Water Management and Conservation Plan

Prepared for
Pacific City Joint Water-Sanitary Authority

March 2022

Prepared by
Parametrix

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Water Management and Conservation Plan

Prepared for

Pacific City Joint Water-Sanitary Authority
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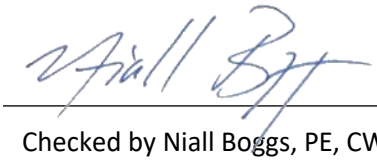
CITATION

Parametrix. 2022. Water Management Conservation Plan
Prepared by Parametrix, Portland, Oregon. March 2022.

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional civil engineer licensed to practice as such, is affixed below.

Prepared by Ryan Rudnick, PE



Checked by Niall Boggs, PE, CWRE

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APPENDICES

ACRONYMS AND ABBREVIATIONS

AC	asbestos cement
bgs	below ground surface
cf	cubic feet
cfs	cubic feet per second
CIP	Capital Improvement Projects
ft	feet
gpd	gallons per day
gpm	gallons per minute
MG	million gallons
MGD	million gallons per day
mg/L	milligrams per liter
NMFS	National Marine Fisheries Service
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
OWRD	Oregon Water Resources Department
PCJWSA	Pacific City Joint Water-Sanitary Authority
PRV	pressure-regulating valve
PVC	polyvinyl chloride
WMCP	Water Management and Conservation Plan
WMP	Water Master Plan
WTP	water treatment plant
yr	year

WATER MANAGEMENT AND CONSERVATION PLAN CHECKLIST

This checklist shows where each required WMCP element is located in this plan. N/A indicates sections that do not apply to the PCJWSA system.

	Item	OAR Reference	Section No.
WMCP Plan Elements			
✓	Notice to affected local government(s)	690-086-0125(5)	1.4
✓	Proposed WMCP update schedule	690-086-0125(6)	1.5
✓	Additional time to implement conservation benchmarks	690-086-0125(7)	1.6
Water Supplier Description			
✓	Description of supplier's source(s)	690-086-0140(1)	2.1
✓	Map/Delineation of current service area	690-086-0140(2)	2.2
✓	Assessment of adequacy and reliability of existing supplies	690-086-0140(3)	2.3
✓	Present and historic water use	690-086-0140(4)	2.4
✓	Water right inventory table	690-086-0140(5)	2.5, Appendix B
✓	Customers served and water use summary	690-086-0140(6)	2.7
✓	Interconnections with other systems	690-086-0140(7)	2.8
✓	System schematic	690-086-0140(8)	2.9, Figure 2-1
✓	Quantification of system leakage	690-086-0140(9)	2.10
Water Conservation Element			
✓	Progress report on implementation of conservation measures	690-086-0150(1)	3.1
✓	Water use measurement and reporting program	690-086-0150(2)	3.2
✓	Currently implemented conservation measures	690-086-0150(3)	3.3
✓	Annual water audit	690-086-0150(4)(a)	3.4.1
✓	Full metering of system	690-086-0150(4)(b)	3.4.2
✓	Meter testing and maintenance program	690-086-0150(4)(c)	3.4.3
✓	Rate structure & billing practices to encourage conservation	690-086-0150(4)(d),(5)(c)	3.4.4
✓	Leak detection program	690-086-0150(4)(e)	3.4.5
✓	Public education program	690-086-0150(4)(f)	3.4.6
✓	Technical and financial assistance programs	690-086-0150(5)(a)	3.4.7
✓	Retrofit/replacement of inefficient fixtures	690-086-0150(5)(b)	3.4.8
✓	Rate structure & billing practices to encourage conservation	690-086-0150(5)(c)	3.4.9
✓	Reuse, recycling, and non-potable opportunities	690-086-0150(5)(d)	3.4.9
✓	Other proposed conservation measures	690-086-0150(5)(e)	3.4.10
Water Curtailment Element			
✓	Water supply assessment and description of past deficiencies	690-086-0160(1)	4.1
✓	Water Curtailment Plan - Stages of alert, Triggers, and Actions	690-086-0160(2,3,4)	4.2
Water Supply Element			
✓	Current/future service area and population projections	690-086-0170(1)	5.1
✓	Schedule to fully exercise each permit (*i.e., certification*)	690-086-0170(2)	5.2
✓	Water demand forecast	690-086-0170(3)	5.3
✓	Comparison of projected need to available sources	690-086-0170(4)	5.4
✓	Analysis of alternative sources	690-086-0170(5)	5.5
✓	Quantification of maximum rate and monthly volume	690-086-0170(6)	5.6
✓	Mitigation actions under state and federal laws	690-086-0170(7)	5.7
✓	Acquisition of New Water Rights	690-086-0170(8)	5.8
Greenlight Water Request			
N/A	Conservation measure schedule and cost effectiveness	690-086-0130(7)(a)	N/A
N/A	Justification that selected source is most feasible/appropriate	690-086-0130(7)(b)	N/A
N/A	Mitigation requirements	690-086-0130(7)(c)	N/A

1. INTRODUCTION AND WMCP ELEMENTS

OAR 690-086-125

1.1 Introduction

The Pacific City Joint Water-Sanitary Authority (PCJWSA) is a publicly owned water and sewer district located in Pacific City in southern Tillamook County, Oregon. It is adjacent to the confluence of the Nestucca River with the Pacific Ocean. It serves the unincorporated communities of Pacific City and Woods, which are approximately midway between Lincoln City and Tillamook, Oregon. This district is approximately 1.7 square miles in size. The properties within the service area are zoned as residential, commercial, park/public facility, or air-park land use types. There is currently one dairy farm located within the service area, and PCJWSA supplies water to this site.

PCJWSA currently serves an approximate permanent resident population of 1,000 with seasonal population peaks up to an estimated 5,000. As of 2021, there were 1,441 active water service connections. Of those, 94 percent of the service connections were residential. Water rights certificates and permits for PCJWSA total 4.125 cubic feet per second (cfs) (1,852 gallons per minute [gpm]), of which 1.425 cfs (639.6 gpm) comes from three groundwater water rights to six wells and 2.7 cfs (1,212 gpm) comes from five surface water rights on Horn Creek, a tributary of the Nestucca River.

The PCJWSA water system includes an 864,000-gallons-per-day (gpd) water treatment plant on Horn Creek and six groundwater wells yielding approximately 144,000 gpd each, for a total delivery capacity of 1.7 million gpd from the Horn Creek Water Treatment Plant (WTP) and the wells. PCJWSA has certified water rights and Oregon Water Resources Department (OWRD) water use permits for these sources. Horn Creek serves the system via a transmission line that is approximately 1,730 feet long and 12 inches in diameter. The remaining distribution network consists of approximately 25 miles of piping ranging from 2 to 12 inches in diameter. There are also three reservoirs within the system; two (the 100,000-gallon [K] and 300K reservoirs) have adjacent pump stations.

Data presented in this document was obtained from the *2020 Pacific City Water Master Plan (WMP)*. Data related to current management, recent water use records, and conservation practices was obtained from the PCJWSA manager. Guidance for creating this document came from the March 2015 *Water Management and Conservation Plans Guidebook for Oregon Municipal Water Suppliers,* prepared by OWRD.

1.2 Plan Requirement

On October 1, 2012, OWRD approved a Water Management and Conservation Plan (WMCP) submitted by the Pacific City Joint Water-Sanitary Authority. The approval order was entered at Volume 88, page 595.

Special Order Volume 88, Page 597 states, “The Pacific City Joint Water-Sanitary Authority Water Management and Conservation Plan is approved and shall remain in effect until October 1, 2022, unless this approval is rescinded pursuant to OAR 690-086-0920.”

Special Order Volume 88, Page 598 states, “The Pacific City Joint Water-Sanitary Authority shall submit an updated plan meeting the requirements of OAR Chapter 690, Division 086 (Effective November 1, 2002) within 10 years and no later than April 1, 2022.”

1.3 Plan Organization

This WMCP meets the requirements of OAR 690 Division 86 and is organized as follows:

- Section 2 describes the PCJWSA water supplier, service area, population served, water sources with associated infrastructure, and historical water use. (OAR 690-086-0140)
- Section 3 outlines water conservation practices currently employed, as well as proposed conservation measures with associated schedules and benchmarks. (OAR 690-086-0150)
- Section 4 describes the proposed water curtailment plan including a description of historical deficiencies, detailed descriptions of the proposed stages of alert for water shortages with an associated implementation program, and a schedule for review and updating. (OAR 690-086-0160)
- Section 5 describes the projected population growth and water supply issues for PCJWSA over the next 20 years with expected water source developments to meet future demand. (OAR 690-086-0170)

1.4 Affected Local Governments

OAR 690-086-0125(5)

Draft copies of this WMCP were made available to the Pacific City Joint Water-Sanitary Authority Manager on March 16, 2022, for review and comment. In addition, a copy of the draft plan was provided to the Tillamook County Planning Department on March 16, 2022.

1.5 Plan Update Schedule

OAR 690-086-0125(6)

PCJWSA proposes to submit a progress report no later than October 1, 2027 (within 5 years of WMCP approval) to evaluate the benchmark schedule established in Section 3.4. An updated WMCP is expected to be included with an updated water system master plan in 2032.

1.6 Request for Additional Time for Metering or Benchmarks

OAR 690-086-0125(7)

Since approval of the last WMCP in 2012, PCJWSA has been focused on two major system improvement projects. Between February and July 2021, nearly all consumption meters were replaced with new radio-read water meters so automated meter reading (AMR) can be used. There are approximately 18 commercial meters remaining, which are planned for replacement in 2022. The second major project was construction of the new wastewater treatment plant, which was completed in 2019.

Due to the financial and staffing demands for these projects, there are several water conservation benchmarks established in the 2012 WMCP that will require more time for implementation. These include implementation of a leak detection program, a zonal water audit, repair of all identified leaks, replacement of asbestos-cement and galvanized steel pipes, and other benchmarks. Please see Section 3 for a progress report on scheduled conservation measures.

2. MUNICIPAL WATER SUPPLIER DESCRIPTION

OAR 690-086-140

2.1 Water Sources, System Description, and Intergovernmental Agreements

OAR 690-086-140(1)

The PCJWSA water system includes an 864,000 gpd water treatment plant on Horn Creek and six groundwater wells yielding approximately 144,000 gpd each, for a total delivery capacity of 1.7 million gpd from the WTP and the wells. PCJWSA has certified water rights or OWRD water use permits for these sources. Horn Creek serves the system via a transmission line that is approximately 1,730 feet long and 12 inches in diameter. The remaining distribution network consists of approximately 25 miles of piping ranging from 2 to 12 inches in diameter. There are also three reservoirs within the system; two (the 100,000-gallon [K] and 300K reservoirs) have adjacent pump stations. These water system elements are described further in the sections below.

2.1.1 Groundwater Sources

The PCJWSA water system currently has six individual groundwater wells. The three Dune Wells (Wells 1, 2, and 3) are located to the immediate north of the PCJWSA office just east of Cape Kiwanda Drive. Wells 1 and 2 were developed in 1980 and 1984, respectively, while Well 3 was installed in 1996, replacing an old Well 3. The Dune Wells are located on Bureau of Land Management-owned property. PCJWSA maintains an easement agreement for access to the wells. The Dune Wells have a north-south alignment with about a 100-yard spacing between them. They feed into a southbound header, with Well 3 being the farthest north. Water from Wells 2 and 3 flows past Well 1. There is a mechanical water meter on each well and a fourth meter on the main header. The Tillamook Public Utility District provides power from an overhead line that serves these wells. Standby power is available from a portable generator, manual transfer switches, and underground cables. The generator is housed in a shed at Well 2. The generator can be used to serve other facilities in town.

Wells 4, 5, and 6 are referred to as the Spit Wells and are located in Bob Straub State Park at the southern end of Sunset Avenue. These wells were drilled in 1988. The Spit Wells have a north-south alignment. They feed into a northbound header. Well 4 has a 45 kVA three-phase pad-mounted transformer. There is a manual transfer switch and a receptacle at Well 5 to accept the portable generator; this feeds all three wells. All the wells have an hour meter and a flow meter.

All six wells have an approximate yield of 100 gpm each. Therefore, the current wellfield capacity is 600 gpm. Appendix B, Table C-1, contains more information on all the wells.

A review of water right records indicated that three water right permits (G-10798, G-9388, and G-10392) are associated with the PCJWSA water supply wells. The three water right permits have been certified (certificates 93770, 80488, and 80489). Appendix C contains water rights documents for all the wells, and Table C-2 of Appendix B contains a summary of the water rights associated with the six water supply wells and identifies the points of diversion, the diversion rates, use, and application areas. The certified rights allow for well rotation to obtain the granted rates of diversion.

Table 2-1 shows information related to the construction of all six wells taken from water well reports. These wells were the only source of water for Pacific City and Woods for several decades until the new surface water treatment plant was constructed in the summer of 2011.

Table 2-1. Well Summary

Well ID (County ID)	Water Rights Application	Construction Date	Screen Diameter (inches)	Depth (feet bgs)	Screened Interval (feet bgs)	Permitted Withdraw Rate (gpm)
#1 (TILL 115)	G-10215	12/16/1980	8	125	45–75	125
#2 (TILL 907)	G-11260	3/1/1984	7.5	80	45–75	100
#3 (TILL 50092)	G-10215	8/13/1996	8	75	45–65	80
#4 (TILL 937)	G-11754	7/16/1988	8	47	22–37	100
#5 (TILL 936)	G-11754	8/9/1988	8	51	34–46	100
#6 (TILL 934)	G-11754	8/22/1988	8	48	27–39	100

bgs = below ground surface; gpm = gallons per minute; ID = identification number

PCJWSA also has three active surface water right permits (two of which have been certified) on Horn Creek all of which have been transferred to a single point of withdraw at the newly constructed intake for the Horn Creek Water Treatment Plant (WTP). Horn Creek currently provides the main source of drinking water for the service area. Figure 2-1 shows the general location of Horn Creek WTP in relation to the service area.

Appendix B summarizes current permit information obtained from the OWRD Water Rights website for all water rights held by PCJWSA. Note that the water right permit (G-15760) for wells #7A and #7B was granted to PCJWSA; however, the proposed wells were determined to be inadequate to sustain supply for the long-term projected community growth. Therefore, these two wells were never constructed and the water right was cancelled in 2015 by final order Vol 93 page 1040.

2.1.2 Surface Water Sources

Horn Creek is a tributary that flows into the Nestucca River approximately 1.5 miles upstream from Pacific City, Oregon. Approximately 90 percent of the watershed is located within the Siuslaw National Forest, with the remaining 10 percent held by the Stimson Timber Company (Stimson) and other private landowners. PCJWSA has three intakes on Horn Creek: an intake at the Horn Creek Water Treatment Plant and two smaller diversions farther upstream. The intake at the treatment plant is the only one currently in use.

PCJWSA had a revocable easement with Stimson. It was for a 10-foot-wide and approximately 20,800-foot-long easement over the existing roadway that connects the Horn Creek Pump Station to its intakes. Selected provisions of the easement agreement allowed Stimson to construct structures within the easements if they do not unreasonably interfere with PCJWSA use. Stimson may also install gates within the easement. PCJWSA is to clearly mark the pipeline at all times. Stimson is not responsible for damages to the pipeline caused by normal logging activities. This easement expired in 2017 and PCJWSA is in the process of re-establishing it.

To supply potable water to its customers, PCJWSA constructed a surface water intake and the WTP along Horn Creek, a tidally influenced tributary to the Nestucca River that supports federally listed salmon. The raw water intake has a microscreen housed in a concrete structure at the edge of Horn Creek. Adequate depth and channel flows are managed in the creek using two V-shaped rock weirs. Raw water is stored and pumped from a 37,000-gallon below-grade concrete tank.

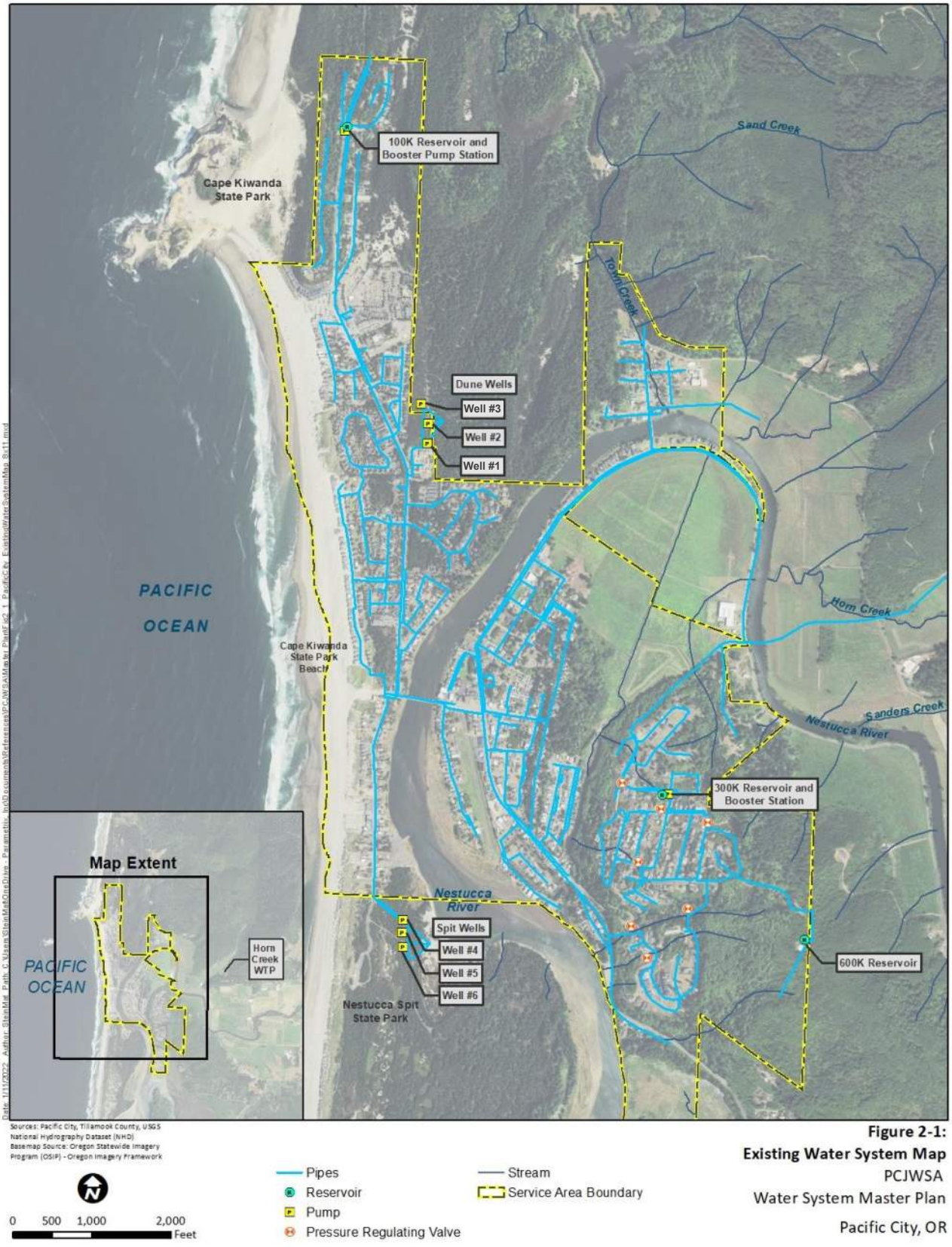

Figure 2-1. Existing Water System Map

The facility uses membrane microfiltration to treat 600 gpm currently, expandable to 1,200 gpm. Sodium hypochlorite is used for disinfection. Backwash and microfilter residuals are treated for surface water discharge in below-grade neutralization and settling tanks. Finished water is chlorinated and stored for required disinfection contact in a baffled 83,000-gallon below-grade concrete tank.

High-pressure vertical turbine pumps discharge at 600 gpm each through a new transmission pipeline to the 300K reservoir. Two hydropneumatic tanks protect the pipeline from water hammer. The pipeline was installed using shallow directional drilling to cross active dairy pastures, wetlands, and the Nestucca River. Shallow borings were used to allow easier access for maintenance. The pumping, microfiltration, residuals, creek levels, and chemical feed systems are monitored and controlled through a centralized SCADA system.

There are finished water pumps at the WTP consisting of two vertical turbine pumps, each rated at 600 gpm and 210 feet of total head. PCJWSA will need to either certify permit S-54783 by October 1, 2025, or file an extension. Because of the significant effort required to file an extension and risk associated with additional extensions, it is recommended that PCJWSA expand the capacity at the WTP to demonstrate beneficial use and certify its water right.

PCJWSA owns the water rights for three Horn Creek sources and manages water use and the infrastructure (e.g., intakes, pipelines, pumps). The water source diversion system consists of three diversion points:

- Upper Diversion #1 – Water right certificate number 86807 for diversion of 0.01 cfs. The diversion is located in Township 04 south, Range 10 west, Section 8, southwest 1/4 of the southwest 1/4. This source was developed in 1959.
- Upper Diversion #2 – Water right certificate number 86808 for diversion of 0.01 cfs. The diversion is located in Township 04 south, Range 10 west, Section 16, southwest 1/4 of the northwest 1/4. This source was developed in 1965.
- Horn Creek WTP – Water right permit number S-54783 for diversion of 2.0 cfs, and water right certificates 91174 for 0.19 cfs and 91175 for 0.49 cfs. Note that according to permit S-54783, withdrawal of surface water from Horn Creek will not be allowed when stream flow is less than 2.0 cfs. The diversion is located in Township 04 south, Range 10 west, Section 20, southwest 1/4 of the northeast 1/4. This source was developed in 2010.

Actual construction dates for the upper diversion intake structures are unknown. The water rights give a general indication of when the intakes may have been constructed and the earliest date at which diversion operations may have commenced.

PCJWSA also has a special-use permit (SUP) issued by the U.S. Forest Service (USFS). It covers the Upper Diversion Intakes. In the SUP, the Upper Diversion #1 is described as a 3-foot diversion dam, 200 feet of pipeline, and a 1,200-foot-long access road. The Upper Diversion #2 is described by the SUP as being undeveloped.

