

*Draft*

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# Water Management and Conservation Plan

Prepared for

## City of Monroe, Oregon



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Prepared by



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## Table of Contents

<b>1</b>	<b>Municipal Water Supplier Plan Elements.....</b>	<b>1-1</b>
1.1	Introduction.....	1-1
1.2	Plan Requirement.....	1-1
1.3	Plan Organization.....	1-1
1.4	Affected Local Governments.....	1-2
1.5	Plan Update Schedule.....	1-2
1.6	Time Extension.....	1-2
<b>2</b>	<b>Municipal Water Supplier Description.....</b>	<b>2-1</b>
2.1	Terminology.....	2-1
2.2	Water Sources.....	2-1
2.3	Interconnections with Other Systems.....	2-2
2.4	Intergovernmental Agreements.....	2-2
2.5	Current Service Area Description and Population.....	2-2
2.6	Demand.....	2-5
2.6.1	Annual and Per Capita Demand.....	2-5
2.7	Water Loss.....	2-7
2.8	Customer Characteristics and Use Patterns.....	2-7
2.8.1	Customer Classes.....	2-7
2.8.2	Annual Total Consumption.....	2-7
2.8.3	Consumption by Class.....	2-8
2.8.4	Largest Customers.....	2-9
2.9	Water Rights.....	2-10
2.10	Aquatic Resource Concerns.....	2-13
2.11	Assessment of Water Supply.....	2-14
2.11.1	Surface Water Rights.....	2-14
2.11.2	Groundwater Rights.....	2-15
2.12	System Description.....	2-17
<b>3</b>	<b>Water Conservation Element.....</b>	<b>3-1</b>
3.1	Progress Report.....	3-1
3.2	Use and Reporting Program.....	3-1
3.3	Required Conservation Measures.....	3-1
3.3.1	Annual Water Audit.....	3-1
3.3.2	System-wide Metering.....	3-2
3.3.3	Meter Testing and Maintenance.....	3-2
3.3.4	Water Rate Structure.....	3-2
3.3.5	Water Loss Analysis.....	3-3
3.3.6	Public Education.....	3-3
3.3.7	Additional Conservation Measures.....	3-3
<b>4</b>	<b>Water Curtailment Element.....</b>	<b>4-1</b>
4.1	Introduction.....	4-1
4.2	History of System Curtailment Episodes.....	4-1
4.3	Capability Assessment.....	4-1

4.4	Curtailment Stages and Initiating Conditions.....	4-2
4.5	Authority and Enforcement .....	4-2
4.6	Curtailment Plan Implementation .....	4-3
4.6.1	Stage 1: Initial (Voluntary).....	4-3
4.6.2	Stage 2: Moderate (Mandatory) .....	4-3
4.6.3	Stage 3: Severe (Mandatory).....	4-3
4.6.4	Stage 4: Critical (Mandatory) .....	4-3
4.7	Notifications of Curtailment .....	4-3
4.8	Drought Declaration .....	4-4
<b>5</b>	<b>Municipal Water Supply Element .....</b>	<b>5-1</b>
5.1	Delineation of Service Area.....	5-1
5.2	Population Projections .....	5-1
5.3	Demand Forecast .....	5-2
5.4	Schedule to Exercise Permits and Comparison of Projected Need to Available Sources.....	5-3
5.5	Alternative Sources .....	5-4
	<i>OAR 690-086-170(5)</i> .....	5-4
5.6	Quantification of Maximum Rate and Monthly Volume.....	5-4
	<i>OAR 690-086-0170(6)</i> .....	5-4
5.7	Mitigation Actions under State and Federal Law .....	5-4
5.8	New Water Rights .....	5-4

## Index of Exhibits

Exhibit 2-1.	City of Monroe Service Area .....	2-3
Exhibit 2-2.	Historical Water Demand, 2014-2018.....	2-4
Exhibit 2-3.	Annual Demand (MG), 2014-2018 .....	2-5
Exhibit 2-4.	ADD and MDD (MG), 2014-2018.....	2-5
Exhibit 2-5.	Annual Consumption by Customer Class (MG), 2015-2018 .....	2-7
Exhibit 2-6.	Consumption by Customer Class (MG), 2015-2018 .....	2-7
Exhibit 2-7.	Consumption by Class as Percent of Total Consumption, 2018.....	2-8
Exhibit 2-8.	Largest Water Users, May 2018 – April 2019 .....	2-8
Exhibit 2-9.	Water Rights .....	2-10
Exhibit 2-10.	Federal and State-Listed Aquatic Species.....	2-12
Exhibit 3-1.	Water Charges .....	3-3
Exhibit 3-2.	Conservation Benchmarks .....	3-4
Exhibit 4-1.	Curtilment Stages of Alert and Initiating Conditions.....	4-2
Exhibit 5-1.	Projected Population, 2029 and 2039.....	5-1
Exhibit 5-2.	Demand Forecast, 2020-2040 .....	5-2

## Appendices

- Appendix A- Letters to Affected Governments
- Appendix B- City of Monroe Water Rates
- Appendix C- City of Monroe Water Master Plan, Select Pages

# 1 Municipal Water Supplier Plan Elements

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*This section satisfies the requirements of OAR 690-086-0125.*

*This rule requires a list of affected local government to whom the plan was made available, and a proposed date for submittal of an updated plan.*

## 1.1 Introduction

The City of Monroe (City) is located in the southeast corner of Benton County. The City sits on the banks of the Long Tom River approximately at river mile (RM) 7.5. The City provides public utility services to city residents including the provision of drinking water. The City's Public Water System Identification number is 41-0540.

The purpose of this Water Management and Conservation Plan (WMCP or Plan) is to describe the development and implementation of water management and conservation measures that ensure sustainable water use. This Plan also discusses the City's future water needs.

## 1.2 Plan Requirement

The Oregon Water Resources Department (OWRD) issued Permit G-13575 to the City on January 29, 1999. Permit G-13575 authorizes appropriation of up to 0.18 cfs from a well within the Long Tom River basin (the City uses Well 2 for appropriation) and required that the City submit a WMCP within three years of permit issuance. The City submitted a draft WMCP to OWRD in April 2008 and OWRD reviewed the WMCP in November of 2013; no final action was taken on the plan. In addition, OWRD issued a final order on April 28, 2009, approving the City's request for an extension of time for Permit G-13575. The final order included a condition requiring the City to submit a WMCP within one year of final order issuance. Finally, on \_\_\_2020, OWRD issued a final order approving an extension of time for the City's Permit G-10890 to October 1, 2034; the final order requires submittal of a WMCP within 3 years. (Permit G-10890 authorizes appropriation of up to 0.45 cfs from a well within the Long Tom River basin and the City uses Well 1 for appropriation). This WMCP is being submitted to address the requirements under Permit G-13575 and Permit G-10890 to submit a WMCP.

This WMCP was developed in tandem with the City's Water Master Plan (WMP). Data and other information applicable both to the WMP and this WMCP were shared to ensure consistency among these documents.

## 1.3 Plan Organization

This WMCP fulfills the requirements of the Oregon Administrative Rules (OAR) adopted by the Water Resources Commission in December 2018 (OAR Chapter 690, Division 86). It describes water management, water conservation, and curtailment measures to guide the wise use and stewardship of the City's water supply.

The WMCP is organized into the following sections, each addressing specific sections of OAR Chapter 690, Division 86. Section 2 is a self-evaluation of the City's water supply, water use, water rights and water systems. The information developed for Section 2 is the foundation for

the sections that follow. Section 3 discusses the City’s current conservation measures and presents the City’s benchmarks for future efforts. Section 4 describes the City’s water curtailment history, assesses the City’s abilities to address water shortages, and describes actions when curtailment of supply is necessary. Section 5 draws on information from Sections 2 and 3 primarily to present the City’s future water needs and how the City intends to meet future demand.

<b>Section</b>	<b>Requirement</b>
<b>Section 1</b> – Municipal Water Supplier Plan Elements	<i>OAR 690-086-0125</i>
<b>Section 2</b> – Municipal Water Suppliers Descriptions	<i>OAR 690-086-0140</i>
<b>Section 3</b> – Municipal Water Conservation Element	<i>OAR 690-086-0150</i>
<b>Section 4</b> – Municipal Water Curtailment Element	<i>OAR 690-086-0160</i>
<b>Section 5</b> – Municipal Water Supply Element	<i>OAR 690-086-0170</i>

## **1.4 Affected Local Governments**

### ***OAR 690-086-0125(5)***

The following governmental agencies may be affected by this WMCP:

- Benton County
- City of Monroe

Thirty days before submitting this WMCP to OWRD, the City made the draft WMCP available for review by the affected local government listed above along with a request for comments relating to consistency with the local government’s comprehensive land use plan. The letter requesting comment and any comments received are in Appendix A.

