watering another day. And, if that's not enough, try the tip below…

16 Let your lawn go brown in the summer. That's what grasses do naturally. When the rains return, your lawn will be as green as ever! Or reduce your lawn area and plant native plants adapted to your local climate.

17 Mulch! Use a mulching mower that leaves the cuttings in the grass. You won't need other fertilizers. Cut your lawn 3-4" high to protect the roots from drying sunlight.

18 Choose the right plants. Use plants that are low-water users, primarily plants native to the area. Replace turf with ground covers such as juniper or heather. Group any high-water use plants together so they can be efficiently watered.

19 In planted beds, cultivate the soil regularly so water can penetrate and encourage a good root system. Use mulch around plants to retain moisture, and consider using a soaker hose or drip irrigation system instead of a sprinkler.

20 Check hoses for leaks, and use a hand-held sprayer to water shrubs so you can control where the water goes.

21 Wash your car at a car wash that recycles the water. If you wash your car at home, use a shut-off nozzle on the hose. Wash the car on the lawn to prevent soap from going directly to storm drains. Bacteria in the soil will cleanse the water before it gets to a stream.

22 Avoid oscillating sprinklers that tend to over-water the ends when they reverse direction. Soakers and stationary sprinklers work better.

23 Rain barrels are a way to catch rainwater from your roof to use in the yard. Find out about rain barrel safety requirements and precautions to avoid breeding mosquitoes – plus other strategies – at www.portlandonline.com/oni/index.cfm?c=29373 or call 503-823-3050.

On the Farm or Ranch

24 Graze properly for a drought-tolerant pasture. Grass needs three inches of leaf or more to support roots below. When grazing removes too much leaf, roots may die, and the pasture will be less drought-tolerant. Use rotational grazing.

25 For hay growers, harvesting one cutting instead of two saves water in a drought year. For pastures, water is important in the spring. If grass develops good root systems during this critical period, it will be more drought-resistant.

26 To minimize evaporation losses, irrigate early in the morning or at night, if possible, when winds are calmer and temperatures are lower. Properly maintain your irrigation system by replacing all leaking gaskets and worn nozzles.

27 Exclude livestock during irrigation and until soil surfaces dry. Wet soils are compacted by livestock, reducing water infiltration and crushing root growth.

28 Control weeds that compete with crops and grasses for moisture.

29 Reduce nitrogen applications during drought by 25 to 50%. Normal amounts of phosphate, potash and sulfur are still needed.

30 Apply water according to crop needs. Annual crops use a net application of 1 to 2 inches per week in the summer. Critical irrigation times are during flowering, seed fill and fruit set. Account for soil moisture and rainfall, as well as crop need, in your watering plan.

31 Consider adjusting livestock numbers to balance with forage supplies. Consider selling calves and lambs early.

32 Grow small grain for use as hay or pasture. Grain requires less water than conventional forage crops.

33 Check springs, stock tanks, float valves and pipelines to ensure they are operating properly. Repair all leaks.

34 Operate tillage tools at shallower depths in dryland conditions.

35 Delay spring tillage until absolutely necessary to help conserve soil moisture.

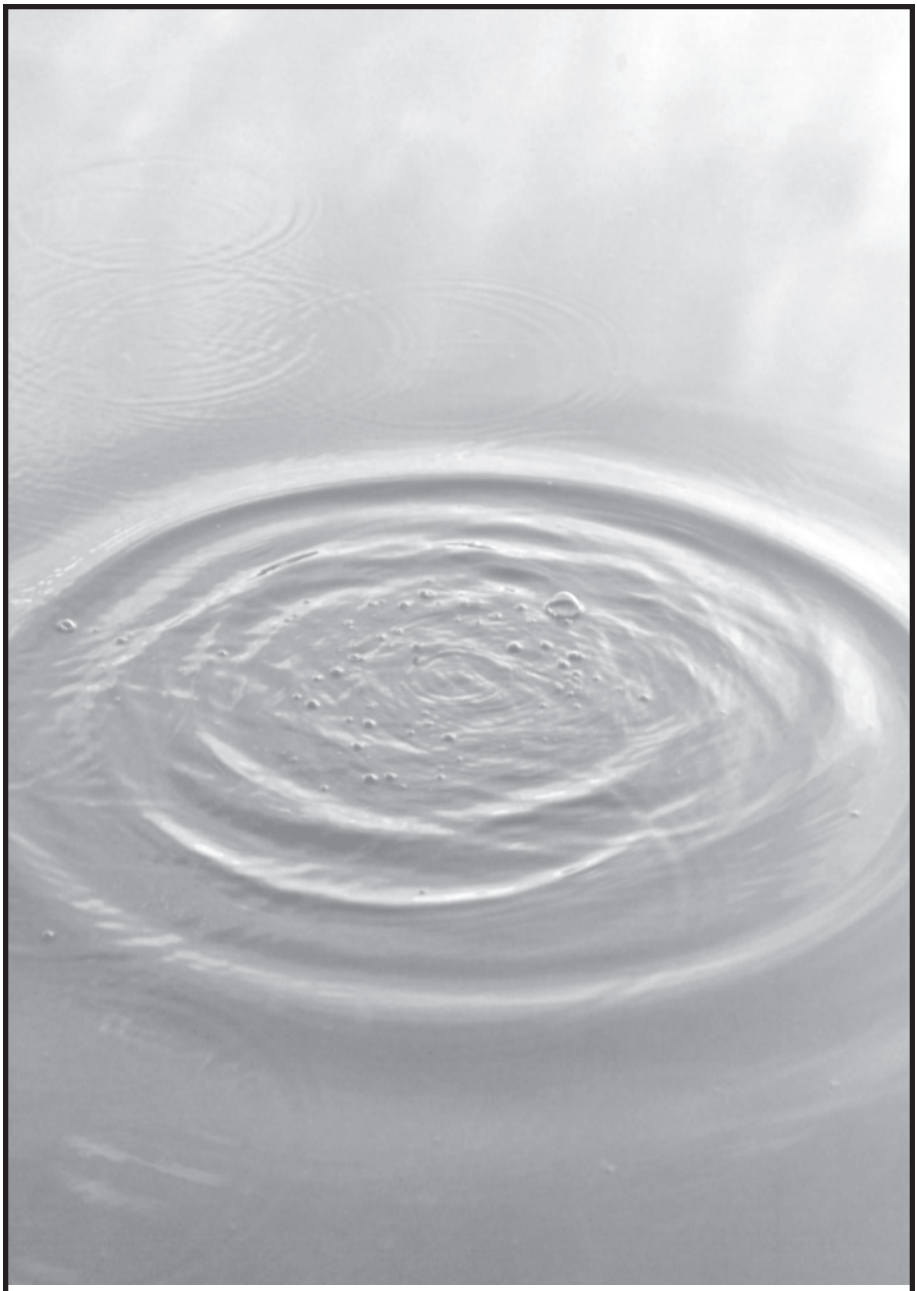
36 Leave crop residues on the soil surface for improved soil moisture from mulching effects, increased water absorption and reduced surface runoff.