USFS retains the right of entry and inspection of the facility and may amend in whole or in part the permit at its discretion. USFS can also prescribe new terms upon renewal. The SUP does not allow for maintenance or construction of future improvements or structures. The SUP requires the use or occupancy of the facility at least one day each year. The SUP states that the permit holder shall maintain the improvements to standards of repair, etc., acceptable to USFS.

The SUP is subject to renewal every four years. It was recently renewed on October 25, 2018 and now expires on December 31, 2022. This SUP has a provision that should the facilities be abandoned or

removed, an abandonment plan needs to be submitted to USFS for the removal of the facilities and area restoration. The work needed to remove these facilities would trigger numerous natural resource permits including the National Environmental Policy Act, Sections 401 and 404 of the Clean Water Act, National Pollution Discharge Elimination System Phase II, biological assessments, water rights validation, and a fish passage variance. Based on the significant permitting effort, PCJWSA should continue to maintain this SUP agreement and the existing intakes indefinitely.

Photograph 2-1. Horn Creek Water Treatment Plant

Photograph 2-2. Horn Creek Intake

Photograph 2-3. Horn Creek Raw Water Pumps

Photograph 2-4. Horn Creek Microfiltration System

Photograph 2-5. Horn Creek Finished Water Pumps

Photograph 2-6. Horn Creek Hydropneumatic Tanks

2.1.3 Distribution System

The water distribution system is composed of approximately 25 miles of pipeline ranging in diameter from 2 to 12 inches. Pipe materials include both C900 and Schedule 40/80 polyvinyl chloride (PVC), steel, polyethylene, asbestos concrete (AC), and ductile iron.

The preferred material for new water pipeline is C900 PVC. On bridge crossings, ductile iron pipe is preferred. For valves, resilient seated gate valves are preferred. For hydrants, PCJWSA prefers 5.25-inch-diameter main valve openings rated at 250 psi with a coefficient of 0.9.

A map of the PCJWSA Water System is shown in Figure 2-1, and a summary of pipe diameters, lengths, and material types is shown in Table 2-2.

Table 2-2. Summary of Distribution System Piping

	Pipe Diameter								Length by Material	
	1-inch (feet)	2-inch (feet)	3-inch (feet)	4-inch (feet)	6-inch (feet)	8-inch (feet)	10-inch (feet)	12-inch (feet)	Linear Feet	Percent
PVC	0	37,648	1,173	9,450	24,523	19,624	0	11,689	104,107	82.6
Polyethylene	100	2,151	0	0	0	0	0	0	2,251	1.8
Galvanized steel	0	987	0	0	0	0	0	0	987	0.8
Steel	0	0	0	0	0	1,442	0	0	1,442	1.1
Asbestos cement	0	0	0	4,036	5,718	2,452	1,329	0	13,535	10.7
Ductile iron	0	0	0	0	1,563	2,176	0	0	3,739	3.0
Length by diameter	100	40,786	1,173	13,486	31,804	25,694	1,329	11,689		
Percent	0.1%	32.4%	0.9%	10.7%	25.2%	20.4%	1.1%	9.3%		
Total									**126,061**	

PVC = polyvinyl chloride

Source: 2020 Water Master Plan

2.1.4 Reservoirs

The water system includes three reservoirs which are named according to their respective approximate capacities: 100K, 300K, and the 600K reservoirs. The locations within the service area are shown in Figure 2-1. The elevation, capacity, and material of construction for each reservoir are shown in Table 2-3. Combined, the existing reservoirs have 880,461 gallons of available storage.

Table 2-3. Reservoir Data

Reservoir Name	Capacity (gallons)	Diameter (feet)	Max Water Surface (feet)	Height (feet)	Base Elevation (feet)	Top Elevation (feet)	Material
100K	95,867	38	11.3	12	155.80	167.8	Concrete
300K	271,918	55	15.3	16	190.88	206.88	Concrete
600K	512,676	81	13.3	14	504.00	518	Bolted Steel

Photograph 2-7. 100K Reservoir

Photograph 2-8. 300K Reservoir

Photograph 2-9. 600K Reservoir

2.1.5 Pump Stations

There are currently two booster pump stations in operation. One is adjacent to the 100K reservoir, which serves Ridge Road, Pine Road, Terrace View, and North Cape Kiwanda Drive. The other booster pump station is adjacent to the 300K reservoir which pumps water to the 600K reservoir. There are finished water pumps at the Horn Creek WTP consisting of two vertical turbine pumps, each rated at 600 gpm and 210 feet of total head. These pump stations are described further below.

100K Booster Pump Station

The 100K reservoir is kept full with water pressure from the 300K reservoir. A booster pump station and hydropneumatic tank adjacent to the 100K reservoir pressurize water for distribution to Ridge Road, Pine Road, Terrace View, and North Cape Kiwanda Drive. The hydropneumatic system is necessary because the 100K reservoir is not high enough above the surrounding area. It must be boosted and held at a higher pressure by the hydropneumatic tank.

There are two pumps, each rated at 85 gpm and 140 feet of total head. This booster pump station does not have the capacity to adequately provide fire flow and pressure needs. There are also low-pressure issues at higher elevations along Ridge Road in the pump station's service area.

There is one fire hydrant in this part of the system. Adequate fire flows and fire flow durations are not achieved here, because of the size of the hydropneumatic tank and pumps.

Photograph 2-10. 100K Booster Pump Station

Photograph 2-11. 100K Hydropneumatic Tank

Photograph 2-12. 100K Booster Pumps

Photograph 2-13. 100K Booster Pump Piping

300K Booster Pump Station

The other booster pump station is adjacent to the 300K reservoir (elevation = 180.88 feet) which pumps water to the 600K reservoir (elevation = 504 feet). There are two pumps, each rated at 150 gpm and 296 feet of total head. The booster pumps keep the 600K reservoir full based on float switch settings. The 300K reservoir is the main storage workhorse of the PCJWSA system. It is filled by the Horn Creek WTP or the wells whenever levels drop below designated levels. It can be kept full by the 600K reservoir through an altitude valve if levels drop too low. The 300K reservoir and its associated booster pump station refill the 600K reservoir whenever levels dictate.

Photograph 2-14. 300K Booster Pump Station

Photograph 2-15. 300K Booster Pumps

Photograph 2-16. 300K Booster Pump Piping

Horn Creek Finished Water Pump Station

There are finished water pumps at the Horn Creek WTP consisting of two vertical turbine pumps; each is rated at 600 gpm and 210 feet of total head. There are open spaces to install a second membrane microfiltration skid with additional pumping capacity to provide redundancy and meet future water demands. See Section 2.1.2 for additional details.

2.1.6 Pressure Zones

Seven pressure-regulating valves (PRVs) and the three reservoirs create six pressure zones. The six pressure zones are listed below, and the locations of the valves and reservoirs are shown in Figure 2-2.

1. 300K Pressure Zone (Pressure Zone 1). Primary system which provides water to the downtown core area and areas west of the Beachy Bridge except for Upper Cape Kiwanda. This pressure zone is set at the elevation of the 300K reservoir when full.
2. 600K Pressure Zone (Pressure Zone 2). Serves homes on Simmons Road and the upper part of Summit Road near the 600K reservoir.
3. Simmons and Topping Pressure Zone (Pressure Zone 3). The Simmons and Topping PRV station is set at an elevation of 412 feet and serves Riverview Drive, High Road, portions of Elderberry Lane, and Summit Road between Saghalie Lane and High Road.
4. Elderberry Pressure Zone (Pressure Zone 4). The Elderberry PRV station is set at an elevation of 380 feet and serves Elderberry Lane west of Riverview Drive.

5. River and Fisher Pressure Zone (Pressure Zone 5). This PRV station is set at an elevation of 362 feet and serves homes on the lower part of Summit Road. It serves Upper Loop Road, Lower Loop Road, Saghalie Lane, Fisher Access Road, and Circle West.
6. 100K Pressure Zone (Pressure Zone 6). The 100K booster pump station and hydropneumatic tank adjacent to the 100K reservoir on Cape Kiwanda Drive serve homes on Ridge Road.

The water system has seven PRVs. These are used to reduce pressures in zones served by the 600K tank. These PRVs are listed below in Table 2-4, and their corresponding locations within the system are shown in Figure 2-2.

Table 2-4. Pressure-Regulating Valve Summary

Pressure-Regulating Valve Name	Size (inches)	Open Setting (psi)
River and Elderberry	2	45
Simmons and Topping	2	44
	6	38
River and Fisher	2	51
	6	40
Solita	2	45
	6	40
	Relief Valve	65
Kingfisher and Solita	2	54
	6	48
	Relief Valve	75
Heron Way	2	90
	6	84
	Relief Valve	100
Reddekopp and Dana	2	58
	6	52
	Relief Valve	78

psi = pounds per square inch

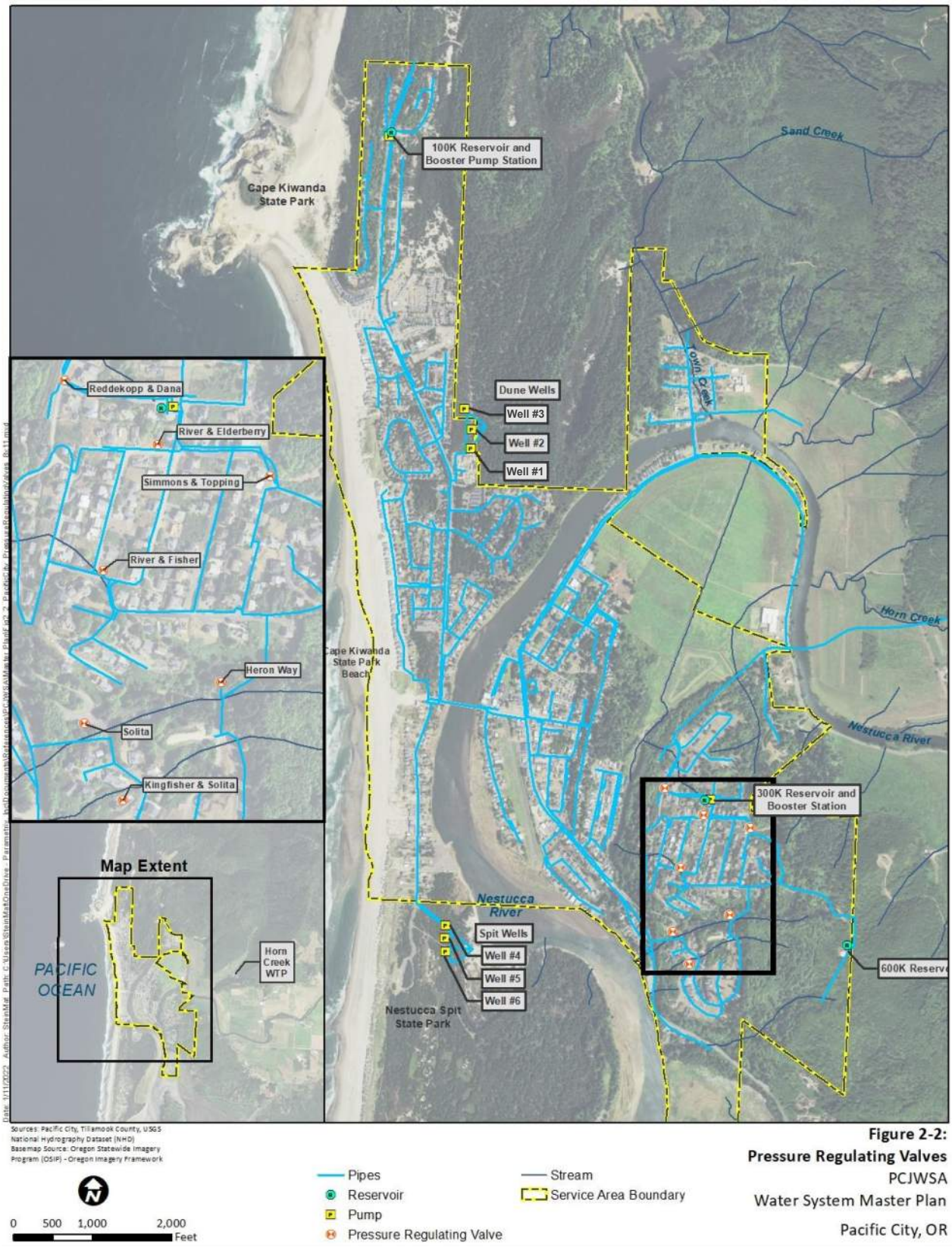

Figure 2-2. Pressure-Regulating Valves

2.1.7 Water Treatment

All well water produced is disinfected using sodium hypochlorite with a target chlorine residual of minimum of 0.2 milligrams per liter at the farthest reaches of the distribution system. The water is not fluoridated. Each well is housed within a small building. Wells 1 and 4 each have an 80-gallon storage tank for mixing sodium hypochlorite to disinfect all water produced.

Water from Horn Creek is treated with a microfiltration system, followed by disinfection with sodium hypochlorite. Detention time is provided by 83,200 gallons of storage. Vertical turbine pumps convey the treated water to the 300,000-gallon reservoir.

2.2 Current Population and Service Area

OAR 690-086-140(2)

PCJWSA currently serves an approximate permanent resident population of 1,000 with seasonal population peaks up to an estimated 5,000 during the peak tourism season (July to August). PCJWSA serves approximately 1,441 water service connections within a service area of approximately 1.7 square miles. The PCJWSA service area includes the communities of Pacific City and Woods. The properties within the service area are zoned as residential, commercial, planned development, or air-park land use types. There is currently one dairy farm located within the service area, and PCJWSA supplies water to this site.

Figure 2-1 includes an aerial map of the PCJWSA service area that indicates the well locations, WTP location, water distribution pipelines, streams, and other regional landmarks.

2.3 Adequacy and Reliability of Water Right/Supply

OAR 690-086-140(3)

The existing groundwater wells and surface water rights are adequate to meet current and future demands based on projected future growth (see Chapter 5). PCJWSA now uses Horn Creek as the primary source while maintaining the well fields as the auxiliary source. With regard to reliability, the current well field water sources may be susceptible to saltwater intrusion or to disruption by natural disasters. The Horn Creek water source is a more reliable source in the event of natural disasters, but it would be limited in the event of extended drought, as there are minimum flows to be maintained for streamflow-dependent species listed by state or federal agencies as sensitive, threatened, or endangered. See Section 2.6 for further discussion on streamflow-dependent species. In addition, a wildfire in the Horn Creek watershed would likely put the plant out of service for a year or two.

2.4 Water Use Records

OAR 690-086-140(4)

2.4.1 Water Production Records

Table 2-5 below shows the annual water production records by source for 2017 through 2021. This information was taken from annual water use reports as required under OAR Chapter 690 Division 85. These reports are submitted by December 31st of each year. Now that the new water treatment plant is operational, water withdraw rates and associated volumes are tracked on a continuous basis and reported to the OWRD on an annual basis for future analysis.

Table 2-5. Total Annual Production by Water Source

Water Source Well ID (County ID) or Horn Creek	Water Rights Application	2017	2018	2019	2020	2021	Avg. [a] (MG/yr)	Avg. [a] (gpd)	Maximum Instantaneous (gpm)
#1 (TILL 115)	G-10215	1.683	0.610	1.489	2.221	3.311	1.863	5,104	125
#2 (TILL 907)	G-11260	3.150	2.665	3.328	2.706	3.118	2.993	8,201	100
#3 (TILL 50092)	G-10215	2.779	1.982	2.159	2.240	2.304	2.293	6,282	80
#4 (TILL 937)	G-11754	1.818	1.702	3.313	3.589	2.568	2.598	7,118	100
#5 (TILL 936)	G-11754	1.526	1.192	2.063	2.194	1.778	1.751	4,796	100
#6 (TILL 934)	G-11754	1.475	1.235	2.463	2.704	1.938	1.963	5,378	100
Horn Creek WTP	S-33272 S-40432 S-49201	78.005	79.141	70.521	57.829	72.495	71.598	196,159	600
Total:		**90.436**	**88.527**	**85.336**	**73.483**	**87.512**	**85.059**	**233,038**	

[a] Average day use is calculated by dividing the total yearly volume for a given well by 365 days.

gpm = gallons per minute; gpd = gallons per day; ID = identification MG/yr = million gallons per year

2.4.2 Water Consumption Summary

Water use is metered at the Horn Creek WTP, at each of the six wells, and at each service connection. Instantaneous and cumulative well production and consumer water use measurements are compliant with the Flow Meter Method described in OAR 690-085-0015 (5)(a).

Until May 2020 the billing cycle was the 24th to the 26th of each month. In May 2020 this was changed to the 1st to the 31st of each month to better align with the monthly production meter reading schedule. This was an improvement and it increased the accuracy of monthly water loss calculations. However, there are some situations where the consumption meters are read before the last day of the month.

Between February and July 2021, nearly all consumption meters were replaced with new radio-read water meters so AMR can be implemented. There are approximately 18 commercial meters remaining, which are planned for replacement in 2022. Meter replacement is expected to improve the accuracy of the meters used for billing purposes. Eventually, this system can be upgraded to an advanced metering infrastructure system where daily produced water flows can be compared with revenue meter flows. This system would also help staff detect leaks in the distribution system more quickly.

Figure 2-3 shows the monthly demand from January 2017 to December 2021 based on the metered water sales. Seasonal demand peaks during the month of August when demand is more than twice that of winter months. The increased water demand in summer months is largely due to the significant population increases from summer tourism. The summertime water use (June to September) is generally between 6 and 10 million gallons, with a maximum month demand of 10.540 million gallons recorded in August 2019. The wintertime water use (November to February) has been more variable by year, generally between 3 and 5 million gallons.

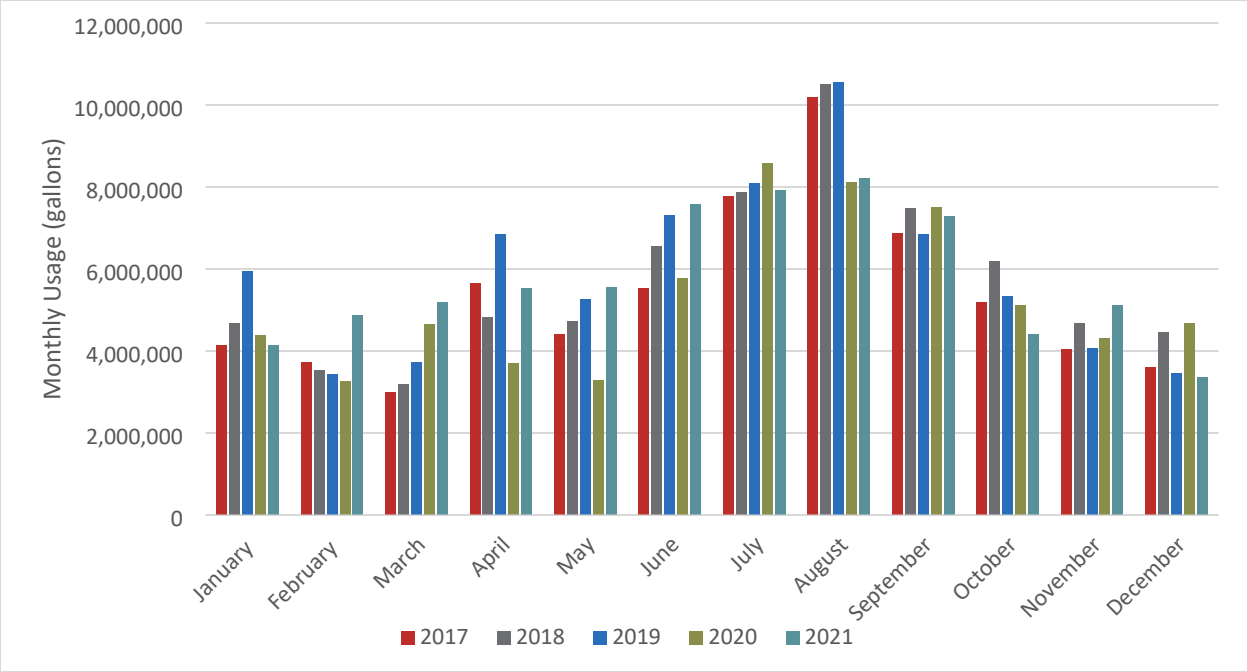

Figure 2-3. Monthly Water Demand by Year

Based on daily production records from all wells and the WTP for 2019, the maximum daily demand (MDD) recorded was 545,320 gallons. The annual average daily production for 2019 was 237,241 gpd. The resulting maximum day factor from average daily demand (ADD) to MDD was 2.3, which is within the range of typical design values (Dewberry 2002; Mays 1999).

Another peak demand is the peak hourly demand (PHD). The PHD was estimated by applying a peaking factor to the ADD. A peaking factor of 3.5 was selected for the PCJWSA system, which is consistent with the previous master plan (PCJWSA 2020). These values for the ratio of MDD to ADD and for PHD to ADD are within typical ranges for water systems (Dewberry 2002; Mays 1999).

Table 2-6 below presents a summary of the estimated number of water service connections, Average Daily Demand (ADD), Maximum Daily Demand (MDD), Peak Hour Demand (PHD), and total annual demand for the past 5 years (2017 to 2021).

Table 2-6. Annual Water Demand Summary

Year	Water Service Connections	Annual Demand (MG)	Average Daily Demand (gpd)	Maximum Daily Demand (gpd)	Average Daily Demand (gpm)	Maximum Daily Demand (gpm)	Peak Hour Demand (gpm)
2017	1,388	90.436	247,770	569,871	172	396	602
2018	1,409	88.527	242,540	557,841	168	387	590
2019	1,421	85.336	237,241	545,320	162	373	568
2020	1,430	73.483	201,324	463,046	140	322	489
2021	1,441	87.512	239,759	551,446	166	383	583

Notes: gpd = gallons per day; gpm = gallons per minute; MG = million gallons
Maximum daily demand was recorded in 2019, resulting in a MDD/ADD factor of 2.3 used to estimate MDD for other years.
Peak hourly demand = ADD x 3.5

2.5 Inventory of Water Rights

OAR 690-086-140(5)

Please see Appendix B for a detailed inventory of water rights held by PCJWSA.

Please see Appendix C for copies of the water right permits listed in the water rights inventory.