## **1.5 Plan Update Schedule**

### ***OAR 690-086-1025(6)***

The City anticipates submitting an update of this plan within 10 years of OWRD’s final order approving the plan. As required by OAR Chapter 690, Division 86, a progress report will be submitted within 5 years of the final order.

## **1.6 Time Extension**

### ***OAR 690-086-0125(7)***

The City is not requesting an extension of time to implement metering or a benchmark established in a previously approved plan.

## 2 Municipal Water Supplier Description

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*This section satisfies the requirements of OAR 690-086-0140.*

*This rule requires descriptions of the water supplier's water sources, service area and population, water rights, and adequacy and reliability of the existing water supply. The rule also requires descriptions of the water supplier's customers and their water use, the water system, interconnections with other water suppliers, and quantification of water loss.*

### 2.1 Terminology

The following terminology is used in this WMCP.

*Production* refers to the quantity of raw water delivered to the distribution system. The terms *production* and *demand* are used interchangeably in this WMCP. Production includes metered consumption (for example, residential, commercial, industrial, public, and irrigation customers), unmetered uses (firefighting, hydrant flushing, other), and water lost to leakage, reservoir overflow, evaporation, and other factors.

*Consumption* is equal to authorized metered and unmetered water use. Production volume minus consumption equals water loss. Water loss is equal to the sum of apparent and real losses. Apparent losses include unauthorized consumption and meter inaccuracies, among other loss types, and real losses include leakage.

Generally, production and consumption in municipal systems are expressed in units of mgd, but also may be expressed in cubic feet per second (cfs) or gallons per minute (gpm). One mgd is equivalent to 1.55 cfs or 694 gpm. For annual or monthly values, a quantity of water typically is reported in million gallons (MG). Water use per person (per capita use) is expressed in gallons per capita per day (gpcd).

The following terms are used to describe specific values of system demands:

- *Average day demand (ADD)* equals the total annual production divided by 365 days.
- *Maximum day demand (MDD)* equals the highest system demand that occurs on any single day during a calendar year. It is also called the one-day MDD or peak day demand.
- *Monthly demand* equals the total volume of water produced in a month divided by the number of days in the month.
- *Peaking factors* are the ratios of one demand value to another. The most common and important peaking factors are the ratio of the MDD to the ADD and the ratio of peak hour demand to MDD.

### 2.2 Water Sources

#### **OAR 690-086-0140(1)**

The City relies on surface water from the Long Tom River as its primary source of supply. The City also has access to three wells which served as the City's historical source of water however, due to water quality concerns, the City reserves these sources for back-up supply only.

## **2.3 Interconnections with Other Systems**

### ***OAR 690-086-0140(7)***

The City does not have any interconnections with other systems.

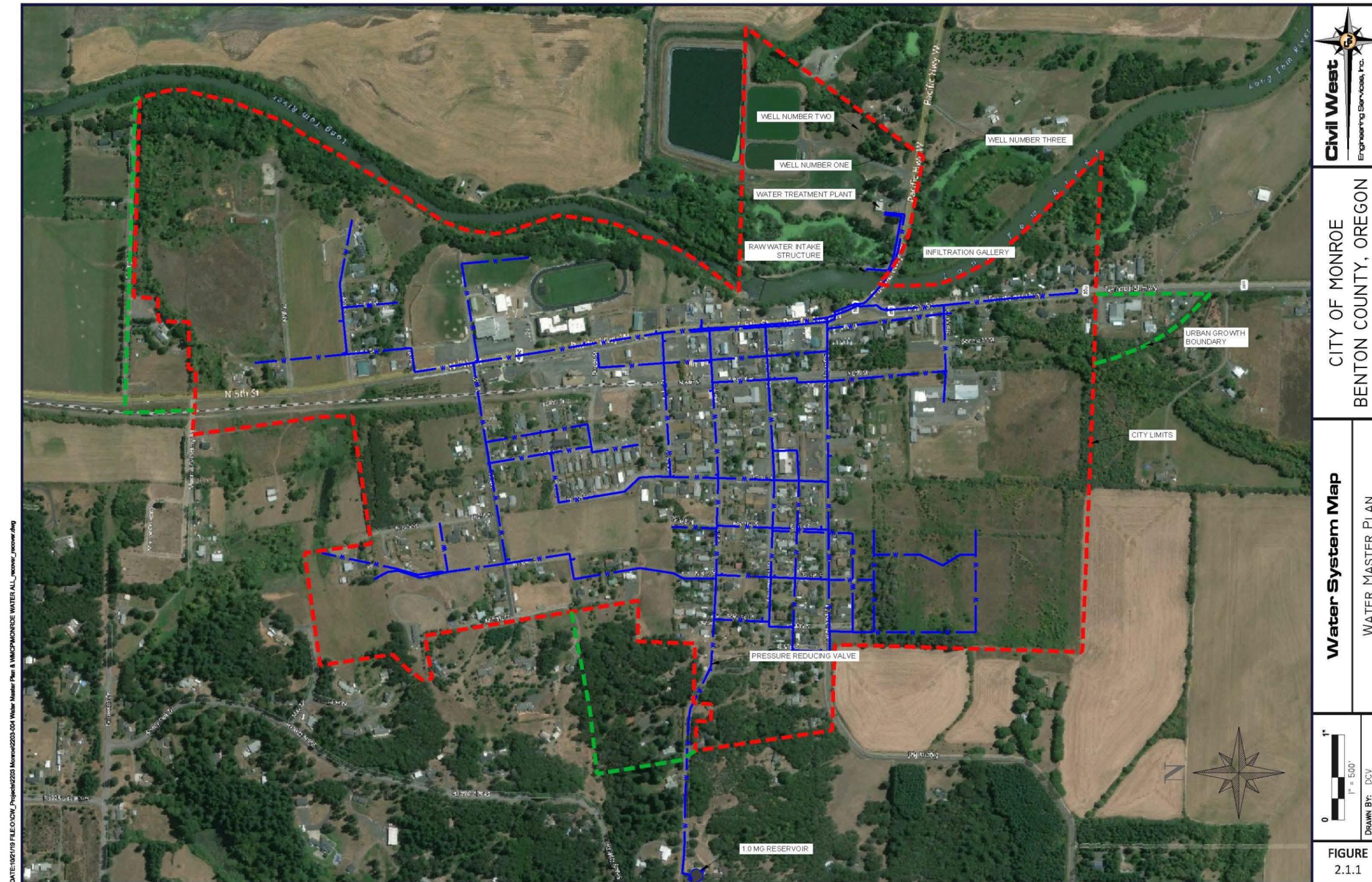
## **2.4 Intergovernmental Agreements**

The City does not have any exchange agreements, intergovernmental cooperation agreements, or water supply or delivery contracts.

## **2.5 Current Service Area Description and Population**

The City's service area includes the entire area within the City's municipal boundary which measures approximately ½ square mile. The current and future service area is presented in the system schematic in **Exhibit 2-1**. The City population was 625 in 2018 according to population estimates published by the Portland State University (PSU) Population Research Center.

Exhibit 2-1. City of Monroe Service Area and System Schematic from Water System Master Plan (2019)



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## 2.6 Demand

### OAR 690-086-0140(4)

#### 2.6.1 Annual and Per Capita Demand

Exhibit 2-2 and Exhibit 2-3 presents the volumes of water appropriated annually from 2014 through 2018. Exhibit 2-2 shows historic population, annual and average daily use, and maximum day and maximum use. Annual water demand volumes were obtained from the City’s water use reports annually submitted to OWRD and supplemented with City-recorded demand volumes for October through December in 2018. The volumes presented in Exhibit 2-2 are raw water volumes. The difference between the volumes of finished water and raw water demand is the volume of water used to flush the City’s filters at the WTP, estimated at 4.2 MG per year.

