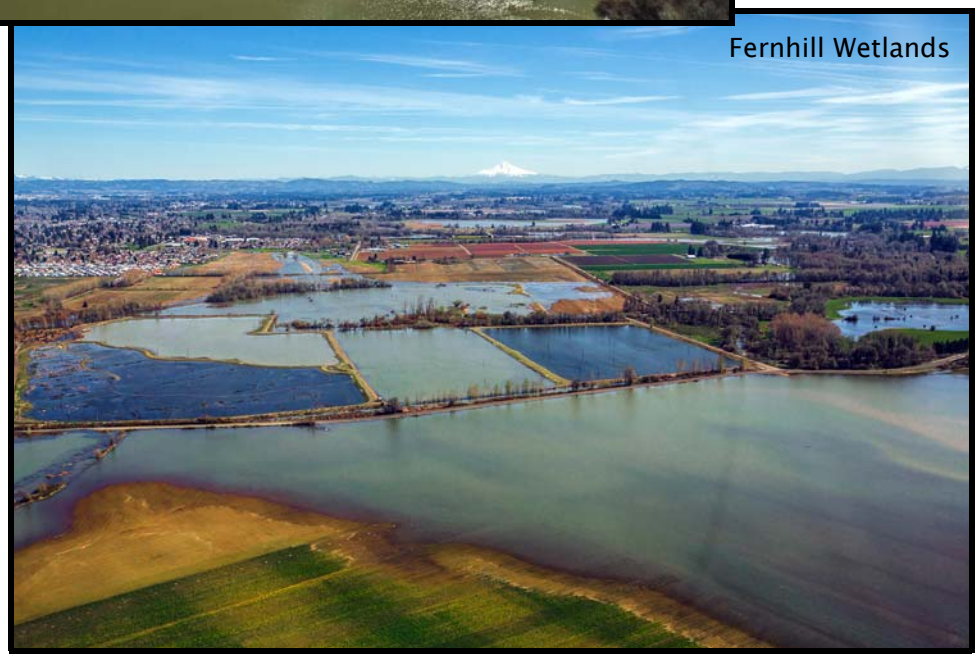
TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE


Jackson Bottom Wetlands


Fernhill Wetlands

2015 Annual Report

prepared by
Bernie Bonn for

Clean Water Services

Cover photos taken by Michael Nipper
for Clean Water Services, March 17, 2016

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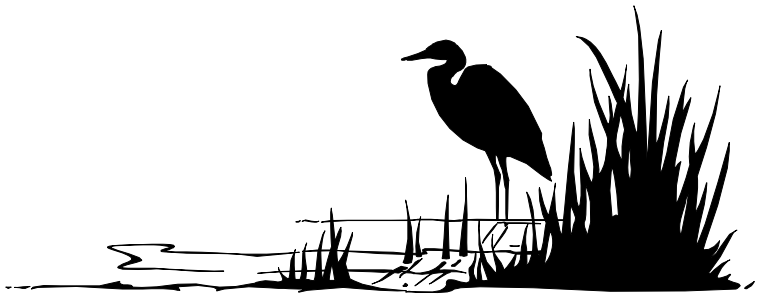
2015 Annual Report



Prepared by:

Bernie Bonn

For:

Clean Water Services

In cooperation with:

Oregon Water Resources Department, District 18 Watermaster

FLOW MANAGEMENT TECHNICAL COMMITTEE MEMBERS

Kristel Fesler, Chair	*City of Hillsboro Water Department*
John Goans	*Tualatin Valley Irrigation District*
Jake Constans	*Oregon Water Resources Department*
Raj Kapur	*Clean Water Services*
Laura Porter	*Clean Water Services*
Scott Porter	*Washington County — Emergency Management System*
Mark Rosenkranz	*Lake Oswego Corporation*
Brian Dixon	*City of Forest Grove*
Todd Winter	*Washington County Parks — Hagg Lake*

ACRONYMS USED IN THIS REPORT

FULL NAME	ACRONYM
Facilities	
Spring Hill Pumping Plant	SHPP
Wastewater Treatment Facility	WWTF
Organization	
Barney Reservoir Joint Ownership Commission	BRJOC
Clean Water Services	CWS
Joint Water Commission	JWC
Lake Oswego Corporation	LOC
Oregon Department of Environmental Quality	ODEQ
Oregon Department of Fish and Wildlife	ODFW
Oregon Department of Forestry	ODF
Oregon Water Resources Department	OWRD
National Marine Fisheries Service	NMFS
Tualatin Valley Irrigation District	TVID
Tualatin Valley Water District	TVWD
Bureau of Reclamation	BOR
U.S. Fish and Wildlife Service	USFWS
U.S. Geological Survey	USGS

FULL NAME	ACRONYM
Units of Measurement	
Acre-Feet	ac-ft
Cubic Feet per Second	cfs
Micrograms per liter	µg/L
Milligrams per Liter	mg/L
Million Gallons per Day	MGD
Pounds	lbs
River Mile	RM
Water Year	WY
Water Quality Parameters	
Biochemical Oxygen Demand	BOD
Dissolved Oxygen	DO
Sediment Oxygen Demand	SOD
Other	
Biological Opinion	BiOp
Total Maximum Daily Load	TMDL
Wasteload Allocation	WLA

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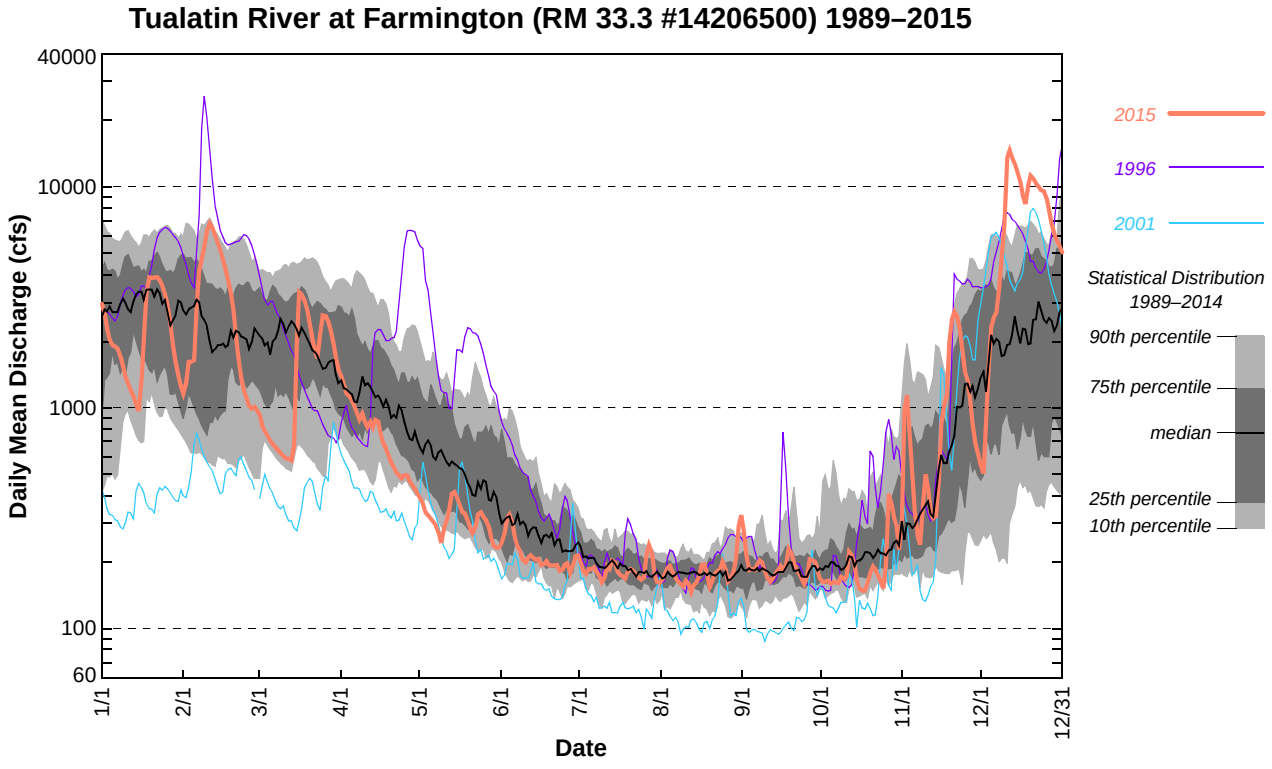
Appendices

2015 SUMMARY

This is the twenty-seventh year that the Tualatin River Flow Management Technical Committee has prepared an annual report documenting the flow management of the Tualatin River. Members of the committee include Clean Water Services (CWS), Tualatin Valley Irrigation District (TVID), Joint Water Commission (JWC), Lake Oswego Corporation (LOC) and Oregon Water Resources Department (OWRD).

Highlights for 2015 include:

- Both Scoggins and Barney Reservoirs filled.
- Weather highlights:
  - Much of the winter was drier than average with the exception of February.
  - Spring (April through June) was exceptionally dry and warm which resulted in low streamflow and one of the earliest dates of river regulation.
  - Fall had a series of large storms, the largest of which occurred in December.
  - December was the wettest on record. Streamflows in December rivaled those during the flood of 1996 at some locations.
- Wapato Lake was pumped out in Spring and the lakebed was farmed as in a normal summer.
- Regulation of river water use began early (May 8th) due to low flows caused by the dry spring weather.
- Clean Water Services to begin releasing water for flow augmentation on June 9th, the earliest date since 1992 (June 5th). The last year that flow augmentation occurred in June was 2002. June releases have only occurred 6 times since flow augmentation began in 1987.