37 Energy-efficient irrigation pumps save both energy and water. State tax credits and loans may be available. Contact Oregon Department of Energy at 1-800-221-8035

38 Not using your computer or computer games? Turn them off to save energy. And don't forget to shut off the monitor.

For more information on reducing water and energy use, contact the following:

- **Natural Resources Conservation Service (NCRS):** www.or.nrcs.usda.gov/water.html
  Weekly monitoring reports on snowpack and drought conditions. Also visit www.wcc.nrcs.usda.gov\nrcsirrig\ for additional irrigation recommendations.
- **Oregon Department of Energy:** www.oregon.gov/energy or (503) 378-4040 or 1-800-221-8035 (in Oregon)
  Energy conservation tips and information on tax credits and other programs for residences, business, industry, schools and governments.
- **Oregon State University Extension Service:** http://extension.oregonstate.edu/emergency/drought.php
  Publications and information to help Oregonians cope with water shortages at home, in the garden and on the farm. Also includes links to info about livestock management, farm production, monitoring and mitigation during drought.
- **Oregon Water Resources Department:** www.wrd.state.or.us/OWRD/WR drought.shtml
  Updates on drought conditions, Governor's declarations of state drought emergency in various counties, and other government programs addressing drought. Includes steps to save water for residential, municipal, agricultural and commercial/industrial water users.
- **Bonneville Power Administration:** www.bpa.gov
  Learn how to make voluntary energy efficiency efforts through "Save A Watt."
- **City of Portland Bureau of Water Works:** www.portlandonline.com/water/index.cfm?c=30675
  Information on water conservation and how to do a water audit of your toilet, sink and shower to determine water usage and where to install water-conserving devices (and save money).
- **Energy Trust of Oregon:** www.energytrust.org/ or 1-866-ENTRUST (368-7878)
  Incentives to conserve energy in homes and businesses for Oregon customers of Pacific Power, Portland General Electric, and NW Natural.
- **Portland General Electric:** www.portlandgeneral.com/EE?aux_html/Tips/tipover.asp
  Room-by-room strategies to save energy plus renewable power choices for PGE customers.
- **Pacific Power:** www.pacificpower.net/Article/Article46670.html
  Take an online home energy audit and check out Blue Sky renewable energy options.



THE OREGON PLAN
for salmon & watersheds

NRCS
Natural Resources Conservation Service

STATE OF OREGON
WATER RESOURCES DEPARTMENT
WRD

OREGON
DEPARTMENT OF
ENERGY

Rev. April 2005

06/05 ODOE-CF-123

APPENDIX F

Water Curtailment Ordinances

ORDINANCE PROHIBITING NONESSENTIAL USES OF WATER

ORDINANCE NO._____

An Ordinance of the city of Coburg, Declaring a Water Shortage Emergency, Establishing Rules and Regulations Limiting Nonessential Uses of Water, and Providing Penalties for Violation Thereof.

The City Council of the city of Coburg does enact as follows:

Section 1. Purpose and Intent.

The City Council of the city of Coburg hereby declares that a water shortage emergency condition prevails within the city of Coburg and that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the city of Coburg to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

In order to conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection, this City Council adopts the following regulations and restrictions on the delivery and consumption of water to take effect immediately and remain in effect until rescinded by ordinance.

The specific uses regulated or prohibited in the Ordinance are nonessential, if allowed would constitute wastage of water, and should be prohibited.

Section 2. Definitions.

For the purpose of the Ordinance, the following terms have the meaning given:

"Customer"	any person using water supplied by the city of Coburg.
"Person"	any person, firm, entity, partnership, association, corporation, company, or organization of any kind.
"Water"	water from the city of Coburg, unless expressly provided otherwise or required by the contract.

Section 3. Application.

The provisions of this Ordinance shall apply to all customers using water provided by the city of Coburg.

Section 4. Regulation of Sprinkling and Watering.

No person or customer shall sprinkle, water, or irrigate any shrubbery, trees, lawns, grass, ground covers, plants, vines, gardens, vegetables, flowers, or any other vegetation, except as follows:

a. Such irrigation, sprinkling, and watering shall be permitted by even-numbered addressed residences on even-numbered days of the calendar.

b. Such irrigation, sprinkling, and watering shall be permitted by odd-numbered addressed residences on odd-numbered days of the calendar.

Section 5. Nonessential Residential Water Use.

The following residential water uses are hereby determined to be nonessential and are prohibited:

a. The use of water to wash any motorbike, motor vehicle, boat, trailer, airplane, or other vehicle, except at a commercial fixed washing facility.

b. The use of water to wash down any sidewalks, walkways, driveways, parking lots, tennis courts or other hard-surfaced area, or building or structure.

c. The use of water to fill, refill or add to any indoor or outdoor swimming pools or jacuzzi pools except for neighborhood fire control, where the pools have recycling water systems and evaporative covers, or where the use of the pool is required by a medical doctor's prescription.

d. The use of water in a fountain or pond for aesthetic or scenic purposes except where necessary to support fish life.

Section 6. Non-essentail Commercial or Industrial Use.

The following commercial or industrial water uses are hereby determined to be nonessential and are prohibited:

a. The use of water to serve a customer in a restaurant unless requested by the customer.

b. The use of water for scenic and recreational ponds and lakes, except for the minimum amount required to support fish life.

c. The use of water from hydrants for construction purposes, fire drills, or any purpose other than firefighting.

d. The use of water by a golf course to irrigate any portion of its grounds except those areas designated as tees and greens.

e. The use of water for dust control.

Section 7. Gutter Flooding.

No person or customer shall cause or permit water to run to waste in any gutter or drain.

Section 8. Regulation of Applications for New Water Service.

No applications for new, additional, further expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or other water service facilities of any kind shall be allowed, approved, or installed.

Section 9. Discontinuance of Service.

The City Administrator may, after one warning by certified mail or in person by staff, disconnect the water service of any person or customer whenever he determines that such person or customer has failed to comply with any provisions of this Ordinance. Service so disconnected shall be restored only upon payment of the turn-on charge, hereby fixed at $10.00 during office hours or $20.00 after office hours, or as otherwise specified by law, and any other costs incurred by the city of Coburg in the discontinuance of service and the giving of suitable assurances to the city of Coburg that the action causing the discontinuance will not be repeated.

In addition to the foregoing, the city of Coburg may, prior to restoration of service, install a flow-restrictive device on the customer's service.

Section 10. Variances.

The City Administrator may, in writing, grant temporary variances for prospective uses of water otherwise prohibited after determining that due to unusual circumstances to fail to grant such variance would cause an emergency condition affecting health, sanitation, or fire protection of the applicant or the public. The City Council shall ratify or revoke any such variance or adjustment at its next scheduled meeting. Any such variance or adjustment so ratified, may be revoked by later action of the City Council. No such variance shall be retroactive or otherwise justify any violation of this Ordinance occurring prior to issuance of said temporary variance.

Section 11. Emergency Ordinance.

This Ordinance is hereby declared to be necessary for the immediate preservation of the public peace, health, and safety and shall take effect and be in force upon its adoption by the members of the City Council. Due to severe drought conditions in the area, it is imperative that this Ordinance become effective immediately to protect existing water supplies for human consumption, sanitation, and fire protection.

Section 12. Ordinance Controlling.

The provisions of this Ordinance shall prevail and control in the event of any inconsistency between this Ordinance and any other rules or regulations of the city of Coburg

Section 13. Severability Clause.

If any section, subsection, sentence, clause, or phrase of the Ordinance is for any reason held to be unconstitutional, such decision shall not affect the remaining

portions of this Ordinance. The City Council of the city of Coburg declares that it would have passed each phrase thereof, irrespective of the fact that any one or more such provisions be declared unconstitutional.

Section 14. Publication.

The City Administrator is hereby directed to publish this Ordinance for the period and in the manner required by the _____ (appropriate legal reference).

ORDER PUBLISHED THIS _____day of _____. 20__.
ADOPTED THIS _____ day of _____. 20__, (by the following vote):
AYES:
NOS:
ABSENT:
Signed:_____
Attest: _____
_____(Clerk)

CATASTROPHIC WATER SHORTAGE EMERGENCY

ORDINANCE NO._____

An Ordinance of the city of Coburg, Declaring a Water Shortage Emergency, Establishing Rules and Regulations For Allocating Available Water Resources, and Providing Penalties for Violation Thereof.