2.6 Streamflow-Dependent Species

OAR 690-086-140(5)(i)

The Horn Creek water source is a more reliable source in the event of tsunamis or saltwater intrusion, but its use must be limited in the event of extended drought as there are minimum flows to be maintained for streamflow-dependent species listed by state or federal agencies as sensitive, threatened, or endangered. These species include coho salmon (federally listed as threatened and state listed as sensitive), Chinook salmon (state listed as sensitive), steelhead (federally listed as species of concern and state listed as sensitive), chum salmon (state listed as sensitive), western brook lamprey (federally listed as a species of concern and state listed as sensitive), and Pacific lamprey (federally listed as a species of concern and state listed as sensitive). Furthermore, Horn Creek is listed by the Oregon Department of Environmental Quality as being water quality limited for temperature during summer months.

Appendix D shows data for calculated flow based on measurements recorded from a staff gauge in Horn Creek. Minimum summer flows approach 5 cfs, which is 2.3 cfs greater than the existing water rights for the creek. Minimum in-stream flows were set a 2.0 cfs in the biological opinion issued by the National Marine Fisheries Service on May 20, 2008.[1]

2.7 Customer Characteristics and Use Patterns

OAR 690-086-140(6)

The Water System serves three main customer types:

1. Residential – single- and multi-family dwellings (small meters)
2. Commercial – businesses and institutional customers (larger meters)
3. Industrial – one dairy and one brewery (removed from service area in 2020)

As of the 2021 billing cycle, there were 1,441 water service connections. Of those, 94 percent (1,349) of the service connections were residential. The remaining 92 connections were for commercial and industrial customers. The existing demand placed on the PCJWSA system is primarily classified as domestic and seasonal use with a smaller portion used for commercial consumption. Of the total water demand metered in 2021, approximately 66 percent was residential, 30 percent was commercial, and 4 percent was industrial.

Commercial users include retail stores, several recreational vehicle and mobile home parks, restaurants, and motels. PCJWSA has two industrial customers: one dairy and one microbrew pub. However, over recent years, production at the brewpub has shifted to another facility outside of the PCJWSA service

[1] https://pcts.nmfs.noaa.gov/pls/pcts-pub/pcts_upload.summary_list_biop?p_id=107123

area, and no production has occurred within the service area during the past two years. Future growth potential of industrial customers is expected to be small. The top five commercial and industrial water users account for approximately 50 percent of the total commercial and industrial water demand, including the Cape Kiwanda RV Park, Cape Kiwanda Marketplace, Pelican Brewery, Inn at Cape Kiwanda, and Headlands Lodge.

The existing demand placed on the PCJWSA system is primarily classified as domestic and seasonal use with a smaller portion used for commercial consumption. Because commercial use varies by month and tracks with total water demand and is expected to grow proportionally with the population, it is incorporated into the per connection water use. Water demands vary considerably based on seasonal and weekend population influx due to tourists and vacation home users. Over the past 9 years, commercial and industrial water use has remained relatively steady, while residential use has been more variable by year. Below are summaries of the annual water usage by customer category.

Table 2-7. Annual Water Use by Customer Category (2013–2021)

Data Source	Year	Residential (MG)	Commercial (MG)	Industrial (MG)
5-year Progress Report	2013	28.141	18.720	2.952
5-year Progress Report	2014	28.339	19.529	2.582
5-year Progress Report	2015	29.561	20.424	2.656
5-year Progress Report	2016	26.968	18.901	2.824
5-year Progress Report	2017	30.046	19.485	2.505
Recent Water Data	2018	38.839	20.247	3.036
Recent Water Data	2019	40.667	23.996	4.101
Recent Water Data	2020	43.875	17.422	2.012
Recent Water Data	2021	45.460	20.581	2.776

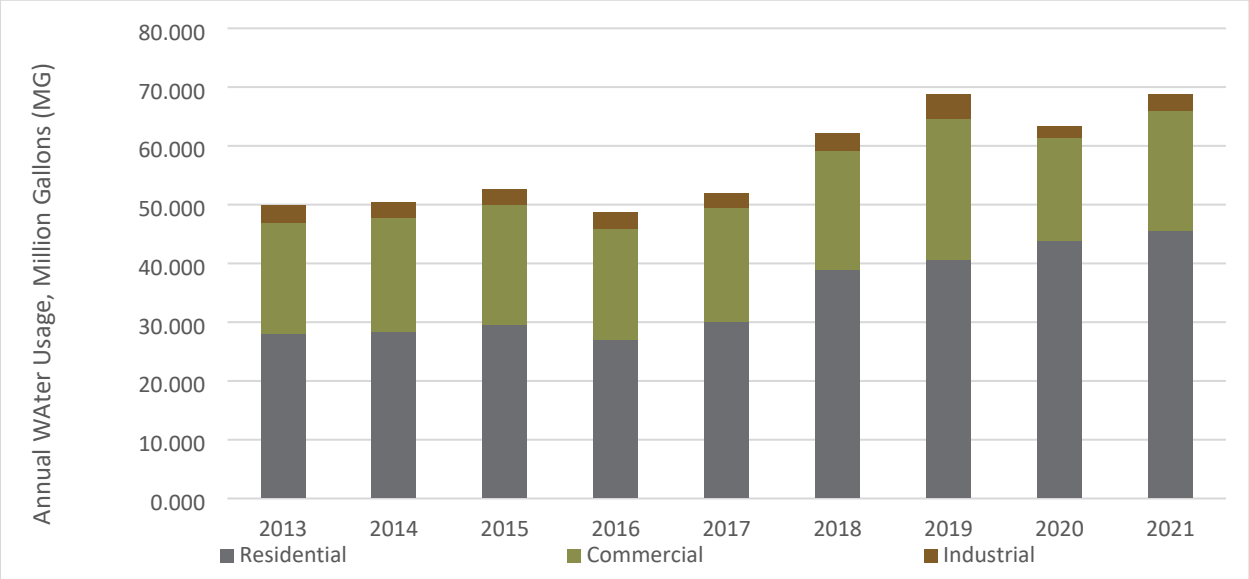

Figure 2-4. Annual Water Use by Customer Category (2013–2021)

2.8 Interconnections with Other Water Supply Systems

OAR 690-086-140(7)

The PCJSWA water system is not interconnected with any other water supply systems.

2.9 System Schematic

OAR 690-086-140(8)

Figure 2-1 and Figure 2-2 show the sources of water, storage facilities, treatment facilities, distribution piping, PRVs, and pump stations. There are no interconnections with other water supply systems, and there are currently no plans to expand the existing service area.

2.10 System Leakage

OAR 690-086-140(9)

Water system leakage is approximated by subtracting the total amount of water sold (including known amounts of water used for maintenance purposes) from the total volume of water produced, then dividing by the volume of water produced. Multiplying this by 100 yields a percentage of water losses Figure 2-5 shows the annual percentage of water loss based on the annual metered water produced by PCJWSA versus the annual metered water sold from 2017 to 2021. These annual values average a 19 percent loss.

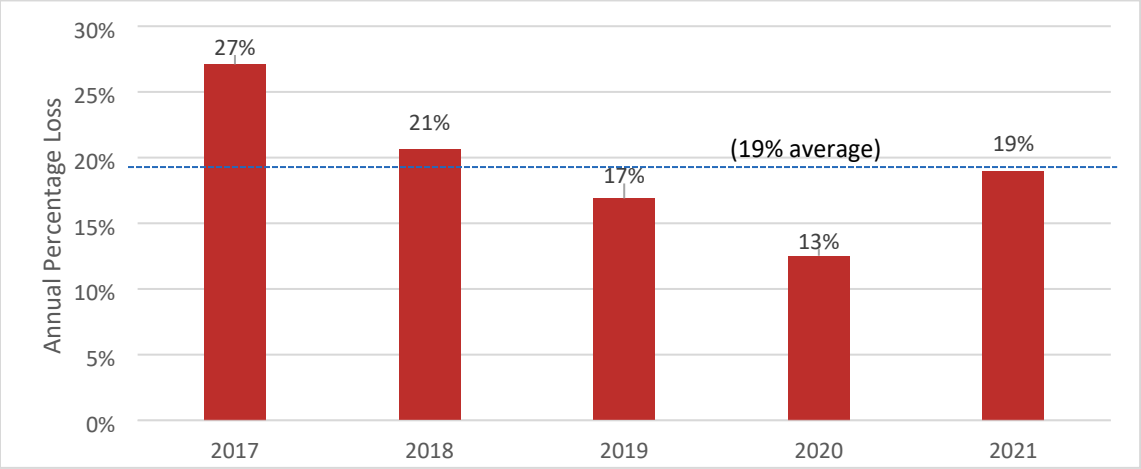

Figure 2-5. Annual Percentage Water Loss (2017-2021)

Figure 2-6 shows the monthly percentage water loss, for the same years. In general, the highest monthly water losses were observed in the year of 2017, and during the months of December through March. Relatively low water losses were observed during the months of August and September.

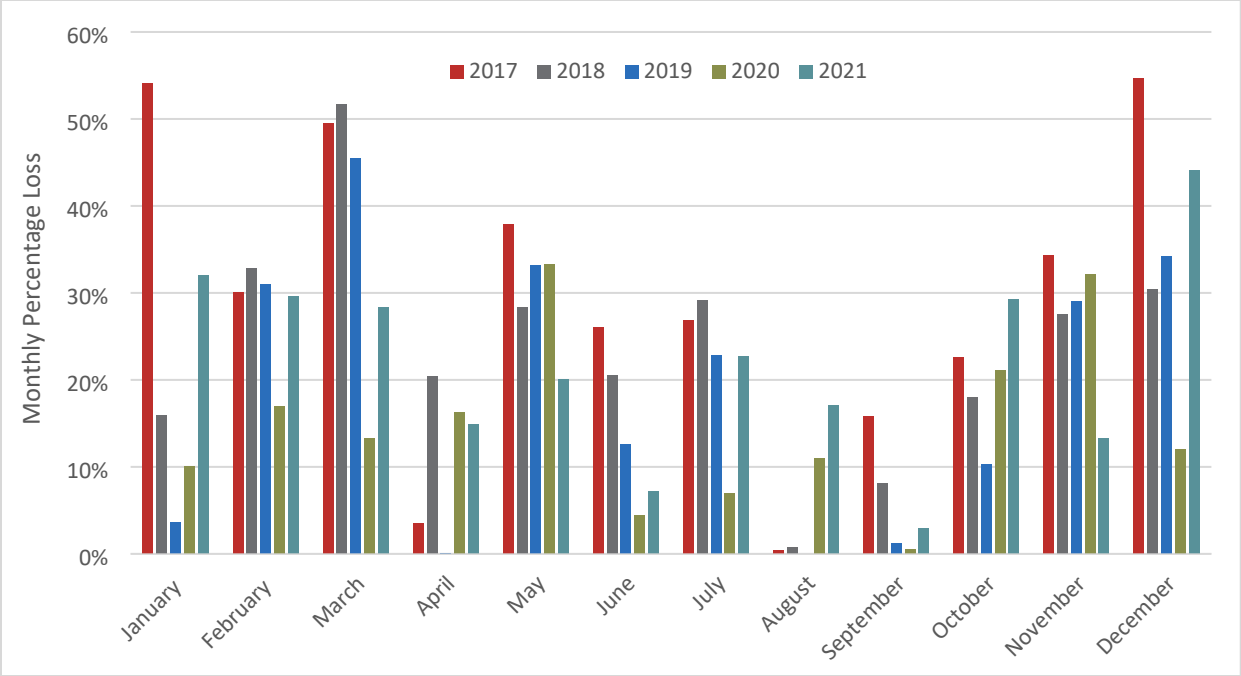

Figure 2-6. Monthly Percentage Water Loss (2017–2021)

To more closely examine total unaccounted for water, a summary of the annual water audit results are provided below in Table 2-8. In addition to metered consumption, this table also includes totals of known and estimated volumes for other authorized non-revenue uses. Figure 2-7 further illustrates these annual water audit results in graphical form.

Table 2-8. Annual Water Audit Summary (2017-2021)

		Authorized and Accounted for Consumption		Estimated Unaccounted for Water	
Year	Total Production (MG)	Revenue Flows from Metered Consumption, incl. Residential, Commercial, and Industrial Use (MG)	Other Authorized Non-Revenue Flows, Estimated[1] (MG)	Total [2] (Losses in MG)	Percentage
2017	90.436	64.051	1.877	24.509	27.10
2018	88.527	68.644	1.643	18.241	20.60
2019	85.336	70.747	0.172	14.417	16.89
2020	73.483	63.277	1.000	9.207	12.53
2021	87.512	69.061	1.848	16.603	18.97

1. Includes water and sewer main flushing, hydrant flushing, fire dept. training, water line breaks, leaks, and repairs, unauthorized use from hydrants (i.e. water theft), construction water, etc. PCJWSA staff estimated by duration of flows (line flushing, etc.), or direct meter readings on hydrant meter.

2. Total unaccounted for water is (Total Production) minus (Total Accounted for Consumption). This includes unaccounted for system leakage, and any inaccuracies from estimated non-revenue flows.

MG = million gallons

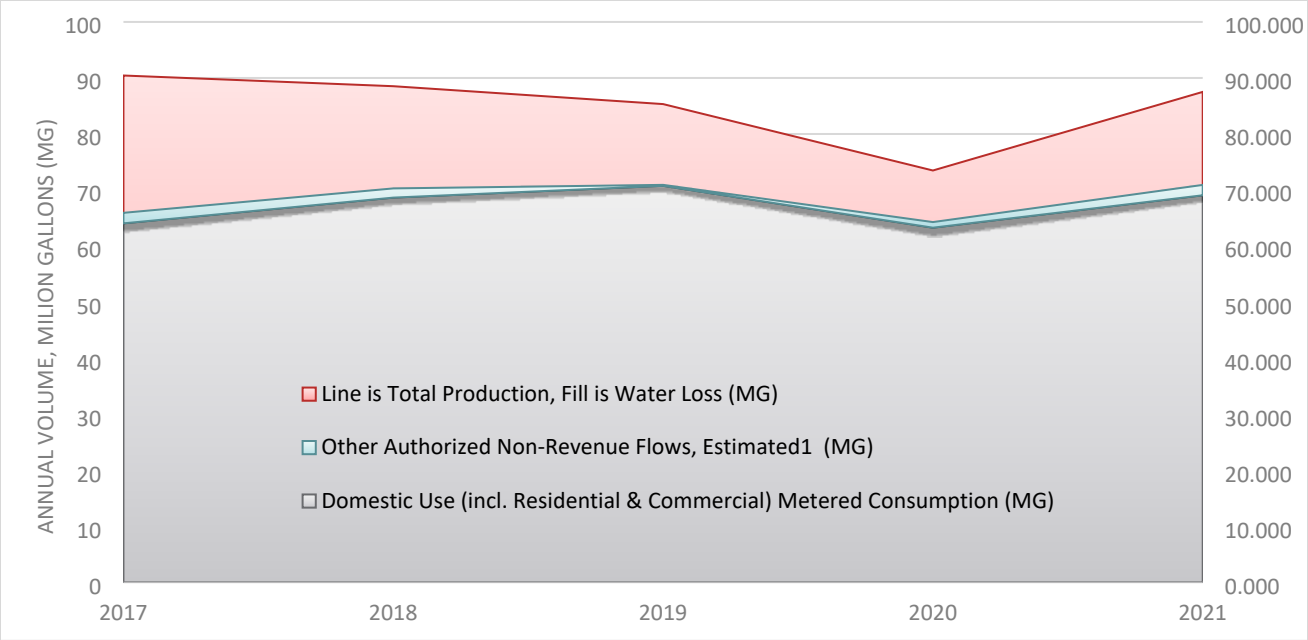

Figure 2-7. Annual Water Audit Graph (2017–2021)

The calculated water losses for each year and the 5-year average water loss (19 percent) are all well above the typical threshold of 10 percent water system leakage. Thus, further investigation and leak detection measures will be implemented by PCJWSA to identify and address the root causes of excessive water losses. Factors that may account for some of the apparent losses include leaks within the distribution system, inaccurate service and production meters, and unauthorized uses. Strategies being employed to increase system efficiency are discussed in the next chapter.

3. WATER CONSERVATION ELEMENT

OAR 690-086-150

This section summarizes existing and planned water conservation measures with associated implementation schedules for PCJWSA in accordance with OAR 690-086-0150. Because PCJWSA uses the surface water rights at Horn Creek (habitat for threatened and endangered species), many of the additional conservation measures listed in OAR 690-086-0150(6) are incorporated into this plan.

3.1 Progress Report on Scheduled Conservation Measures

OAR 690-086-150(1)

Below is a summary of progress made by PCJWSA on the scheduled water conservation measures proposed in the 2012 *Water Management and Conservation Plan*.

Table 3-1. Progress Report on Water Conservation Benchmarks from 2012 WMCP

Benchmark	Full Implementation Date	Percent Complete
Ongoing Efforts		
Water auditing	-	Ongoing, monthly
User meter testing	-	Ongoing
Source meter testing	-	Ongoing
Meter replacement	By 2016	98%
Conservation kit distribution	-	Ongoing
Public education program (mailers with bills, news publication, children's outreach materials)	-	Ongoing
Planned Programs		
Zonal water audit (based on results of leak detection program)	TBD	0%
Complete leak detection program	By 2018	0%
Leak repair (all leaks from 2013 survey)	By 2020	0%
Replacement of all AC and galvanized steel pipes	By 2020	0%
Public education program for tourist population	By 2012	80%
Technical and financial assistance program	-	Ongoing
Customer rebate program survey	2016	0%

AC = asbestos cement; TBD = to be determined; WMCP = Water Management and Conservation Plan

- **Ongoing efforts** – PCJWSA has been auditing water data, testing user meters, testing source meters, offering conservation kits, and sharing water conservation information with the public on a regular basis.
- **Meter replacement** – Between February and July 2021, nearly all consumption meters were replaced with new radio-read water meters so AMR can be used. There are approximately 18 commercial meters remaining, which are planned for replacement in 2022.

- **Complete leak detection program** – Not completed, but this is something that the PCJWSA is actively pursuing. The plan is to procure the acoustic leak detection equipment and begin this process in 2022. The service area will be divided into four to five manageable sections, and a leak detection survey will be conducted on each section annually.
- **Zonal water audit** – Not completed. The leak detection program may help to define these zones. Once these water distribution zones are identified, additional water meters can be installed on distribution mains to monitor water delivered to each zone. These volumes can then be compared to water consumption within each zone, which may help identify the region where leaks or unauthorized uses may be occurring. This approach will be simpler and more effective for zones where water is delivered via a single distribution main, such as the Woods Community, Rueppell Avenue, and the area north of Alder Street. Zones served by multiple mains with bi-directional flow will be more complicated to analyze in a zonal water audit.
- **Leak repair** – PCJWSA estimates that approximately 5-10 leaks were identified and fixed reactively per year during the past 5 years. However, no proactive leak repairs were made based on leak detection surveys. When the leak detection program described above is implemented, proactive leak repair will be possible.
- **Replacement of all AC and galvanized steel pipes** – Not completed. This will take some time, so completion of this benchmark is expected to take 5 to 10 years. With the capital improvement plan outlined in the 2020 WMP, PCJWSA will have a clear list of AC and galvanized steel pipe segments to replace over time.
- **Public education program for tourist population** – This was initiated, but it has not been sustained. Outside of posting water conservation tips on the PCJWSA website, efforts towards this end have declined in recent years. PCJWSA will consider reviving this effort, but there does not seem to be much interest from the public.
- **Technical/financial assistance programs** – PCJWSA has an abundant supply of water conservation kits, low-flow shower heads, and kitchen/bathroom sink aerator nozzles that are free to the public. Even so, it has been difficult generate public interest in water conservation retrofit kits. Many customers (including tourists cleaning up from beach visits) prefer the comfort and effectiveness of standard- and higher-flow shower heads. Even if retrofit kits are free to the public, the extra time and effort to install fixtures is hard for customers to justify if what they have works. However, some time has passed since the availability of free retrofit kits were advertised to the public. This is another effort that can be revived, if necessary.
- **Customer rebate program:** Not Completed. The Authority may never be in a financial position to offer rebates to customers for water-efficient landscaping, fixtures, and appliances.

3.2 Water Use Measurement and Reporting Program

OAR 690-086-150(2)

Water use is metered at the Horn Creek WTP, at each of the six wells, and at each service connection. Instantaneous and cumulative well production and consumer water use measurements are compliant with the Flow Meter Method described in OAR 690-085-0015 (5)(a).

Until May 2020 the billing cycle was the 24th to the 26th of each month. In May 2020 this was changed to the 1st to the 31st of each month to better align with the monthly production meter reading schedule. This was an improvement and it increased the accuracy of monthly water loss calculations.

However, there are some situations where the consumption meters are read before the last day of the month.

Between February and July 2021, nearly all consumption meters were replaced with new radio-read water meters so AMR can be used. There are approximately 18 commercial meters remaining, which are planned for replacement in 2022. Meter replacement is expected to improve the accuracy of the meters used for billing purposes. Eventually, this system can be upgraded to an advanced metering infrastructure system where daily produced water flows can be compared with revenue meter flows. This system would also help staff detect leaks in the distribution system more quickly.

3.3 Other Currently Implemented Conservation Measures

OAR 690-086-150(3)

Over the past several years, PCJWSA has implemented the following water conservation measures:

- PCJWSA currently implements a protocol where customers with minor leaks found in their service connections have 30 days to repair the problem before water service is shut off. For major leaks, service is shut off immediately until the problem is repaired.
- PCJWSA currently bills monthly allowing customers to see the previous month's usage in a timely manner. In July 2009, PCJWSA converted the residential water rate billing structure from a declining block rate structure (cost per unit of consumption decreases with additional units of consumption) to an inverted block rate structure where the cost per unit of consumption increases with additional units of consumption. The commercial water billing structure was also revised to the inverted block rate structure. See Section 3.4.4 for more information on the inverted block water rate structure.
- Public information programs have been established that include the following:
  - Water conservation mailers are sent out with water bills to residents.
  - Pamphlets are available at the public works office and distributed at public events.
  - Youth outreach materials promoting water conservation such as coloring books and stickers are handed out at public events and at the main office.
  - Water conservation tips are included in the local newspaper and on the PCJWSA website.
  - Water conservation issues are discussed at PCJWSA board meetings.