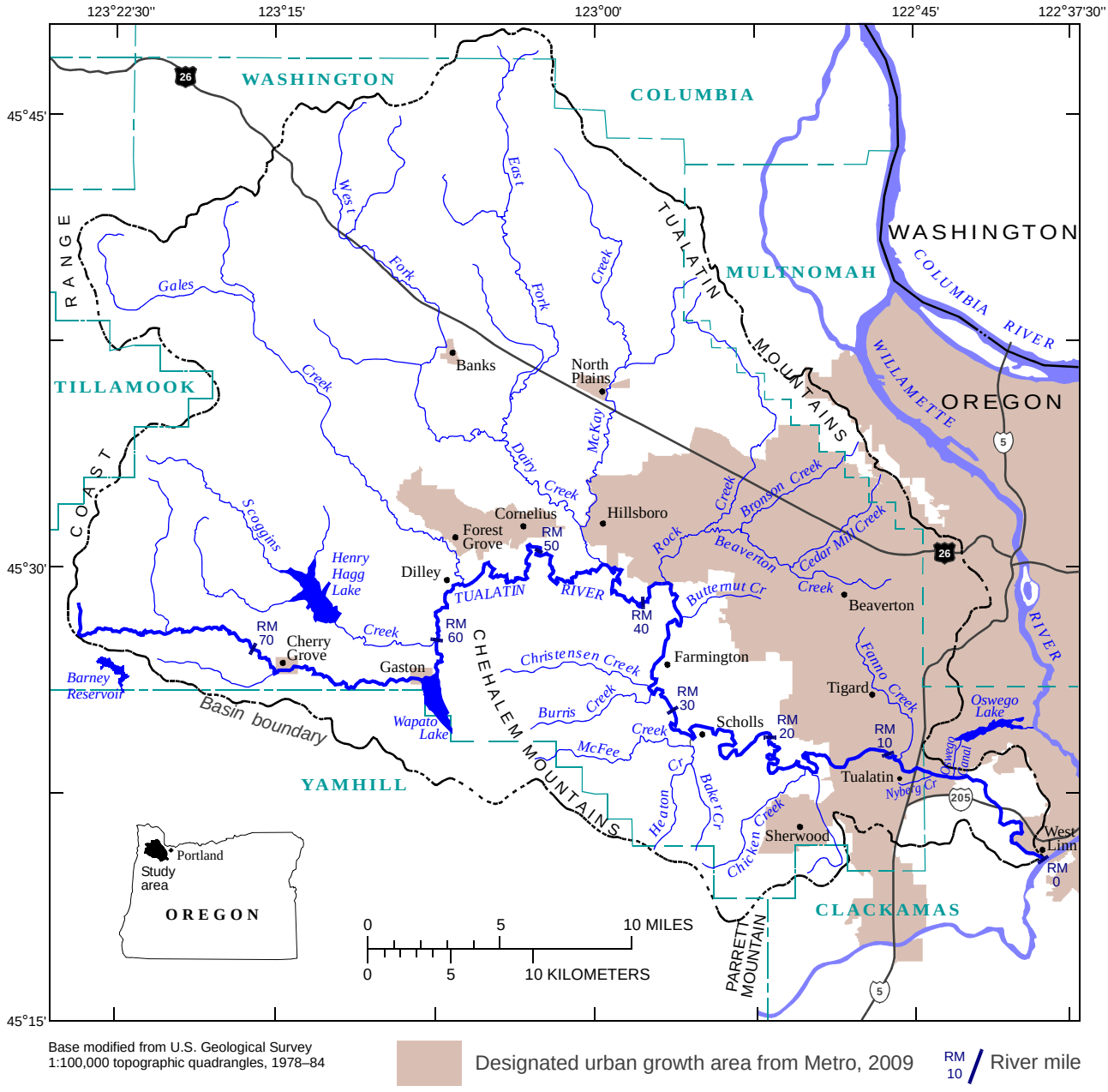
BACKGROUND

Basin Description

The Tualatin River Basin comprises an area of 712 square miles situated in the northwest corner of Oregon and is a subbasin of the Willamette River. The headwaters are in the Coast Range and flow in a generally easterly direction to the confluence with the Willamette River. The basin lies almost entirely in Washington County. (See map below)

The Tualatin River is about 80 miles long and changes dramatically from its headwaters to its mouth. The mountain or headwater reach (upstream of RM 55) is narrow (about 15 ft) and steep with an average slope of about 74 ft/mi. The meander reach (RM 55–33) is wider with an average slope of about 1.3 ft/mi. The reservoir reach (RM 33–3.4) is very wide (up to 150 ft) and has an estimated slope of only 0.08 ft/mi. It includes several deep pools. Travel times through this reach are very long. The slow movement of the water causes this reach to act much like a lake. In the riffle reach (RM 3.4–0), the Tualatin River flows through a short reservoir section and then drops into a narrow gorge near the City of West Linn before it enters the Willamette River just upstream of Willamette Falls. The average slope in this reach is 10 ft/mi .

Tualatin River Basin



Base modified from U.S. Geological Survey 1:100,000 topographic quadrangles, 1978–84

Designated urban growth area from Metro, 2009

RM 10 / River mile

Water sources to the Tualatin River

Precipitation: Seasonal rainfall accounts for most of the natural flow in the Tualatin Basin; streamflow from snowmelt is minimal. The amount of rainfall ranges from 110 inches on the eastern slopes of the Coast Range to 37 inches in the southeastern area of the drainage basin. Peak months for rainfall are November through February while the driest months are normally June through October. The peak streamflow month is usually February and the lowest streamflow month is August.

Barney Reservoir: Barney Reservoir is located behind Eldon Mills Dam on the Middle Fork of the North Fork of the Trask River (outside of the Tualatin Basin). A trans-basin aqueduct carries water over a low Coast Range divide to a pipeline that discharges into the Tualatin River at RM 78. Barney Reservoir has a capacity of 20,000 acre-feet and stores water for the Joint Water Commission (Cities of Hillsboro, Forest Grove and Beaverton, and the Tualatin Valley Water District) and Clean Water Services. The Barney Reservoir Joint Ownership Commission owns, operates and manages Barney Reservoir. Reservoir content is monitored through calibrated reservoir elevations; water releases are monitored using a stream gage located in the outlet flume. Water is released during the summer low-flow season to supplement shortages in natural flow. The water is used for municipal supply and for instream water quality. Storage in Barney Reservoir is also allocated to the Oregon Department of Fish and Wildlife. Those flows, to the Trask River, are measured using an instream weir.

Scoggins Reservoir: In the early 1970s the Bureau of Reclamation built an earthen dam on Scoggins Creek (RM 5.1). Releases from Scoggins Reservoir (Henry Hagg Lake) flow down Scoggins Creek and enter the Tualatin River at RM 60.0. Scoggins Reservoir has an active storage capacity of 53,640 acre-feet. It is a multipurpose facility with contracted water for irrigation, municipal and industrial, and water quality uses.

Scoggins Reservoir is operated and maintained by the Tualatin Valley Irrigation District under contract with the Bureau of Reclamation. Flow into Scoggins Creek (RM 4.8) is monitored by a Bureau of Reclamation stream gage; Oregon Water Resources Department maintains the rating curve for this site.

Clean Water Services: Clean Water Services provides sanitary and stormwater services to the urban areas of Washington County. A watershed-based NPDES permit allows Clean Water Services to discharge treated wastewater into the Tualatin River from four wastewater treatment facilities (WWTFs). The Rock Creek WWTF discharges an average of 50 cfs (33 MGD) at RM 38.1; the Durham WWTF discharges an average of 34 cfs (22 MGD) at RM 9.3. The Forest Grove and Hillsboro WWTFs (RM 55.2 and 43.8, respectively) are much smaller and do not discharge during the summer. (River mile locations given here are based on USGS topographic maps and may be slightly different from those used in Clean Water Services watershed-based NPDES permit which were obtained from a different source.) WWTF flow rates are continuously monitored at each WWTF. Clean Water Services also releases storage water from Scoggins and Barney Reservoirs for flow augmentation during the seasonal low flow periods to improve water quality in the Tualatin River, to offset a portion of the thermal load from the Rock Creek and Durham WWTFs, and to provide operational flexibility for their WWTFs.

Water sources to the tributaries

Clean Water Services: Clean Water Services has been using Tualatin Valley Irrigation District transmission lines to deliver water to several tributaries for flow restoration in the summer. About 1 to 2.5 cfs of water was added to McKay Creek since 2005. Similar programs were implemented for Gales Creek (2009), East Fork Dairy Creek (2010), West Fork Dairy Creek (2011) and Blackjack Creek (2014). The goal is to improve water quality, specifically increasing the dissolved oxygen concentration and decreasing the temperature.The flow augmentation water is from Clean Water Services' allocation in Scoggins Reservoir.

Water diversions from the Tualatin River

Cherry Grove Intake (RM 73.2): The City of Hillsboro diverts water for municipal and industrial uses at the Cherry Grove Intake. This water is delivered to the rural residents of the Dilley and Cherry Grove areas (served by the City of Hillsboro), as well as the City of Gaston and the LA Water Cooperative (as Hillsboro wholesale customers). The diversion is less than 3 cfs and is monitored via metered flows.

Spring Hill Pumping Plant (RM 56.3): The Spring Hill Pumping Plant is the largest diversion facility on the river. It is owned by the Bureau of Reclamation (BOR) and operated jointly by the Tualatin Valley Irrigation District (TVID) and the Joint Water Commission (JWC). TVID, with a pumping capacity of approximately 90 MGD (140 cfs), delivers water to about 12,000 acres of irrigated cropland via a pressure pipeline. JWC, with a pumping capacity of approximately 86 MGD (160 cfs), delivers water to the Cities of Hillsboro, Forest Grove and Beaverton, to the Tualatin Valley Water District, and to the wholesale customers of these entities. Both TVID and JWC have natural flow water rights that are used when natural flow is adequate; they release contracted stored water from Scoggins and Barney Reservoirs to augment low natural flow in the summer. Pumping rates are monitored by TVID and JWC using telemetry-equipped flow meters. Additional monitoring is provided by real-time stream gages on the Tualatin River located above and below the pumping plant and on Gales Creek.

Wapato Canal Diversion: The US Fish and Wildlife Service (USFWS) now owns most of the land within the levees surrounding the Wapato Lake area. The duties of the now defunct Wapato Improvement District have been split between USFWS (to maintain the dike and levee system), and TVID (to operate and maintain the irrigation water delivery system).

While USFWS develops a restoration plan, the area will remain in cooperative farming agreements. TVID diverts water from the Tualatin River at the Wapato Canal Diversion, near RM 62 as needed for irrigation of the historic lake bed and surrounding TVID customers. Water levels in Wapato Canal, which discharges from the lake bed into Wapato Creek, have been monitored by the USGS since September 2011.

Irrigation Withdrawals: Water is obtained directly from the Tualatin River for irrigation purposes by members of the TVID and by irrigators with natural flow water rights. About 5,000 acres of cropland served by TVID is irrigated with water obtained directly from the Tualatin River. Some of the discharge from the Rock Creek WWTF (RM 38.1) is contracted to TVID to be used by downstream irrigators.

Patton Valley Pump Plant: Tualatin Valley Irrigation District pumps water from Scoggins Creek (RM 1.71) into a low-pressure pipeline that serves customers along Patton Valley Road. Historically, this pipeline also diverted water into the upper Tualatin River (at RM 63.1 and RM 64.3) to supplement low flows in this reach, but this has not been needed in recent years due to releases from Barney Reservoir.

Oswego Lake Canal Diversion: The Lake Oswego Corporation (LOC) diverts a portion of the Tualatin flow into the Oswego Lake Canal at RM 6.7. A headwork structure regulates the flow into this mile long canal that feeds into Oswego Lake. The Lake Oswego Corporation has several natural flow water rights, including water rights for hydropower generation, irrigation, and lake level maintenance. At RM 3.4, a combination diversion dam/fish ladder structure is used during low flow periods to elevate the Tualatin River enough to divert the flow into the canal. During most of the year, river elevation is adequate to allow diversion of the LOC water right. Historically, flash boards were installed to increase the water level during the summer, but they have not been used since 2003. The dam plus several natural basalt sills cause the water to pool in the reservoir reach. Flow in Lake Oswego Canal was monitored during the summer by a gaging station operated by the Oregon Water Resources Department, but that site was discontinued partway through 2011.