The City Council of the city of Coburg does enact as follows:

Section 1. Purpose and Intent.

The City Council of the city of Coburg hereby declares that a water shortage emergency condition prevails within the City of Coburg and that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the city of Coburg to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

In order to conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection, this City Council adopts the following regulations and restrictions on the delivery and consumption of water to take effect immediately and remain in effect until rescinded by ordinance.

The specific uses regulated or prohibited in the Ordinance are nonessential, if allowed would constitute wastage of water, and should be prohibited.

Section 2. Definitions.

For the purpose of the Ordinance, the following terms have the meaning given:

"Customer" any person using water supplied by the city of Coburg.

"Person" any person, firm, entity, partnership, association, corporation, company, or organization of any kind.

"Water" water from the city of Coburg, unless expressly provided otherwise or required by the contract.

Section 3. Application.

The provisions of this Ordinance shall apply to all customers using water provided by the city of Coburg.

Section 4. Prohibiting Nonessential Water Use.

Uses of water for residential purposes in excess of the following daily usage allotment are determined to be nonessential and are prohibited:

Section 5. Nonessential Residential Uses Defined.

Uses of water for residential purposes in excess of the following daily usage allotment are determined to be nonessential:

(1) One or two residential units - Daily usage allotment
   a. One permanent resident _____ gallons
   b. Two permanent residents _____ gallons
   c. Three permanent resident _____ gallons
   d. Each additional permanent resident _____ gallons

(2) Multi-residential units - Daily usage allotment (Three or more) for each permanent _____ gallons residence. Each customer in whose name water is supplied to a residence, or residences or apartments or other dwelling units, shall upon request of the City Administrator advise the utility under penalty of perjury the number of permanent residents using water supplied to the residence, residences, apartments, or other dwelling units. If the customer fails to advise the City Administrator, each residence, apartment or dwelling unit shall be permitted the water allocation herein provided for one permanent resident.

(3) All irrigation uses, use of water features, filling of pools or ponds, exterior washing of cars, driveways, buildings or other equipment except for the purposes of safety or fire fighting purposes are prohibited.

Section 6. Nonessential Commercial Uses Defined.

Uses of water for commercial purposes in excess of the following amounts are determined to be nonessential and are prohibited:

1. The use of water for schools, parks, recreation areas, golf courses, community food gardens, residential gardens, cemeteries, and similar recreation or memorial type facilities for purposes other than human consumption and sanitation.

2. The use of water for nursery facilities, restaurants, shopping centers, filling stations, health and swim clubs, and all other commercial uses for purposes other than human consumption and sanitation.

Section 7. Nonessential Industrial Uses Defined.

Uses of water for industrial purposes in excess of the following amounts are determined to be nonessential:

1. The use of water for manufacturing, food processing, cooling or cleaning of equipment for purposes other than for safety, fire protection human consumption and sanitation.

Section 8. Other Nonessential Uses.

All other uses of water not expressly set forth in this Ordinance for purposes other than safety, fire fighting, human consumption, livestock watering and sanitation.

Section 9. Regulation of Applications for New Water Service.

No applications for new, additional, further expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or other water service facilities of any kind shall be allowed, approved, or installed during the time this ordinance is in effect..

Section 10. Penalties and Discontinuance of Service.

Violations of any provision of this Ordinance shall be punished as follows:

First violation:	*Warning Letter*
Second violation:	Fine - *$100*
Third violation, and subsequent violations:	Fine - *$250*

City Staff may, after written or personal warning, disconnect the water service of any customer that repeatedly violates this ordinance. Water service disconnected shall be restored only upon payment of any turn-on charge and any other costs incurred by the City and suitable assurances that the action causing the discontinuance will not be repeated. In addition to the foregoing, the city of Coburg may, prior to restoration of service, install a flow-restrictive device on the customer's service.

Section 11. Enforcement.

Each deputy of the Coburg Police shall diligently enforce the provisions of this Ordinance. All employees of the city of Coburg, Public Works Department, and Fire Department, have the duty and are hereby authorized to enforce the provisions of this Ordinance.

Section 12. Variances.

The City Administrator may, in writing, adjust any consumer's usage allotment if it is determined that due to unusual circumstances to fail to do so would cause an emergency condition affecting health, sanitation, or fire protection of the applicant or the public; and may grant such adjustment in the case of a mixed residential and nonresidential use if it is found that such adjustment is necessary to place an equivalent allotment burden on consumers.

The City Council shall ratify or revoke any variance or adjustment. Any variance or adjustment so ratified may be revoked by later action of the City Council. No

variance or adjustment shall be retroactive or otherwise justify any violation of this Ordinance occurring prior to issuance of temporary variance or adjustment.

Section 13. Emergency Ordinance.

This Ordinance is hereby declared to be necessary for the immediate preservation of the public peace, health, and safety and shall take effect and be in force upon its adoption by the members of the City Council. Due to impending water shortages in the city of Coburg, it is imperative that this Ordinance become effective immediately to protect existing water supplies for human consumption, sanitation, and fire protection.

Section 14. Ordinance Controlling.

The provisions of this Ordinance shall prevail and control in the event of any inconsistency between this Ordinance and any other rules or regulations of the city of Coburg.

Section 15. Severability Clause.

If any section, subsection, sentence, clause, or phrase of the Ordinance is for any reason held to be unconstitutional, such decision shall not affect the remaining portions of this Ordinance. The City Council of the city of Coburg declares that it would have passed each phrase thereof, irrespective of the fact that any one or more such provisions be declared unconstitutional.

Section 16. Publication.

The City Administrator is hereby directed to publish this Ordinance for the period and in the manner required by the _____ (appropriate legal reference).

ORDER PUBLISHED THIS _____day of _____. 20__.
ADOPTED THIS _____ day of _____. 20__, (by the following vote):
AYES:
NOS:
ABSENT:
Signed:_____
Attest: _____
_____
(Clerk)

APPENDIX G

2024 Consor Technical Memorandum

System Capacity Analysis and Modeling Results for Developments East of Interstate 5

Technical Memorandum

Date: December 4, 2024

Project: City of Coburg – New Customer Hydraulic Modeling Support

To: Julie Leland, PE
Branch Engineering, Inc.

Written by: Kevin Trott, PE
Consor

Reviewed by: Justin Ford, PE
Consor

Re: System Capacity Analysis and Modeling Results for Developments East of Interstate 5

1. Introduction and Background

The City of Coburg (City) is planning to construct a new 12-inch diameter pipeline loop on the east side of Interstate 5 (I-5) to serve new customers and feed a potential future elevated reservoir. The new pipeline will allow future users to connect to the potable water distribution system with a reliably looped pipeline. The first portion of the pipeline is currently installed across I-5 at Selby Way in the southeast corner of the distribution system, where the pipeline is currently terminated. The City is in the process of conceptualizing the next phase of the loop that will extend the pipeline north, and working with potential developers to bring a large (100 acre) undeveloped lot into the City's system at some point in the future.

In the interim, the City (through Branch Engineering) has retained Consor to assist with evaluating the impact of bringing Premier RV Resort (PRVR) into the City's distribution system, which all parties would like to accomplish as soon as possible. The understanding is that PRVR may be brought into the City's system as soon as early 2024. To support this, the City requested that Consor perform targeted hydraulic modeling to analyze the system in conjunction with this proposed modification. The City plans to extend a 4-inch diameter service through a 3-inch meter from the current 12-inch diameter main terminus on the east side of I-5, north of Selby Way.

In addition, the City has recently drilled and tested a new supply well (Well 3, Stallings Well Site) northwest of the distribution system. This well was constructed to meet projected demand increases but is producing less than what was originally anticipated for the new supply. Flow testing showed that it will produce approximately 100 to 175 gallons per minute (gpm). A supply overview is presented in this Technical Memorandum (Memo) to help inform the City as to current and projected demand shortcomings with the updated Well 3 capacity information.