These practices are part of a long-range goal of adjusting public perception within the PCJWSA service district. As existing water conservation practices become more publicly recognized and followed, PCJWSA will implement additional measures.

3.4 Water Conservation Programs

OAR 690-086-150(4)

OAR 690-086-0150(4) requires that all water suppliers establish 5-year benchmarks for implementing the water management and conservation measures listed in Table 3-2. For this WMCP, proposed conservation measures are summarized below, in reference to the OAR section related to each measure. The following sections describe each conservation measure in greater detail.

Table 3-2. Five-year Benchmarks for Implementing Water Conservation Measures

Measure	OAR Reference	Percent Complete	Full Implementation Date	WMCP Section
Annual water audit	690-086-0150(4)(a)	100	Ongoing	3.4.1
Full metering of system	690-086-0150(4)(b)	100	Complete	3.4.2
Meter testing and maintenance program	690-086-0150(4)(c)	80	2022	3.4.3
Rate structure and billing practices to encourage conservation	690-086-0150(4)(d) 690-086-0150(5)(c)	100	Completed in 2016	3.4.4
Leak detection and repair	690-086-0150(4)(e)	0	2025	3.4.5
Public education program	690-086-0150(4)(f)	80	2027	3.4.6
Technical and financial assistance programs	690-086-0150(5)(a)	100	Ongoing	3.4.7
Retrofit/replacement of inefficient fixtures	690-086-0150(5)(b)	100	Ongoing	3.4.8
Reuse, recycling, and non-potable opportunities	690-086-0150(5)(d)	0	Unfeasible	3.4.9
Other conservation measures	690-086-0150(5)(e)	0		3.4.10
-Replacement of AC & galvanized steel piping			2032	
-Zonal Water Audit			2027	

3.4.1 Annual Water Audit

OAR 690-086-150(4)(a)

PCJWSA conducts water audits by comparing the amount of water produced to the amount of water sold on a monthly basis. Authorized unmetered uses including pipe flushing, firefighting, and maintenance are estimated by multiplying the flow rate by the length of time that the water is being used and are included in the monthly water production/sales records maintained by PCJWSA. Unauthorized unmetered uses including unmetered connections, illegal hydrant use, and distribution system failures represent the unaccounted-for portion of the production versus sold water and are usually detected by PCJWSA during inspections or complaints from customers. The audit does not currently account for changes in storage volume of the reservoirs; however, this was estimated to only account for less than 1 percent of the average yearly volume of water produced.

Based on the water audits from 2017 through 2021, PCJWSA had an average annual water loss of 19 percent (see Figure 2-5). According to OAR 690-086-0150(4)(i), this value is above the threshold of 10 percent and a systemwide leak detection and repair program must be initiated to reduce water loss to less than 15 percent (see Section 3.4.5 below).

3.4.2 Systemwide Metering

OAR 690-086-150(4)(b)

The water system is metered systemwide with water meters on all connections within the service area. The production wells and water treatment plant are fully metered. Contractors accessing bulk water from fire hydrants are required to meter water use from hydrants and pay for that usage. Maintenance uses from hydrants should be measured with portable water meters, such as for regular flushing of fire hydrants, water main blowoffs, and construction water truck fills. However, water use is not typically measured for fire suppression, and some maintenance water uses are not practical to meter. In these cases, estimates are typically provided for known unmetered water uses, losses, and waste.

3.4.3 Meter Testing and Maintenance

OAR 690-086-150(4)(c)

Between February and July 2021, nearly all consumption meters were replaced with new radio-read water meters so AMR can be used. There are approximately 18 commercial meters remaining, which are planned for replacement in 2022. This measure is expected to improve the accuracy of the meters used for billing purposes. Eventually, this system can be upgraded to an advanced metering infrastructure system where daily produced water flows can be compared with revenue meter flows. This system would also help staff detect leaks in the distribution system more quickly.

PCJWSA will continue to monitor billing records for discrepancies and test or repair meters as necessary. Calibration and maintenance of meters is performed at the factory on a 4- to 5-year basis.

Due to the high water losses calculated in the water audit, PCJWSA intends to replace the master (propeller) meter at the Dune Wells #1-#3 with a new mag meter, install a master (mag) meter at the Spit Wells #4-#6 (none currently exists), and replace the 12-inch effluent (propeller) meter at Horn Creek with a mag meter. There are currently no plans to replace the existing individual well meters. The master meters for each well field will be used for comparison to consumption meters to calculate water loss. This will also provide a method for verifying individual well meter accuracy. It is possible that the water source meters (at the wells and the Horn Creek WTP) are over-reporting water produced, which would result in an inflated water loss calculation. Since the American Water Works Association suggests testing or replacing meters every 12 years, these source meters are likely due for replacement.

3.4.4 Water Rate Structure and Billing Schedule

OAR 690-086-150 (4)(d) and (5)(c)

PCJWSA bills customers with an inverted block water rate structure to encourage water conservation. All customers are charged a Monthly Capital Improvement Charge and a Base User Fee for water consumption up to 399 cubic feet. Additional water use above this base allowance is charged per additional 100 cubic feet at a rate increasing in four water consumption tiers. Please see Table 3-3 and Figure 3-1 below for more information.

Table 3-3. Inverted Block Water Rate Structure

Charge	Amount
Monthly Capital Improvement Charge – all users	$3.00
Base User Fee per month for consumption of up to 399 cf	$30.78
Consumption 400 to 899 cf of water, charge per each additional 100 cf	$1.55
Consumption 900 cf to 1,399 cf of water charge per each additional 100 cf	$1.94
Consumption 1,400 cf to 1,899 cf of water charge per each additional 100 cf	$2.34
Consumption 1,900 cf and above charge per each additional 100 cf	$2.92

cf = cubic feet

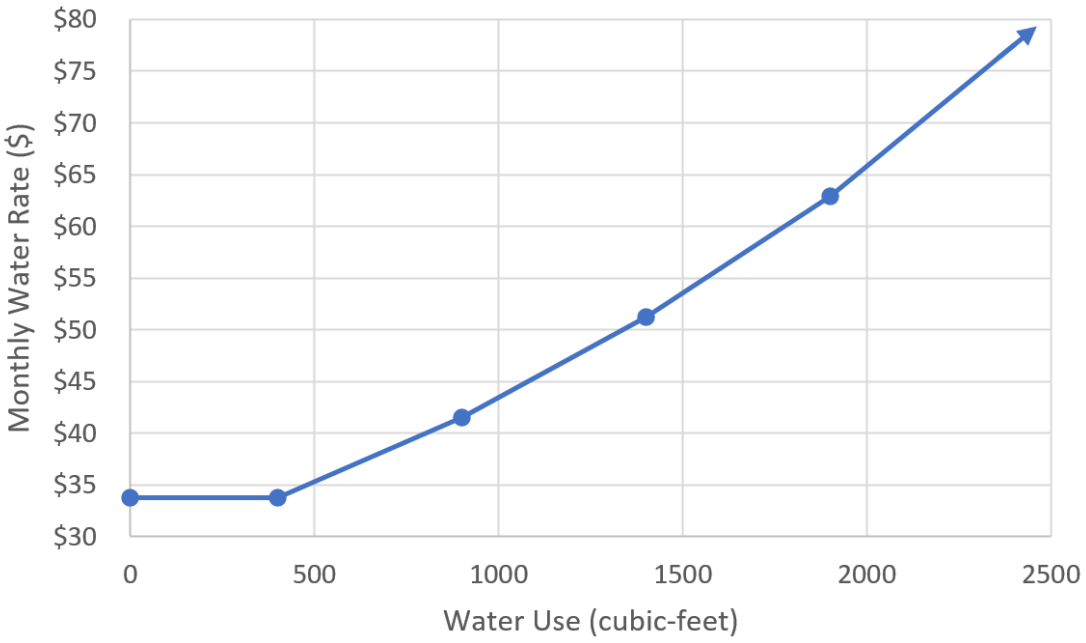

Figure 3-1. Graduated Monthly Water Rate vs. Water Use

3.4.5 Leak Detection and Repair

OAR 690-086-150(4)(e)

In accordance with OAR 690-086-0150 (4)(e), PCJWSA is required to implement a leak detection program because the historical water loss is greater than 10 percent. Historically, the most common method for the PCJWSA staff to detect leaks is through visual observation. To better locate leaks within the system, PCJWSA will implement an acoustic leak detection program focusing primarily on those areas of the distribution system with older pipes. Once this survey is completed, any leaking pipes identified by the leak detection survey will be prioritized for completion by 2025. The results of the survey will also assist in prioritizing projects on the 2020 WMP list of capital improvement projects.

3.4.6 Public Education

OAR 690-086-150(4)(f)

Public information programs for water conservation have been established, including the following:

- Water conservation mailers are sent out with water bills to residents.
- Pamphlets are available at the public works office and distributed at public events.
- Youth outreach materials promoting water conservation such as coloring books and stickers are handed out at public events and at the main office.
- Water conservation tips are included in the local newspaper.
- Water conservation issues are discussed at PCJWSA board meetings.
- PCJWSA currently bills on a monthly basis allowing customers to see the previous month's usage in a timely manner.
- The PCJWSA website includes links to water conservation information and tips. See Appendix F.

In addition to the public information programs already in place for the community, PCJWSA is planning to expand outreach to include distribution of materials to hotels, restaurants, and rental homes in the area to target the tourist population. These materials will include tips for how to reduce water use through reuse of linens, water by request at restaurants, etc. This is expected to occur within the next 5 years, by 2027.

3.4.7 Technical/Financial Assistance Programs

OAR 690-086-150(5)(a)

PCJWSA has a supply of water conservation kits that are available to homeowners free of charge (see next section). As part of this program, interested homeowners may go to the PCJWSA office to pick up the kit. This allows for PCJWSA staff to provide technical assistance to the homeowner on proper kit installation procedures, perform a brief water audit based on the customer's billing record, and make suggestions for additional water conservation practices.

Most of the commercial customers within Pacific City are restaurants or motels that serve the tourist population. PCJWSA has been working with the motels to provide information in each of the guest rooms requesting that linens be reused to reduce the water usage for laundry.

PCJWSA is planning to work with local restaurants to start requiring customers to ask for water. In addition, PCJWSA intends to provide water conservation information cards that would be displayed at the tables explaining the conservation approach.

3.4.8 Retrofit/Replacement of Inefficient Fixtures

OAR 690-086-150(5)(b)

PCJWSA has previously distributed water conservation kits in conjunction with the Tillamook Public Utility District. PCJWSA now offers a similar program that provides low-flow shower heads and kitchen/bathroom sink aerator nozzles. Homeowners interested in taking advantage of this program may pick up the equipment at the PCJWSA office as described in the previous section.

Currently, PCJWSA does not have allocated funding to start a rebate program for customers wanting to purchase water conservation equipment. Instead, it is relying on the financial disincentive of an inverted rate structure that charges customers more based on the more water that is used.

3.4.9 Reuse, Recycling, and Non-Potable Opportunities

OAR 690-086-150(5)(d)

Opportunities for water reuse, recycling, and non-potable use are extremely limited for this community. PCJWSA has two industrial customers: one dairy and one microbrew pub (removed from service area in 2020). None of these industries have practices which would be applicable candidates for water reuse or recycling. The dairy does not use PCJWSA-supplied water for irrigation. Should a future industrial user move to the community, these opportunities will be reconsidered.

Enhanced treatment of municipal wastewater has the added benefit of potentially providing water that can be used for irrigation. However, domestic irrigation represents an insignificant portion of water use in the area. Therefore, establishing infrastructure to provide non-potable water irrigation is not economically feasible for PCJWSA. Furthermore, public perception of non-potable water use would likely not be favorable.

3.4.10 Other Conservation Measures

OAR 690-086-150(5)(e)

Proactive pipeline replacement

Descriptions of recommended pipe upgrades are described in the Capital Improvement Plan, included in Section 6 of the 2020 WMP. PCJWSA plans to complete these capital improvement projects gradually, as staff and financial resources allow, over the next 20 years. Sections of the distribution system composed of AC and galvanized steel pipes are on the 2020 WMP recommended improvements list as needing replacement due to their age and propensity for leakage. As a proactive effort to eliminate potential leaks, the following AC and galvanized steel pipes will be replaced by 2032:

- 4-, 6-, 8-, and 10-inch AC waterlines on Brooten Road, Cape Kiwanda Drive, and Pacific Avenue
- 2-inch galvanized steel service lines located in various parts of the distribution system including (but not limited to) Rueppell Avenue, Nestucca Manor, and Cape Kiwanda Drive

Zonal Water Audit

Based on the results of the leak detection program, PCJWSA will perform a zonal water audit to help identify where the highest losses are occurring. This will allow PCJWSA to focus on meter replacement, leak detection, and investigation of possible unauthorized use in those areas with the highest water loss.

The leak detection program will inform PCJWSA on how to best define these zones. Once these water distribution zones are identified, additional water meters will be installed on distribution mains to monitor water delivered to each zone. These volumes can then be compared to metered water consumption within each zone, which may help identify the zone in which leaks or unauthorized uses may be occurring.

This zonal water audit can be readily implemented in areas where water is delivered via a single distribution main, such as the Woods Community, Rueppell Avenue, and the area north of Alder Street. At a minimum, PCJWSA plans to implement a partial zonal analysis by 2027 for areas like these where water distribution can be isolated. A zonal water audit may not be feasible to implement by 2027 for other areas served by multiple mains and/or mains with bi-directional flow.

4. WATER CURTAILMENT PLAN ELEMENTS

OAR 690-086-160

This section outlines the historical deficiencies in water supply for PCJWSA, the proposed notification system during periods of water supply shortages/emergencies, and an implementation plan for notifying the public. This section complies with the requirements of OAR 690-086-0160.

The Horn Creek WTP became operational in 2011. Its current treatment capacity is 600 gpm, which doubled the previous supply from the well field supply. The most likely scenario in which PCJWSA is not able to meet demand includes large-scale failure or contamination of the well water supply coupled with low flows in Horn Creek.

4.1 Historical Supply Deficiencies & Current Capacity Limitations

OAR 690-086-160(1)

Over the past 5 years, no mechanical or structural failures within the system have occurred that have resulted in noticeable supply deficiencies. Other failures that could potentially lead to supply deficiencies include structural failure of one of the reservoirs or failure of one or more of the well pumps during the peak demand season. Since the Horn Creek WTP became operational, the well fields became a standby source. This provides PCJWSA with redundancy and larger capacity in the event of a large-scale emergency. The proximity of the wells to the ocean still makes them vulnerable to contamination by tsunamis or saltwater intrusion.

4.2 Water Curtailment Plan

OAR 690-086-160 (2,3,4)

Table 4-1 outlines the water curtailment plan including triggers, goals, and implementation measures for each stage of alert. The PCJWSA manager will oversee all aspects of the tasks associated with enactment of the water curtailment plan.

Table 4-1. Water Curtailment Plan

Stage	Trigger	Goal	Implementation Measures
Mild	Use reaches 85% of WTP capacity or flow in Horn Creek drops to 5.0 cfs.	Awareness and 10% reduction in consumption	• Flush lines for essential needs only. • Post alert on PCJWSA website with water saving tips and send out warnings. • Voluntary irrigation schedule.
Moderate	Use reaches 90% of WTP capacity or flow in Horn Creek drops to 4.0 cfs.	15% reduction in consumption	• Mandatory irrigation schedule. • Eliminate line flushing, street cleaning, and county park irrigation. • Request businesses reduce use by 10%. • Disallow hosing of pavement except when necessary to protect public health and safety. • Post alert on PCJWSA website with water saving tips and send out warnings.
Critical	Use reaches 95% of WTP capacity or flow in Horn Creek drops below 3.0 cfs.	20% reduction in consumption	• Outdoor use banned. • Mail fliers to all households that emergency rate increase being imposed. • Post alert on PCJWSA website with water saving tips and send out warnings. • Make water conservation announcements on local radio stations and in local newspapers.

cfs = cubic feet per second; WTP = water treatment plant

5. MUNICIPAL WATER SUPPLY ELEMENT

OAR 690-086-170

5.1 Growth Projections

OAR 690-086-170(1)

Water demand projections are based on the analysis conducted for the 2020 WMP. There are no known plans to expand the current service area shown in Figure 2-1 in the foreseeable future, so the current and future service areas are considered the same for the purposes of this WMCP.

The conventional approach to forecasting flows and loads is based on population trends. In Oregon, communities outside the Metro boundary must apply the most recent final forecast issued by the Portland State University Population Research Center (PRC) to develop population projections per OAR 660-032-0020. The most recent population forecast for Tillamook County was published in 2017 and did not include a forecast for Pacific City. It is worth noting that the PRC did forecast an average annual growth rate of 0.6 percent for Tillamook County as a whole and 0.3 percent for areas outside the urban growth boundaries between 2017 and 2035.

In 2021, PCJWSA reported there were 1,441 active water service connections served by the system. Of those, approximately 1,349 connections were residential, which makes up approximately 94 percent of all service connections. The number of service connections added per year was evaluated to help predict growth and forecast future demand. Between 1996 and 2021, the annual growth rate of water service connections ranged from 0.3 to just under 8 percent.

Table 5-1. Historical Water Connections

Fiscal Year Ending [a]	New Connections	Total Connections
1996	35	919
1997	25	944
1998	24	968
1999	25	993
2000	22	1,015
2001	23	1,038
2002	17	1,055
2003	33	1,088
2004	38	1,126
2005	88	1,214
2006	32	1,246
2007	50	1,296
2008	31	1,327
2009	9	1,336
2010	10	1,346
2011	4	1,350
2012	5	1,355
2013	5	1,360
2014	6	1,366
2015	6	1,372
2016	11	1,383
2017	5	1,388
2018	21	1,409
2019	12	1,421
2020	9	1,430
2021	11	1,441

[a] PCJWSA Fiscal Year is July 1 – June 30

Table 5-1 summarizes the number of connections from 1996 to present. PCJWSA experienced an average connection growth rate of 0.8 percent over the past 5 years, 0.63 percent over the past 10 years, and 1.61 percent over the past 15 years. The past 5-year period is considered to be the trend for future growth in

Pacific City and 0.8 percent is in line with the population forecasts provided by the PRC for Tillamook County. As such, an 0.8 percent annual increase in service connections is used as part of the WMP and this WMCP master plan. Based on a starting point of 1,441 service connections in 2021, an additional 249 service connections are expected to be added by 2041, over 20 years of community growth. The total number of expected connections in 2041 is 1,690.

Projected service connection estimates and the existing ADD were used to determine future water demands. Peaking factors discussed previously were used to estimate the Maximum Daily Demand (MDD) and the Peak Hour Demand (PHD). Table 5-2 presents these projected flows by year from 2021 through 2041. These demands will be used to estimate future water system requirements.

Table 5-2. Projected Populations and Water Demands

Year	Water Service Connections	Average Daily Demand (gpd)	Maximum Daily Demand (gpd)	Average Daily Demand (gpm)	Maximum Daily Demand (gpm)	Peak Hourly Demand (gpm)	Annual Demand (MG)
2021	1,441	239,759	551,446	166	383	583	87.512
2022	1,453	258,550	594,665	180	413	628	94.371
2023	1,464	260,618	599,422	181	416	633	95.126
2024	1,476	262,703	604,218	182	420	639	95.887
2025	1,488	264,805	609,051	184	423	644	96.654
2026	1,500	266,923	613,924	185	426	649	97.427
2027	1,512	269,059	618,835	187	430	654	98.206
2028	1,524	271,211	623,786	188	433	659	98.992
2029	1,536	273,381	628,776	190	437	664	99.784
2030	1,548	275,568	633,806	191	440	670	100.582
2031	1,561	277,773	638,877	193	444	675	101.387
2032	1,573	279,995	643,988	194	447	681	102.198
2033	1,586	282,235	649,140	196	451	686	103.016
2034	1,598	284,493	654,333	198	454	691	103.840
2035	1,611	286,768	659,568	199	458	697	104.670
2036	1,624	289,063	664,844	201	462	703	105.508
2037	1,637	291,375	670,163	202	465	708	106.352
2038	1,650	293,706	675,524	204	469	714	107.203
2039	1,663	296,056	680,928	206	473	720	108.060
2040	1,677	298,424	686,376	207	477	725	108.925
2041	1,690	300,812	691,867	209	480	731	109.796

Notes: gpd = gallons per day; gpm = gallons per minute; MG = million gallons
Average daily water demand per connection is 178 gpd, as determined by the 2020 Water Master Plan
Average daily demand (ADD) = Connections x 178 gpd; Maximum daily demand = ADD x 2.3; Peak hourly demand = ADD x 3.5

5.2 Schedule for Fully Exercising Water Use Permits

OAR 690-086-170(2)

According to Table 5-2, projected maximum day demands will not require the full use of water right permits for the wells and the Horn Creek WTP within the next 20 years. The combined surface water rights at Horn Creek can be expected to be fully exercised by 2025 through expanding the capacity of the Horn Creek WTP and demonstrating full beneficial use of the rights. PCJWSA has three active surface water right permits (two of which have been certified) on Horn Creek; all have been transferred to a single point of withdraw at the intake at the Horn Creek WTP. To certify the final water right, PCJWSA must show beneficial use of the entire right. The Horn Creek facility currently uses membrane microfiltration to treat 600 gpm. To demonstrate beneficial use of the full water right, the Horn Creek facility should be increased to 1,200 gpm by adding an additional membrane microfiltration skid, raw water pump, finished water pump, and associated systems. If PCJWSA cannot afford these improvements by 2025, a permit extension will be filed.

There are finished water pumps at the Horn Creek WTP consisting of two vertical turbine pumps; each is rated at 600 gpm and 210 feet of total head. PCJWSA will need to either certify the permit S-54783 by October 1, 2025, or file an extension. Because of the significant effort required to file an extension and the risk associated with additional extensions, it is recommended that PCJWSA expand the capacity at Horn Creek WTP to demonstrate beneficial use and certify its water right.

5.3 Water Demand Forecast

OAR 690-086-170(3)

Table 5-3 summarizes the projected water demands in 10 years and 20 years, in terms of Average Day Demand, Maximum Day Demand, Peak Hour Demand, and Total Annual Demand.

Table 5-3. 10-year and 20-Year Water Demand Projections.