Water diversions from the tributaries

Irrigation withdrawals: Water is obtained directly from some tributaries for irrigation by irrigators with natural flow water rights.

Tualatin River Water Management

Tualatin River Flow Management Technical Committee

The Tualatin River Flow Management Technical Committee provides a mechanism for the coordination and management of flow in the Tualatin River. The members of the committee are technical staff with detailed knowledge of the specific characteristics of flow in this river. The committee meets monthly from February through November. Meetings focus on the current status of the reservoirs. In addition, a variety of other water issues and any problems are discussed. Each member updates the committee on changes that could impact the flow management of the Tualatin. The communication, coordination and cooperation among the partner agencies has proven invaluable in managing the resource.

Data collection system

Water in the Tualatin Basin is monitored by gages on streams and flow meters on diversions and wastewater treatment facility discharges. Stream gages are present along the mainstem Tualatin and all major tributaries that affect water distribution. Many of these monitors have telemetry, making the data available in real-time. Throughout the season, daily operations can be monitored by Clean Water Services (CWS), Joint Water Commission (JWC), Tualatin Valley Irrigation District (TVID), and the Lake Oswego Corporation (LOC). These data in shown in Appendices A and B of this report.

A coordinated information system was developed to provide flow information to all members of the committee. Flow conditions and a summary of daily releases are reported via daily email by the superintendent of Scoggins Dam. The JWC provides a daily email containing information about the rate of intake at the Spring Hill Pump Plant, releases from Scoggins and Barney Reservoirs, and available natural flow. Because use or release of water by any one of the entities can impact the other users, coordination of flow information is an important aspect of the committee's work.

The monitoring effort makes it possible to proactively manage storage, instream flows, and diversions so that minimum instream flow requirements and general compliance with water rights and storage agreements are met. It also makes the calculation of pollutant loads possible, when it is necessary for the Total Maximum Daily Load (TMDL) program. Monitoring includes temperature as well as flow at some sites. As water quality issues have come to the forefront, the monitoring system has provided information vital to understanding the Tualatin Basin, helped guide basin management, and been an excellent example of interagency cooperation. The members of the Flow Management Committee appreciate the efforts of the Oregon Water Resources Department (District 18 Watermaster), the US Geological Survey and others who provide data.

Some of the monitoring data for the Tualatin Basin can be accessed at the following web sites:

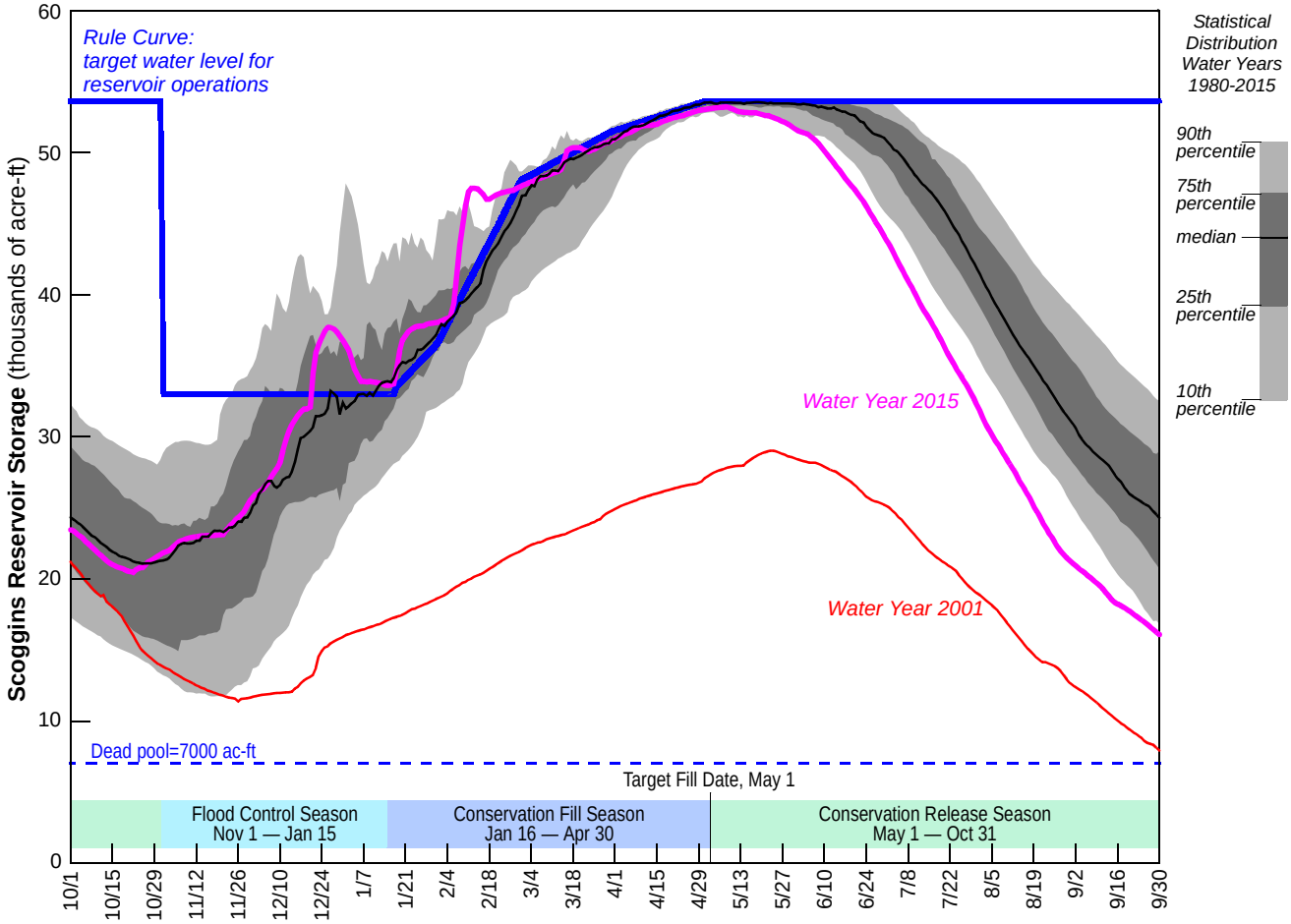
- Bureau of Reclamation data:
  http://www.usbr.gov/pn/hydromet/tuatea.html
- Jackson Bottom Wetlands Center data:
  http://or.water.usgs.gov/cgi-bin/grapher/graph_setup.pl?basin_id=tualatin&site_id=14206241
- Oregon Water Resources Department data:
  http://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/
- USGS data:
  http://or.water.usgs.gov/tualatin/

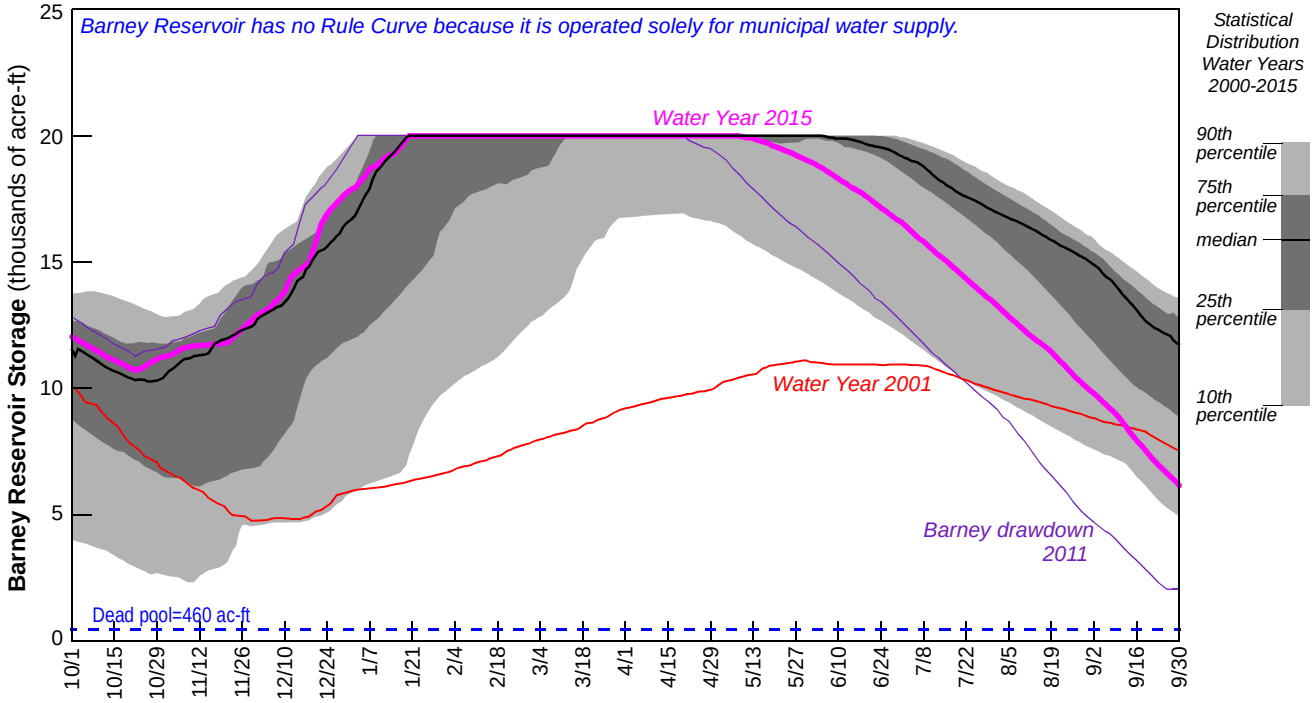
Annual Tualatin Basin Flow Management Report

This report is published annually and describes water management, accounting, storage, stream gaging, diversions, and effluent discharge for the Tualatin Basin. Annual reports dating from 1992 are available at: http://www.co.washington.or.us/Watermaster/SurfaceWater/tualatin-river-flow-technical-committee-annual-report.cfm

RESERVOIR STATUS

Barney Reservoir filled on January 18, 2015. Scoggins Reservoir at that time was being managed for flood control. Scoggins Reservoir peaked on May 8th at 53,222 ac-ft. The reservoir levels for 2015 and the reservoir filling histories are shown below.





CLEAN WATER SERVICES

BY RAJ KAPUR, CLEAN WATER SERVICES

Clean Water Services provides wastewater treatment, stormwater management, and watershed management to more than 550,000 customers mostly in the urban areas of Washington County. Clean Water Services has twelve member cities, and owns and operates four wastewater treatment facilities (WWTFs) at sites in Forest Grove, Hillsboro, and Tigard. Clean Water Services also implements the municipal separate storm sewer system (MS4) program in the urban parts of the Tualatin River watershed. The four WWTFs and the MS4 program are permitted by the Oregon Department of Environmental Quality (DEQ) under a watershed-based National Pollutant Discharge Elimination System (NPDES) permit. The watershed-based permit provides Clean Water Services with a mechanism to offset a portion of the thermal load from its WWTFs by releasing stored water from Scoggins and Barney Reservoirs. Stored water releases from the reservoirs are also used to maintain minimum dilutions and provide operational flexibility at the WWTFs, and to improve overall water quality in the Tualatin River.