System Improvement Review

The current hydraulic model was updated with the newly installed pipelines. Below is the list of pipelines that were included in this analysis:

- Coleman Street Water Line – this consisted of a new 8-inch and 12-inch pipeline in Coleman Street.

- E. McKenzie Street Waterline – this consisted of a new 8-inch pipeline in McKenzie Street.
- Willamette, Harrison, and Macy Street Waterline Replacement – this consisted of a new 8-inch pipeline in Willamette, Harrison, and Macy Streets, and abandoning the 4-inch pipeline in the alley.
- First Addition to Coburg Creek – this consisted of new 8-inch pipelines in Coburg Creek Drive, Macy Street, and Skinner Street.

The model was analyzed using the maximum day demand (MDD) and peak hour demands (PHD) from the 2016 Water Master Plan (WMP) Update created by 4B Engineering and Consulting. The values used for MDD and PHD were taken for the year 2025 and were 793 gpm and 1,984 gpm, respectively.

2. Capacity Analysis

Well 3 was recommended in the 2016 WMP as required additional source capacity was shown to be needed to meet the projected demand increases. Well 3, which is installed but not fully developed or online yet, was drilled and cased as planned but is only capable of producing approximately 100 gpm to 175 gpm, which is less than the predicted capacity of the well site. The current MDD was reviewed and compared with the current system supply to determine if a deficiency exists, and target when one may occur based on demand projections. For this analysis, Table 5-1 from the 2016 WMP was utilized. **Table 1** below shows the capacity analysis using 100 gpm at Well 3 (results shown in gpm).

Table 1 | Coburg Capacity Analysis with Well 3 at 100 gpm

Supply	2015	2016	2020	2025	2030	2036
Well #1[1]	550	550	525	525	525	525
Well #2[1]	550	550	525	525	525	525
Well #3	0	0	0	100	100	100
Total Available Capacity[2]	1,100	1,100	1,050	1,150	1,150	1,150
MDD	451	485	642	793	954	1,166
Total Required Capacity[3]	542	582	770	952	1,145	1,463
Net Reserve	**558**	**518**	**280**	**198**	**5**	**-313**

Notes:
1. WMP assumes the capacity of Wells 1 and 2 reduces to 525 gpm in 2020 due to aging
2. The Total Available Capacity is based on the full capacity of all sources
3. Based on MDD @20 max hrs/day of pumping

Table 2 below includes the capacity analysis using 175 gpm at Well 3 (results shown in gpm).

Table 2 | Coburg Capacity Analysis with Well 3 at 175 gpm

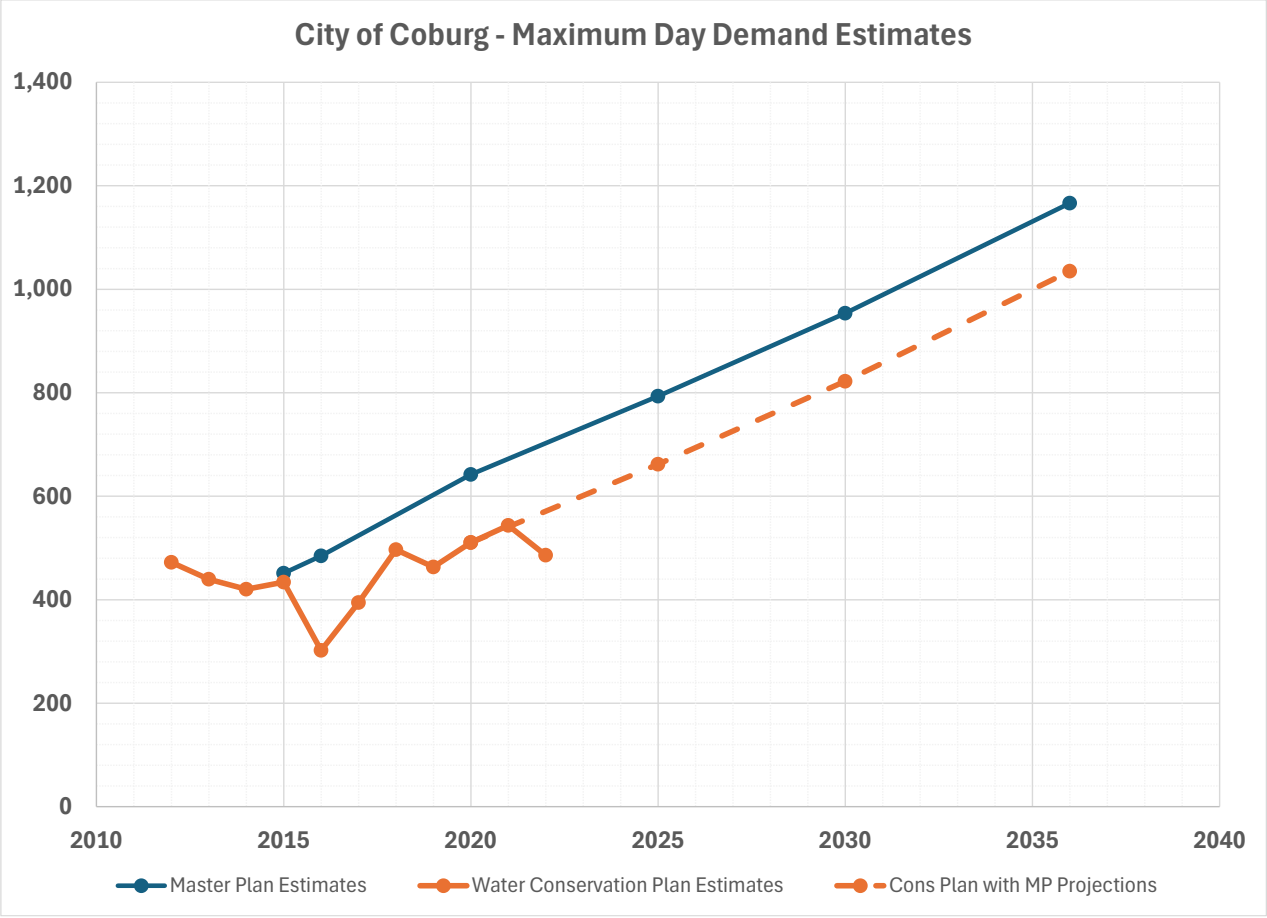
Supply	2015	2016	2020	2025	2030	2036
Well #1[1]	550	550	525	525	525	525
Well #2[1]	550	550	525	525	525	525
Well #3	0	0	0	175	175	175
Total Available Capacity[2]	1,100	1,100	1,050	1,225	1,225	1,225
MDD	451	485	642	793	954	1,166
Total Required Capacity[3]	542	582	770	952	1,145	1,463
Net Reserve	**558**	**518**	**280**	**273**	**80**	**-238**

Notes:
1. WMP assumes the capacity of Wells 1 and 2 reduces to 525 gpm in 2020 due to aging
2. The Total Available Capacity is based on the full capacity of all sources
3. Based on MDD @20 max hrs/day of pumping

Based on this analysis, the current (year 2025, after Well 3 is placed in service) capacity of the system is an excess of 198 gpm to 273 gpm, depending on the production at Well 3. If the demand trends from the WMP are accurate, the City will need to have a new well online by shortly after the year 2030 to account for the reduced capacity of Well 3. Note that the WMP assumed a reduction of capacity of the existing wells from 550 gpm to 525 gpm due to well age. This reduction was assumed to occur in 2020.