	Current [a]	10-Year	20-Year
Average Day Demand (gpm)	166	193	209
Maximum Day Demand (gpm)	383	444	480
Peak Hour Demand (gpm)	583	675	731
Total Annual Demand (MG)	87.512	101.387	109.796

[a] Current water demands are based on 2021 water production records.

5.4 Comparison of Projected Need to Available Sources

OAR 690-086-170(4)

The current and future maximum daily water demands can be satisfied by the existing PCJWSA water sources including the six well fields and the Horn Creek WTP. Since the Horn Creek WTP was constructed and commissioned in 2009, PCJWSA has not observed all six wells operating simultaneously. Please see Table 5-4 for a comparison of projected need to available sources.

All six wells have an approximate yield of 100 gpm each. Therefore, the current wellfield capacity is 600 gpm. In Table 5-4, an *impaired* well capacity of 500 gpm is also shown to represent limited capacity in the event that the largest well is out of service. Appendix B, Table B-1, contains information on all the wells. A review of water right records indicated that three water right permits (G-10798, G-9388, and G-10

392) are associated with the PCJWSA water supply wells. The three water right permits have been certified (certificates 93770, 80488, and 80489).

PCJWSA owns the water rights for three Horn Creek sources and manages water use and the infrastructure (e.g., intakes, pipelines, pumps). These three surface water right permits (two of which have been certified) on Horn Creek have been transferred to a single point of withdrawal at the intake at the Horn Creek WTP. To certify the final water right, PCJWSA must show beneficial use of the entire right. The water source diversion system consists of three diversion points:

- Upper Diversion #1 – Water right certificate number 86807 for diversion of 0.01 cfs. The diversion is located in Township 04 south, Range 10 west, Section 8, southwest 1/4 of the southwest 1/4. This source was developed in 1959.
- Upper Diversion #2 – Water right certificate number 86808 for diversion of 0.01 cfs. The diversion is located in Township 04 south, Range 10 west, Section 16, southwest 1/4 of the northwest 1/4. This source was developed in 1965.
- At the Horn Creek WTP – Water right permit number S-54783 for diversion of 2.0 cfs, and water right certificates 91174 for 0.19 cfs and 91175 for 0.49 cfs. Note that according to permit S-54783, withdrawal of surface water from Horn Creek will not be allowed when stream flow is less than 2.0 cfs. The diversion is located in Township 04 south, Range 10 west, Section 20, southwest 1/4 of the northeast 1/4. This source was developed in 2010.

The Horn Creek facility currently uses membrane microfiltration to treat 600 gpm. To demonstrate beneficial use of the full water right, the Horn Creek facility should be increased to 1,200 gpm by adding an additional membrane microfiltration skid, raw water pump, finished water pump, and associated systems.

Table 5-4. Comparison of Projected Need to Available Sources

	Current	10-Year	20-Year
Maximum Day Demand	**383 gpm**	**444 gpm**	**480 gpm**
Total Diversion Rate per Well Water Rights	1.425 cfs = 639.6 gpm		
Total Diversion Rate per Surface Water Rights	2.7 cfs = 1,211.9 gpm		
Total Diversion Rate Allowed by All Water Rights	**4.125 cfs = 1851.6 gpm**		
Combined Well Capacity	600 gpm		
Impaired Well Capacity (with one well out of service)	500 gpm		
Current Horn Creek WTP Capacity	600 gpm		
Increased Horn Creek WTP Capacity	1,200 gpm		
Current Water Production Capacity*	**1,100 gpm**		
Increased Water Production Capacity*	**1,700 gpm**		

gpm = gallons per minute; WTP = water treatment plant

*based on impaired well capacity, with one well out of service

5.5 Analysis of Alternative Sources

OAR 690-086-170(5)

Based on the above comparison of projected water needs and available sources, no expansion or additional diversion of water allocated under existing permits will be necessary within the next 20 years. However, the proximity of the wells to the ocean makes them vulnerable to contamination by tsunamis or saltwater intrusion from rising sea levels. Although the Horn Creek water source is a more reliable source in the event of these oceanic disasters, its use must be limited in the event of extended drought so that minimum flows of 2.0 cfs are maintained for streamflow-dependent species. In the event of a wildfire in the Horn Creek basin, the surface water source could be contaminated and rendered unusable.

Given the vulnerability of the water sources to potential natural disasters and climate change impacts, PCJWSA intends to secure a contingency of water rights and water supply capacity for the service area. To this end, PCJWSA plans to develop the Horn Creek WTP to the extent that it can meet all future water demands without requiring use of the wells. To do this, the Horn Creek facility capacity will be increased to 1,200 gpm by adding an additional membrane microfiltration skid, raw water pump, finished water pump, and associated systems. PCJWSA then plans to certify water right permit number S-54783 for diversion of 2.0 cfs from Horn Creek by demonstrating beneficial use of the full water right.

5.6 Quantification of Maximum Rate and Monthly Volume

OAR 690-086-170(6)

The supplier is not requesting authorization to expand use under any existing water right permits, so there is no amount of additional water to quantify in this section.

5.7 Mitigation Actions under State and Federal Law

OAR 690-086-170(7)

The supplier is not requesting authorization to expand use under any existing water right permits, so there are no related mitigation actions to describe in this section.

5.8 Acquisition of New Water Rights

OAR 690-086-170(8)

Based on current 20-year development projections within the PCJWSA service area, no additional water rights are anticipated to be needed to meet 20-year buildout water demand projections.

Appendix A

Final Order Approving Prior WMCP

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BEFORE THE WATER RESOURCES DEPARTMENT
OF THE
STATE OF OREGON

In the Matter of the Proposed Water Management and Conservation Plan for Pacific City Joint Water-Sanitary Authority, Tillamook County	))))	FINAL ORDER APPROVING A WATER MANAGEMENT AND CONSERVATION PLAN

Authority

OAR Chapter 690, Division 086, establishes the process and criteria for approving water management and conservation plans required under the conditions of permits, permit extensions and other orders of the Department. An approved water management plan may authorize the diversion and use of water under a permit extended pursuant to OAR Chapter 690, Division 315.

Findings of Fact

1. On August 5, 2010, the Pacific City Joint Water-Sanitary Authority (PCJWSA) submitted a draft Water Management and Conservation Plan for review under OAR Chapter 690, Division 086.

2. The Oregon Water Resources Department (Department) published notice of receipt of the plan on August 10, 2010, as required under OAR Chapter 690, Division 086. Timely public comments were received on September 9, 2010, from WaterWatch of Oregon.

3. The Department provided comments on the plan to PCJWSA on October 28, 2010, and, in response, the City submitted draft revisions to the plan on July 17, 2012 and August 1, 2012. The final revised plan was submitted to the Department on August 20, 2012.

4. The Department reviewed PCJWSA's revised plan, as well as the public comments received, and finds that the revised plan contains all of the elements required under OAR 690-086-0125.

5. The projections of future water needs in the plan demonstrate a need for 2.0 cfs of water available under Permit S-36881 to help meet overall anticipated demands of 3.43 cfs for PCJWSA's 20-year planning horizon. These projections are reasonable and consistent with PCJWSA's land use plan.

6. The system is fully metered and unaccounted-for water is estimated at 31 percent. The rate structure includes a base rate and volumetric charge, and customers are billed on a monthly basis.

This is a final order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080, you may petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

7. The plan includes 5-year benchmarks to continue and/or initiate implementation of the following: perform an annual water audit; completely replace all old water meters by the year 2016; monitor billing records for discrepancies and test and/or repair customer meters, as necessary; calibrate and maintain source meters on a 4 to 5 year basis; perform acoustical leak detection; replace pipe in sections of the distribution system comprised of aging asbestos cement (AC) and galvanized steel pipes; distribute residential conservation kits; distribute low-flow shower heads/bathroom sink aerator nozzles; staff an information booth at local events to provide public outreach and educational materials related to water conservation; expand public outreach to include distribution of water conservation-related materials to hotels/motels, restaurants and rental homes in the area, thereby targeting the tourist population; provide technical assistance to homeowners related to home water audits and suggestions on water conservation practices; and provide technical assistance to commercial customers by working with hotels/motels to provide water conservation information in each guest room and with restaurants to start requiring customers to ask for water instead of automatically supplying it. The plan also includes a 5-year benchmark to perform a survey to evaluate public interest in PCJWSA offering rebates to customers who invest in water conserving fixtures/appliances.

8. The plan identifies Horn Creek, an Unnamed Stream (a tributary of Horn Creek), and ground water as the sources of PCJWSA's water rights. The plan accurately and completely describes the listed streamflow-dependent species that are present in PCJWSA's surface water sources, being Coho salmon (federally listed as threatened and state listed as sensitive), Chinook salmon (state listed as sensitive), Chum salmon (state listed as sensitive), Steelhead trout (federally listed as species of concern and state listed as sensitive), Western Brook lamprey (federally listed as species of concern and state listed as sensitive) and Pacific lamprey (federally listed as species of concern and state listed as sensitive). The plan also accurately and completely describes that Horn Creek is listed by the Oregon Department of Environment Quality as being water quality limited for temperature during summer months, and that PCJWSA's ground water sources are not located within a designated critical ground water area or a ground water management area.

9. The water curtailment element included in the plan satisfactorily promotes water curtailment practices and includes a list of three stages of alert with concurrent curtailment actions.

10. The diversion of water under Permit S-36881 will be expanded during the next 20 years and is consistent with OAR 690-086-0130(7), as follows:

    a. As evidenced by the 5-year conservation benchmarks and continuing conservation measures described in Findings of Fact #6 and 7 above, the plan includes a schedule for development of conservation measures that would provide water at a cost that is equal to or lower than the cost of other identified sources;

b. Considering that PCJWSA's water supply capacity is limited during low streamflow, high demand periods; that accessing additional supply from ground water would likely be limited and generally a poor alternative supply source; and that PCJWSA's current and planned conservation measures cannot meet future demands alone, the use of surface water under PCJWSA's extended Permits S-36881 is the most feasible and appropriate water supply alternative available to PCJWSA; and

c. The plan identifies that PCJWSA is subject to conditions for maintaining a diversion structure that includes an intake and screen complying with the Oregon Department of Fish and Wildlife fish screening requirements. The plan also identifies that PCJWSA must maintain minimum streamflow levels in Horn Creek, as established by the National Marine Fisheries Service in its March 20, 2009 Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Horn Creek Municipal Water Intake which included a Biological Opinion, Incidental Take Statement and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation (for Corps No. NWP-2008-161), and as incorporated into the Final Order Incorporating Settlement Agreement issued by the Oregon Water Resources Department on May 14, 2012, approving an Extension of Time for Permit S-36881.

11. Based upon Findings of Fact #4 – #10, the Department issued a Proposed Final Order on August 23, 2012, proposing to approve PCJWSA's revised WMCP. In accordance with OAR 690-086-0915(10), the deadline for submittal of appeals to the Proposed Final Order was September 24, 2012. No timely appeals to the Proposed Final Order were received by the Department.

Conclusion of Law

The Water Management and Conservation Plan submitted by the Pacific City Joint Water-Sanitary Authority is consistent with the criteria in OAR Chapter 690, Division 086.

Now, therefore, it is ORDERED:

1. The Pacific City Joint Water-Sanitary Authority Water Management and Conservation Plan is approved and shall remain in effect until October 1, 2022, unless this approval is rescinded pursuant to OAR 690-086-0920.

2. The limitation of the diversion of water under Permit S-36881 established in Condition #1 (Development Limitations) in the Final Order Incorporating Settlement Agreement (Page 6 of 9) issued by the Oregon Water Resources Department on May 14, 2012, approving an Extension of Time for Permit S-36881 is removed.

   Subject to other limitations and/or conditions of the permit, as well as the Settlement Conditions set forth in the Extension of Time Final Order Incorporating Settlement Agreement issued by the Oregon Water Resources Department on May 14, 2012, the Pacific City Joint Water-Sanitary Authority is authorized to divert up to 2.0 cfs under Permit S-36881.

3. The Pacific City Joint Water-Sanitary Authority shall submit an updated plan meeting the requirements of OAR Chapter 690, Division 086 (effective November 1, 2002) within 10 years and no later than April 1, 2022.

4. The Pacific City Joint Water-Sanitary Authority shall submit a progress report containing the information required under OAR 690-086-0120(4) by October 1, 2017.

5. The deadline established herein for the submittal of an updated Water Management and Conservation Plan (consistent with OAR Chapter 690, Division 086) shall not relieve the Pacific City Joint Water-Sanitary Authority from any existing or future requirement(s) for submittal of a Water Management and Conservation Plan at an earlier date as established through other final orders of the Department.

Dated at Salem, Oregon this 1 day of October, 2012.

Dwight French, Water Right Services Administrator *for*
PHILLIP C. WARD, DIRECTOR

Mailing date: Oct. 9 2012

Appendix B

Water Rights Inventory

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Table B-1
Water Supply Well Summary Data
Pacific City Joint Water-Sanitary Authority

Water Supply Well Information

Water Resource Dept Records								Production Rate (gpm)		Construction Dates		Total Depth (feet bgs)	First Water Depth (feet bgs)	Static Water Level (feet bgs)
County	Well ID	Owner	Current Well Identification	Well Identification Remarks	General Well Location	Well Type	Well Type Remarks	Standard Demand	Peak Demand	Start	Complete			
TILL	115	Pacific City Joint Water-Sanitary Authority	# 1	always called #1	southern dune well	production	operating	< 100	not exceeding 100	12/4/1980	12/17/1980	125	20	7
TILL	907	Pacific City Joint Water-Sanitary Authority	#2	originally called #3 before 1984	middle dune well	production	operating	< 100	not exceeding 100	2/15/1984	3/1/1984	80	45	7
TILL	908	Pacific City Joint Water-Sanitary Authority	old well #3	originally called #2 before 1984	northern dune well area	abandoned (see TILL 501505)	exists as capped well.	0	0	1/6/1981	1/10/1981	75	45	5
TILL	909	Pacific City Joint Water-Sanitary Authority	#2	first attempt abandoned due to sand intrusion	northern dune well area	abandoned	no abandonment record. Actual location not known.	0	0	12/17/1980	1/6/1981	85	n/a	n/a
TILL	50105	Pacific City Joint Water-Sanitary Authority	old well #3	well TILL 908	northern dune well area	abandonment	exists as capped well.	< 100	0	8/1/1996	8/1/1996	n/a	n/a	n/a
TILL	50092	Pacific City Joint Water-Sanitary Authority	new well #3	replaced TILL 908	northern dune well area	production	operating	< 100	not exceeding 100	7/17/1996	8/13/1996	75	2	3.2
TILL	937	Pacific City Joint Water-Sanitary Authority	#4	always called #4	northern spit well area	production	operating	not exceeding 100	not exceeding 100	7/6/1988	7/16/1988	47	16	8
TILL	936	Pacific City Joint Water-Sanitary Authority	#5	always called #5	middle spit well area	production	operating	< 100	not exceeding 100	7/26/1988	8/9/1988	51	16	8
TILL	934	Pacific City Joint Water-Sanitary Authority	#6	always called #6	southern spit well	production	operating	< 100	not exceeding 100	8/9/1988	8/22/1988	48	32	8

Table B-2
Water Supply Well Summary Data
Pacific City Joint Water-Sanitary Authority

Water Rights Information

Groundwater Rights								
Application Number	Permit Number	Certificatate Number	Priority Date	Stated Point of Diversion	Diversion Rate	Use	Application Area	State Limitations or Constraints
G-10215	G-9388	93770	3/16/1981	Wells #1 and #3.	Total of 0.457 cfs (205.1 gpm). 0.279 cfs (125.2 gpm) from well #1 and 0.178 cfs (79.9 gpm) from well #3.	quasi-municipal	All or portions of Sections 19 and 30 of T4S/R10W and portions of Sections 13, 24, and 25 of T4S/R11W.	Certificate allows reasonable rotation of diversion rates from the two wells.
G-11260	G-10392	80488	4/11/1984	Well #2.	Total of 0.3 cfs (134.6 gpm) or its equivalent in case of rotation.	quasi-municipal	All or portions of Sections 19, 25, 29, and 30 of T4S/R10W and portions of Sections 13 and 25 of T4S/R11W. Possible error regarding Section 25 being associated with T4S/R11W.	Certificate allows for reasonable rotation of diversion rates between wells.
G-11754	G-10798	80489	11/27/1987	Wells #4, #5, and #6.	Total of 300 gpm or its equivalent in case of rotation.	quasi-municipal	All or portions of Sections 18,19, and 30 of T4S/R10W and portions of Sections 13, 24, and 25 of T4S/R11W.	Further appropriation of water limited to the extent that it does not interfere with prior surface and groundwater rights. Certificate allows for rotation of diversion rates between the three wells.
			Total Diversion Rate allowed under existing Permits and Certificates		639.6 gpm or 1.425 cfs			

Table B-3
Water Supply Well Summary Data
Pacific City Joint Water-Sanitary Authority

Water Rights Information

Surface Water Rights								
Application Number	Permit Number	Certificatate Number	Priority Date	Stated Point of Diversion	Current Intake Identification	Diversion Rate	Use	Application Area
S-33272	S-26793	91174	8/3/1959	4S-10W-20-NESW	Horn Creek Intake	0.19 cfs	Municipal	Most or portions of Sections 19, 30, and 31 of T4S/R10W and portions of Sections 13, 24, and 25 of T4S/R11W.
S-40432	S-30792	91175	7/8/1965	4S-10W-20-NESW	Horn Creek Intake	0.49 cfs	Municipal	Most or portions of Sections 19, 30, and 31 of T4S/R10W and portions of Sections 13, 24, and 25 of T4S/R11W.
S-33272	S-26793	86807	8/3/1959	4S-10W-8-SESE	Upper Diversion #1	0.01 cfs	Municipal	Portions of Sections 19 and 30 of T4S/R10W and portions of Sections 24 and 25 of T4S/R11W.
S-40432	S-30792	86808	7/8/1965	4S-10W-16-SWNW	Upper Diversion #2	0.01 cfs	Municipal	Portions of Sections 19 and 30 of T4S/R10W and portions of Sections 24 and 25 of T4S/R11W.
S-49201	S-54783	-	5/3/1972	4S-10W-20-NESW	Horn Creek Intake	2.0 cfs	Quasi-municipal	Portions of Section 30 of T4S/R10W and portions of Sections 13, 24, and 25 of T4S/R11W.
				Total Diversion Rate allowed under existing Permits and Certificates		2.7 cfs		

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Appendix C

Water Right Permits

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STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JOINT WATER-SANITARY AUTHORITY
PO BOX 520
PACIFIC CITY OR 97135

confirms the right to use the waters of TWO WELLS, in the NESTUCCA RIVER BASIN, for QUASI-MUNICIPAL PURPOSES.

This right was perfected under Permit G-9388. The date of priority is MARCH 16, 1981. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.457 CUBIC FOOT PER SECOND (CFS); BEING 0.279 CFS FROM WELL 1 AND 0.178 CFS FROM WELL 3, or its equivalent in case of rotation, measured at the well.

The wells are located as follows:

Twp	Rng	Mer	Sec	Q-Q	GLot	Measured Distances
4 S	10 W	WM	19	NW NW	1	WELL 3 (NEW) - 1570 FEET NORTH AND 170 FEET EAST FROM THE W1/4 CORNER, SECTION 19
4 S	10 W	WM	19	SW NW		WELL 1 (ORIGINAL) - 850.7 FEET NORTH AND 255.7 FEET EAST FROM W1/4 CORNER, SECTION 19

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	19	NE NE
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	NW NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW

NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE
4 S	10 W	WM	30	NW NE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	10 W	WM	30	NE SW
4 S	10 W	WM	30	NE SE
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	NW SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	24	NE NE
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE

Water shall be acquired from the same aquifer (water source) as the original point of appropriation.

The quantity of water diverted at the new point of appropriation shall not exceed the quantity of water lawfully available at the original point of appropriation as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	19	NW NW	WELL 2 – 1465.2 FEET NORTH AND 167.4 FEET EAST FROM W1/4 CORNER, SECTION 19

The water user shall maintain an in-line flow meter or other suitable device for measuring and recording the quantity of water appropriated.

The right to use of the water is restricted to beneficial use at the place of use described, and is subject to all other conditions and limitations contained in Certificate 61546 and any related decree.

This certificate is issued to confirm a change in POINT OF APPROPRIATION OF WELL 2, approved by an order of the Water Resources Director entered JANUARY 13, 2005, at Special Order Volume 63, Page 76, approving Transfer Application 9607, supercedes Certificate 61546, State record of Water Right Certificates.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described; however, water may be applied to lands which are not specifically described above, provided the holder of this right complies with ORS 540.510(3).

Issued MAY 25 2018.

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

 Recorded in State Record of Water Right Certificates numbered 93770.

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JWSA
P.O. BOX 520
PACIFIC CITY, OREGON 97135-0520

confirms the right to use the waters of ONE WELL in the NESTUCCA RIVER BASIN for QUASI-MUNICIPAL USE.

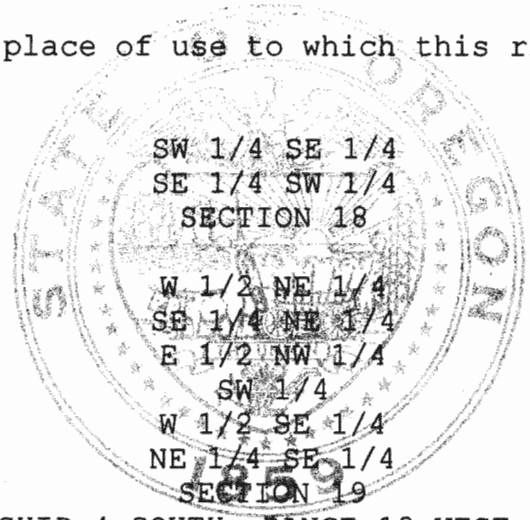
This right was perfected under Permit G-10392. The date of priority is APRIL 11, 1984. This right is limited to 0.3 CUBIC FOOT PER SECOND or its equivalent in case of rotation, measured at the well.

The well is located as follows:

SW 1/4 NW 1/4, SECTION 19, TOWNSHIP 4 SOUTH, R 10 W, W.M.; BEING 1200.2 FEET NORTH 11 DEGREES 3 MINUTES 41 SECONDS EAST FROM THE WEST 1/4 CORNER OF SECTION 19.