The reservoir releases during July and August are used to mitigate part of the thermal load from the wastewater treatment facilities. Clean Water Services offsets the remainder of its thermal load by planting riparian areas in the Tualatin River basin. Water is also released to offset the effect of sediment oxygen demand on the dissolved oxygen levels in the river. The dissolved oxygen levels in the river downstream of the wastewater treatment facilities determine the ammonia limits for the wastewater treatment facilities. When dissolved oxygen levels are well above the water quality standards, the wastewater treatment facilities have more operational flexibility.

Low dissolved oxygen levels can be a water quality issue in the lower Tualatin River. During the low flow season, photosynthetic production of oxygen by algae often offsets the consumption of oxygen by decaying substances in the sediment of the river (sediment oxygen demand or SOD). Low levels of dissolved oxygen can result if oxygen production by algae is less than the oxygen consumption by SOD. Although low dissolved oxygen can occur during any season it is more likely in the fall because photosynthetic oxygen production decreases as the days become shorter and low flows maximize the effect of sediment oxygen demand. Increasing streamflow reduces oxygen consumption by SOD because it shortens the contact time between the river water and the river sediments. Clean Water Services flow augmentation and treatment plant flow accounts for a significant fraction of flow in the lower Tualatin River, especially during the late summer and early fall period (see graphs on page 12).

2015 Water Releases

Clean Water Services usually starts releasing stored water in July for thermal trading. Because of the unseasonably warm and dry spring, flow augmentation releases began early in 2015–on June 9. Flow augmentation was continuous until it ended for the season on November 5 when Tualatin River flow at Farmington exceeded 500 cfs and winter flow conditions started.

Release of Scoggins Reservoir water for Clean Water Services began with 10 cfs on June 9. By the end of June, the release had increased to 40 cfs. Average daily releases were 50.9 cfs (July/August period) and 39.8 cfs (September). The last release day was November 5. Clean Water Services released a total 12,307acre-feet from Scoggins Reservoir for 2015. This was 98% of its allocation. CWS purchased an additional 600 ac-ft of water from TVID, but did not use it because of the onset of the rainy season.

Clean Water Services released water from Barney Reservoir at a rate of 14 cfs beginning on August 14, 2015. The release was decreased to 10 cfs on August 23 and continued at that rate through October 27. The last day of release was October 28 when 5 cfs was released. Clean Water Services used a total of 1,569 acre-feet from Barney Reservoir which was 95% of its allocation.

Clean Water Services released flow augmentation water for a total of 150 days in 2015—the longest release season since 2002. The total average daily release (for days with releases) was 41.4 cfs. The amount of water available to and released by Clean Water Services during 2015 and monthly details of the water releases are summarized on page 11.

CLEAN WATER SERVICES WATER AVAILABILITY AND USE — 2015

Reservoir		Maximum Available (acre-ft)	Available (acre-ft)	Total CWS Release (acre-ft)
Scoggins Reservoir	Storage	12,618	12,618	12,307
	2015 purchase from TVID		600	0
	Natural flow credit	4,282	0	—
Barney Reservoir	Storage	2,000	1,654	1,569
	Summer storage*	—	0	
Total		**18,900**	**14,872**	**13,876**
Percent of available				**93.3%**

*Summer storage is water from rain that is stored in Barney Reservoir after releases have begun for the season. Summer storage (when it occurs) is allocated among the members of the Barney Partnership.

CLEAN WATER SERVICES WATER RELEASE SUMMARY 2015

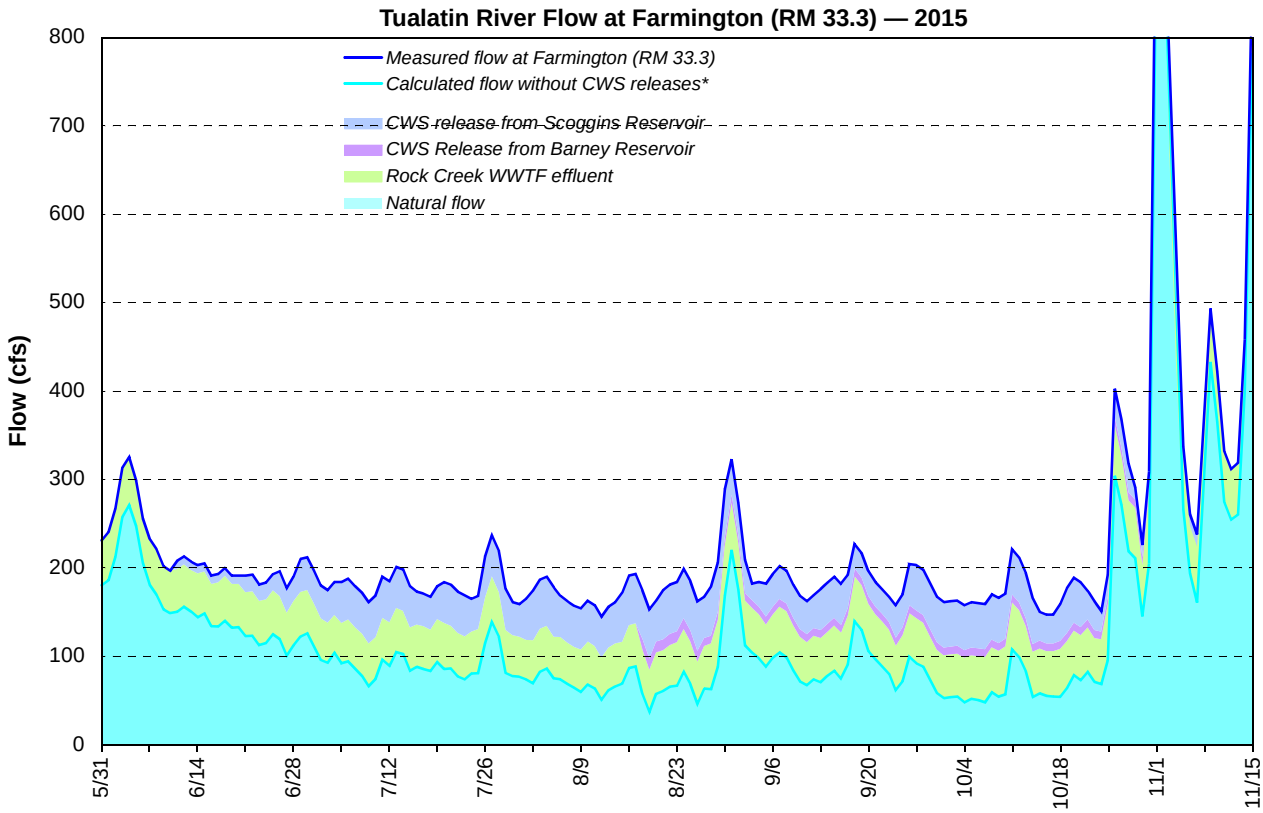
	Units	May	June	July	Aug	Sept	Oct	Nov 1-18	Total
Scoggins Release	acre-ft	0	893	2,897	3,359	2,480	2,530	149	12,307
	days	0	22	31	31	30	31	5	150
Barney Release	acre-ft	0	0	0	429	595	546	0	1,569
	days	0	0	0	18	30	28	0	76
Total Release	acre-ft	0	893	2,897	3,787	3,075	3,075	149	13,876
Daily Average Release (for days with releases)	cfs	0	20.5	47	62	52	50	15	47
Measured Flows for Tualatin River at Farmington (RM 33.3) – based on daily average									
Measured minimum	cfs	229	176	158	144	157	146	508	—
Measured mean	cfs	310	215	181	180	188	198	840	—
Measured maximum	cfs	410	325	236	322	273	402	1,130	—

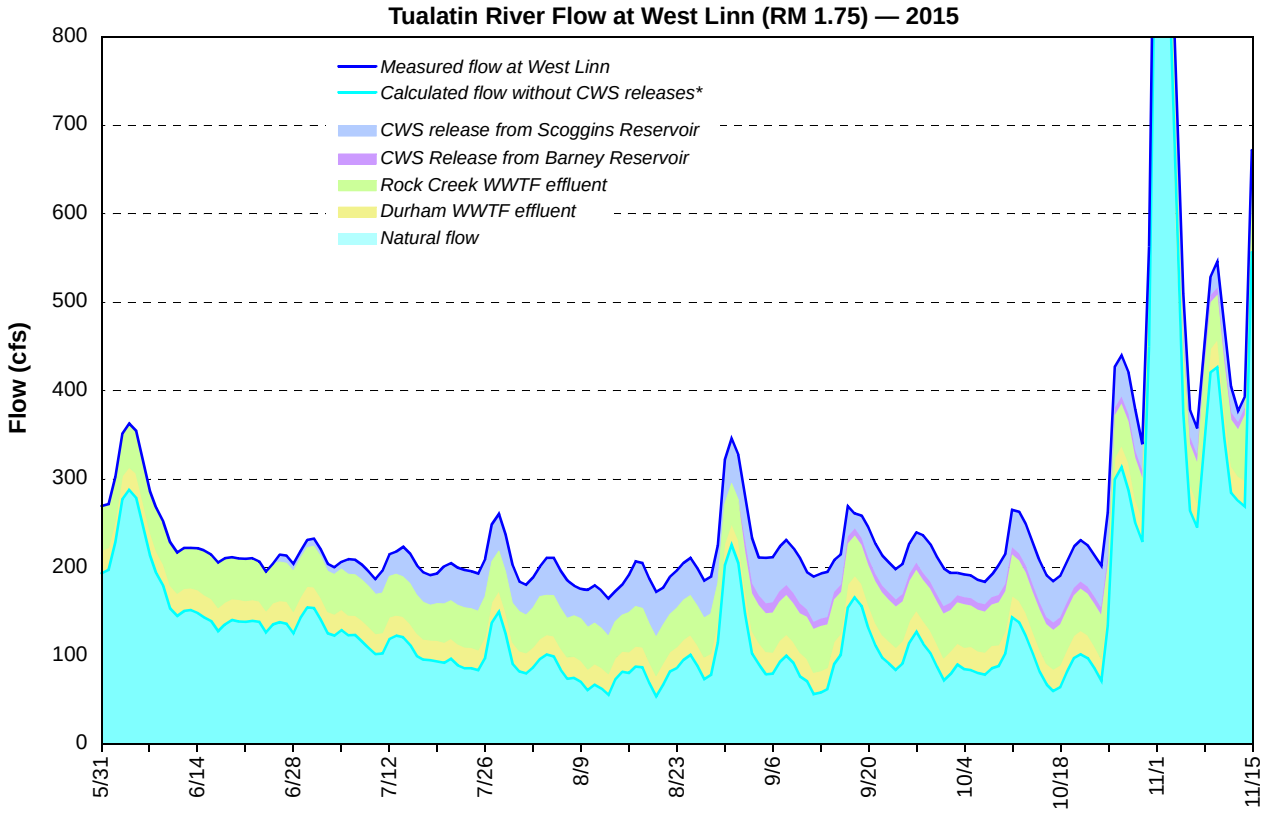
Natural flow credit

When Scoggins Dam was created, Clean Water Services was granted a natural flow credit of up to 4,282 acre-ft. The credit is only applies in May, June, October and November, and only if the monthly mean daily natural flow in the Tualatin River measured at West Linn is less than flow targets specified for each month. Natural flow is calculated as the monthly mean daily measured flow at West Linn minus Clean Water Services mean daily release of stored water. Clean Water Services was not entitled to a natural flow credit in 2015 because the natural flow exceeded the target flow for months in question (see table below). Clean Water Services last received a natural flow credit in 1994.