Based on the City's comments, the current capacity of Wells #1 and #2 are 550 gpm and 450 gpm, respectively. It appears that the expected wear did not occur on Well #1, but more than expected wear occurred on Well #2. In addition, the City provided MDD values that are being used in its updated Water Management and Conservation Plan (WMCP). The effort to update the City's WMCP, which was last published in 2008, has been underway and is expected to be finalized and adopted in 2025. **Figure 1** provides a comparison between the 2016 WMP numbers and the updated WMCP numbers, which are more recently derived.

Figure 1 | MDD Comparison – 2016 WMP vs Updated WMCP



Note that the updated WMCP numbers are less than the 2016 WMP MDD numbers. However, in an effort to display what can be considered the "worst case scenario", **Table 3** presents the scenario of 450 gpm at Well #2, 100 gpm at Well #3, and the 2016 WMP projections (results shown in gpm).

Table 3 | Coburg Capacity Analysis – Worst Case Scenario

Supply	2015	2016	2020	2025	2030	2036
Well #1[(1)]	550	550	550	550	550	550
Well #2[(1)]	550	550	450	450	450	450
Well #3	0	0	0	100	100	100
Total Available Capacity[(2)]	1,100	1,100	1,000	1,100	1,100	1,100
MDD	451	485	642	793	954	1,166
Total Required Capacity[(3)]	542	582	770	952	1,145	1,463
Net Reserve	558	518	230	148	-45	-363

Notes:

1. Assumes the capacity of Wells 1 and 2 are 550 gpm and 450 gpm, respectively
2. The Total Available Capacity is based on the full capacity of all sources
3. Based on MDD @20 max hrs/day of pumping

For an additional comparison, using the 2016 WMP projections forecasted out from the 2024 WMCP estimates, the resulting 2036 MDD would be 1,035 gpm (not shown in the tables). Due to this uncertainty, the City should continue to plan on having additional water supply ready by 2030, and should closely monitor its MDD and well production over the next few years to track the available supply and plan accordingly.

3. New Customer and Phased Improvement Analysis

As PRVR wants to be brought into the City's system now, but the new 12-inch east side pipe loop is not going to be constructed for some time, the City requested that we review the implications of them providing service under current conditions (prior to extending the pipeline). PHD and MDD analysis model runs were completed with PRVR getting service from the current end of the 12-inch pipeline through a 4-inch service. This is considered "Phase 1" for reporting purposes, which will include only a 4-inch service extended (without the East Side Loop). No Well 3 flow will be included based on the anticipated timeframes, and no fire flow requirement will be reviewed for PRVR property, per City direction.

At some point in the next few years, it is anticipated that a land developer will want to build on the 100-acre lot, which will necessitate extending the 12-inch pipeline north from its current terminus to Van Duyn Street. This will be considered "Phase 2" for reporting purposes. PHD, MDD, and fire flow demand analysis model runs were completed assuming the following new demands: 25 percent of the 100-acre lot comes into the system and additional customers south of Van Duyn and East of I-5 come into the system including a gas station with a convenience store and a restaurant. For this analysis it was assumed that Well 3 will have been developed and the flow contribution included in the system.

Eventually, it is anticipated that the pipeline will be extended past the new development and a second I-5 crossing North of Van Duyn Road will also be built which would complete the pipeline loop. Once the entire pipeline is completed and looped, this will be considered "Phase 3" for reporting purposes. PHD, MDD, and fire flow demand analysis model runs were completed with the 12-inch pipeline complete but without the reservoir constructed. The model runs will be completed assuming an additional 25 percent of the 100-acre lot comes into the system (for a total of 50 percent), and that the Well 3 contribution persists.

Phase 1 Results

The first phase of this analysis was completed assuming both MDD flow and PHD flow within the system and at the PRVR. Based on this analysis, the City can bring the PRVR online without any observable effect to the level of service within the existing system. The pressure observed at PRVR during MDD + PHD was 67.5

pounds per square inch (psi) and 67.7 psi, respectively. **Figure 2** presents the results of the Phase 1 PHD scenario.

Phase 2 Results

The second phase of the analysis includes the demand of the PRVR and assumed a new demand for the 100-acre site. The demand for the 100-acre site was assumed to be 25 gpm MDD, which is 50 percent of the Phase 3 demand. According to the WMP, the MDD:PHD peaking factor is 2.5, which would correspond to a PHD of 62.5 gpm for the site. With this demand, the peak hour simulation indicated a pressure observed at 70.3 psi and a velocity of 0.5 feet per second (fps). Under the MDD conditions, it was determined that the site is limited to 2,200 gpm at 20.3 psi. This indicates that with an MDD of 25 gpm, the site has 2,175 gpm available for fire flow protection. **Figure 3** presents the results of the Phase 2 PHD scenario. **Figure 4** presents the results of the Phase 2 MDD plus fire flow scenario.

Phase 3 Results

The third phase of the analysis included the demand of the PRVR and assumed a new demand for the 100-acre site. The MDD for the 100-acre site was assumed to be 50 gpm which is 100 percent of the assumed site demand. Utilizing the MDD:PHD peaking factor, the corresponding PHD for the site is 125 gpm. With this demand, the peak hour simulation indicated a pressure observed at 71 psi and a velocity of 1.0 fps. Under the MDD, it was determined that the site is limited to 3,850 gpm at 20.3 psi. This indicates that with an MDD of 50 gpm, the site has 3,850 gpm available for fire flow protection. Per the WMP, the largest fire flow demand within the City is 3,500 gpm at the I-5 industrial zone. **Figure 5** presents the results of the Phase 3 PHD scenario. **Figure 6** presents the results of the Phase 3 MDD plus fire flow scenario.

4. Conclusions and Recommendations

Based on the analysis above, the limiting factor to bringing the new customers online is both the well supply and construction phasing of the pipelines. With the available well supply, the site is limited to ~165 gpm (200 gpm available from the wells for 20 hours of pumping), which would put the entire system at capacity and not allow any further growth. In addition, the site is limited to 2,175 gpm for fire flow conditions during the Phase 2 scenario. Once the loop is complete, the site can match the current maximum fire flow in the system of 3,500 gpm.

There is also uncertainty regarding wear on the existing well pumps. Well #1 experienced no reduction of capacity over the last few years and is still at 550 gpm capacity while Well #2 had excess wear and has dropped to 450 gpm capacity. In addition, the production of the new Well #3 is estimated to be between 100 gpm and 175 gpm. There is also uncertainty with the MDD projections, which seem to be high in the 2016 WMP when compared to the updated WMCP estimates. With these uncertainties, the City may need to bring an additional supply source online prior to 2030, or it may be able to delay the implementation of the additional supply source. Therefore, the City should closely watch its water demands and well production capacity over the next few years.

The following is a list of conclusions and recommendations at each Phase based on the results of the modeling analyses conducted:

<u>Confirmation of Assumptions</u>

1. Monitor the yearly MDD to verify projections and compare with the projections presented in Figure 1 above. If future MDD exceed the projections, the City will need to speed up the implementation of additional water supply or take steps to reduce consumption.

2. Monitor the well production to verify well pump wear at existing wells and production at the new well. If the existing wells decrease or the new production Well #3 has less than 100 gpm capacity, the City will need to speed up the implementation of additional water supply or take steps to reduce consumption.

Capacity Review

3. Identify a new supply source to meet the projected demands beyond the year 2025. This supply source will most likely need to be online by around the year 2030. Depending on the actual capacity of Well 3 after it is developed, the deficit in supply is estimated at up to 363 gpm in the year 2036.