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use to which this right is appurtenant is as follows:



SW 1/4 SE 1/4
SE 1/4 SW 1/4
SECTION 18

W 1/2 NE 1/4
SE 1/4 NE 1/4
E 1/2 NW 1/4
SW 1/4
W 1/2 SE 1/4
NE 1/4 SE 1/4
SECTION 19

TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review of the order must be filed within the 60 days of the date of service.

G-11260.SB

Certificate Number 80488

NW 1/4 NE 1/4
S 1/2 NE 1/4
NW 1/4
NE 1/4 SW 1/4
W 1/2 SE 1/4
SECTION 30
TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.

E 1/2 SE 1/4
SECTION 13

E 1/2 NE 1/4
E 1/2 SE 1/4
SECTION 24

E 1/2 NE 1/4
SECTION 25
TOWNSHIP 4 SOUTH, RANGE 11 WEST, W.M.

Water may be applied to lands which are not specifically described above, provided the holder of this right complies with ORS 540.510(3).

The well shall be maintained in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon.

Issued January 14, 2004.

Dwight Ford for

Paul R. Cleary, Director
Water Resources Department

Recorded in State Record of Water Right Certificates Number 80488.

G-11260

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JWSA
P.O. BOX 520
PACIFIC CITY, OREGON 97135-0520

confirms the right to use the waters of WELL NO.'S 4, 5 AND 6 in the NESTUCCA RIVER BASIN for QUASI-MUNICIPAL USE.

This right was perfected under Permit G-10798. The date of priority is NOVEMBER 27, 1987. This right is limited to 300 GALLONS PER MINUTE or its equivalent in case of rotation, measured at the wells.

The wells are located as follows:

WELL NO. 4 - SW 1/4 SW 1/4, SECTION 30, TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.; 1000 FEET NORTH AND 590 FEET EAST FROM THE SW CORNER OF SECTION 30;

WELL NO. 5 - NW 1/4 SW 1/4, SECTION 30, TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.; 1930 FEET NORTH AND 340 FEET EAST FROM THE SW CORNER OF SECTION 30; AND

WELL NO. 6 - NW 1/4 SW 1/4, SECTION 30, TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.; 2280 FEET NORTH AND 2800 FEET EAST FROM THE SW CORNER OF SECTION 30.

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use to which this right is appurtenant is as follows:

SW 1/4 SE 1/4
SE 1/4 SW 1/4
SECTION 18
TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review of the order must be filed within the 60 days of the date of service.

G-11754 Certificate Number 80489

W 1/2 NE 1/4
SE 1/4 NE 1/4
E 1/2 NW 1/4
SW 1/4
W 1/2 SE 1/4
NE 1/4 SE 1/4
SECTION 19

NW 1/4 NE 1/4
S 1/2 NE 1/4
NW 1/4
NE 1/4 SW 1/4
W 1/2 SE 1/4
SECTION 30
TOWNSHIP 4 SOUTH, RANGE 10 WEST, W.M.

E 1/2 SE 1/4
SECTION 13

E 1/2 NE 1/4
E 1/2 SE 1/4
SECTION 24

E 1/2 NE 1/4
SECTION 25
TOWNSHIP 4 SOUTH, RANGE 11 WEST, W.M.

Water may be applied to lands which are not specifically described above, provided the holder of this right complies with ORS 540.510(3).

The well shall be maintained in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon.

Issued January 14, 2004.

Paul R. Cleary, Director
Water Resources Department

Recorded in State Record of Water Right Certificates Number 80489.

G-11754

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JOINT WATER SANITARY AUTHORITY
PO BOX 520
PACIFIC CITY OR 97135

confirms the right to use the waters of UNNAMED STREAM, a tributary of HORN CREEK, for MUNICIPAL USE.

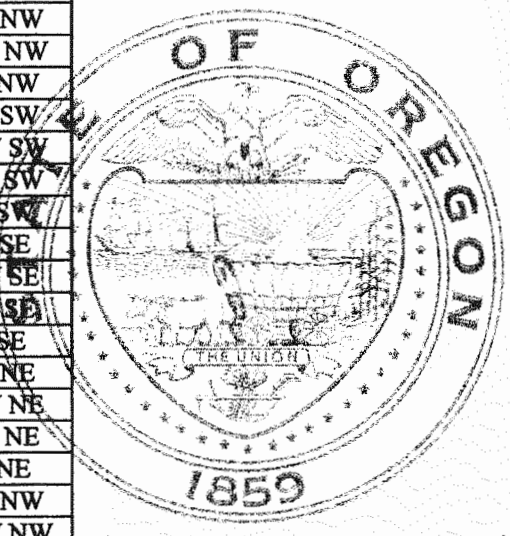
This right was perfected under Permit S-30792. The date of priority is JULY 8, 1965. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.49 CUBIC FOOT PER SECOND, or its equivalent in case of rotation, measured at the point of diversion.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	20	NE SW	2200 FEET NORTH AND 2450 FEET EAST FROM SW CORNER, SECTION 20

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	18	SE SW
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE
4 S	10 W	WM	30	NW NE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW



NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	30	NE SW
4 S	10 W	WM	30	NE SE
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	10 W	WM	31	NW NE
4 S	10 W	WM	31	SW NE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	24	NE NE
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE

The quantity of water diverted at the new point of diversion shall not exceed the quantity of water available from the original point of diversion described as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	16	SW NW	330 FEET NORTH AND 50 FEET EAST FROM W1/4 CORNER, SECTION 16

The water user shall maintain and operate the existing measurement device and shall make such improvements as may be required by the Department.

The water user shall maintain the existing headgate and shall make such improvements as may be required by the Department.

The water user shall maintain and operate fish screening and by-pass device as required by the Oregon Department of Fish and Wildlife to prevent fish from entering the diversion.

The right to the use of the water is subject to the existing minimum flow policies established by the Water Policy Review Board.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described; however, water may be applied to lands which are not specifically described above, provided the holder of this right complies with ORS 540.510(3).

This certificate is issued to confirm changes in POINT OF DIVERSION AND PLACE OF USE approved by an order of the Water Resources Director entered JANUARY 31, 2011, at Special Order Volume 83, Page 461, approving Transfer Application 11126, and together with Certificate 86808, supersedes Certificate 44554, State record of Water Right Certificates.

Issued JAN 26 2016.

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JOINT WATER SANITARY AUTHORITY
PO BOX 520
PACIFIC CITY OR 97135

confirms the right to use the waters of HORN CREEK, a tributary of NESTUCCA RIVER, for MUNICIPAL USE.

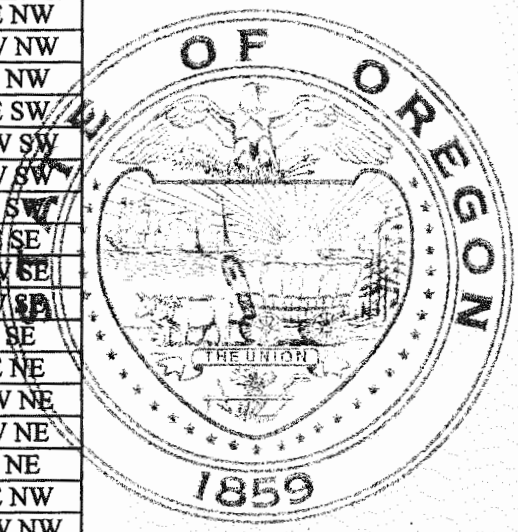
This right was perfected under Permit S-26793. The date of priority is AUGUST 3, 1959. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.19 CUBIC FOOT PER SECOND, or its equivalent in case of rotation, measured at the point of diversion.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	20	NE SW	2200 FEET NORTH AND 2450 FEET EAST FROM SW CORNER, SECTION 20

A description of the place of use is as follows:

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	18	SE SW
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE
4 S	10 W	WM	30	NW NE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	10 W	WM	30	NE SW
4 S	10 W	WM	30	NE SE



NOTICE OF RIGHT TO PETITION FOR RECONSIDERATION OR JUDICIAL REVIEW

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482. Pursuant to ORS 183.482, ORS 536.075 and OAR 137-003-0675, you may petition for judicial review and petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	10 W	WM	31	NW NE
4 S	10 W	WM	31	SW NE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	24	NE NE
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE

The quantity of water diverted at the new point of diversion shall not exceed the quantity of water available from the original point of diversion described as follows:

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	8	SE SE

The water user shall maintain and operate the existing measurement device and shall make such improvements as may be required by the Department.

The water user shall maintain the existing headgate and shall make such improvements as may be required by the Department.

The water user shall maintain and operate fish screening and by-pass device as required by the Oregon Department of Fish and Wildlife to prevent fish from entering the diversion.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described; however, water may be applied to lands which are not specifically described above, provided the holder of this right complies with ORS 540.510(3).

This certificate is issued to confirm changes in POINT OF DIVERSION AND PLACE OF USE approved by an order of the Water Resources Director entered JANUARY 31, 2011, at Special Order Volume 83, Page 461, approving Transfer Application 11126, and together with Certificate 86807, supersedes Certificate 32238, State record of Water Right Certificates.

Issued JAN 26 2016.

Dwight French
Water Right Services Division Administrator, for
Thomas M. Byler, Director
Oregon Water Resources Department

 Recorded in State Record of Water Right Certificates numbered 91174.

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JOINT WATER SANITARY AUTHORITY
PO BOX 520
PACIFIC CITY, OR 97135-0520

confirms the right to use the waters of HORN CREEK, a tributary to the NESTUCCA RIVER for MUNICIPAL USES.

This right was perfected under Permit S-26793. The date of priority is AUGUST 3, 1959. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.01 CUBIC FOOT PER SECOND, or its equivalent in case of rotation, measured at the point of diversion.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	8	SE SE

A description of the place of use to which this right is appurtenant is as follows:

MUNICIPAL USES					
Twp	Rng	Mer	Sec	Q-Q	GLot
4 S	10 W	WM	19	NE SW	
4 S	10 W	WM	19	NW SW	
4 S	10 W	WM	19	SW SW	
4 S	10 W	WM	19	SE SW	
4 S	10 W	WM	30	NE NW	
4 S	10 W	WM	30	NW NW	
4 S	10 W	WM	30	SW NW	
4 S	10 W	WM	30	SE NW	
4 S	11 W	WM	24	NE NE	1
4 S	11 W	WM	24	SE NE	2
4 S	11 W	WM	24	NE SE	3
4 S	11 W	WM	24	SE SE	4
4 S	11 W	WM	25	NE NE	1
4 S	11 W	WM	25	SE NE	2

This certificate describes that portion of the water right confirmed by Certificate 32238, State Record of Water Right Certificates, NOT modified by the provisions of an order of the Water Resources Director entered JAN 31 2011, approving Transfer Application T-11126.

The issuance of this superseding certificate does not confirm the status of the water right in regard to the provisions of ORS 540.610 pertaining to forfeiture or abandonment.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described.

WITNESS the signature of the Water Resources Director, affixed JAN 3 1 2011.

Phillip C. Ward, Director

STATE OF OREGON, |
County of Marion, |ss.

This superseding permit is issued to describe an amendment for a change in point of diversion proposed under Permit Amendment Application T-11450 and approved by Special Order Vol. 86, Page 744, entered NOV. 19, 2012, and to describe extensions of time for complete application of water approved May 24, 1978, August 27, 1981, March 21, 1986, and May 14, 2012, an assignment to a new permittee approved September 18, 1998, and a Water Management and Conservation Plan approved October 1, 2012. This permit supersedes Permit S-36881.

This is to certify that I have examined the foregoing application and do hereby grant the same, SUBJECT TO EXISTING RIGHTS and the following limitations and conditions:

The right herein granted is limited to the amount of water which can be applied to beneficial use and shall not exceed 2.0 *cubic feet per second measured at the point of diversion from the stream, or its equivalent in case of rotation with other water users, from* Horn Creek.....

The use to which water is to be applied is quasi-municipal.....

.....

Authorized Points of Diversion:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	20	NE SW	2445 FEET NORTH AND 2514 FEET EAST FROM THE SE CORNER OF SECTION 19
4 S	10 W	WM	20	NE SW	2450 FEET NORTH AND 2575 FEET EAST FROM THE SW CORNER OF SECTION 20

Authorized Place of Use:

QUASI-MUNICIPAL USE				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	18	SE SW
4 S	10 W	WM	18	SW SE
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE

QUASI-MUNICIPAL USE				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	30	NW NE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	10 W	WM	30	NE SW
4 S	10 W	WM	30	NW SW
4 S	10 W	WM	30	NE SE
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	10 W	WM	31	NW NE
4 S	10 W	WM	31	SW NE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	24	NE NE
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE
4 S	11 W	WM	25	NE SE

Permit Amendment T-11450 Conditions

The combined quantity of water diverted at the new additional point of diversion, together with that diverted at the old point of diversion, shall not exceed the quantity of water lawfully available at the original point of diversion.

The water user shall operate and maintain an approved fish screen at the new point of diversion. If Oregon Department of Fish and Wildlife (ODFW) determines the screen is not functioning properly, and is unsuccessful in working with the water user to meet ODFW standards, ODFW may request that OWRD regulate the use of water until OWRD receives notification from ODFW that the fish screen is functioning properly.

Water shall be acquired from the same surface water source (Horn Creek) as the original point of diversion.

Extension of Time Conditions

1. Development Limitations

Diversion of any water beyond 1.35 cfs under Permit S-36881 (superseded by Permit S-54783) shall only be authorized upon issuance of a final order approving a Water Management and Conservation Plan (WMCP) under OAR Chapter 690, Division 86. The required WMCP shall be submitted to the Department within 3 years of an approved extension of time application. Use of water under Permit S-54783 must be consistent with this and subsequent WMCP's approved under OAR Chapter 690, Division 86 on file with the Department.

The deadline established by the Extension of Time Final Order for submittal of a WMCP shall not relieve a permit holder of any existing or future requirement for submittal of a WMCP at an earlier date as established through other orders of the Department. A WMCP submitted to meet the requirements of the Extension of Time Final Order may also meet the WMCP requirements of other Department orders.

2. Settlement Conditions

The following three conditions are added pursuant to the Settlement Agreement:

2.a. Total surface water withdrawals from any of the points of diversion authorized under Certificates 86807 and 86808, under Transfer T-11126 and Permit S-54783 and any subsequent certificates issued thereunder, will be limited to a combined rate of 2.7 cfs.

2.b. Withdrawal of surface water from Horn Creek will not be allowed when stream flow is less than 2.0 cfs; however, for as long as Condition 3 of the Biological Opinion or the Corps Permit is in effect, the withdrawal of surface water will not be allowed when stream flow is less than 2.5 cfs. Condition 3 of Biological Opinion is copied below:

> 3. To implement reasonable and prudent #3 (instream flows) the Corps shall ensure that water withdrawals at the Horn Creek intake do not exceed 2.7 cfs, and minimum instream flows do not drop below 2.5 cfs.
>
> a. When water withdrawals on Horn Creek reach 2.0 cfs, instream flows shall be measure[d] concurrently at two locations until water withdrawals drop below 2.0 cfs. The first location shall be located approximately 250 feet from the confluence of Horn Creek and the Nestucca River. The second location shall be located approximately 250 feet above the head of tide.
>
> Biological Opinion, Attachment 1, p. 31.

For as long as the Biological Opinion is in effect, stream flow measurements will be taken in accordance with Paragraph 3.a. of Attachment 1 (as shown above), except that if the requirements of Paragraph 3.a. are amended by agreement of NOAA and Pacific City, requirements as amended shall apply. Thereafter, stream flow measurement for purposes of complying with Condition **2.b.** shall be taken below the lowest PCJSWA point of diversion on Horn Creek. The permit holder shall be responsible for maintaining and operating a stream gage at such location.

2.c. The water right permit holder will provide copies to Oregon Water Resources Department ("OWRD") of all reports prepared pursuant to Conditions 4(d)-(g) of the Biological Opinion for as long as such reports are required under the Corps Permit. At such time as reports are no longer required under the Corps Permit, the water right permit holder will provide annual reports to the OWRD, or more frequently if requested by OWRD, of daily stream flow measurements and daily surface water withdrawals. Conditions 4(d)-(g) of the Biological Opinion are copied below:

> 4. To implement reasonable and prudent #4 (monitoring) the Corps shall:
>
> ***
>
> d. Annually, submit a report that details Pacific City's operation plan, including peak demand, Horn Creek withdrawals, and duration of peak withdrawals.
>
> e. Annually, for a period of 5 years, submit a report to NMFS that summarizes the results of the post-construction instream temperature monitoring, low flow habitat analysis, and the effectiveness of the installation of the large wood debris structures in creating pools and providing habitat and riparian planting survival.
>
> f. As required by term and condition #2[3], submit a monitoring report detailing instream flow measures collected during periods of peak withdrawals exceeding 2.0 cfs.
>
> ...
>
> Biological Opinion, Attachment 1, p. 32

Water Management and Conservation Plan Conditions

The Pacific City Joint Water-Sanitary Authority Water Management and Conservation Plan shall remain in effect until October 1, 2022, unless approval is rescinded pursuant to OAR 690-086-0920.

The limitation of the diversion of water under Permit S-36881 (superseded by Permit S-54783) established in Condition #1 (Developmental Limitations) in the Final Order Incorporating Settlement Agreement (Page 6 of 9) issued by the Oregon Water Resources Department on May 14, 2012, approving an extension of time for Permit S-36881 (superseded by Permit S-54783) is removed.

Subject to other limitations and/or conditions of the permit, as well as the Settlement Conditions set forth in the Extension of Time Final Order Incorporating Settlement Agreement issued by the Oregon Water Resources Department on May 14, 2012, the Pacific City Joint Water-Sanitary Authority is authorized to divert up to 2.0 cfs under Permit S-54783.

The Pacific City Joint Water-Sanitary Authority shall submit an updated plan meeting the requirements of OAR Chapter 690, Division 086 within 10 years (of the plan approval date) and no later than April 1, 2022.

The Pacific City Joint Water-Sanitary Authority shall submit a progress report containing the information required under OAR 690-086-0120(4) by October 1, 2017.

The deadline established herein for the submittal of an updated Water Management and Conservation Plan (consistent with OAR Chapter 690, Division 086) shall not relieve the Pacific City Joint Water-Sanitary Authority from any existing or future requirement(s) for submittal of a Water Management and Conservation Plan at an earlier date as established through other final orders of the Department.

The priority date of this permit is May 3, 1971.....

Actual construction work shall begin on or before July 27, 1974..... *and shall thereafter be prosecuted with reasonable diligence and be completed on or before* October 1, 2025.....

Complete application of the water to the proposed use shall be made on or before October 1, 2025.....

WITNESS my hand this.....19.....*day of* November, 2012.

.....

Dwight French, Water Right Services Administrator, for
PHILLIP C. WARD, DIRECTOR

BEFORE THE WATER RESOURCES DEPARTMENT
OF THE
STATE OF OREGON

In the Matter of Permit Amendment T-11450, Tillamook County	)	**FINAL ORDER**
	)	APPROVING AN ADDITIONAL POINT
	)	OF DIVERSION AND A CHANGE IN
	)	PLACE OF USE

Authority

ORS 537.211 establishes the process in which a water right permit holder may submit a request to change the point of diversion and/or place of use authorized under an existing water right permit.

Applicant

PACIFIC CITY JOINT WATER-SANITARY AUTHORITY
ATTN TONY OWEN
PO BOX 520
PACIFIC CITY OR 97135-0520

Findings of Fact

Background

1. On July 24, 2012, PACIFIC CITY JOINT WATER-SANITARY AUTHORITY filed an application for an additional point of diversion and to change in place of use under Permit S-36881. The Department assigned the application number T-11450.

2. On September 18, 1998, the Department approved an assignment of the permit to Pacific City Joint Water-Sanitary Authority.

3. On May 24, 1978, the Department approved an extension of time for complete application of water to October 1, 1980.

4. On August 27, 1981, the Department approved an extension of time for complete application of water to October 1, 1985.

5. On March 21, 1986, the Department approved an extension of time for complete application of water to October 1, 1990.

6. On May 14, 2012, the Department approved an extension of time for complete application of water to October 1, 2025.

This is a final order in other than contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60 day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-080 and OAR 690-01-005 you may either petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

7. On October 1, 2012, the Department approved a Water Management and Conservation Plan submitted by the Pacific City Joint Water-Sanitary Authority. The approval order was entered at Volume 88, Page 595.

8. Permit Amendment Application T-11450 proposes an additional point of diversion approximately 60 feet upstream from the existing point of diversion to:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	20	NE SW	2450 FEET NORTH AND 2575 FEET EAST FROM THE SW CORNER OF SECTION 20

9. Permit Amendment Application T-11450 proposes to change the place of use of the permit to:

QUASI-MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	18	SE SW
4 S	10 W	WM	18	SW SE
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE
4 S	10 W	WM	30	NW NE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	10 W	WM	30	NE SW
4 S	10 W	WM	30	NW SW
4 S	10 W	WM	30	NE SE
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	10 W	WM	31	NW NE
4 S	10 W	WM	31	SW NE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	24	NE NE

QUASI-MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE
4 S	11 W	WM	25	NE SE

10. Notice of the application for the permit amendment was published in the Department's weekly notice on July 31, 2012 pursuant to ORS 540.520(5). No comments were filed in response to the notice.

11. The Oregon Department of Fish and Wildlife has determined that a fish screen is necessary at the new point of diversion to prevent fish from entering the diversion and that the diversion is currently equipped with an appropriate fish screen.

Permit Amendment Review Criteria

12. The changes would not result in injury to other water rights.

13. The proposed place of use is controlled by the permit holder.

14. The changes do not enlarge the permit.

15. The changes do not alter any other terms of the permit.

16. The proposed place of use is contiguous to the authorized place of use.

Conclusions of Law

The additional point of diversion and change in place of use proposed by Permit Amendment Application T-11450 is consistent with the requirements of ORS 537.211.

Now, therefore, it is ORDERED:

1. The additional point of diversion and change in place of use proposed by Permit Amendment Application T-11450 are approved.