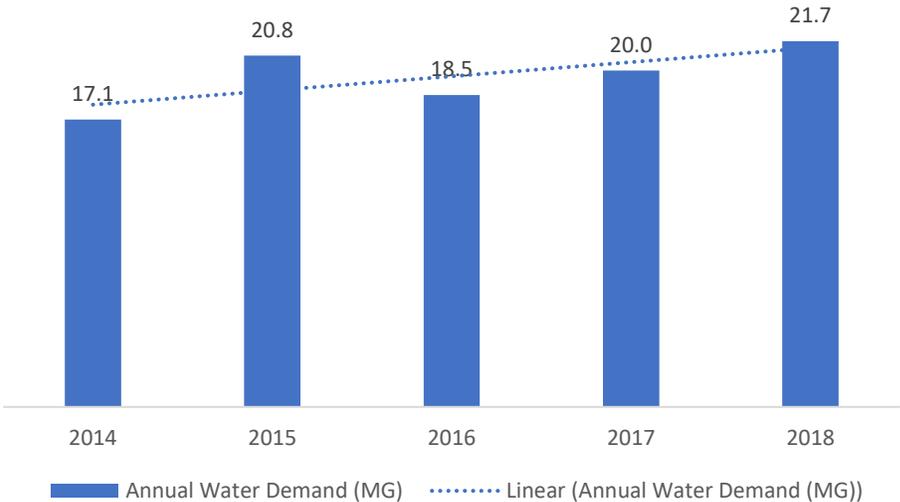
**Exhibit 2-2. Historical Water Demand, 2014-2018**

Year	PSU Population Estimate	Annual Water Demand		Average Daily Demand (gal)	Max Day Demand Estimate* (gal)	Max Month Demand (MG)
		(MG)	gpcd			
<b>2014</b>	620	17.1	75.4	46,719	93,439	5.3
<b>2015</b>	620	20.8	92.1	57,098	114,196	6.9
<b>2016</b>	620	18.5	81.8	50,720	101,441	6.8
<b>2017</b>	620	20.0	88.2	54,690	109,381	6.5
<b>2018</b>	625	21.7	95.1	59,452	118,904	9.3
<b>Average</b>	<b>621</b>	<b>19.6</b>	<b>86.5</b>	<b>53,736</b>	<b>107,472</b>	<b>7.0</b>
<b>Max</b>	<b>625</b>	<b>21.7</b>	<b>95.1</b>	<b>59,452</b>	<b>118,904</b>	<b>9.3</b>

\*MDD is an estimate and calculated by multiplying the ADD by the estimated peaking factor of 2.

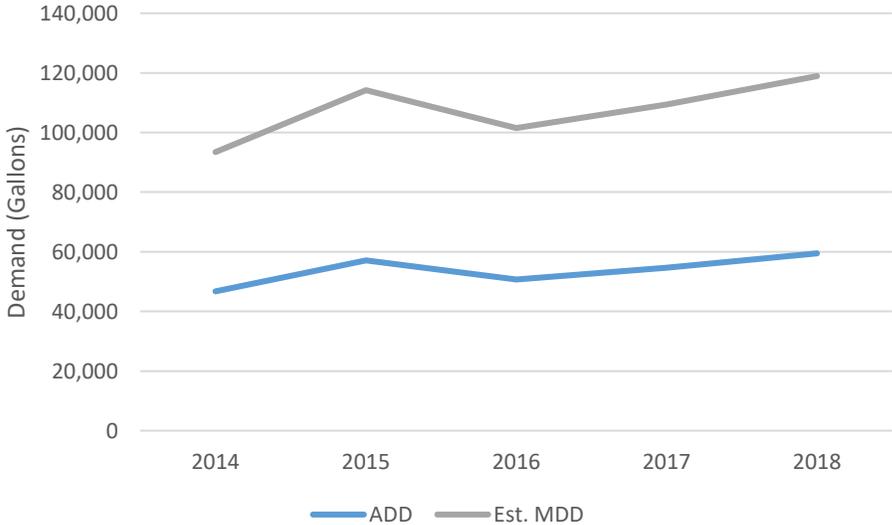
Over this five year period, annual demand averaged 19.6 MG and ranged from 17.1 MG in 2014 to 21.7 MG in 2018. Exhibit 2-3 presents annual demand graphically. An overall increasing trend in demand over these five years is shown by the trend line.

**Exhibit 2-3. Annual Demand (MG), 2014-2018**



Average Day Demand (ADD) averaged nearly 54,000 gallons and ranged from approximately 47,000 gallons to 59,000 gallons over the five year period. Since the City does not record daily demands, Maximum Day Demands (MDDs) were estimated by applying a peaking factor of two to annual ADDs, matching the methodology used in the City’s WMP. The City selected a factor of two since a peaking factor of two is a typical industry standard value for the area. Historical volumes for ADD and MDD are presented in **Exhibit 2-4**.

**Exhibit 2-4. ADD and MDD (Gallons), 2014-2018**



The historical average per capita demand based was 86.5 gallons per capita per day (gpcd) with a high of 95.1 gpcd in 2018 and a low of 75.4 gpcd in 2014, as shown in Exhibit 2-2. These estimates were calculated by dividing annual demand by the population estimate for each year. Per capita demands for the City trend lower than the per capita demands of other water providers. For example, the City referenced the WMCPs of two smaller water utilities within a 20 mile radius from Monroe. The 2015 WMCP for the City of Harrisburg describes per capita

demands of 102 gpcd and the City of Veneta's 2012 WMCP notes a per capita demand of 110 gpcd.

## **2.7 Water Loss**

### ***OAR 690-086-0140(9)***

The City calculated water loss by subtracting consumption volumes from demand volumes, less estimates of unmetered and authorized uses not otherwise captured in the consumption volumes. The City's calculation of water loss is described below.

Demand volumes were taken from meter reads obtained from the City's finished water master meter. However, the City did not have complete meter read data for this meter: from October 2014 through April 2019, a total of 32 months of finished water demand data was available and the majority of this data was available from January 2017 through September 2018. Therefore, an average monthly demand was calculated using the months in which demand data was available.

Consumption volumes were based on billing data from October 2014 through April 2019 and also converted to a monthly average, but the City only used billing data in the water loss calculation from the same months in which demand data was available.

To estimate unmetered, authorized activities, the City identified the average monthly consumption attributable to the fire department for training exercises and firefighting, hydrant flushing performed by the City, and use of reservoir water which served as feedwater for the WTP's chlorination/dechlorination system. These unmetered, authorized volumes were observed from October 2018 through August 2019. The average monthly value for these uses was subtracted from the City's preliminary water loss estimate to obtain the City's final water loss volume. This water loss volume was divided by the City's average monthly demand volume to obtain a water loss estimate of 8.0 percent.

The City is confident in its water loss calculation given the large data set available and intends to collect a complete demand data set annually in the future, as identified in a benchmark in Section 3.

## **2.8 Customer Characteristics and Use Patterns**

### ***OAR 690-086-0140(6)***

Customer characteristics impact water usage. Understanding these characteristics is helpful when analyzing current customer consumption and forecasting future consumption patterns.

#### **2.8.1 Customer Classes**

For billing purposes, the City categorizes its customers into the three classes: Residential, Multifamily, and Commercial. At the end of 2018, the City had 225 Residential meter connections, 10 Multifamily meter connections, and 40 Commercial meter connections.

#### **2.8.2 Annual Total Consumption**

The following consumption information is based on the City's billing data from metered connections for the City's customers from 2015 through 2018. (The earliest consumption report which presented consumption by customer class generated for this WMCP captured

consumption in the 2014/2015 fiscal year. Therefore, consumption for the 2014 calendar year is not presented.) Annual consumption by customer class is presented in **Exhibit 2-5** and further described in the following sections. Generally, from 2015 through 2018, overall consumption showed an increasing trend.

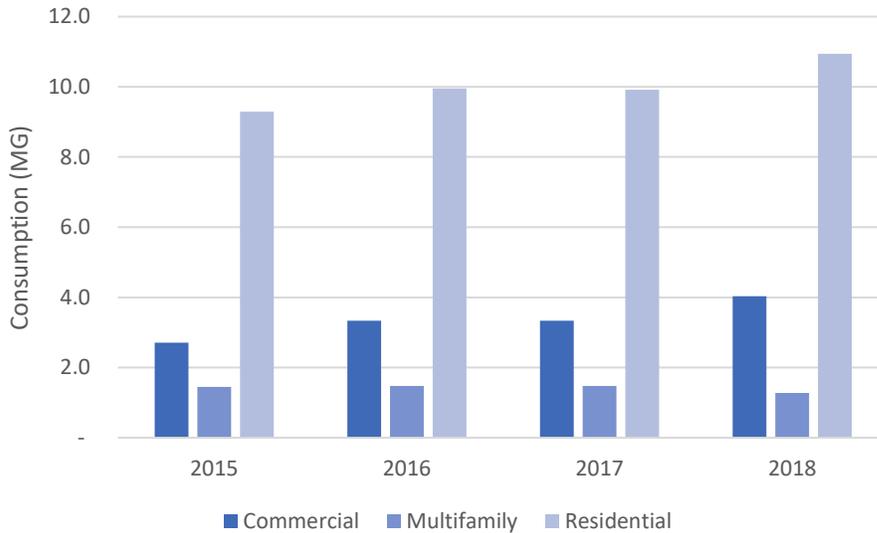
**Exhibit 2-5. Annual Consumption by Customer Class (MG), 2015-2018**

	2015	2016	2017	2018
<b>Commercial</b>	2.71	3.33	3.34	4.03
<b>Multifamily</b>	1.45	1.47	1.47	1.28
<b>Residential</b>	9.29	9.95	9.91	10.94
<b>Total</b>	<b>13.46</b>	<b>14.76</b>	<b>14.73</b>	<b>16.25</b>

### 2.8.3 Consumption by Class

Consumption data by class shown in Exhibit 2-6 is presented in **Exhibit 2-6** graphically.