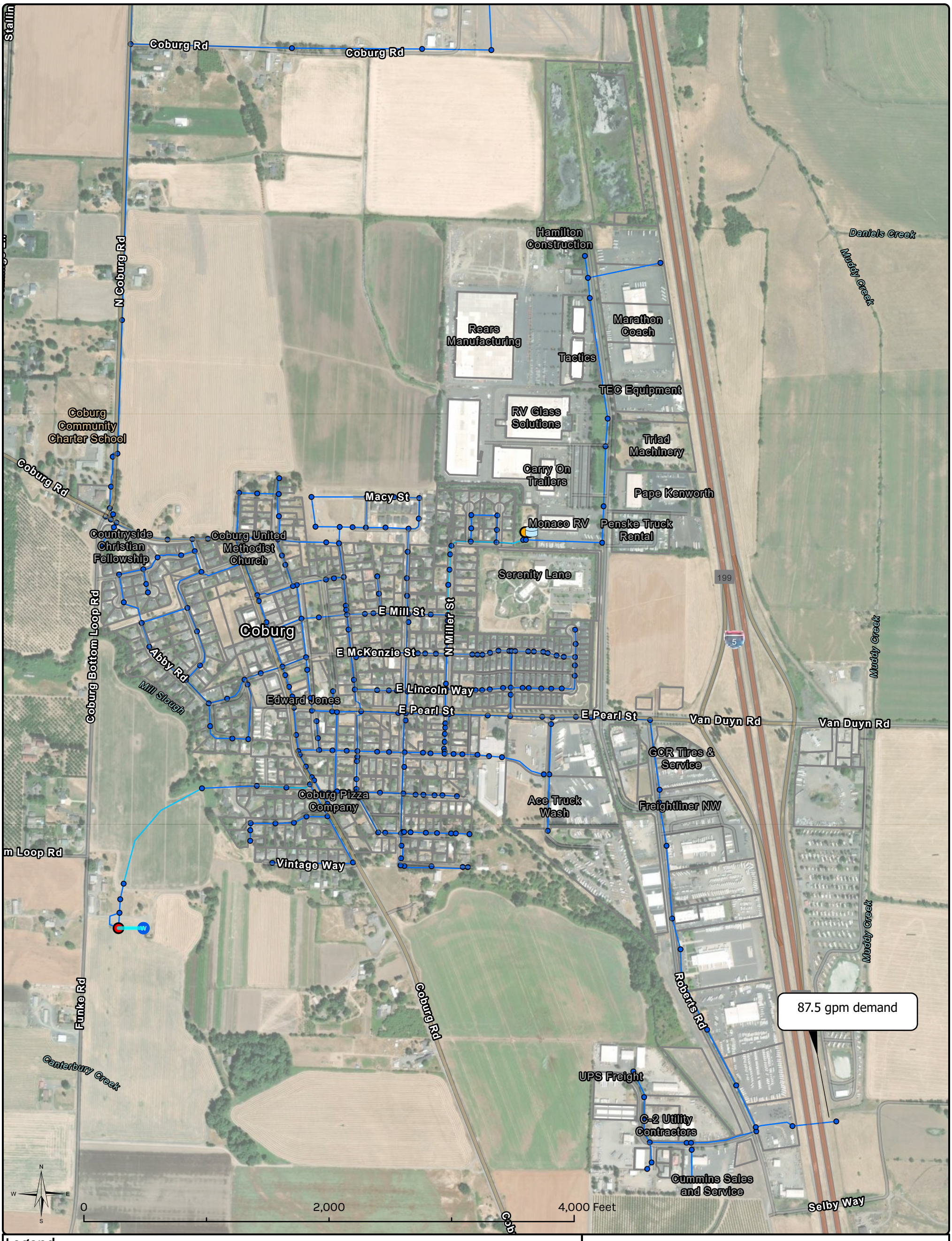
Phase 1 Improvements

4. Adding PRVR to the City's system right now introduces no observable (from hydraulic modeling) effect to the level of service within the existing system. Fire flow was not analyzed as part of Phase 1, but would be similar to the available fire flow observed in Phase 2.

Phases 2 & 3 Improvements

5. Limit the 100-acre site to an MDD of 100 gpm to allow the remaining 65 gpm of supply be available to other areas of the distribution system (for demand increases from expected or unexpected growth), until such time as another supply source is determined.

6. Limit the fire flow requirement of the 100-acre site to 2,000 gpm until Phase 3 of the pipeline is complete.



Legend

- Wells 1&2
- New Well
- Sarah Lane Reservoirs
- Parcels

PRESSURE	VELOCITY
< 5 psi	< 2 fps
5 - 20 psi	2 - 5 fps
20 - 30 psi	5 - 8 fps
30 - 50 psi	8 - 12 fps
50 - 80 psi	> 12 fps
> 80 psi	

COBURG OREGON

Branch ENGINEERING inc

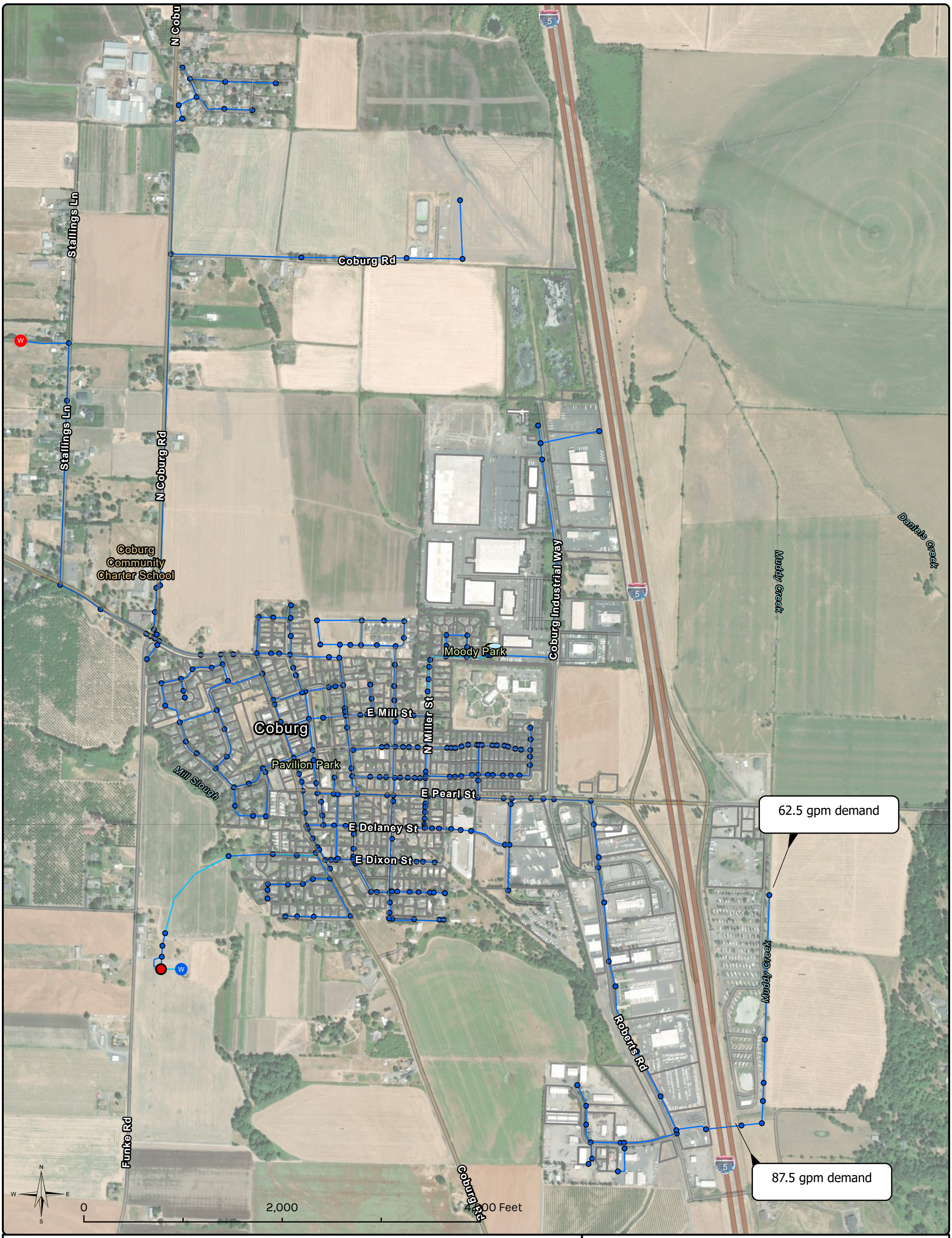
consor

Figure 2
New Customer Analysis

Phase 1 - Existing PHD Scenario
Pressure and Velocity

Project No: W2308360R.03 December 2024

C:\Users\Kevin.Trott\OneDrive - Consor Engineers, LLC\Documents\Projects\Coburg\Coburg_Figure2.aprx 5/15/2024 1:31 PM Kevin.Trott