BUREAU OF RECLAMATION NATURAL FLOW CREDIT 2015

Month	Mean Daily Measured Flow at West Linn (cfs)	Mean Daily CWS Release (cfs)	Calculated Natural Flow at West Linn (cfs)	Target Natural Flow at West Linn (cfs)	Maximum Possible CWS Natural Flow Credit (cfs)	*[acre-ft]*	CWS Natural Flow Credit (cfs)
May	369	0	369	85	13	*[798]*	0
June	240	20.4	221	140	21	*[1250]*	0
October	253	50	203	95	16	*[984]*	0
November	1105	15	1090	110	21	*[1250]*	0





*Flows without CWS releases were calculated as follows. (Constant travel times and a uniform evaporative loss of 0.25% per mile were assumed.)

Flow at Farmington without CWS releases =
+ Measured flow at Farmington
– 0.988 x Rock Ck WWTF flow from the same day
– 0.933 x CWS Scoggins Release from 2 days before
– 0.888 x CWS Barney Release from 4 days before

Flow at West Linn without CWS releases =
+ Measured flow at West Linn
– 0.981 x Durham WWTF flow from 3 days before
– 0.909 x Rock Ck WWTF flow from 14 days before
– 0.854 x CWS Scoggins Release from 17 days before
– 0.809 x CWS Barney Release from 19 days before

Historical perspective

In 1987, Clean Water Services began managing the release of its water with the goal of maintaining a monthly average of 150 cfs at the Tualatin River at Farmington. Work by the United States Geological Survey in the early 1990s indicated that it was more important to have higher flows in the fall to maintain dissolved oxygen levels than in the early summer to prevent algal blooms. The flow goals were changed to maintaining 120 cfs in the early summer, 150 cfs in August and then 180–200 cfs from September until the winter flows start. Winter flows are defined as flows that exceed a 7-day median of at least 350 cfs. In 2004, an additional goal of releasing water in July and August for temperature trading was added. In 2008, as a result of the Rock Creek WWTF mixing zone study, the goal was increased to 150 cfs through August. The following table shows the history of Clean Water Services releases from Scoggins Reservoir.

CLEAN WATER SERVICES — SCOGGINS RESERVOIR RELEASES

Year	Start Date	End Date	Total Release Days	Total Release (acre-ft)	Average per Release Day (cfs)	Minimum Daily Flow at Farmington (RM 33.3) (cfs)
1987	6/9	11/30	175	*16,722	48.2	63
1988	7/2	11/4	126	*15,071	60.3	106
1989	6/27	11/15	141	*16,586	59.3	112
1990	7/12	11/1	113	11,889	53.0	124
1991	7/12	11/4	116	13,024	56.6	125
1992	6/5	11/19	168	12,730	38.2	73
1993	7/3	12/1	150	11,486	38.6	98
1994	6/21	10/27	129	10,917	42.7	105
1995	6/24	11/8	138	9,824	35.9	118
1996	7/27	11/10	114	10,952	48.4	146
1997	7/4	10/2	91	6,716	37.2	154
1998	8/12	11/7	87	9,407	54.5	146
1999	7/27	11/12	109	12,001	55.5	156
2000	7/21	11/27	130	**15,275	59.2	152
2001	9/25	11/14	50	**2,403	24.0	88
2002	6/12	11/9	151	12,618	42.0	103
2003	7/11	11/17	130	11,765	52.4	107
2004	7/1	11/2	125	8,650	34.9	130
2005	7/8	10/31	116	9,918	43.1	153
2006	7/1	11/3	126	9,634	38.5	148
2007	7/3	11/13	119	10,134	42.9	148
2008	7/1	11/4	127	11,896	47.2	162
2009	7/1	10/27	119	10,614	45.0	147
2010	7/24	10/25	94	8,392	45.0	187
2011	7/23	11/18	119	10,464	44.3	173
2012	7/7	10/22	106	10,950	52.1	178
2013	7/2	11/4	103	6,884	33.7	163
2014	7/1	10/22	114	9,037	40.0	163
2015	6/9	11/5	150	12,307	41.4	144

*During these years, Bureau of Reclamation allowed Clean Water Services to release its entire allocation (stored and natural flow).

**Clean Water Services purchased additional water for flow augmentation in 2000 because low flow conditions persisted until the end of November that year. Because the Scoggins Reservoir did not fill in 2001, all allocations were severely decreased.

Water is released from Barney Reservoir at a constant rate during the late summer to supplement the water released from Scoggins Reservoir. The following table shows the historic use of Barney Reservoir releases. Clean Water Services owns 10% of the 20,000 acre-foot reservoir. Accounting for dead pool volume and the 15% allocation to Oregon Department of Fish and Wildlife, Clean Water Services has 1,654 ac-ft available at full pool.

CLEAN WATER SERVICES — BARNEY RESERVOIR RELEASES

Year	Start Date	End Date	Total Release (acre-ft)	Daily Release Rate (cfs)	Comment
1998	7/12	8/27	2,779	24.6	extra water released to draw down reservoir
1999	9/1	10/19	1,025	10	10 cfs also released 6/4–6/10
2000	9/8	10/23	1,461	18	—
2001	9/18	10/29	1,416	17	1000 acre-ft purchased in addition to allocation; reservoir did not fill; 4,000 acre-ft held in reserve
2002	8/26	10/24	1,667	14	—
2003	8/15	10/14	1,742	14	—
2004	9/1	11/2	1,777	14	—
2005	9/1	11/8	1,874	14	miscommunication about end date; extra water released
2006	9/1	11/3	1,638	14	—
2007	9/1	10/30	1,667	14	—
2008	9/4	10/31	1,611	14	—
2009	9/1	10/30	1,667	14	—
2010	9/1	10/30	1,653	14	7 cfs on 9/1/2010 only, all other days 14 cfs
2011	7/1	8/30	1,089	9	Barney Reservoir was drawn down for maintenance which resulted in a reduced allocation
2012	8/31	10/29	1,667	14	—
2013	8/30	11/5	1,611	14	release suspended 9/30/2013 – 10/9/2013
2014	9/2	10/23	1,438	14	—
2015	8/14	10/28	1,569	14 (8/14–8/22) 10 (8/23-10/27) 5 (10/28)	

JOINT WATER COMMISSION

BY KRISTEL FESLER, WATER RESOURCES PROGRAM COORDINATOR,
JOINT WATER COMMISSION/CITY OF HILLSBORO

Introduction

Over 365,000 people in Washington County receive at least a portion of their drinking water from the Joint Water Commission (JWC). JWC provides water to its member agencies: the Cities of Hillsboro (the managing and operating agency), Forest Grove, Beaverton, and the Tualatin Valley Water District. JWC also provides wholesale service directly to the City of North Plains, and to Cornelius, Gaston, and the LA Water Cooperative as wholesale customers of Hillsboro. In 2015 the City of Tigard leased water from JWC as a wholesale customer from July to September.

JWC's water treatment plant (WTP) is supplied with water from the nearby Tualatin River. An intake facility at Spring Hill constructed by the Bureau of Reclamation, and shared with the Tualatin Valley Irrigation District (TVID), pumps river water to the JWC water treatment plant.

Flows in the Tualatin River are supplemented during the summer with water from two impoundments—Hagg Lake and Barney Reservoir. Hagg Lake is located on Scoggins Creek behind Scoggins Dam. Scoggins Dam is owned by the Bureau of Reclamation (BOR) and operated by TVID under contract to the BOR. Barney Reservoir is located on the upper Trask River behind the Eldon S. Mills Dam. The reservoir and dam are owned and operated by the Barney Reservoir Joint Ownership Commission (BRJOC). The BRJOC includes the cities of Hillsboro (the managing and operating agency), Forest Grove, and Beaverton, the Tualatin Valley Water District, and Clean Water Services.

The JWC water treatment plant uses conventional dual media filtration plus disinfection to produce high quality potable water. Treated water is pumped from the plant to the member agencies either directly through finished water pipelines or via the Fern Hill Reservoirs. The Fern Hill Reservoirs are located about one-third mile to the east of the treatment plant and can store up to 40 million gallons of finished water (in two 20 million gallon covered concrete tanks). The JWC finished water pipelines include master meters and pressure reducing stations at the connection points to the member agencies.

2015 Operations summary

Production and demands: Multiple weather records were broken in the Portland area in 2015. It was the warmest year, had the most days over 80ºF, and the most days over 90ºF on record. This translated to increased municipal water demands relative to previous years. The average water production rate during the 2015 release season was 43.0 million gallons per day (MGD); in 2014 it was 31.8 MGD. The maximum produced in one day was 65.0 MGD on July 30, 2015, only slightly below the maximum day on record of 66.8 MGD in 2008. The average production rate for the calendar year was 34.5 MGD.

Western Oregon received a record amount of rain the week of December 7, 2015. The heavy rain flooded the Tualatin River; in some places the flooding was comparable to the Flood of 1996. The high proportion of rain water in the river changed the chemistry of the raw water entering the WTP, and operators battled to raise the alkalinity and pH to levels high enough for the aluminum sulfate to work as a coagulant. This slowed WTP processes so that production was less than 20 MGD, even though demands on the WTP remained greater than 20 MGD. To reduce demands on the WTP, all the JWC partners relied upon finished water storage in Fern Hill Reservoirs and their own in-town finished water storage. The City of Beaverton and TVWD also relied upon their alternative water sources— aquifer storage and recovery for Beaverton and a wholesale contract with Portland Water Bureau for TVID. By the fourth day, the WTP started increasing production after the addition of caustic soda to the flash mix changed the water chemistry enough to ensure successful results. Over the next few days, finished water reserves were replenished and all partners returned to their normal demand levels from the JWC water treatment plant.

Water Rights: The City of Hillsboro, Bureau of Reclamation (BOR), and Oregon Water Resources Dept. (OWRD) worked cooperatively to finalize a water rights process for the City of Hillsboro to obtain 500 ac-ft of stored water in Hagg Lake. Originally Lake Oswego Corp. (LOC) had an option in their contract with BOR for an additional 500 ac-ft of water stored in Hagg Lake, beyond the 500 ac-ft LOC normally relies upon. LOC did not exercise its option, so in 2011 the City of Hillsboro began working with BOR to transfer the water right. Originally, the beneficial use was identified as municipal and industrial. However, OWRD considered this use to be for irrigation purposes and issued a permit that authorized it as 'municipal irrigation'. Hillsboro and BOR worked cooperatively with OWRD to obtain a certificate for this right based on the use of water for irrigation of 200.1 acres of parks and other properties by the City and identified the point of diversion as the Spring Hill Pumping Plant. After certificate 87303 was obtained, the parties worked together to transfer (T-11872) the place of use to the City's service area and changed the beneficial use to municipal.