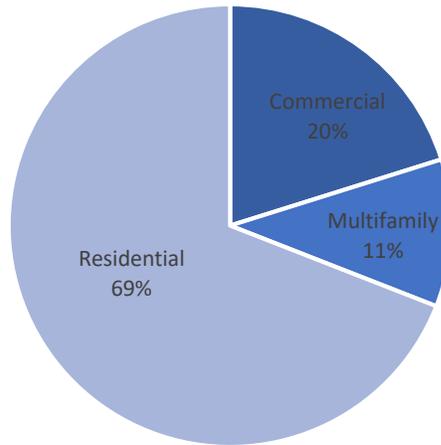
**Exhibit 2-6. Consumption by Customer Class (MG), 2015-2018**



The City’s largest customer class by volume is the Residential class, followed by the Commercial class. Both customer classes displayed an increasing trend in consumption over this four year time period. Total annual consumption for the Multifamily class remained relatively stable over this time frame.

In 2018, the Residential class consumption represented 69 percent of total consumption, the Commercial class consumed 20 percent, and the Multifamily class consumed 11 percent. **Exhibit 2-7** presents this data graphically.

**Exhibit 2-7. Consumption by Class as Percent of Total Consumption, 2018**



**2.8.4 Largest Customers**

Exhibit 2-8 presents the monthly average consumption by the City’s top 10 water users from May 2018 through April 2019. The list is comprised of six customers in the Commercial category, three in the Multifamily category, and one in the Residential category. Combined, these customers’ average monthly consumption represented approximately 2.1 percent of the total average monthly consumption for all customer classes during this time period. The City’s top 10 largest customers represent a relatively small percentage of overall consumption.

**Exhibit 2-8. Largest Water Users, May 2018 – April 2019**

Customer Category	Average Monthly Consumption (Gal)	Percent of Total Customer Consumption
Commercial	81,650	0.6%
Commercial	62,154	0.4%
Multifamily	27,268	0.2%
Multifamily	23,433	0.2%
Commercial	20,987	0.1%
Commercial	19,167	0.1%
Multifamily	18,114	0.1%
Commercial	17,019	0.1%
Commercial	15,100	0.1%
Residential	12,175	0.1%
<b>Total</b>	<b>297,067</b>	<b>2.1%</b>

## 2.9 Water Rights

### **OAR 690-086-0140(5)**

The City holds three surface water certificates, three groundwater permits, and one groundwater certificate. **Exhibit 2-9** provides details about the City's surface and groundwater rights and these rights are also discussed below.

Surface water Certificate 91065 authorizes the use of 0.78 cubic feet per second (cfs) from the Long Tom River. This right is used as the primary source of water for the City. In addition to this surface right, the City holds surface water Certificate 5101 that authorizes diversion of up to 0.25 cfs from Kyle Springs and holds Certificate 23996 that authorizes diversion of up to 0.10 cfs from Belknap Creek. These latter two sources are not currently in use due to concerns about water quality and source water protection and are held in reserve by the City.

Groundwater Permit G-10890 authorizes appropriation from Well 1 for up to 0.45 cfs. The City submitted a claim of beneficial use (COBU) for partial perfection of Permit G-10890 for 0.154 cfs on April 13, 2009; this COBU is still pending review by OWRD. The remaining undeveloped portion of this right (0.296 cfs) is in permit status. In 2014, the City submitted an extension of time application for Permit G-10890 and on \_\_\_\_\_, 2020, OWRD issued a final order approving the extension application.

The City submitted a COBU for partial perfection of Permit G-13575 for 0.061 cfs on June 16, 2009, which is also still pending review by OWRD. The remaining undeveloped portion of Permit G-13575 of 0.119 cfs is in permit status.

Permit G-13575 has a development limitation of 0.09 cfs from a final order on extension dated April 28, 2009. The current completion date for Permit G-13575 is October 1, 2018; the City intends to submit an application for extension of time.

Permit G-17933 authorizes appropriation from Well 3 for up to 0.33 cfs; the completion date is January 4, 2038.

Groundwater Certificate 43629 authorizes appropriation from a well for up to 0.20 cfs. This water right is currently held in reserve due to water quality concerns.

**Exhibit 2-9. Water Rights**

Application	Permit	Certificate	Priority Date	Completion Date	Type of Use	Source of Water	Authorized Rate	Max. Rate of Withdrawal to Date (cfs)	2018 Average Withdrawal (MG/mo.)	2018 Average Daily Diversions (mgd)	Five Year Average Monthly Diversion (MG/mo.)	Five Year Average Daily Diversion (mgd)
<b>Ground Water Rights</b>												
G-11769	G-10890	COBU for partial perfection pending at OWRD	4/18/1989	-	Municipal	Well No. 1	0.154	0.154	0	0	<0.01	<0.01
		-		10/1/2034*			0.296	0				
G-14759	G-13575	COBU for partial perfection pending at OWRD	5/26/1998	-	Municipal	Well No. 2	0.061	0.061	0	0	0	0
		-		10/1/2018			0.119**	0				
G-4392	G-4184	43629	9/27/1968	-	Municipal	Well	0.20	0.20	0	0	0	0
G-17268	G-17933	-	10/5/2009	1/4/2038	Municipal	Well No. 3	0.33	0	0	0	0	0
<b>Surface Water Rights</b>												
S-86270	S-54261	91065	4/21/2005	-	Municipal	Long Tom River	0.78	0.78	1.81	0.06	1.63	0.05
9202	6081	5101	11/7/1923	-	Municipal	Kyle Spring	0.25	0.25	0	0	0	0
24168	19008	23996	9/27/1949	-	Municipal	Belknap Creek	0.10	0.10	0	0	0	0

\*As requested in the City's pending permit extension submitted in 2014. C-date on permit is October 1, 2008.

\*\*Permit G-13757 has a development limitation of 0.09 cfs.

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## 2.10 Aquatic Resource Concerns

OAR 690-086-140(5) requires municipal water suppliers to identify the following for each of its water sources: 1) any listing of the source as water quality limited (and the water quality parameters for which the source was listed); 2) any streamflow-dependent species listed by a state or federal agency as sensitive threatened or endangered that are present in the source; and 3) any designation of the source as being in a critical groundwater area.

The City holds water rights for both ground and surface water. Therefore, this rule applies. The City's groundwater sources are not within an OWRD designated Critical Groundwater Area nor Groundwater Limited Area.

The Oregon Department of Environmental Quality's (DEQ) publishes the Integrated Report Assessment Database which identifies surface water bodies that are water quality limited and associated water quality limiting parameters. The information described below for the Long Tom River was drawn from DEQ's 2012 Integrated Report, otherwise known as DEQ's "303d list" which can be found on DEQ's web page at <https://www.oregon.gov/deq/wq/Pages/WQ-Assessment.aspx>.

The Long Tom River is on the DEQ's 303(d) list of water quality limited streams for multiple parameters at the City's authorized diversion point on the river, approximately RM 7.5. The Long Tom River at this point of diversion was listed for biological criteria (year round), dissolved oxygen (year round, non-spawning), E.coli (fall, winter, spring), iron (year round), lead (year round), and temperature (summer), based on a review of DEQ's 2012 Integrated Report. Neither Kyle Springs nor Belknap Creek are identified on DEQ's 303(d) list published by DEQ in the 2012 Integrated Report as water quality limited for any parameters.