2. Permit S-54783, in the name of PACIFIC CITY JOINT WATER-SANITARY AUTHORITY, is issued to replace Permit S-36881, and incorporates the amendments approved by this order, the extensions of time, and the Water Management and Conservation Plan. Permit S-36881, in the name of PACIFIC CITY JOINT WATER-SANITARY AUTHORITY, is no longer of any force or effect.

3. The combined quantity of water diverted at the new additional point of diversion, together with that diverted at the old point of diversion, shall not exceed the quantity of water lawfully available at the original point of diversion.

4. The water user shall operate and maintain an approved fish screen at the new point of diversion. If Oregon Department of Fish and Wildlife (ODFW) determines the screen is not functioning properly, and is unsuccessful in working with the water user to meet ODFW standards, ODFW may request that OWRD regulate the use of water until OWRD receives notification from ODFW that the fish screen is functioning properly.

5. Water shall be acquired from the same surface water source as the original point of diversion.

6. All other terms and conditions of Permit S-54783 remain the same.

Dated at Salem, Oregon this 19 day of November, 2012.

Dwight French, Water Right Services Administrator, for
PHILLIP C. WARD, DIRECTOR

Mailing Date: NOV 20 2012

STATE OF OREGON

COUNTY OF TILLAMOOK

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

PACIFIC CITY JOINT WATER SANITARY AUTHORITY
PO BOX 520
PACIFIC CITY, OR 97135-0520

confirms the right to use the waters of UNNAMED STREAM, a tributary to HORN CREEK for MUNICIPAL USES.

This right was perfected under Permit S-30792. The date of priority is JULY 8, 1965. The amount of water to which this right is entitled is limited to an amount actually used beneficially, and shall not exceed 0.01 CUBIC FOOT PER SECOND, or its equivalent in case of rotation, measured at the point of diversion.

The point of diversion is located as follows:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	16	SW NW	330 FEET NORTH AND 50 FEET EAST FROM W1/4 CORNER, SECTION 16

A description of the place of use to which this right is appurtenant is as follows:

MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	SW SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	NW NE
4 S	11 W	WM	25	SW NE
4 S	11 W	WM	25	SE NE

This certificate describes that portion of the water right confirmed by Certificate 44554, State Record of Water Right Certificates, NOT modified by the provisions of an order of the Water Resources Director entered JAN 3 1 2011, approving Transfer Application T-11126.

The issuance of this superseding certificate does not confirm the status of the water right in regard to the provisions of ORS 540.610 pertaining to forfeiture or abandonment.

The right to the use of the water for the above purpose is restricted to beneficial use on the lands or place of use described and is subject to the existing minimum flow policies established by the Water Policy Review Board.

WITNESS the signature of the Water Resources Director, affixed JAN 3 1 2011.

Phillip C. Ward, Director

BEFORE THE WATER RESOURCES DEPARTMENT
OF THE
STATE OF OREGON

In the Matter of Transfer Application T-11126, Tillamook County	)))	FINAL ORDER APPROVING A CHANGE IN POINT OF DIVERSION AND PLACE OF USE

Authority

ORS 540.505 to 540.580 establishes the process in which a water right holder may submit a request to transfer the point of diversion, place of use, or character of use authorized under an existing water right. OAR Chapter 690, Division 380 implements the statutes and provides the Department's procedures and criteria for evaluating transfer applications.

Applicant

PACIFIC CITY JOINT WATER SANITARY AUTHORITY
TONY OWEN
PO BOX 520
PACIFIC CITY, OR 97135-0520

Findings of Fact

Background

1. On September 1, 2010, PACIFIC CITY JOINT WATER SANITARY AUTHORITY filed an application for a change in point of diversion and to change the place of use under Certificates 32238 and 44554. The Department assigned the application number T-11126.

2. The portion of the first right to be transferred is as follows:

Certificate: 32238 in the name of PACIFIC CITY WATER DISTRICT (perfected under Permit S-26793)
Use: MUNICIPAL
Priority Date: AUGUST 3, 1959
Rate: 0.19 CUBIC FOOT PER SECOND
Source: HORN CREEK, tributary to the NESTUCCA RIVER

Authorized Point of Diversion:

Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	8	SE SE

This final order is subject to judicial review by the Court of Appeals under ORS 183.482. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.482(1). Pursuant to ORS 536.075 and OAR 137-003-0675, you may petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

Authorized Place of Use:

MUNICIPAL USES					
Twp	**Rng**	**Mer**	**Sec**	**Q-Q**	**GLot**
4 S	10 W	WM	19	NE SW	
4 S	10 W	WM	19	NW SW	
4 S	10 W	WM	19	SW SW	
4 S	10 W	WM	19	SE SW	
4 S	10 W	WM	30	NE NW	
4 S	10 W	WM	30	NW NW	
4 S	10 W	WM	30	SW NW	
4 S	10 W	WM	30	SE NW	
4 S	11 W	WM	24	NE NE	1
4 S	11 W	WM	24	SE NE	2
4 S	11 W	WM	24	NE SE	3
4 S	11 W	WM	24	SE SE	4
4 S	11 W	WM	25	NE NE	1
4 S	11 W	WM	25	SE NE	2

3. Transfer Application T-11126 proposes to move the authorized point of diversion approximately 1.8 miles downstream to:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	20	NE SW	2450 FEET NORTH AND 2575 FEET EAST FROM THE SW CORNER OF SECTION 20

4. Transfer Application T-11126 also proposes to change the place of use of the right to:

MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	18	SE SW
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE
4 S	10 W	WM	30	NWNE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	10 W	WM	30	NE SW

MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	30	NW SW
4 S	10 W	WM	30	NE SE
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	10 W	WM	31	NW NE
4 S	10 W	WM	31	SW NE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	24	NE NE
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE
4 S	11 W	WM	25	NE SE

5. The portion of the second right to be transferred is as follows:

Certificate: 44554 in the name of PACIFIC CITY WATER DISTRICT (perfected under Permit S-30792)
Use: MUNICIPAL USE
Priority Date: JULY 8, 1965
Rate: 0.49 CUBIC FOOT PER SECOND
Source: UNNAMED STREAM, tributary to the HORN CREEK

Authorized Point of Diversion:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	16	SW NW	330 FEET NORTH AND 50 FEET EAST FROM THE W1/4 CORNER OF SECTION 16

Authorized Place of Use:

MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	SW SE
4 S	11 W	WM	24	SE SE

MUNICIPAL USES				
Twp	**Rng**	**Mer**	**Sec**	**Q-Q**
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	NW NE
4 S	11 W	WM	25	SW NE
4 S	11 W	WM	25	SE NE

6. Transfer Application T-11126 proposes to move the authorized point of diversion approximately 1.25 miles downstream to:

Twp	Rng	Mer	Sec	Q-Q	Measured Distances
4 S	10 W	WM	20	NE SW	2450 FEET NORTH AND 2575 FEET EAST FROM THE SW CORNER OF SECTION 20

7. Transfer Application T-11126 also proposes to change the place of use of the right to:

MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	10 W	WM	18	SE SW
4 S	10 W	WM	19	NW NE
4 S	10 W	WM	19	SW NE
4 S	10 W	WM	19	SE NE
4 S	10 W	WM	19	NE NW
4 S	10 W	WM	19	SE NW
4 S	10 W	WM	19	SW NW
4 S	10 W	WM	19	NE SW
4 S	10 W	WM	19	NW SW
4 S	10 W	WM	19	SW SW
4 S	10 W	WM	19	SE SW
4 S	10 W	WM	19	NE SE
4 S	10 W	WM	19	NW SE
4 S	10 W	WM	19	SW SE
4 S	10 W	WM	19	SE SE
4 S	10 W	WM	30	NE NE
4 S	10 W	WM	30	NW NE
4 S	10 W	WM	30	SW NE
4 S	10 W	WM	30	SE NE
4 S	10 W	WM	30	NE NW
4 S	10 W	WM	30	NW NW
4 S	10 W	WM	30	SW NW
4 S	10 W	WM	30	SE NW
4 S	10 W	WM	30	NE SW
4 S	10 W	WM	30	NW SW
4 S	10 W	WM	30	NE SE
4 S	10 W	WM	30	NW SE
4 S	10 W	WM	30	SW SE
4 S	10 W	WM	30	SE SE
4 S	10 W	WM	31	NW NE
4 S	10 W	WM	31	SW NE
4 S	11 W	WM	13	NE SE
4 S	11 W	WM	13	SE SE
4 S	11 W	WM	13	SW SE
4 S	11 W	WM	24	NE NE

MUNICIPAL USES				
Twp	Rng	Mer	Sec	Q-Q
4 S	11 W	WM	24	NW NE
4 S	11 W	WM	24	SW NE
4 S	11 W	WM	24	SE NE
4 S	11 W	WM	24	NW SE
4 S	11 W	WM	24	NE SE
4 S	11 W	WM	24	SE SE
4 S	11 W	WM	25	NE NE
4 S	11 W	WM	25	SE NE
4 S	11 W	WM	25	NE SE

8. Notice of the application for transfer was published on September 7, 2010, pursuant to OAR 690-380-4000. No comments were filed in response to the notice.

9. The Oregon Department of Fish and Wildlife (ODFW) has determined that a fish screening and/or by-pass device is necessary at the new point of diversion to prevent fish from entering the diversion and/or safely transport fish back to the body of water from which the fish were diverted and that the diversion is not currently equipped with an appropriate fish screening and/or by-pass device. This diversion may be eligible for screening cost share funds.

10. On November 22, 2010, the Department mailed a copy of the draft Preliminary Determination proposing to approve Transfer Application T-11126 to the applicant. The draft Preliminary Determination cover letter set forth a deadline of December 22, 2010, for the applicant to respond. The applicant requested that the Department make a few corrections, extend the completion date to allow for completion of the project, and proceed with issuance of a Preliminary Determination.

11. On December 6, 2011, the Department issued a Preliminary Determination proposing to approve Transfer T-11126 and mailed a copy to the applicants. Additionally, notice of the Preliminary Determination for the transfer application was published on the Department's weekly notice on December 7, 2010, and in the Headlight-Herald newspaper on December 15, 22, and 29, 2010, pursuant to ORS 540.520 and OAR 690-380-4020. No protests were filed in response to the notice.

Transfer Review Criteria [OAR 690-380-4010(2)]

12. Certificates 32238 and 44554 are for municipal use. Therefore, they are not subject to forfeiture under ORS 540.610.

13. A diversion structure and pipelines sufficient to use the full amount of water allowed under the existing rights were present within the five-year period prior to submittal of Transfer Application T-11126.

14. The proposed changes would not result in enlargement of the rights.

15. The proposed changes would not result in injury to other water rights.

Conclusions of Law

The change in point of diversion and change in place of use proposed in Transfer Application T-11126 are consistent with the requirements of ORS 540.505 to 540.580 and OAR 690-380-5000.

Now, therefore, it is ORDERED:

1. The change in point of diversion and change in place of use proposed in Transfer Application T-11126 are approved.

2. The right to the use of the water is restricted to beneficial use at the place of use described, and is subject to all other conditions and limitations contained in Certificates 32238 and 44554 any related decree.

3. Water right certificates 32238 and 44554 are cancelled. New certificates will be issued describing the portions of the rights not affected by this transfer.

4. The quantity of water diverted at the additional point of diversion, together with that diverted at the original point of diversion, shall not exceed the quantity of water lawfully available at the original point of diversion.

5. The water user shall maintain and operate the existing measurement device and shall make such improvements as may be required by the Department.

6. The water user shall maintain the existing headgate and shall make such improvements as may be required by the Department.

7. Prior to diverting water, the water user shall install a fish screening and/or by-pass device, as appropriate, at the new point of diversion consistent with the Oregon Department of Fish and Wildlife's (ODFW) design and construction standards. Prior to installation, the water user shall obtain written approval from ODFW that the required screen and/or by-pass device meets ODFW's criteria. Prior to submitting a Claim of Beneficial Use, the water user must obtain written approval from ODFW that the required screening and/or by-pass device was installed to the state's criteria. The water user shall maintain and operate the fish screen and/or by-pass device, as appropriate, at the point of diversion consistent with ODFW's operational and maintenance standards.

8. The approved changes shall be completed and full beneficial use of the water shall be made on or before **October 1, 2020**. A Claim of Beneficial Use prepared by a Certified Water Right Examiner shall be submitted by the applicant to the Department within one year after the deadline for completion of the changes and full beneficial use of the water.

9. When satisfactory proof of the completed changes is received, new certificates confirming the rights transferred will be issued.

Dated at Salem, Oregon this 31st day of January 2011.

Dwight French for
PHILLIP C. WARD, DIRECTOR

Mailing Date: FEB 02 2011

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Appendix D

Horn Creek Flows

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Table B-1 Estimated Flow Data for Horn Creek

Observation Date	Staff Gage Reading, ft	Calculated Flow, cfs
6/28/2007	N/A	12.3
8/13/2007	N/A	8.4
8/15/2007	N/A	7.9
9/18/2007	N/A	3.8
10/15/07	0.41	6.36
10/18/07	0.50	8.54
10/19/07	0.76	22.40
10/23/07	0.60	13.48
10/30/07	0.50	10.92
11/5/07	0.55	10.54
11/14/07	0.55	13.57
11/19/07	1.15	36.22
11/26/07	0.83	23.23
12/11/07	1.18	38.49
12/18/07	0.96	31.59
12/28/07	1.68	66.61
1/3/08	1.46	58.00
1/30/08	1.28	42.15
2/4/08	1.86	97.85
2/12/08	1.98	95.57
2/21/08	1.10	49.58
2/27/08	0.90	31.62
2/27/08	0.90	24.37
3/14/08	1.90	71.73
3/26/08	1.40	44.78
4/1/08	1.35	39.57
4/7/08	1.34	41.17
4/23/08	1.50	43.90
5/2/08	1.00	29.89
5/9/08	0.87	26.35
5/16/08	0.78	22.65
5/28/08	0.78	21.34
6/4/08	0.88	27.74
6/6/08	1.06	32.19
6/10/08	1.05	29.50
6/17/08	0.85	25.82
6/25/08	0.70	19.73
7/2/08	0.68	19.76
7/9/08	0.62	15.84
7/14/08	0.56	11.75
7/22/08	0.52	11.13

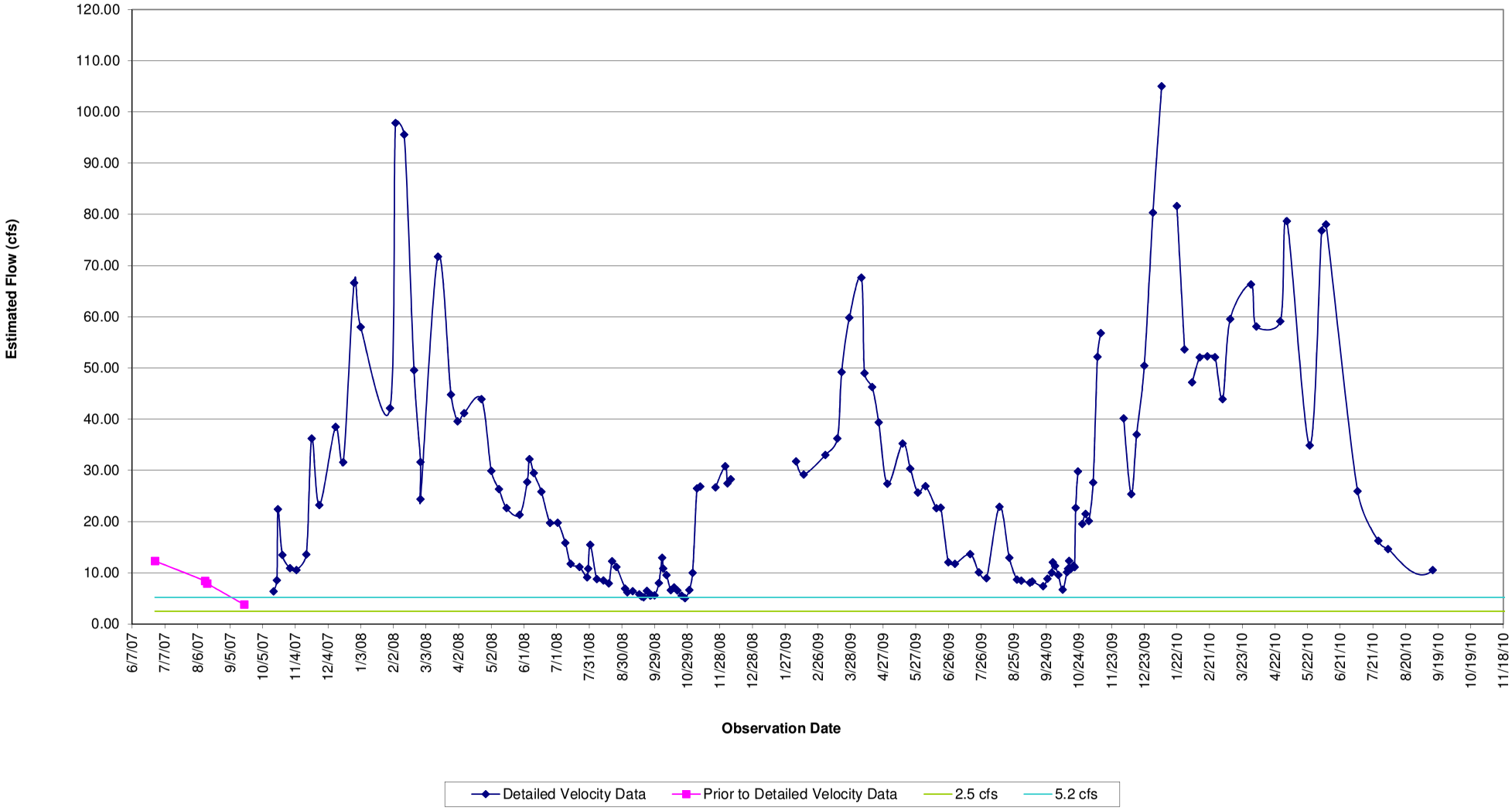
Observation Date	Staff Gage Reading, ft	Calculated Flow, cfs
7/29/2008	0.50	9.09
7/30/2008	0.52	10.81
8/1/2008	0.62	15.46
8/7/2008	0.52	8.79
8/13/2008	0.48	8.51
8/18/2008	0.48	7.93
8/21/2008	0.56	12.24
8/25/2008	0.52	11.16
9/2/2008	0.44	6.92
9/4/2008	0.42	6.19
9/9/2008	0.42	6.40
9/15/2008	0.42	5.80
9/17/2008	0.40	5.37
9/19/2008	0.40	5.23
9/22/2008	0.42	6.46
9/25/2008	0.40	5.56
9/26/2008	0.42	5.67
9/29/2008	0.41	5.60
10/3/2008	0.48	7.98
10/6/2008	0.60	12.95
10/7/2008	0.54	10.82
10/10/2008	0.50	9.54
10/14/2008	0.44	6.60
10/17/2008	0.44	7.14
10/20/2008	0.44	6.54
10/24/2008	0.40	5.51
10/27/2008	0.41	5.04
10/31/2008	0.46	6.62
11/3/2008	0.54	10.00
11/7/2008	0.92	26.48
11/10/2008	0.96	26.85
11/13/2008	FLOODED: NO DATA	
11/14/2008	FLOODED: NO DATA	
11/21/2008	High Water	
11/24/2008	1.15	26.69
12/3/2008	1.10	30.82
12/5/2008	1.08	27.45
12/8/2008	1.10	28.26
12/22/2008	FLOODED: NO DATA	
12/30/2008	FLOODED: NO DATA	
1/8/2009	FLOODED: NO DATA	

Observation Date	Staff Gage Reading, ft	Calculated Flow, cfs
1/26/2009	FLOODED: NO DATA	
2/6/2009	1.10	31.76
2/13/2009	0.93	29.20
3/5/2009	0.98	33.00
3/16/2009	1.40	36.21
3/20/2009	1.40	49.17
3/27/2009	1.56	59.82
4/7/2009	1.68	67.65
4/10/2009	1.46	49.00
4/17/2009	1.40	46.27
4/23/2009	1.19	39.36
5/1/2009	0.94	27.37
5/15/2009	1.10	35.24
5/22/2009	1.04	30.35
5/29/2009	0.94	25.66
6/5/2009	0.90	26.91
6/15/2009	0.85	22.62
6/19/2009	0.83	22.72
6/26/2009	0.63	12.05
7/2/2009	0.62	11.74
7/16/2009	0.62	13.63
7/24/2009	0.54	10.11
7/31/2009	0.53	8.93
8/12/2009	0.82	22.90
8/21/2009	0.50	12.92
8/28/2009	0.51	8.67
9/1/2009	0.49	8.46
9/9/2009	0.48	8.04
9/11/2009	0.48	8.31
9/21/2009	0.46	7.37
9/25/2009	0.46	8.83
9/29/2009	0.50	10.02
9/30/2009	0.54	12.07
10/2/2009	0.54	11.35
10/5/2009	0.50	9.58
10/9/2009	0.46	6.70
10/13/2009	0.52	10.14
10/14/2009	0.56	10.79
10/15/2009	0.58	12.32
10/16/2009	0.56	10.67

Observation Date	Staff Gage Reading, ft	Calculated Flow, cfs
10/19/2009	0.54	11.37
10/20/2009	0.51	11.10
10/21/2009	0.76	22.70
10/23/2009	1.04	29.78
10/26/2009	No Velocity Measurements	
10/27/2009	0.78	19.54
10/30/2009	0.82	21.50
11/2/2009	0.76	20.11
11/6/2009	0.96	27.64
11/10/2009	1.40	52.17
11/13/2009	1.56	56.81
11/20/2009	No Velocity Measurements	
11/25/2009	No Velocity Measurements	
12/4/2009	1.22	40.17
12/11/2009	0.95	25.36
12/16/2009	1.18	37.00
12/23/2009	1.45	50.43
12/31/2009	1.80	80.32
1/8/2010	2.40	105.02
1/15/2010	No Velocity Measurements	
1/22/2010	2.00	81.61
1/29/2010	1.40	53.64
2/2/2010	No Velocity Measurements	
2/5/2010	1.35	47.19
2/12/2010	1.45	52.07
2/19/2010	1.38	52.26
2/26/2010	1.35	52.08
3/5/2010	1.20	43.90
3/12/2010	1.58	59.54
3/31/2010	1.60	66.31
4/5/2010	1.60	58.10
4/27/2010	1.38	59.10
5/3/2010	1.74	78.68
5/24/2010	1.00	34.88
6/4/2010	1.80	76.82
6/8/2010	1.66	78.03
7/7/2010	0.86	25.95
7/26/2010	0.72	16.24
8/4/2010	0.68	14.63
9/14/2010	0.60	10.54

Notes:
1. Flow data prior to 10/15/07 were calculated without detailed velocity and cross section data.
2. Flow calculations after 9/18 were based on a detailed cross sectional area at the staff gage mulitplied by surface velocity measurements adjusted with a 0.85 multiplication factor (Lindsey, 1996) to yield the average velocity.