The City of Forest Grove added the Spring Hill Pumping Plant as a point of diversion for 4.46 cfs to Certificate c85513 via T-11677. Although the administrative process is complete, SHPP cannot begin withdrawing this water until a gaging station with telemetry is installed at the original point of diversion on Gales Creek. From June 1–September 30, measurement of flow in Gales Creek at the original point of diversion is required for this withdrawal at SHPP. This condition does not apply during the rest of the year.

Maintenance: In February 2015, the JWC hired Advanced American Construction to conduct a maintenance overhaul of traveling screen #1 at the Spring Hill Pump Plant to extend its useful life. In May 2015, Cascade Dive Co. inspected the traveling screens and trash rack bar screens and removed the built-up sediment around the traveling screens. In September 2015, HPS Construction and Cascade Dive Co. replaced the trash rack bar screens located on the JWC side of the intake structure. The screens were manufactured by Grating Pacific to the original specifications so the replacement was like for like.

Completed installation of new trash rack bar screens at SHPP

Generator installation at WTP, August 27, 2105

Back-up power project: As described in the 2014 Flow Management Report, a seismic resiliency study identified loss of power as one of the greatest vulnerabilities at the JWC's water treatment plant. The JWC has been working to address this issue through the design and installation of an onsite backup power facility. In 2015, the two 2.5 megawatt generators and paralleling switchgear were installed in a new concrete building on the WTP site. In December 2015, the generators were commissioned, tested and capable of providing power to the electrical grid.

WTP expansion project: In order to meet increasing water demand, the JWC is planning a water treatment plant expansion that would increase the peak capacity from 75 MGD to 85 MGD. Construction will take place in two phases, with project completion planned for June 2019. Package 1 design has begun and construction is expected to begin in October 2016. Package 1 construction activities include maintenance projects and minor modifications to existing structures. Package 2 design has also begun with construction planned for the autumn of 2017. Package 2 will include the construction of two new filters, a new rapid mix basin, and potentially new solids handling facilities.

Wapato Lake: Wapato Lake management was normal for water year 2015. In April, the large pump was manually switched off because the automatic switch caused the pump to cycle on and off every few hours, creating difficulties at the JWC's water treatment plant.

2015 Stored water releases

Following the warm winter of 2014–2015 and drier than normal conditions in the late spring, the 2015 release season began approximately one month earlier than average. Regulation off natural flow began on May 8 with releases beginning the same day. Regulation was lifted on October 29 for a total of 175 days. Due to the longer than average release season and the abnormally hot summer, total stored water released was almost 50% higher than average.

COMPARISON OF STORED WATER RELEASES— 10-YEAR RECORD

Year	Regulated Use			Stored Water Release (acre-ft)			Average Release (acre-ft/day)
	Start	End	Days*	Barney	Scoggins	Total	
2015	5/8	10/29	173	11,730	9,904	21,633	124
2014	6/5	10/24	142	6,548	9,090	15,638	110
2013	5/4	10/1	141	6,387	7,490	13,877	98
2012	6/23	10/30	129	6,557	7,016	13,573	105
2011	6/28	11/7	132	8,848	3,945	12,794	97
2010	6/30	10/22	114	5,647	5,171	10,818	95
2009	6/14	10/26	134	4,723	9,203	13,926	104
2008	6/18	10/31	135	4,407	10,163	14,571	108
2007	5/25	11/13	155	5,544	10,372	15,916	103
2006	5/18	11/3	160	8,101	11,332	19,432	121
2005	6/20	10/27	130	5,966	10,550	16,517	127
10-yr average	**6/4**	**10/27**	**142**	6,849	**8,369**	**15,218**	**107**

*Days of Regulated Use is accurate; it does not equal the elapsed days between the start and end dates for regulation when regulation was temporarily suspended during that time.

The amount of stored water released by JWC for 2015 is summarized in the tables below. In all, 76% of the total allocation was released (73% for Scoggins Reservoir and 79% for Barney Reservoir).

STORED WATER RELEASE FROM EACH RESERVOIR — 2015

Description	Beginning Balance (acre-ft)	Amount Released (acre-ft)	Ending Balance (acre-ft)	Average Release (acre-ft/day)
Scoggins	13,500	9,904	3,596	57
Barney (M&I)	14,886	11,730	3,156	67
Total	**28,386**	**21,633**	**6,753**	**124**

In 2015 the JWC partners leased stored water among themselves. The City of Hillsboro leased an additional 500 ac-ft and TVWD leased an additional 1,000 ac-ft. Forest Grove and Beaverton each made 750 ac-ft of their stored water available. The City of Tigard leased water from JWC member agencies as a wholesale customer from July to September. Tigard needed additional supply to meet their peak demands due to the construction activities of their new permanent supply source on the Clackamas River. Slightly more than half of the total allocation was released.

STORED WATER RELEASE TO EACH AGENCY — 2015

Description	Beginning Storage (acre-ft)	Amount Released (acre-ft)			Ending Balance* (acre-ft)	Average Release (acre-ft/day)
		from Scoggins	from Barney	Total		
Hillsboro	10,627	4,902	4,541	9,444	1,184	54
Forest Grove	4,164	1,654	38	1,692	2,472	10
Beaverton	6,806	2,630	1,887	4,517	2,289	26
TVWD	6,789	717	5,264	5,981	808	34
Total	**28,386**	**9,904**	**11,730**	**21,633**	**6,753**	**124**

North Plains— 154 ac-ft released; average daily release 0.88 ac-ft/day (usage is reflected in the values for JWC partners)
Tigard— 217 ac-ft released; average daily release 2.93 ac-ft/day (usage is reflected in the values for JWC partners)
Storage amounts reflected in this table include internal leases between JWC partner agencies.

Efficiency: JWC maximizes the capture of released waters through coordination of finished water storage at Fern Hill Reservoirs and careful tracking of individual JWC member use of their stored water and system demands. During the peak season, the JWC and Cherry Grove pump station (at the City of Hillsboro's slow sand filter plant) recovered an average of 98% of the water available for municipal use from natural flow rights and releases from impounded supplies. The JWC no longer accounts for a water loss rate from stored water of 0.25% per river mile.

ESTIMATED WATER CAPTURE RATES – 2015

Water Available		Water Production					
		Raw Water Pumped		Finished Water Produced		Average Daily Production	Peak Day Production
Source	(acre-ft)	(acre-ft)	(MGD)	(acre-ft)	(MGD)	(MGD)	(MGD)
Reservoir release	21,633	*JWC Treatment Plant (Springhill)*					
		23,944	7,815	23,032	7,518	43.0	65.0
Natural flow	3,305	*Slow Sand Filter Plant (Cherry Grove)*					
		410	134	410	134	0.8	1.2
Total:	**24,938**	**24,354**	**7,949**	**23,441**	**7,651**		
Capture rate:		**98%**					

Acknowledgements

The Joint Water Commission appreciates the efforts of the Watermaster and our partners on the Flow Management Committee, and we extend our thanks for all of their involvement and cooperation. The communication and coordination that comes from this committee among the various Tualatin River users is invaluable.

MILLS DAM/BARNEY RESERVOIR

BY KRISTEL FESLER, WATER RESOURCES PROGRAM COORDINATOR,
JOINT WATER COMMISSION/CITY OF HILLSBORO

Overview

Mills Dam/Barney Reservoir is a rock and earth impoundment on the upper Trask River. When Trask Dam was built in 1970 by the Cities of Hillsboro and Forest Grove, the reservoir held 4,000 ac-ft of water. In 1999, the dam height was raised to accommodate 20,000 ac-ft of storage and was renamed the Mills Dam. Barney Reservoir is named for J.W. Barney and Mills Dam is named for Eldon S. Mills, both former Hillsboro City Managers and key leaders in the original dam construction and its later expansion.

Water stored in Barney Reservoir is released to both the Trask and Tualatin Rivers. Flows to the Trask River include all storage overflows and 15% of the stored water, which is allocated to Oregon Department of Fish and Wildlife (ODFW). A gravity flow diversion pipeline conveys water from the Trask River to the headwaters of the Tualatin River. The additional flow in the Tualatin River is used for municipal purposes and flow augmentation to improve water quality.

Release from Barney Reservoir to the Trask River through a Howell-Bunger Valve

The current owners of Barney Reservoir are the Cities of Hillsboro, Forest Grove, Beaverton, the Tualatin Valley Water District (the same entities that form the Joint Water Commission) and Clean Water Services. Collectively they form the Barney Reservoir Joint Ownership Commission (BRJOC). As with the Joint Water Commission, the City of Hillsboro serves as the managing and operating agency for the BRJOC.

RESERVOIR OWNERSHIP AND WATER ALLOCATION FOR BARNEY RESERVOIR

		Water Allocation (percent)	Storage at Full Capacity (acre-ft)	Reservoir Ownership (percent)
Reserved	Dead pool	2.3%	460	—
	Oregon Department of Fish and Wildlife (ODFW)	15.0%	3,000	0.0%
BRJOC Partners	Clean Water Services	8.3%	1,654	10.0%
	JWC Partners	74.4%	14,886	90.0%
	City of Hillsboro	*25.6%*	*5,127*	*31.0%*
	City of Forest Grove	*2.1%*	*414*	*2.5%*
	City of Beaverton	*17.8%*	*3,556*	*21.5%*
	Tualatin Valley Water District (TVWD)	*28.9%*	*5,789*	*35.0%*
	TOTAL	100.0%	20,000	100.0%

Dam Inspection

No inspection of the Mills Dam was performed by OWRD in 2015.

2015 Operations

Barney Reservoir filled on January 18, 2015. By the end of the release season, 81% of the total allocated water was released.

Releases to the Tualatin River: The majority of the JWC's natural flow rights were regulated off on May 8, 2015 and releases from Barney Reservoir to the Tualatin River began on the same day. Releases continued until October 29, for a total of 175 release days. Clean Water Services used 95% of their allotment and the JWC partners used 79%.

Releases to the Trask River: Releases from Barney Reservoir to the Trask River for ODFW began on June 6 and continued until November 30 for a total of 178 release days. All of the stored water for ODFW was released to the Trask River.