The Long Tom River is within the Upper Willamette River Watershed Sub-Basin. This sub-basin and waters downstream of this sub-basin support several fish species that are listed as threatened, endangered, or sensitive under state and federal laws. The listed fish species that occur in these areas are summarized in **Exhibit 2-10**.

**Exhibit 2-10. Federal and State-Listed Aquatic Species**

<b>Species</b>	<b>Evolutionarily Significant Unit (ESU)</b>	<b>Federal Listing</b>	<b>State Listing</b>
Coho salmon ( <i>Oncorhynchus kisutch</i> )	Lower Columbia River	Threatened	Endangered
Chinook salmon ( <i>O. tshawytscha</i> )	Lower Columbia and Upper Willamette Rivers	Threatened	N/A
Coastal cutthroat trout ( <i>O. clarkii clarkii</i> )	Lower Columbia River	Species of Concern	Sensitive
Steelhead trout ( <i>O. mykiss</i> )	Lower Columbia River	Threatened	Sensitive-Critical (Summer)
	Upper Willamette River		Sensitive-Critical (Winter)
Chum salmon ( <i>O. keta</i> )	Columbia River	Threatened	N/A
Western brook lamprey ( <i>Lampetra richardsoni</i> )	No ESU listed	N/A	Sensitive
Pacific lamprey ( <i>Entosphenus tridentatus</i> )	No ESU listed	N/A	Sensitive
Pacific Eulachon ( <i>Thaleichthys pacificus</i> )	Southern DPS	Threatened	N/A
Green Sturgeon ( <i>Acipenser medirostris</i> )	Southern DPS	Threatened	N/A
Oregon Chub ( <i>Oregonichthys crameri</i> )	Lower Columbia	N/A	Sensitive-Critical
	Willamette SMU		Sensitive

**2.11 Assessment of Water Supply**

**OAR 690-086-0140(3)**

**2.11.1 Surface Water Rights**

The City’s three surface water rights allow the City to divert up to 1.13 cfs. However, the City does not use Certificates 5101 and 23996 due to source protection issues raised by the Oregon Department of Health, making these two water rights unavailable for use.

The City’s other surface water right, Certificate 91065, authorizes diversion of up to 0.78 cfs from the Long Tom River. This right serves as the City’s primary source of supply. Comparing the City’s historical five-year average ADD of 0.08 cfs (0.05 mgd) from 2014 through 2018 to the authorized rate of diversion for Certificate 91065 of 0.78 cfs, the City’s water right is adequate to meet current demand. However, Certificate 91065 is conditioned to require that the City either obtain an alternate water supply for use during the period of June 15 to October 15 annually or secure a long-term contract and water use permit for use of stored water from Fern Ridge reservoir. The City has two years to select an alternative following the availability of a long-term contract. As required by Certificate 91065 the City provides the following update regarding “progress in securing a long-term contract and associated water right permit for the use of stored water from Fern Ridge Reservoir.” Currently, the stored water in the Willamette Basin Projects (including Fern Ridge Reservoir) is not available for municipal use and it will not be available for municipal use (or for contracting with the U.S. Army Corps of Engineers) until

the reservoir space is reallocated and the reallocation is approved by Congress. The City is continuing to track the reallocation effort.

The Willamette Basin Review Study (reallocation study) was reinitiated in 2013. The goal of the study is to reallocate the storage space in the Willamette Basin Projects (13 reservoirs storing up to 1.64 million acre-feet of water) for Endangered Species Act-listed fish (F&W), agricultural irrigation (AI) and municipal and industrial water supply (M&I). In 2015, a full-scale reallocation feasibility study was initiated by the U.S. Army Corps of Engineers (USACE). In September 2018, following review of agency and public comments the USACE announced its Agency Recommended Plan (ARP) which is to proceed with reallocation Alternative C. Under reallocation Alternative C, 159,750 acre-feet of storage space would be allocated to M&I use. In June 2019, the National Marine Fisheries Service (NMFS) issued a Biological Opinion with a finding of jeopardy for salmon and steelhead, but included a number of Reasonable and Prudent Alternatives that may allow for the future contracting of up to 11,000 acre-feet for M&I use. In the fall of 2019 it is expected that the Chief's Report will be sent to USACE Headquarters and the Office of Management and Budget (OMB). Upon OMB accepting the report it will be passed along to the appropriate congressional committees. The timeline for being approved by OMB and congress and then establishing a municipal contracting program is uncertain, but likely several years out from now.

In addition to tracking the reallocation effort, the City continues to evaluate options for alternate sources of primary water supply, such as the City's groundwater rights, or the acquisition of an existing surface water right for use between June 15 and October 15. To date a specific water right has not been identified.

### **2.11.2 Groundwater Rights**

The City holds Certificate 43629 which authorizes appropriation of 0.20 cfs of groundwater from an infiltration gallery. This well served as the City's primary water source until 1986 when the City began to rely on Permits G-10890 and G-13575 as its primary source of supply due to persistent turbidity and clogging of the infiltration gallery. The City does not currently use this gallery, but is holding this supply source in reserve for future use.

The combined authorized rate of appropriation for Permits G-10890 and G-13575 is 0.63 cfs. Historically, these rights served as the City's primary sources of supply. Low yields relative to anticipated future system demands and water quality concerns associated with groundwater from the Wells 1 and 2 led the City to stop use of these wells in 2008 and rely entirely on the Long Tom River as its primary source of supply.

The current groundwater yields from the point of appropriation for G-10890 (Well 1) and the point of appropriation for G-13575 (Well 2) are 69 gallons per minute (gpm) and 27 gpm, respectively. Combined, these wells can produce 96 gpm (0.21 cfs), or approximately 138,000 gpd from the aquifer and could serve as an important source of supply for the City in the future.

In addition to low yields, groundwater from these wells have concentrations of iron and manganese that are in excess of drinking water standards, specifically Secondary Maximum

Contaminant Levels (SMCLs).<sup>1</sup> Although elevated concentrations of these constituents do not pose a health hazard, high concentrations of these parameters are undesirable as they produce unpleasant aesthetic characteristics (e.g., taste, odor, and staining of clothing and fixtures).

Despite these issues related to yield and aesthetic water quality, these wells should suffice as backup supply during water supply shortages associated with the City's current primary water supply. Backup supply is important to the City given the challenge of treating the high seasonal turbidity of the Long Tom River.

Permit G-17933 authorizes appropriation of groundwater from Well 3. Water produced from Well 3 contains concentrations of chlorine, hardness, manganese, and total dissolved solids that are also in excess of SMCLs.

At this time, the City does not consider these three groundwater sources adequate in terms of water quality to meet long-term demands. In order to use these wells long-term, the City must address these water quantity and quality concerns. Water quantity issues (i.e. low yield) may be addressed through well refurbishment or development of additional wells within the aquifer. To address water quality concerns, the City may be able to upgrade its WTP, but at potentially great expense. At this time the City continues to evaluate the costs and benefits of its water supply options and maintains its groundwater rights for both back-up supplies and possible future use as a primary sources of supplies.

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<sup>1</sup> SMCLs are non-enforceable guidelines for drinking water established as a guideline for aesthetic considerations, such as taste, color, and odor.

## **2.12 System Description**

### ***OAR 690-086-0140(8)***

The City's water system consists of wells, surface water intake, transmission and distribution lines, a WTP, a reservoir, and infrastructure and equipment appurtenant to these system components.

Supply is diverted from the Long Tom River using the City's raw water intake lines. Water is transmitted several hundred yards to the City's WTP for treatment. Finished water is sent to the City's one active reservoir which is 1 MG in capacity and then distributed to the City's customers. In summary, the primary assets of the water system include:

- An intake structure and associated piping on the Long Tom River
- An ultrafiltration technology-based treatment plant
- One potable 1 MG water storage reservoir
- One pressure reduction valve station
- A distribution system including fire service
- Two off-line water storage reservoirs

Monroe's service area extends only to the city limits and includes one pressure zone. Raw water used to flush the filters in the City's WTP and finished water used in the WTP's dechlorination system are sent to the City's waste water treatment plant for treatment and release to the Long Tom River or held by the City in its lagoons until release to the Long Tom River is permitted per the City's wastewater discharge permit. A system schematic is shown in Exhibit 2-1.

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## 3 Water Conservation Element

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*This section addresses the requirements of OAR 690-086-0150(1) – (6). This rule requires a description of specific required conservation measures and benchmarks, and additional conservation measures implemented by the City.*

### 3.1 Progress Report

#### **OAR 690-086-0150(1)**

This is the City's first WMCP, therefore this rule does not apply.