Legend

- Wells 1&2
- New Well
- Sarah Lane Reservoirs
- Parcels

PRESSURE

- < 5 psi
- 5 - 20 psi
- 20 - 30 psi
- 30 - 50 psi
- 50 - 80 psi
- > 80 psi

VELOCITY

- < 2 fps
- 2 - 5 fps
- 5 - 8 fps
- 8 - 12 fps
- > 12 fps

COBURG OREGON

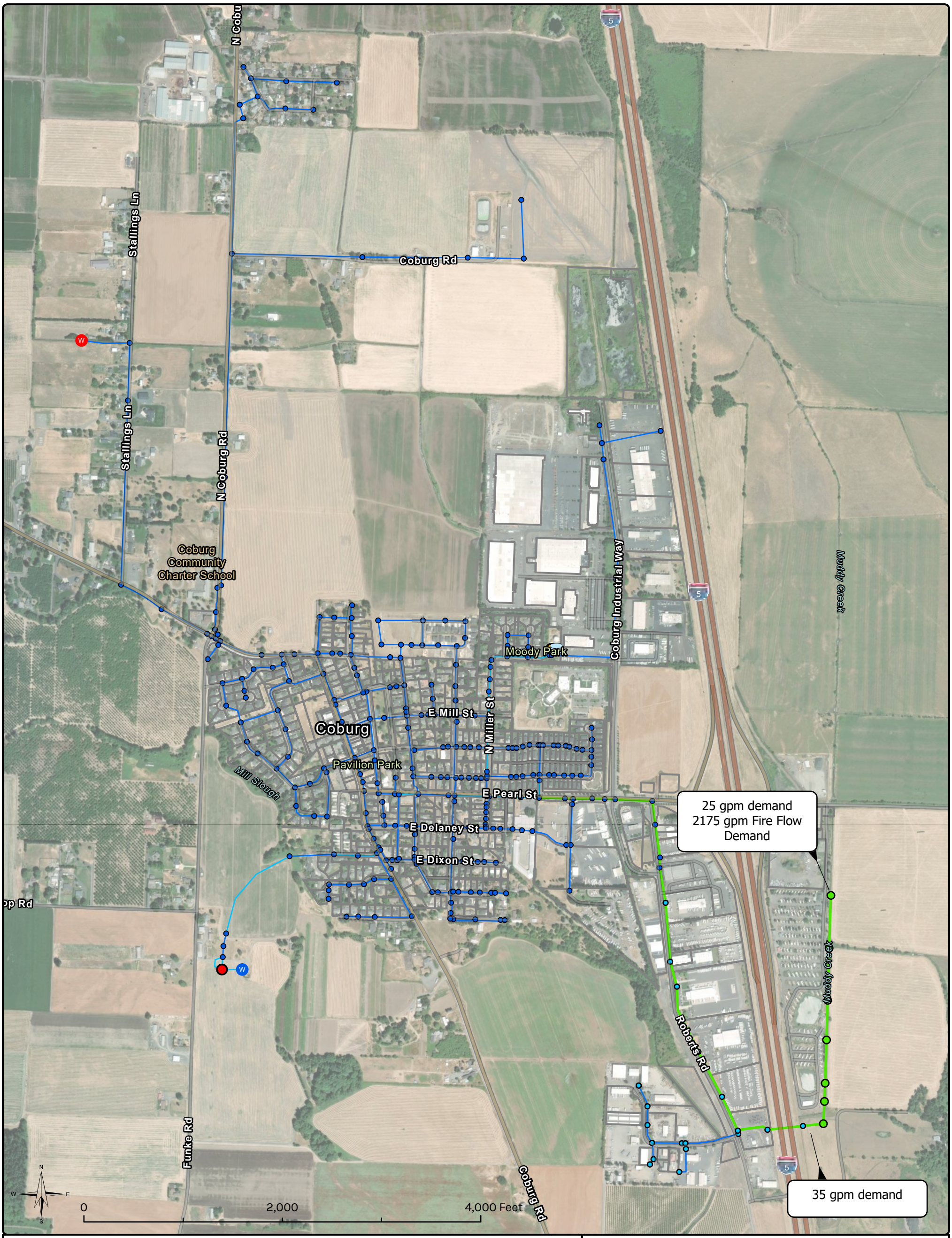
Branch ENGINEERING Inc

consor

Figure 3
New Customer Analysis
Phase 2 - Existing PHD Scenario
Pressure and Velocity

Project No: W230836OR.03 May 2024

Data Sources:: Lane County, OR 2022, Consor April 2024;Hybrid Reference Layer: Esri Community Maps Contributors, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS
World Imagery: Maxar.
Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
Disclaimer: Consor and City of Coburg make no representations, express or implied, as to the accuracy, completeness and timeliness of the information displayed. This map is not suitable for legal, engineering, or surveying purposes.
Notification of any errors is appreciated. Boundaries of adjacent purveyors are approximate and not to be interpreted as exact.



Legend

- Wells 1&2
- New Well
- Sarah Lane Reservoirs
- Parcels

PRESSURE	VELOCITY
< 5 psi	< 2 fps
5 - 20 psi	2 - 5 fps
20 - 30 psi	5 - 8 fps
30 - 50 psi	8 - 12 fps
50 - 80 psi	> 12 fps
> 80 psi	

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Figure 4
New Customer Analysis
Phase 2 - Existing MDD+FF Scenario
Pressure and Velocity