STORED WATER ALLOCATION AND RELEASES FOR BARNEY RESERVOIR — 2015

	Total Storage	Oregon Dept of Fish and Wildlife	BRJOC Partners					
			Clean Water Services	*JWC Total*	JWC Partners			
					City of Hillsboro	*City of Forest Grove*	*City of Beaverton*	*TVWD*
Water Allocation (acre-ft)	20,000	3,000	1,654	14,886	*5,127*	*414*	*3,556*	*5,789*
Water Released (acre-ft)	16,299	3,000	1,569	11,730	*4,541*	*38*	*1,887*	*5,264*
Percent Allocation Used	81%	100%	95%	79%	*89%*	*9%*	*53%*	*91%*

LAKE OSWEGO CORPORATION

BY MARK ROSENKRANZ, WATER RESOURCE SPECIALIST, LAKE OSWEGO CORPORATION

Introduction

The Lake Oswego Corporation (LOC), a non-profit organization, owns and manages Oswego Lake, a 163-hectare (403 acre) reservoir located 10 miles south of Portland, Oregon. LOC was formed in 1942 when the Oregon Iron and Steel Company, then owner of the land around the Lake, deeded to LOC the land, three dam structures, and all water rights. The original dam was constructed in 1871 and later upgraded in 1921. Oswego Lake is a private water body whose primary water right is hydropower generation. Secondary uses include irrigation, aesthetic viewing, contact recreation, fishing, and boating.

Oswego Lake and Watershed Morphology

The original natural lake, called Waluga, was formed 10,000 years ago by the Missoula glacial floods which altered the old Tualatin River channel. Today, the Lake has three basins: West Bay, the Main Lake, and Lakewood Bay. There are also two shallow, man-made canals, Blue Heron Canal and Oswego Canal. Oswego Canal is the 2.4-km conduit from the Tualatin River (RM 6.7). Total lake surface area and volume is 1.63 km^2 (403 acres) and 12.7 x 10^6 m^3 (10,300 acre-feet). Shoreline length, including bays and canals, is 18.62 km (11.56 mi). Oswego Lake has a 5.08-km (3.15-mi) fetch and a narrow 0.56-km width (0.34-mi). The hydraulic residence time is 390 days.

Oswego Lake's two watersheds include the natural, 7.5-mi^2 urban basin around the Lake (10:1 watershed to lake-area ratio) and the larger 700-mi^2 Tualatin River basin (1,000:1 ratio) when the LOC Headgate is open. Major inflows from the watershed include Springbrook Creek, Lostdog Creek, Blue Heron Creek, and 70-plus storm drains from the City of Lake Oswego.

Aerial view of the West Bay of Oswego Lake looking to the East

LOC Water Rights and Contracts

Hydropower Generation: The primary hydropower water right is 57.5 cubic feet per second (cfs) obtained in 1906 that allows year-round diversion. To guarantee this flow during the dry season, LOC owns and operates a diversion dam located downstream of the Oswego Canal (RM 3.4). Flaps are erected on an “as needed” basis. No flaps have been used since 2004.

Irrigation: A contract between LOC and the Bureau of Reclamation (Oct 20, 1972) provides for up to 500 acre-feet from Scoggins Reservoir for irrigation use during March through November. The largest irrigator on the Lake is the Lake Oswego Country Club (approximately 175 acre-feet).

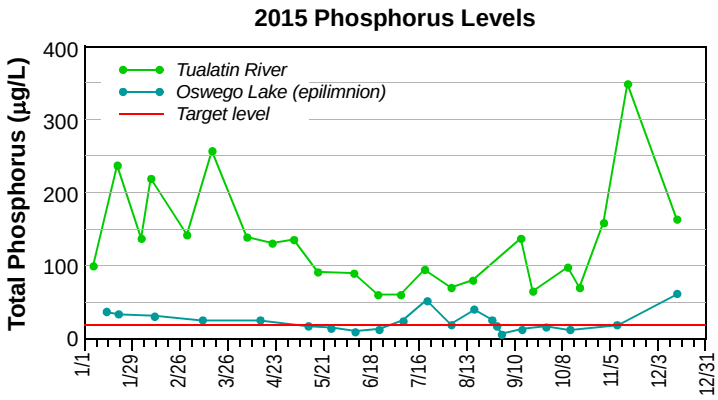
Maintenance/Evaporation: LOC also has a maintenance/evaporation water right of 3.36 cfs dating from 1985. This water can be diverted between September 16th and July 30th.

Oswego Lake Watershed Management Plan

Water quality improvements and safety are the top priorities for LOC. For many years, Oswego Lake has had issues with overgrowth of algae and cyanobacteria that can impair lake aesthetics. Under extreme conditions cyanobacteria also can be harmful to health. The goal of the annual LOC Water Quality Management Plan is to reduce cyanobacteria productivity and maximize the aesthetic value of the Lake. In order to accomplish this goal and provide long-term water quality solutions, LOC conducts a variety of watershed activities as part of the management plan.

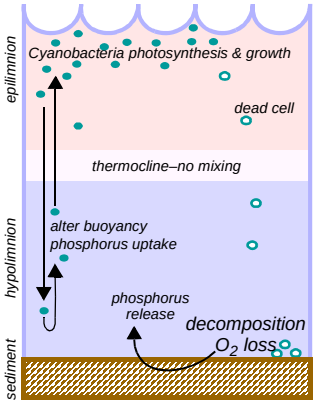
Role of phosphorus: Algae require sunlight and nutrients in order to grow. To limit the growth of algae (especially cyanobacteria) in the Oswego Lake, LOC has focused its efforts on reducing the availability of one particular nutrient—phosphorus. The LOC has targeted 20 µg/L as the maximum phosphorus concentration in the lake that would substantially limit cyanobacteria growth. In order to obtain this goal, LOC is trying to curb additional phosphorus loading to the lake as well as pursue methods to make the phosphorus that is already present in the lake biologically unavailable.

Oswego Lake is fed by rainwater, creeks draining the surrounding watershed, likely groundwater inflow, stormwater inputs, and water from the Tualatin River that is conveyed via the Oswego Canal. In recent years, LOC has tried to minimize or eliminate flow from the Tualatin River into the lake because the river has a much higher phosphorus concentration than the target level for the lake (see figure at right). Flow into the lake from the Oswego Canal is regulated by a headgate.



Two methods have been used in Oswego Lake to reduce the amount of phosphorus that is available to algae: hypolimnetic aeration to prevent phosphorus release from the sediments and alum addition to bind dissolved phosphorus making it biologically unavailable. Both methods have been successful in decreasing phosphorus concentrations in the lake, although not always to the target level of 20 µg/L.

Conceptual model of lake dynamics: Oswego Lake is thermally stratified during warmer months. Algae and cyanobacteria grow in the epilimnion (upper layer) where they have access to sunlight. The epilimnion is generally well-oxygenated due to oxygen production by photosynthesis as well as reaeration. In the hypolimnion (lower layer) decomposition processes at the sediment water interface (sediment oxygen demand) consume oxygen. Because the lake is stratified very little oxygen is transferred between the two layers and consequently, the dissolved oxygen concentration in the hypolimnion decreases.

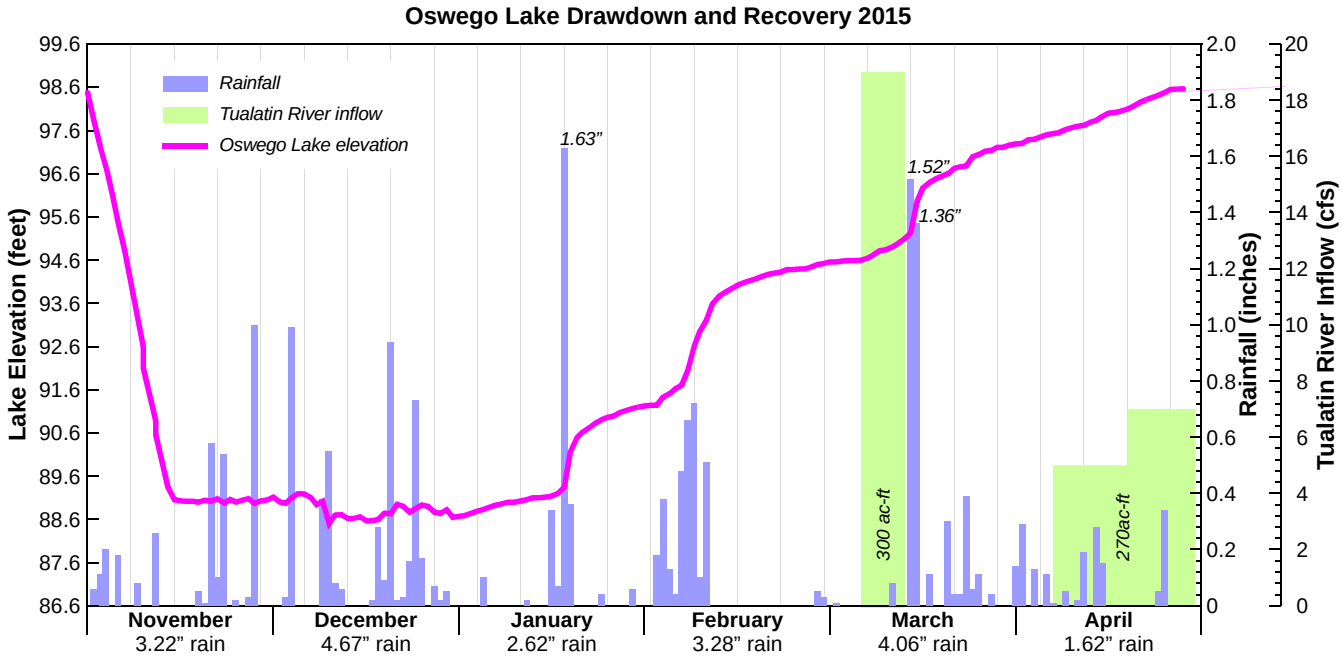


Under oxygenated conditions phosphorus is bound to iron oxides and other minerals in the sediment or suspended particles. When the oxygen is depleted in the hypolimnion, these minerals dissolve and phosphorus is released. Because of stratification, little phosphorus is directly transferred from the hypolimnion to the epilimnion. Certain cyanobacteria, however, have the ability to adjust their buoyancy. At night they descend to the nutrient-rich hypolimnion to obtain phosphorus and then return to the epilimnion during daylight to photosynthesize. This ability allows them to access nutrients that are not available to other algae species. It also sets up a positive feedback loop in which high productivity in the epilimnion leads to further oxygen depletion and phosphorus release in the hypolimnion. When the organisms die, they sink, consuming oxygen as they decay and eventually contributing additional sediment oxygen demand. Oxygen concentrations in the hypolimnion decrease, releasing more phosphorus which is then available to fuel an increasing biomass of cyanobacteria. LOC uses hypolimnetic aeration to disrupt this cycle by adding oxygen directly to the hypolimnion.