### 3.2 Use and Reporting Program

#### **OAR 690-086-0150(2)**

The water measurement and reporting program of the City complies with the measurement and reporting standards in OAR Chapter 690, Division 85. The City collects monthly master meter reads for the Long Tom River raw water intake.

The City submits these monthly water use measurements to OWRD on an annual basis. Reporting is for the previous water year (October 1 to September 30). Their water use records can be found at [http://apps.wrd.state.or.us/apps/wr/wateruse\\_report/](http://apps.wrd.state.or.us/apps/wr/wateruse_report/)

### 3.3 Required Conservation Measures

#### **OAR 690-086-0150(4)(a-f)**

OAR 690-086-0150(4) requires that all water suppliers establish five-year benchmarks for implementing the following water management and conservation measures:

1. Annual water audit
2. System-wide metering
3. Meter testing and maintenance
4. Unit-based billing
5. Water Loss Analysis
6. Public education

During the next five years, the City plans to initiate, continue, or expand the following conservation measures that are required of all municipal water suppliers when a condition of a water use permit, permit extension, or another order or rule requires a WMCP. The City's five-year benchmarks are also provided below and listed in **Exhibit 3-2** at the end of this section.

#### **3.3.1 Annual Water Audit**

OWRD defines a water audit as an analysis of the water system that includes a thorough accounting of all water entering and leaving the system. The results of the City's latest water audit was presented in Section 2. The City has not historically performed annual water audits, and has set a benchmark to perform these audits annually. To enable these calculations, the City will collect annual consumption and demand water volumes and estimate annual unmetered authorized and unauthorized water volumes.

*Five-Year Benchmark:* Starting in 2019, the City will begin performing annual water audits using annual demand water use data, annual consumption data, annual estimates of unmetered authorized and unauthorized uses, including its own water uses.

### **3.3.2 System-wide Metering**

All customer water connections are metered and the City installs meters at all new customer water connections.

*Five-Year Benchmark:* The City will continue to require installation of meters at all customer connections.

### **3.3.3 Meter Testing and Maintenance**

The City has an active meter testing and maintenance program. The City is currently testing its master meters located at its WTP, which includes the meters used to measure raw water diverted from the Long Tom River. These meters will be recalibrated if found to be outside of the manufacturers' recommended specifications of tolerance.

Like most water providers, the City finds that testing of small meters is cost-prohibitive. Therefore, the City has not established a meter testing and maintenance program for its customer meters, all of which are two-inches or less, but established a meter replacement program. The City is in the process of replacing all customer meters with Automatic Meter Reading (AMR) meters. Approximately half of all customer meters have been replaced as of September 2019 and the City anticipates that all customers' meters will be replaced by 2024. Thereafter, the City will replace customer meters when the meters begin to provide unrealistic volumes given a customer's historic use. During the monthly billing process, the City checks for unusual water volumes relative to previous consumption. When discovered, the City investigates the cause. If a faulty meter is determined to be the source of the problem, the City replaces the meter in question.

*Five-Year Benchmark:* The City will test and recalibrate its master meters every five years, starting in 2020, continue to replace residential meters with AMR, and replace all customers' meters on an as-needed basis.

### **3.3.4 Water Rate Structure**

The City's rate structure is based, in part, on the quantity of water metered at each service connection. In addition to a minimum monthly charge based on the customer classes Residential and Commercial, the City charges a rate for consumption over 4,000 gallons in increments of 1,000 gallons. **Exhibit 3-1** presents a summary of these charges, the details of which are provided in a rate sheet found in Appendix B. The City reads customers' meters and bills customers monthly.

**Exhibit 3-1. Water Charges**

Service Type	Minimum Monthly Charge	Block Charges (Applicable to all Service Types)
Residential Service, Inside City Limits	\$28.48	<ul style="list-style-type: none"> <li>• 4,001 to 5,000 gallons, additional \$11.50</li> </ul>
Residential Service, Outside City Limits	\$44.99	<ul style="list-style-type: none"> <li>• 5,001 to 6,000 gallons, additional \$21.50</li> <li>• 6,001 to 7,000 gallons, additional \$32.50</li> </ul>
Commercial Service, Inside City Limits	\$44.99	<ul style="list-style-type: none"> <li>• 7,001 to 8,000 gallons, additional \$44.00</li> </ul>
Commercial Service, Outside City Limits	\$61.18	<ul style="list-style-type: none"> <li>• 8,001 gallons and above, \$15.00 per 1,000 gallons</li> </ul>

*Five-Year Benchmark:* The City will continue to bill customers based, in part, on the volume of water consumed.

**3.3.5 Water Loss Analysis**

This rule requires that a municipal water provider must compare their water loss estimates as calculated through their annual water audit to an established water loss threshold of 10 percent. The City’s most recent water audit revealed water loss of 8.0 percent as described in Section 2.

*Five-Year Benchmark:* The City will continue its water conservation measures described herein in an effort to keep water losses below 10 percent of demand.

**3.3.6 Public Education**

This rule requires the City to establish a public education program to encourage efficient indoor and outdoor water use that includes regular communication of the supplier’s water conservation activities and schedule to customers. The City provides multiple opportunities for customers to learn about wise-water consumption and the City’s efforts, as follows:

- The City includes conservation tips in its newsletter during the irrigation season.
- The City annually includes a conservation brochure as a “bill stuffer” with utility bills at start of the irrigation season.
- The City provides an accessible conservation brochure at City Hall for its customers.

*Five-Year Benchmark:* The City will continue to include indoor and outdoor conservation tips in its newsletter annually. In addition, the City will send a conservation brochure bill-stuffer annually at the start of the irrigation season along with utility bills and provide a water conservation-focused brochure at City Hall.

**3.3.7 Additional Conservation Measures**

**OAR 690-086-0150(6)**

OAR 690-086-0150(6) requires municipal water suppliers that either: (a) serve a population greater than 1,000 and propose to expand or initiate diversion of water under an extended permit for which resource issues have been identified, or (b) serve a population greater than 7,500, to provide a description of the specific activities, along with a five-year schedule to implement several additional conservation measures. The City estimates that it serves approximately 625 persons and the City is not proposing to expand the diversion of water under an extended permit. Therefore, this rule does not apply.

Exhibit 3-2. Conservation Benchmarks

Required Conservation Measures (OAR 690-086-0150)	2019 Benchmarks
(a) An annual water audit that includes a systematic and documented methodology for estimating any un-metered authorized and unauthorized uses and an analysis of the water supplier's own water use to identify alternatives to increase efficiency	Starting in 2019, the City will begin performing annual water audits using annual demand water use data, annual consumption data, and annual estimates of unmetered authorized and unauthorized uses, including its own water uses.
(b) If the system is not fully metered, a program to install meters on all un-metered water service connections	The City will continue to require installation of meters at all customer connections.
(c) A meter testing and maintenance program	The City will test and recalibrate its master meters every five years, starting in 2020, continue to replace residential meters with AMR, and replace all customers' meters on an as-needed basis.
(d) A rate structure under which customers' bills are based, at least in part, on the quantity of water metered at the service connections	The City will continue to bill customers based, in part, on the volume of water consumed.
(e) If the annual water audit indicates that system leakage exceeds 10 percent:	The results for the City's 2018 water audit showed a water loss of 8.0%. The City will continue its water conservation measures described herein in an effort to keep water losses below 10 percent of demand.
(A) within 2 years of approval of the WMCP, the water supplier shall provide a description and analysis identifying potential factors for the loss and selected actions for remedy;	N/A
(B) if actions identified under subsection (A) do not result in the reduction of Water Losses to 10 percent or less, within five years of approval of the WMCP, the water supplier shall: (i) Develop and implement a regularly scheduled and systematic program to detect and repair leaks in the transmission and distribution system using methods and technology appropriate to the size and capabilities of the Municipal Water Supplier or a line replacement program detailing the size and length of pipe to be replaced each year; or,	N/A
(ii) Develop and implement a water loss control program consistent with American Water Works Association's standards.	N/A

(f) A public education program to encourage efficient water use and the use of low water use landscaping that includes regular communication of the supplier's water conservation activities and schedule to customers.

The City will continue to include conservation tips in its newsletter annually. In addition, the City will send a conservation brochure bill-stuffer annually at the start of the irrigation season along with utility bills and provide a water conservation-focused brochure at City Hall.