Project No: W230836OR.03 May 2024

Data Sources:: Lane County, OR 2022, Consor April 2024;Hybrid Reference Layer: Esri Community Maps Contributors, Oregon State Parks, State of Oregon GEO, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS
World Imagery: Maxar.
Coordinate System: NAD 1983 StatePlane Oregon South FIPS 3602 Feet Intl
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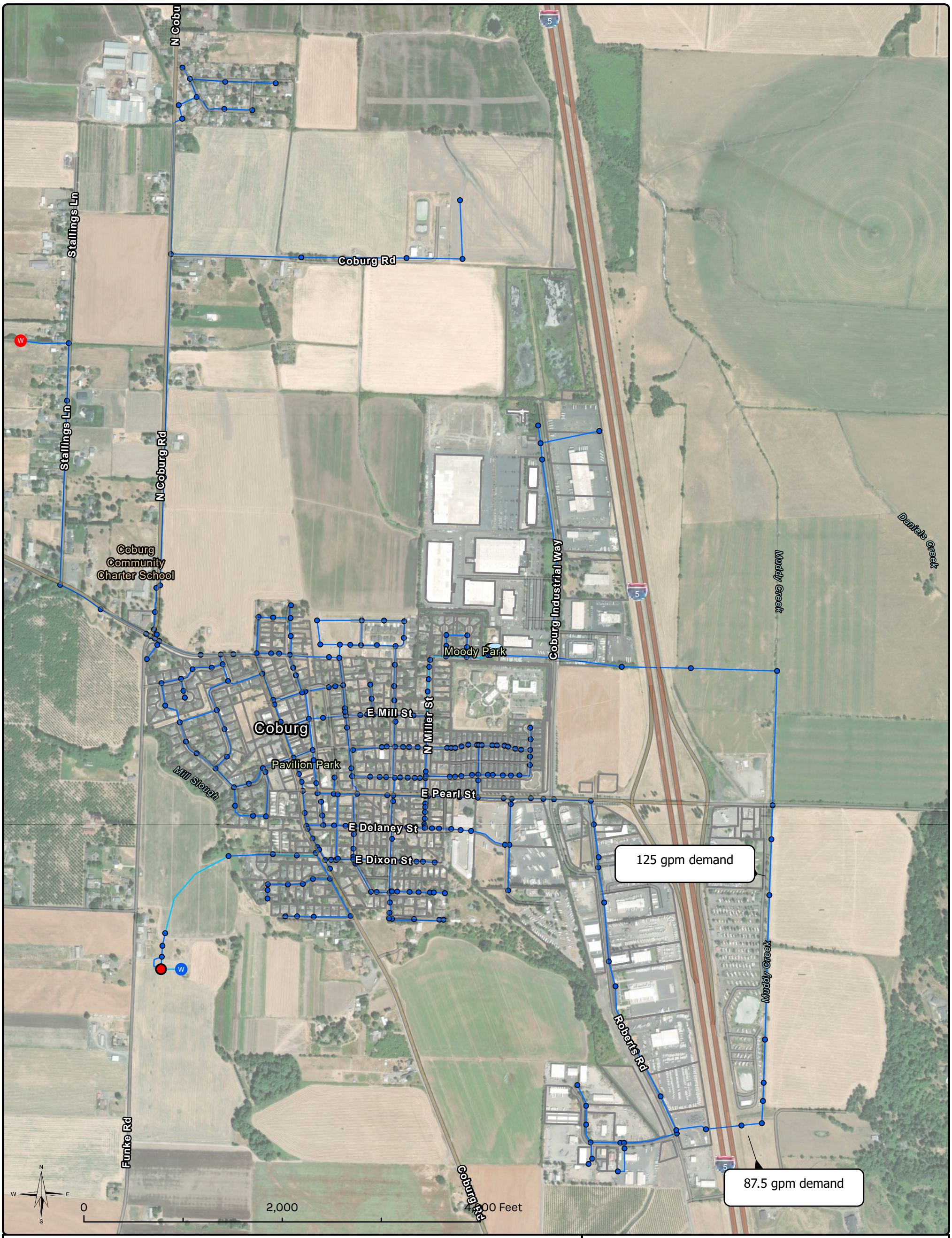

Legend

- Wells 1&2
- New Well
- Sarah Lane Reservoirs
- Parcels

PRESSURE

- < 5 psi
- 5 - 20 psi
- 20 - 30 psi
- 30 - 50 psi
- 50 - 80 psi
- > 80 psi

VELOCITY

- < 2 fps
- 2 - 5 fps
- 5 - 8 fps
- 8 - 12 fps
- > 12 fps

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Figure 5
New Customer Analysis
Phase 3 - Existing PHD Scenario
Pressure and Velocity

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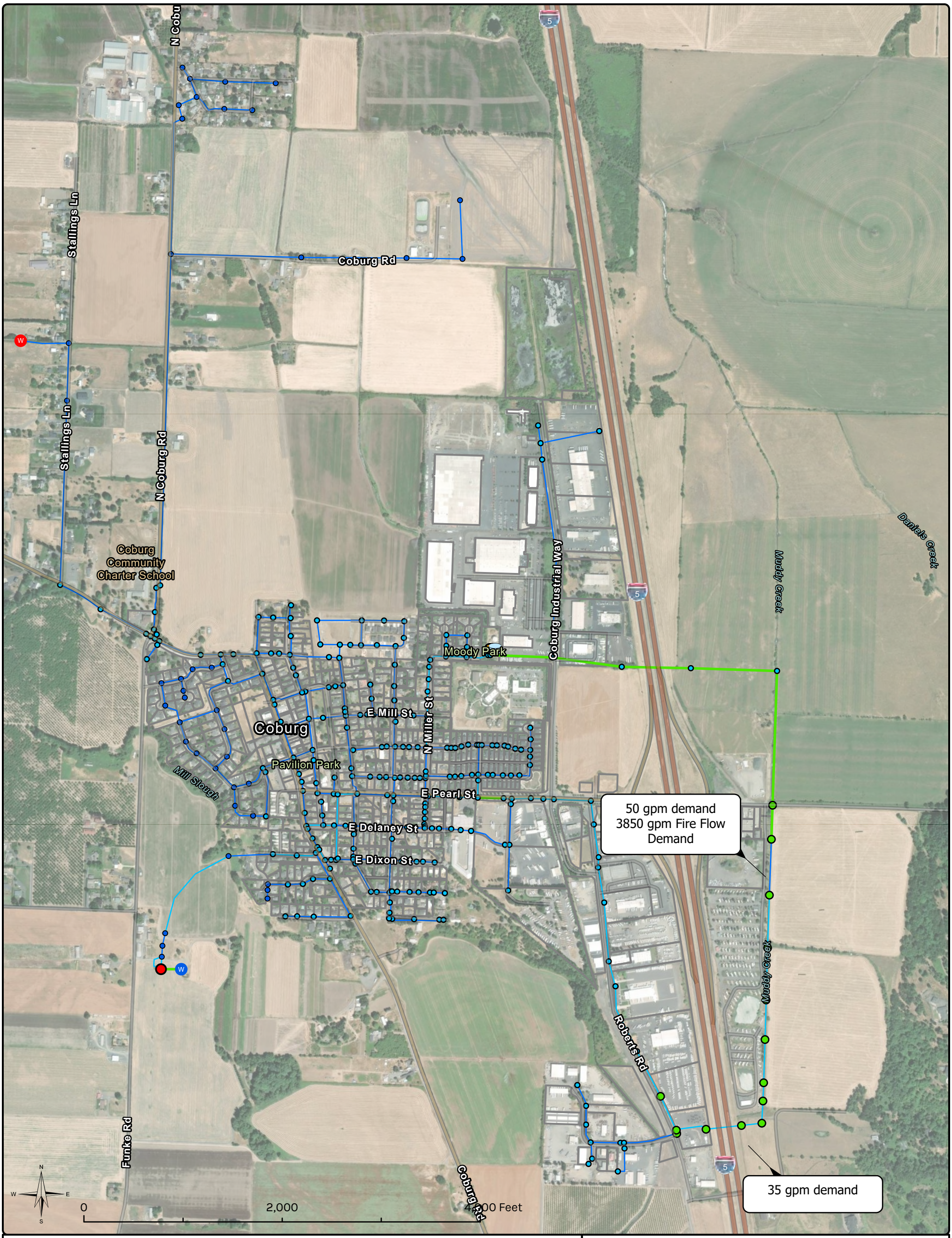

Legend

- Wells 1&2
- New Well
- Sarah Lane Reservoirs
- Parcels

PRESSURE	VELOCITY
< 5 psi	< 2 fps
5 - 20 psi	2 - 5 fps
20 - 30 psi	5 - 8 fps
30 - 50 psi	8 - 12 fps
50 - 80 psi	> 12 fps
> 80 psi	

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Figure 6
New Customer Analysis
Phase 3 - Existing MDD+FF Scenario
Pressure and Velocity

Project No: W230836OR.03 May 2024