Figure B-1 Estimated Flows for Horn Creek



Appendix E

Consumer Confidence Report (2020)

Pacific City Joint Water-Sanitary Authority (PCJWSA)

2020 Annual

Water Quality Report

Drinking Water Quality Data

www.pcjwsa.com

To our valued customers,

I am pleased to present the 2020 Water Quality Report (also known as the Consumer Confidence Report) for your review. The report contains essential information about your drinking water, including where it comes from, treatment techniques, and what, if any contaminants it may contain. The Environmental Protection Agency (EPA) mandates many sections of the report; however, PCJWSA has developed a more comprehensive report that we hope you will find informative.

We are fortunate to have two separate high-quality water resources with sufficient capacity to meet all of our water demands. Our Horn Creek surface water treatment plant utilizes state of the art microfiltration technology to purify our drinking water.

In 2020, PCJWSA's drinking water met or surpassed all safe drinking water standards set by the Oregon Health Authority and the EPA.

PCJWSA employees work hard to deliver safe, reliable drinking water to your tap and we pride ourselves on providing excellent customer service. For more information regarding your drinking water, please contact me at 503-965-6636 or visit us at www.pcjwsa.com.

Sincerely,

Michelle Hughes
PCJWSA Authority Manager

Please Use Water Wisely!

Your PCJWSA Board of Directors

Chair - Carolyn McVicker

Vice Chair - Anne Price

Secretary - Sean Carlton

Director - Cameron Gogas

Director - Tom Donohue

The PCJWSA Board Meetings are held on the first Tuesday of every month at 5:00 PM and the public is always welcome to participate!

Is my water safe?

Yes, PCJWSA's drinking water meets or exceeds all safe drinking water standards set by the Oregon Health Authority and the Environmental Protection Agency (EPA).

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Where does my water come from?

The supply of PCJWSA's water comes from two separate sources. The primary source of our drinking water comes from Horn Creek. Located just outside of the Woods community, Horn Creek is part of the Nestucca River-Frontal Pacific Ocean watershed. Water is diverted from the Creek and treated at the Horn Creek water treatment plant utilizing micro-filtration technology. PCJWSA also relies on six groundwater wells that serve as a backup to the Horn Creek Water treatment plant. Both sources can meet the water demands of our community.

Source water assessment and its availability

The 1996 Amendments to the Safe Drinking Water Act require that all States conduct Source Water Assessments for public water systems within their boundaries. The assessment identifies; the Drinking Water Protection Area for surface and groundwater systems, any potential sources of pollution within the Drinking Water Protection Area, and; the susceptibility or relative risk to the water from those potential contamination sources.

The purpose of the assessment is to provide water systems with the information needed to develop a strategy to protect their drinking water resource. In 2017, the Oregon Health Authority and Department of Environmental Quality updated the assessment for the PCJWSA system and a copy is available on file at our office at 34005 Cape Kiwanda Drive in Pacific City.
Several potential high and moderate-risk contamination sources were identified within the groundwater protection area.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land

or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity; Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. To ensure that tap water is safe to drink, EPA prescribes regulations that limit the number of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protections for public health.

Description of Water Treatment Process

Your surface water is treated using a Pall Advanced Separation Systems micro-filtration membrane system. Filtration removes particles suspended in the source water. Particles typically include clays and silts, natural organic matter, iron and manganese, and microorganisms. Groundwater sources rely on natural infiltration to remove particles from the water over time as it enters the aquifer. All PCJWSA water is disinfected. Disinfection involves the addition of chlorine or other disinfectants to kill bacteria and other microorganisms (viruses, cysts, etc.) that may be in the water. Disinfection is considered to be one of the major public health advances of the 20th century.

Horn Creek Treatment Equipment

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- Dispose of chemicals properly; take used motor oil to a recycling center.

Monitoring and reporting of compliance data violations

PCJWSA had two violations in 2020. Two late violations on the same day due to samples taken from the wrong location and having to be retaken.

Additional Information for Lead

PCJWSA is in compliance with the lead and copper rule and is currently on a reduced monitoring schedule. Lead and copper sampling is not required until the summer of 2021. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. PCJWSA is responsible for providing high-quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure are available from the Safe Drinking Water Hotline or at: http://www.epa.gov/safewater/lead.

Backflow or Cross Connection Control Survey

Water suppliers are responsible for enforcing cross-connection control regulations and insuring that no contaminants can, under any flow conditions, enter the public water system. PCJWSA conducts Cross Connection Control surveys to determine whether any cross-connections exist at a home or business. If a potential cross-connection is identified, customers will be immediately notified of any necessary plumbing modifications that may be needed.

Asbestos Sampling

PCJWSA was not required to monitor for asbestos in 2020 but one distribution system sample was taken for informational purposes. The sample concentration was 1.41 MFL which is below the EPA maximum contaminant level of 7 MFL.

2020 Water Quality Data

To ensure that tap water is safe to drink, EPA prescribes regulations that limit the number of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful to our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table, you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions on the last page of this report.

Operator Lab – Horn Creek WTP

2020 Water Quality – Dune and South (Spit) Wells

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Nitrate (ppm) Spit Wells	10	10	ND	0	0	2020	No	Runoff from fertilizer use; Erosion of Natural Deposits
Nitrate (ppm) Dune Wells	10	10	.57	.46	.57	2020	No	Runoff from fertilizer use; Erosion of Natural Deposits

2020 Water Quality - Horn Creek Water Treatment Plant

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range Low	Range High	Sample Date	Violation	Typical Source
Inorganic Contaminants								
Nitrate [measured as Nitrogen] (ppm)	10	10	.709	NA	.709	2020	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Microbiological Contaminants								
Turbidity (NTU)	NA	1.0	100	.015	.034	2020	No	Soil runoff; Erosion of natural deposits
100% of the samples were below the TT limit of 1 (a value less than 95% constitutes a TT violation). Any measurement exceeding 5 NTU is a violation unless otherwise approved by the state.								

2020 Water Quality - Distribution System

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Detect In Your Water	Range Low	Range High	Sample Date	Violation	Typical Source
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Haloacetic Acids (HAA5) (ppb)	NA	60	48	36	66	2020	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	54	33	54	2020	No	By-product of drinking water disinfection
Free Chlorine (ppm)	4.0	4.0	.32-1.82	.32	1.82	2020	No	Disinfectant to control microbial contaminants
Total Coliform (Each)	0	1 Positive Per Month	absent	0	0	2020	No	Naturally present in the environment
E. Coliform Bacteria	0	See definitions	absent	0	0	2020	No	Human and animal fecal waste
Copper (ppm)	1.3	AL=1.3	90th percentile	ND	.10	2018**	No	Corrosion of household plumbing systems
Lead (ppb)	0	AL=15	90th percentile*	ND	.002	2018**	No	Corrosion of household plumbing systems

*1 Lead sample exceeded the 90th percentile.

**Lead and Copper sampling was not required in 2020 so data is from the most recent monitoring.

Undetected Contaminants

The following contaminants were monitored for, but not detected (ND), in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
Benzene (ppb)	0	5	ND	No	Discharge from factories; Leaching from gas storage tanks and landfills
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
Chlorobenzene (monochlorobenzene) (ppb)	100	100	ND	No	Discharge from chemical and agricultural chemical factories
Dichloromethane (ppb)	0	5	ND	No	Discharge from pharmaceutical and chemical factories
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; Leaching from landfills
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; Discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; Discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories

Units of Measurement and Definitions

Unit Descriptions	
Term	**Definition**
ppm	ppm: parts per million, or milligrams per liter (mg/L)
ppb	ppb: parts per billion, or micrograms per liter (µg/L)
NTU	NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
% positive samples/month	% positive samples/month: Percent of samples taken monthly that were positive
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.
E. coli MCLG	Routine and repeat samples are total coliform-positive and either E. coli-positive or the water supplier fails to collect repeat samples following E. coli-positive routine samples or system fails to analyze total coliform-positive repeat sample for E. coli

Important Drinking Water Definitions	
Term	**Definition**
MCLG	MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected health risk. MCLGs allow for a margin of safety.
MCL	MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
MFL	Million fibers per liter (asbestos), > 10 micrometers in length
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected health risk. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
MRDL	MRDL: Maximum residual disinfectant level. The highest level of disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for the control of microbial contaminants.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

For more information please contact:

Contact Name: Michelle Hughes, Authority Manager
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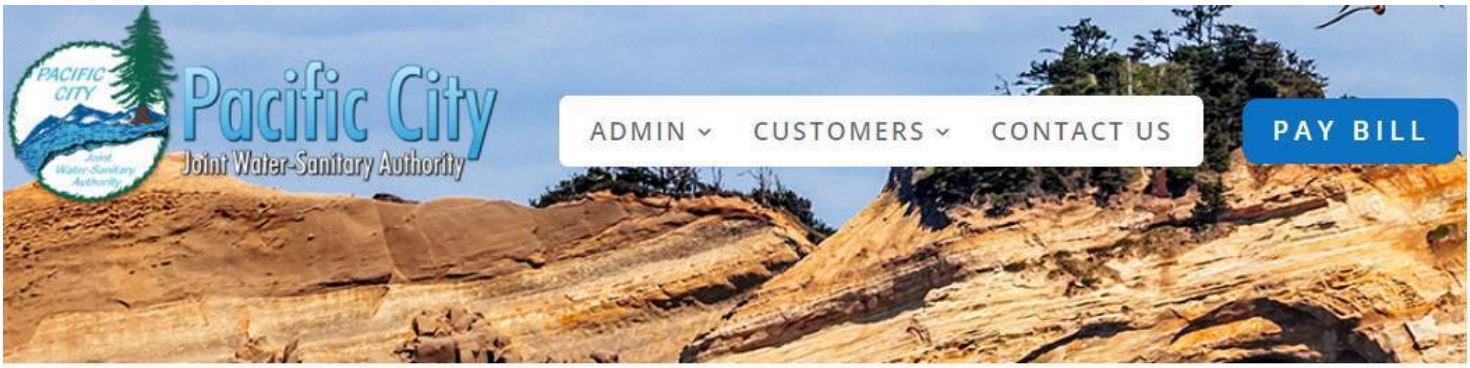
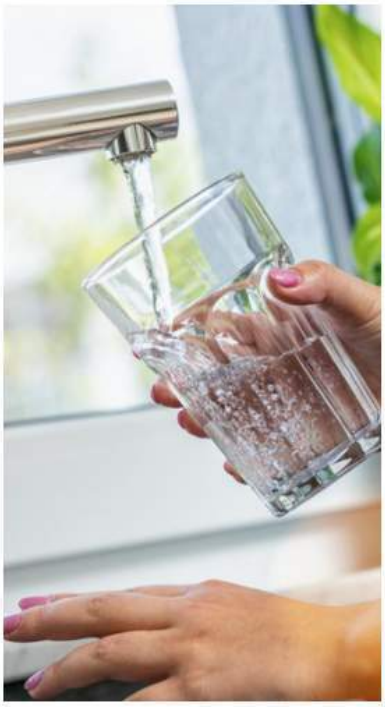
Appendix F

Water Conservation Materials

Water Conservation Tips provided to customers on PCJWSA Website:

https://www.pcjwsa.com/helpful-tips/





HELPFUL TIPS

Every drop counts! Nationwide, more than 1 trillion gallons of water leak from U.S. homes each year!

- Video: Fix a leak
- Saving Water Outside
- Saving Water Inside

FOR KIDS

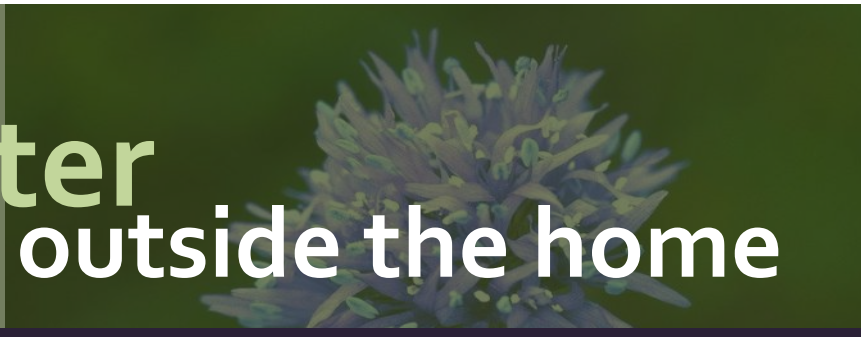
Thirsty for knowledge? Let's learn about water!

Video: Fix a Leak
https://www.epa.gov/watersense/fix-leak-week

Saving Water Outside (included below)
https://www.oregon.gov/owrd/WRDPublications1/Saving_Water_Outside.pdf

Saving Water Inside (included below)
https://www.oregon.gov/owrd/WRDPublications1/Saving_Water_Inside.pdf

Saving Water outside the home



We can all do our part to lessen the effects of limited water supplies this summer. We can start by conserving the water we use today. Here you will find helpful and common tips for saving water outside your home.

☑ Adjust sprinklers & water when it's cool

Sprinklers should water your lawn and garden, not the street or sidewalk. Most automatic irrigation timers are set to go off in the early morning (5:00 am – 7:00 am); therefore, utilities must often super-size their facilities to meet early morning demands. Setting irrigation timers at other times of the morning or night (11:00 pm – 5:00 am), when temperatures are cooler, helps minimize evaporation and shave peak water usage.

☑ Inspect your irrigation system

Look for leaks, broken lines, or blockage in the lines. A well maintained system will save you money, time, and water. Even little things like a shut-off nozzle for your garden hose can save you about 5 – 7 gallons each minute.

☑ Water established lawns about 1 inch per week

You may need slightly more during hot, dry weather. Some water providers will use a "*weekly watering number*" that is based on local weather conditions to help customers determine exactly how much water their gardens and landscapes need each week.

☑ Adjust your watering schedule

Whether you have a manual or automatic system, be sure to adjust your watering schedule throughout the irrigation season. Adjusting the amount of water used to match weather conditions (watering more when it is hot and dry, less when it is cooler and wet) helps you water your landscape more efficiently.

☑ Apply the amount of water your soil can absorb

Water thoroughly, but infrequently. If runoff or puddling occurs, break longer watering sessions into several short sessions allowing water to soak into the soil between each session.

☑ Consider using water-saving technology

Weather-based irrigation controllers, which act as a thermostat for your sprinkler system, use local weather data to determine when and how much water to use. Soil moisture sensors water plants based on their needs by measuring the amount of moisture in the soil and tailoring the irrigation schedule accordingly. Rainfall shutoff devices and rain sensors help decrease water wasted in the landscape by turning off the irrigation system when it is raining.

☑ Adjust your mower to a higher setting

A taller lawn provides shade to the roots and helps retain soil moisture, so your lawn needs less water.

☑ Aerate your soil

Soil can become compacted during home construction or from normal foot traffic. Aerating your soil with a simple lawn aerator can increase the infiltration of water into the ground, improving water flow to the root zone and reducing water runoff.

☑ Replace lawns

Consider replacing some lawn areas with low water use plants and ornamental grasses. They are easier to maintain than turf, don't need as much water, and look beautiful. Seek out native plants that are appropriate to your local climate and soil conditions. Once established, these plants require little water beyond normal rainfall, are very low maintenance, require little to no pesticides or fertilizer, and are more resistant to pests and diseases than are other species.

☑ Use mulch around shrubs & garden plants

Doing so helps reduce evaporation, inhibit weed growth, moderate soil temperature, and prevent erosion. Types of mulch include bark chips, grass clippings, straw, leaves, stones, and brick chips. Leave a few inches of space between trunks of woody plants and organic mulches to prevent rot.

☑ Group plants together

Creating a garden with "watering zones" allows you to give each plant the water it requires – not too much, not too little.

☑ Minimize or eliminate fertilizer

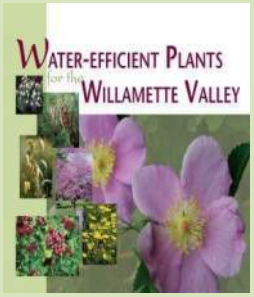
Fertilizer encourages thirsty new growth, causing your landscape to require additional water. Minimize or eliminate the use of fertilizer where possible. If you do need fertilizer, look for a product that contains "natural organic" or "slow-release" ingredients. These fertilizers feed plants slowly and evenly, helping to create healthier plants with strong root systems and no excessive "top growth." Moreover, using "slow-release" fertilizers can reduce nutrient run-off into ground and surface waters, protecting natural resources.

☑ Use a broom and a bucket

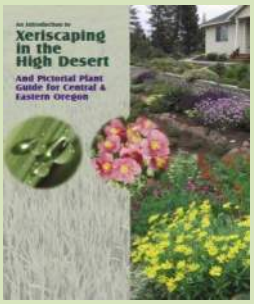
Sweep patios, sidewalks and driveways clean with a broom, instead of using a hose. Instead of using a running hose, fill a bucket with water to wash your car. A hose equipped with a shut-off nozzle would also work.

Helpful Landscaping Guides

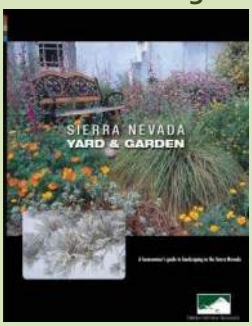
Western Oregon



Central & Eastern Oregon



Southern Oregon



Saving Water inside the home

We can all do our part to lessen the effects of limited water supplies this summer. We can start by conserving the water we use today. Here you will find helpful and common tips for saving water inside your home.

☑ Monitor your water bill

Checking your water bill for unusually high water use can alert you to leaks in your home. Knowing how much water your household typically uses make this easier to determine. If your water use seems high, first determine if the increase is due to changes in your daily routine. If not, you may have a leak.

☑ Periodically test and check for water leaks

If it's easy to find, check your water meter before and after a two-hour period when no water is being used. If the meter does not read exactly the same, you probably have a leak. Common household leaks include: running toilets, dripping faucets, and other leaking valves. If leaks are found, repairing them in a timely manner will not only conserve water, but will save you money by reducing your water bill.

Toilet leaks are often easy to detect. One way to check is to remove the tank lid, then drop 1 dye tablet or 10 drops of food coloring into the tank. (*Dye tablets may be available from your local water provider.*) Put the lid back on the toilet tank and come back in 10 to 15 minutes. If the water in the bowl has changed color, you have a leak. If the water hasn't turned a color, everything is okay.

Grabbing a wrench to repair a leaky faucet is simple, inexpensive, and can save up to 140 gallons of water per week. These types of leaks are often caused by faulty washers that don't allow your faucet to shut off properly. Faulty washers can be replaced fairly easily and inexpensively (*typically for less than $1*), which can help you save water and reduce your water bill.

☑ Wash only full loads

The average American household uses about 23 percent of its water running the clothes washer and dishwasher. Just one partially full load can waste 5 – 10 gallons of water.

☑ Wash fruits and vegetables in a pan of water

Avoid continually running water to clean those fruits and veggies. You can also save water by composting your food, instead of running it down the garbage disposal. You'll save water every time.

☑ Defrost food in the fridge

Rather than using running water to thaw food, for water efficiency as well as food safety, defrost food in the refrigerator.

☑ Keep drinking water in the fridge, re-purpose those ice cubes

Instead of running the tap until the water turns cold, keep a pitcher on hand in the fridge. This way, every drop of water goes down you and not the drain. For those ice cubes that hit the floor instead of your glass, don't toss them. Instead, drop them in a house plant.

☑ Turn off the water faucet while brushing your teeth

Doing so will save up to 4 gallons per minute. That's up to 200 gallons a week for a family of four.

☑ Plug the sink on purpose

When shaving, plug the sink instead of running the water to rinse your razor and save up to 300 gallons per month.

☑ Flush only when necessary

Don't use the toilet to flush tissues. Drop tissues in the trash instead of flushing them.

☑ Shorten your shower

Trimming a minute or two off your normal shower time can save up to 150 gallons per month. Keeping the shower time to less than 5 minutes can save the average household up to 1,000 gallons per month. Turning the water off while washing your hair can save up to 150 gallons a month.

☑ Retrofit old showerheads, faucets, and aerators

You can save up to 40 percent of the water used for showering by replacing an older showerhead with a water efficient model. Look for WaterSense® models, which use less than 2 gallons per minute. Your local water provider may offer water conservation kits that often include a water-efficient showerhead and other water-reducing devices. Replacing old, inefficient faucets and aerators with WaterSense® labeled models can save the average family 700 gallons of water each year, equivalent to 40 showers. Some water suppliers offer indoor water conservation kits that include water-efficient faucet aerators.

☑ Replace that old toilet

By replacing old, inefficient toilets with more water-efficient WaterSense® labeled models, the average family can reduce water used for toilets by 20 to 60 percent – or close to 13,000 gallons of water conserved every year! That's a savings of more than $110 per year in water costs, and $2,200 over the lifetime of the toilet. Many municipal water providers offer a rebate for replacing an old toilet with one that uses no more than 1.6 gallons per flush.

☑ Consider a dual-flush toilet

It has two flush options: a half-flush for liquid waste and a full-flush for solid waste. A standard water-efficient toilet uses approximately 1.6 gallons per flush, which is about the amount of water a dual-flush toilet uses for the solid waste option. The half-flush option for liquid waste only uses about 0.9 gallon per flush. An average family of four can save approximately 7,000 gallons per year by switching to a dual-flush toilet.

☑ Determine how much water you use

Access the Alliance for Water Efficiency's water calculator to get an estimate of how much water your household uses. The calculator also compares your estimated water usage to an average home and a highly efficient home. Visit http://www.home-water-works.org/calculator.