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## 4 Water Curtailment Element

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*This section satisfies the requirements of OAR 690-086-0160. This rule requires a description of past supply deficiencies and current capacity limitation. It also requires inclusion of stages of alert and the associated triggers and curtailment actions for each stage.*

### 4.1 Introduction

Curtailment planning is the development of proactive measures to reduce demand during water supply shortages. The City developed this curtailment plan by reflecting on the most likely events which may reduce the City's ability to meet system demands and cause water supply shortages. Those events include: 1) an earthquake, 2) a drought, 3) infrastructure failure, and 4) source water quality degradation.

### 4.2 History of System Curtailment Episodes

#### **OAR 690-086-0160(1)**

The City is not aware of any system curtailment episodes within the last 10 years.

### 4.3 Capability Assessment

The City evaluated its ability to continue to provide water during the four events described above and determined that it will be able to continue to meet or partially meet demand following some of these events. The results of this evaluation are as follows.

- **Earthquake:** The City's reservoir was constructed to withstand a major earthquake, though older water system infrastructure is more vulnerable to seismic events.
- **Drought:** A long-term drought could impinge the City's ability to meet system demands, however the City may access groundwater from its wells to meet system demands temporarily.
- **Infrastructure failure:** Should infrastructure fail due to a power outage, the City's WTP and pumps can run off a generator in order to continue to treat raw water and pump treated water to the City's reservoir. Partial or full mechanical failure of the City's WTP may cause enactment of the City's water curtailment plan and/or use of the City's wells.
- **Source water quality degradation:** Source water quality degrades during high turbidity events in the Long Tom River. The turbidity of the Long Tom River increases during seasons with high precipitation, slowing down the production capacity of the WTP due to clogging of the filters and frequent flushing of the filters for cleaning. The City is able to manage these events through various means and thereby has been able to continue to meet demand, but longer periods of unusually high turbidity (e.g. multiple weeks) could cause a supply shortage. In these cases the City's groundwater from the City's wells could augment water supply.

The City could continue to meet system demand during some of these events using stored water in the City's 1 MG reservoir, assuming the reservoir is not affected by the particular

event. The City maintains approximately 0.5 MG in the reservoir typically, which would enable the City to meet ADD for up to 9 days.

Based on this capability analysis, the City determined that it may be able to continue to meet water demand during some of the events listed above. However, the City deemed that its water system is vulnerable, at least in part, to some of these supply shortage events, resulting in the possibility that the City may not be able to maintain delivery during one of these events. The following curtailment plan will help the City respond to challenges posed by these potential events.

## 4.4 Curtailment Stages and Initiating Conditions

### **OAR 690-086-0160(2) and (3)**

The City developed a four-stage curtailment plan to be invoked in the event of a water supply shortage. These stages are of increasing severity and could be initiated and implemented in progressive steps or a later stage could be implemented directly. The plan includes both voluntary and mandatory measures, depending upon the cause, severity, and anticipated duration of the shortage.

**Exhibit 4-1** presents the four curtailment stages, as well as their initiating conditions (i.e., triggers). Initiation of a curtailment stage is based on the specific circumstances of the actual event. The decision to implement curtailment will also consider the knowledge and judgment of City staff members familiar with the water system. Staff members may evaluate such considerations by assessing the extent of system damage or contamination, duration of repair, costs, fire hazards, weather forecasts, or system demand.

The initiating conditions described in Exhibit 4-1 are dependent upon water system capacity. Water system capacity is determined by considering: 1) the rate of WTP production, 2) the volume of water in the reservoir, 3) capacity of the distribution system to meet system demand, or 4) some combination thereof. The water system capacity will be determined on a case-by-case basis by City staff.

#### **Exhibit 4-1. Curtailment Stages of Alert and Initiating Conditions**

<b>Curtailment Stages</b>	<b>Initiating Conditions (Triggers)</b>
<b>Stage 1: Initial</b>	System demand has <i>potential</i> to reach or exceed water system capacity.
<b>Stage 2: Moderate</b>	System demand nears or occasionally reaches water system capacity.
<b>Stage 3: Severe</b>	System demand exceeds water system capacity.
<b>Stage 4: Critical</b>	Near complete loss or complete loss of ability to meet system demand.

## 4.5 Authority and Enforcement

The City may declare a water crisis state of emergency and implement this curtailment plan. The City has the authority to decrease or increase the curtailment stages or terminate curtailment activities. The City’s Ordinance Number 216, Section 7, Paragraph 7 gives the Water Department the authority “to give preference in the matter of furnishing service to customers and interest of the Water Department from the standing of public convenience or necessity” in the event of supply shortages.

## **4.6 Curtailment Plan Implementation**

### **OAR 690-086-0160(4)**

The City's curtailment plan provides specific curtailment actions for each of the four curtailment stages. In Stage 1, voluntary actions are requested of customers. In the latter curtailment stages, mandatory actions are prescribed to restrict water use. In regard to the following lists of measures or restrictions, the City may revise, add, or remove specific measures or restrictions on water use or activities as needed, depending upon the circumstances of the event for which curtailment is necessary.

#### **4.6.1 Stage 1: Initial (Voluntary)**

The City will issue a general request for a voluntary reduction in water use by all users. The request will include a summary of the current water situation, the reason for the requested reduction in use, suggestions for conserving water, and a warning that mandatory cutbacks may be required if the voluntary measures do not sufficiently reduce water usage or the initiating event is not reduced in severity and the potential for shortage continues to exist. Examples of voluntary reductions include reductions to outdoor water use such as limiting irrigation of landscape and lawns to specific night and early morning hours and implementation of water conservation measures promoted by the City's conservation program.

#### **4.6.2 Stage 2: Moderate (Mandatory)**

The City will restrict the irrigation of lawns, gardens, and landscaping areas during certain hours of the day. Certain outside uses of water will be prohibited, including car washing, non-essential City uses of water, washing down sidewalks or parking lots, filling swimming pools, using water for dust control and other uses. The installation of new water service connections will be temporarily discontinued.

#### **4.6.3 Stage 3: Severe (Mandatory)**

All outdoor uses of water will be restricted for any purpose other than fire-fighting. The only exceptions will be those specifically identified by the City.

#### **4.6.4 Stage 4: Critical (Mandatory)**

Stage 4 restrictions include those identified in Stage 3, plus a prohibition on all nonessential water use that do not maintain the health and safety of the public. The only exceptions will be those specifically identified by the City.

## **4.7 Notifications of Curtailment**

The City has several communication channels that it can use to relay important information about a supply shortage, including its voluntary and mandatory measures. The City may rely on local radio, TV, and print media; mailers; bill stuffers; door hangers; social media; strategically-located sandwich boards; and its web site to communicate with its customers on an ongoing basis about a supply shortage. Notices and other forms of communication may include a description of the current water situation, the reason for the requested conservation measures, and a warning that mandatory restrictions will be implemented if voluntary measures are not sufficient to achieve water use reduction goals.

## 4.8 Drought Declaration

If a declaration of a severe drought in Benton County is declared by the Governor per ORS 536.720, the Oregon Water Resources Commission may order political subdivisions within any drainage basin or subbasin to implement a water conservation or curtailment plan or both, approved under ORS 536.780. The conservation and curtailment elements of this WMCP meet these requirements. If the City falls within a severe drought area declared by the Governor, such as Benton County, the City will consider whether curtailment measures are needed to meet system demands. If ordered to implement a water conservation or curtailment plan during a declared drought, the Cities will comply by implementing the water conservation and curtailment provisions of this WMCP. Regardless of whether curtailment is needed, the City will continue to encourage customers to conserve water.

# 5 Municipal Water Supply Element

*This section satisfies the requirements of OAR 690-086-0170.*

*This rule requires descriptions of the City’s current and future service area and population projections, demand projections for 10 and 20 years, and the schedule for when the City expect to fully exercise their water rights. The rule also requires comparison of the City’s projected water needs and the available sources of supply, an analysis of alternative sources of water, and a description of required mitigation actions.*

## 5.1 Delineation of Service Area

### **OAR 690-086-0170(1)**

The City’s current service area is described in Section 2 and delineated in Exhibit 2-1. Within the 20-year planning period, the City does not anticipate that its service area will expand beyond its existing service area boundary.

## 5.2 Population Projections

### **OAR 690-086-0170(1)**

The City’s projected population in 2040 was obtained from the City’s 2019 WMP. The population projection described in the WMP relied on a population forecast performed by the PSU Population Resource Center in 2017 for the years 2017 through 2067.<sup>2</sup> For the WMP, PSU’s population forecast was revised to take into account an increase in population as a result of new growth not accounted for in PSU’s forecast. Specifically, the City anticipates construction of a 55-unit subdivision, two commercial establishments (including a brewery), four new classrooms and a daycare, and eight new single family residences. The City estimates that these developments will add 163 persons and be completed by 2030. These 163 persons were added to the population projected by PSU. Since the WMP only provided population for 2040, the population for 2030 was linearly interpolated using the WMP’s 2040 population estimate for this WMCP.

**Exhibit 5-1** shows the City’s population is projected to be 814 persons by 2030 and 837 by 2040.

**Exhibit 5-1. Projected Population, 2029 and 2039**

Year	Population
2018	625
2030	814
2040	837

These population projections account for projected growth only within the City’s service area--the City does not intend to serve areas outside city boundaries in the future.

<sup>2</sup> Portland State University, Population Research Center, 2017, *Coordinated Population Forecast for Benton County, its Urban Growth Boundaries (UGB), and Area Outside UGBs 2017-2067*

## 5.3 Demand Forecast

### OAR 690-086-0170(3)

Demand is anticipated to increase over time, driven by population increases and anticipated commensurate economic expansion. The City presents its demand forecast and summarizes the methodology below. The basis for this WMCP demand forecast was the demand forecast presented in Monroe’s 2019 WMP.

The ADD forecast in the WMP was calculated based on a per capita formula. Using historical finished water demand, the City estimated the per capita rate in gallons per person per day (gpcd) was 78 gpcd and assumed that this rate would continue through the planning period. This per capita rate was multiplied by the population in 2040 to forecast the finished water ADD in 2040. The City forecasted MDD by applying a peaking factor of 2 to ADD. The applicable portions of the City’s WMP are provided in **Appendix C** for reference.

For this WMCP, the City performed a similar calculation, but forecast *raw* water demand instead of finished water demand. As previously noted, the difference between the volumes of finished water and raw water demand is the volume of water used to flush the City’s filters at its WTP. In order to incorporate these flushing volumes into the forecast, the City increased the per capita rate to account for these flushing volumes, as follows. The City’s current average WTP flushing rate is 350,000 gallons per month, equivalent to 11,667 gallons per day (350,000 gallons/30 days). The rate of 11,667 gallons per day translates to 19 gpcd (11,667 gpd/625 persons in 2018), which was added to the City’s finished water per capita rate to obtain an ADD per capita rate of 96 gpcd (19 gpcd + 78 gpcd).<sup>3</sup> This rate is greater by approximately one gallon compared to the City’s highest observed per capita rate of 95.1 gpcd shown in Exhibit 2-2. This discrepancy is explained by the WMP’s use of incomplete finished water data (as noted in this WMCP’s Section 2.7) to estimate a per capita rate and the conversion of this incomplete data to raw water volumes as described above.

The City calculated ADD for 2030 and 2040 by multiplying the per capita rate of 96 gpcd by the population presented for those years in the previous section. MDD was calculated by multiplying ADD by a factor of 2. This forecast also accounts for the WTP flushing rate increasing in proportion to demand over time.

Based on this methodology, the City calculated an ADD of raw water demand in 2040 of 79,100 gallons and MDD of 158,200 gallons (0.24 cfs). **Exhibit 5-2** presents the City’s forecast of (raw water) demand through 2040.

**Exhibit 5-2. Demand Forecast, 2020-2040**

Year	Population	ADD (gpd)*	MDD (gpd)*	MDD (cfs)**
2030	808	77,600	155,200	0.24
2040	822	79,100	158,200	0.24

\*Rounded to the nearest hundreds.

\*\*Rounded to the nearest hundredths.

<sup>3</sup> During calculations, the values were rounded to the nearest whole number and therefore do not exactly sum to a value of 96 gpcd.

## 5.4 Schedule to Exercise Permits and Comparison of Projected Need to Available Sources

### *OAR 690-086-0170(2) and (4)*

The City's demand forecast projects an MDD of 0.24 cfs (158,200 gpd) within the 20-year planning period. Surface water Certificate 91065 authorizes diversions from the Long Tom River for up to 0.78 cfs which is adequate to meet this forecasted demand.

As described in Section 2, Certificate 91056 is conditioned to require that the City eventually obtain an alternative source of supply during the period of June 15 through October 15 of each year or secure a long-term contract and water supply permit for use of stored water from Fern Ridge reservoir for this period. Currently, the City continues to maintain its groundwater permits (Permit G-10890, G-13575, and G-17933), as critical back-up and emergency sources of supply for use in offsetting any reductions in supply from the Long Tom River. However, the City may determine within this 20-year planning period that use of its existing groundwater supply as a primary source of supply is preferable to surface water based on the City's ongoing alternatives analysis for long-term supply. This alternatives analysis considers the outcome of the reallocation of federal storage water (described in Section 2), the potential cost and limitations on the use of stored water and associated contract, and the ability and cost of acquiring an existing surface water right. To this end, and based on information currently available to the City, the City's intended strategy for exercising existing permits includes the following.

**Permit G-10890 (0.45 cfs)** – Obtain a certificate based on the pending COBU for 0.154 cfs. Continue to hold in reserve the 0.296 cfs undeveloped portion of the permit in the near-term. As more alternatives analysis information becomes available, and as will be described in the 10 year update of this WMCP, the City may seek access to the undeveloped portion of this extended permit. At this time, the City is not seeking access to any of the 0.296 cfs undeveloped portion of Permit G-10890. **As described in the City's 2014 permit extension application for Permit G-10890, the point of appropriation (POA) for Permit G-10890 (Well 1) does not currently have the capacity to produce the 0.296 cfs undeveloped portion of the permit. Thus, the City will likely seek an amendment to Permit G-10890 to allow appropriation from a new POA. By October 1, 2034, the City anticipates that it will have studied potential locations for the POA, obtained funding for well construction, obtained permit amendments as needed, and, installed the needed pre-treatment process.**

**Permit G-13575 (0.18 cfs)** – Obtain a certificate based on the pending COBU for 0.061 cfs. Submit an application for an extension of time to October 1, 2034. Develop the remaining 0.029 cfs developed portion of the permit (0.09 cfs – 0.061 cfs = 0.029 cfs) within the timeframe of the extension approval and, similar to Permit G-10890 and hold the remaining portion of the undeveloped permit (0.09 cfs) in reserve until additional information on alternative supplies becomes available. This will also be described in the City's 10 year update to this WMCP. Assuming the City determines that developing additional groundwater is feasible, the City will take steps to complete development of the permit.

**Permit G-17933 (0.33 cfs)** – Continue to evaluate the feasibility of developing this permit in light of information regarding alternative supply sources and as needed develop some or all of the

permit by the current completion date of January 4, 2038. This will also be described in the City's 10 year update to this WMCP.

## **5.5 Alternative Sources**

### ***OAR 690-086-170(5)***

OAR 690-086-0170(5) requires an analysis of alternative sources of water if any expansion or initial diversion of water allocated under existing permits is necessary to meet the City's demand forecast and redundancy needs. As described above, Monroe currently does not intend to expand diversion of its groundwater permits to meet the 10 and 20 year demand projections described above. Consequently, this rule does not apply.

## **5.6 Quantification of Maximum Rate and Monthly Volume**

### ***OAR 690-086-0170(6)***

OAR 690-086-0170(6) requires a quantification of the maximum rate of withdrawal and maximum monthly use if any expansion or initial diversion of water allocated under an existing permit is sought. As described above, Monroe currently does not intend to expand diversion of its groundwater permits to meet the 10 and 20 year demand projections described above. Consequently, this rule does not apply.

## **5.7 Mitigation Actions under State and Federal Law**

### ***OAR 690-086-0170(7)***

Under OAR 690-086-0170(7), if mitigation is required for expansion or initial diversion of water under an existing permit, the water supplier is to describe mitigation actions it is taking to comply with legal requirements of the Endangered Species Act, Clean Water Act, and other applicable state or federal environmental regulation.

As described above, Monroe currently does not intend to expand diversion of its groundwater permits to meet the 10 and 20 year demand projections described above. Consequently, this rule does not apply.

## **5.8 New Water Rights**

### ***OAR 690-086-0170(8)***

Under OAR 690-086-0170(8), if a municipal water supplier finds it necessary to acquire new water rights within the next 20 years to meet its projected demand, an analysis of alternative sources of the additional water is required. The analysis must consider availability, reliability, feasibility and likely environmental impacts and a schedule for development of the new sources of water.

Monroe currently does not intend to acquire new water rights to meet demands within the next 20 years, so the provisions of this section are not applicable.