2015 Lake Management

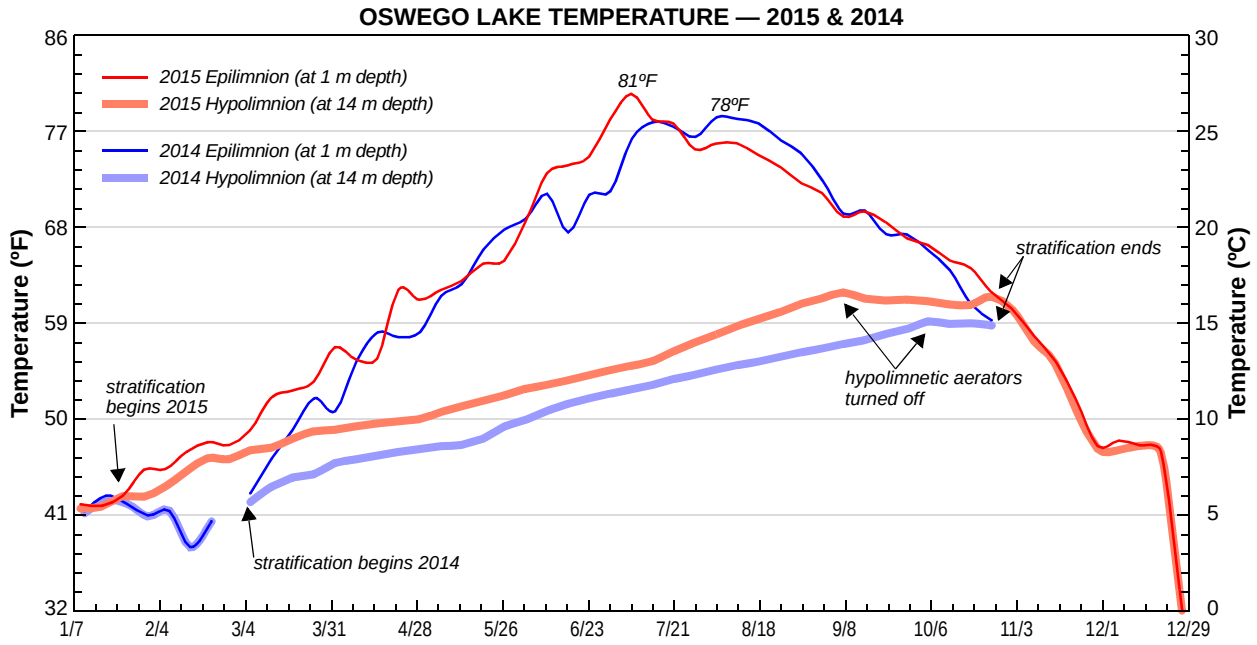
Summer 2015 was a difficult year throughout the region due to record warm temperatures and a relatively dry spring. The LOC also had a maintenance drawdown in November 2014. Because of the dry weather, the lake did not completely refill until May— two months later than usual—and required use of Tualatin River water. The sunny warm weather plus the use of Tualatin River water which contains more nutrients than rainwater resulted in a cyanobacteria bloom that required extensive management to control.

Maintenance drawdown: On November 1, 2014 LOC initiated a 10 foot maintenance drawdown. Refill began on January 1, 2015. Unfortunately, only 2.62" of rain fell in January and by February 1st, the lake level had only risen by two feet. Although February was wetter than January, lake level increased by only two more feet. In a year with normal rainfall, complete refill would have occurred within the months of January and February, but in 2015 the lake was only 60% recovered by March 1st. The dry weather pattern continued through March and April, further slowing the refill. During March 6–13, LOC diverted 19 cfs of Tualatin River flow into the lake to supplement rainfall. In order to completely fill the lake, more Tualatin River flow was diverted into the lake during April. LOC estimates that using Tualatin River water for refill added about 115 kg phosphorus to the lake.



Lake temperature: Oswego Lake water temperature was high during the spring and summer of 2015. In particular, the temperature of the hypolimnion was higher than normal from early in the spring until turnover in October (see figure on next page). Many factors contributed to the warm water temperatures.

- During the prolonged fill period, the pool of water was smaller than normal. With less water to heat and unseasonably warm and sunny spring weather, lake temperatures warmed more than usual in the early season.
- Sediment exposed during drawdown was warmed during the dry sunny spring. As the lake was filling that sediment warmed the overlying water.
- Incoming Tualatin River water was warmer than lake water.
- The summer of 2015 set records for warm weather. Eleven days of temperatures above 90ºF in July drove temperatures in the epilimnion to above 80ºF.



Effects of lake temperature on water quality: Warm temperatures increase the rate of oxygen consumption by biological activity— biochemical oxygen demand in the water and sediment oxygen demand at the sediment/water interface. The result is a rapid loss of oxygen in the hypolimnion and subsequent releases of phosphorus from the sediment. Although hypolimnetic aeration helped to counter this effect, the elevated biological activity due to warm temperatures exacerbated the low oxygen condition of the hypolimnion in 2015 leading to phosphorus release.

Compared to typical fresh water algae, cyanobacteria grow better at higher temperatures. Increased cyanobacteria productivity in the epilimnion fueled by warm water and available phosphorus reinforced the feedback loop leading to further oxygen depletion in the hypolimnion. Unfortunately, this combination of events led to a cyanobacteria bloom starting in June and lasting most of the summer. Cyanobacteria are present in Oswego Lake every year but warm water and nutrient abundance allowed them to really dominate in 2015.

2015 OSWEGO LAKE WATER QUALITY SUMMARY AVERAGES

Location	Season	Chlorophyll-a (µg/L)	Total P (µg/L)	SRP (µg/L)	Total N (µg/L)	Secchi (m)	Turbidity (NTU)
Lakewood Bay (depth 3.2 m)	Annual	17	37	1	520	1.3	6.8
	Summer	22	43	1	560	0.8	9.8
Main Lake (depth 16 m)	Annual	14	25	2	591	2.5	4.1
	Summer	13	22	1	455	**2.3**	5.0
West Bay (depth 1.4 m)	Annual	48	91	7	1309	0.5	18
	Summer	**50**	**87**	4	925	0.4	**21**
Oswego Canal (depth 1.2 m)	Annual	12	88	29	4733	0.8	4.0
	Summer	16	82	**10**	**5419**	0.8	4.3
Blue Heron Canal (depth 1.3 m)	Annual	10	38	3	763	1.0	6.0
	Summer	10	32	1	567	1.1	5.4
Outlet (depth 6 m)	Annual	22	25	2	570	2.2	4.3
	Summer	26	26	1	441	2.0	4.6

Bold = highest average during the summer; Underline = lowest average during the summer; Summer=June–September

Abbreviations: Total P = Total Phosphorus, SRP = Soluble Reactive Phosphorus, Total N = Total Nitrogen, Secchi = Secchi depth, ug/L = micrograms per liter, m = meters, NTU = nephelometric turbidity units

Intern project

Maddee Rubenson is finishing her intern project and will be publishing results in 2016. Her project measured phosphorus concentrations at seven sub-basins in the watershed. Her study is trying to answer:

- Are there differences in phosphorus loading from stormwater pipes versus stream tributaries?
- Can phosphorus loading be linked with physical land characteristics within the greater watershed?
- If so, what other sub-watersheds have a potential for significant phosphorus loading based on their physical attributes?

Our next intern will be starting late summer or fall of 2016 with a to-be-determined project.

Sunset across Oswego Lake

OREGON WATER RESOURCES DEPARTMENT

BY JAKE CONSTANS, WATERMASTER, DISTRICT 18

Introduction

The District 18 Watermaster's Office is a field office of the Oregon Water Resources Department (OWRD) (www.wrd.state.or.us) in cooperation with Washington County (www.co.washington.or.us/index.htm), and is responsible for water distribution management within the Tualatin, Oswego Lake, and Lower Willamette Drainage Basins in northwestern Oregon. District 18 covers approximately 1,111 square miles and serves the majority of the population in Washington and Columbia counties, as well as parts of Clackamas, Multnomah, and Yamhill counties. There are 2,806 total surface water rights in the district which cover 58,602 acres of land. As part of the surface water rights within the Tualatin River Basin there the following streams have instream water rights: Tualatin River, Gales Creek, Scoggins Creek, Rock Creek, West Fork Dairy Creek, and Fanno Creek. To assist in monitoring surface water in the basin we currently utilize 17 total gaging stations, 10 of which are on real time data.

WATERMASTER DISTRICT 18 GAGING STATIONS FOR 2015

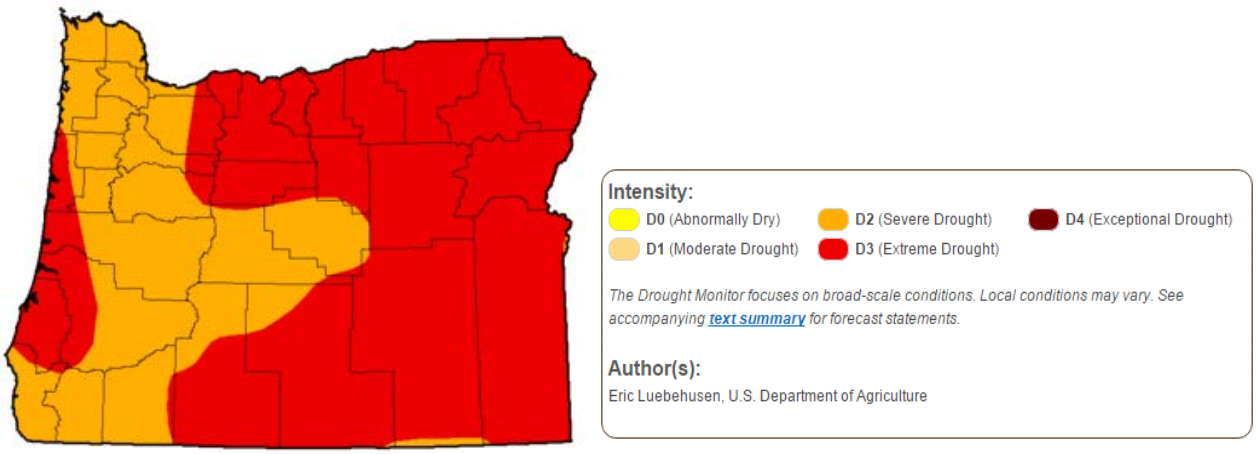
Station Number	Stream	Stream Mile	Latitude	Longitude	Type
14206200	Dairy Creek at Hwy 8 near Hillsboro, OR	2.06	45°30'38"N	123°06'56"W	*Logger
14205480	E. Fk. Dairy Creek at Dairy Creek Rd near Mountaindale, OR	12.33	45°40'32"N	123°03'54"W	Staff
14205000	W. Fk. Dairy Creek @ Banks, OR	7.7	45°37'26"N	123°06'59"W	Staff
14205160	W. Fk. Dairy Creek @ Evers Rd near Roy, OR	1.96	45°34'34"N	123°05'34"W	Staff
14204530	Gales Creek @ Old Hwy 47 near Forest Grove, OR	2.36	45°30'39"N	123°06'56"W	*Logger
14204540	Gales Creek @ Clapshaw Hill Rd near Gales Creek, OR	12.36	45°35'39"N	123°12'38"W	Staff
14202920	Sain Creek above Hagg Lake near Gaston, OR	1.6	45°28'50"N	123°14'40"W	*Logger
14202850	Scoggins Creek above Hagg Lake near Gaston, OR	8.0	45°30'06"N	123°15'06"W	Logger
14202980	Scoggins Creek below Hagg Lake near Gaston, OR	4.8	45°28'10"N	123°11'56"W	*Logger
14202860	Tanner Creek above Hagg Lake near Gaston, OR	1.6	45°30'21"N	123°13'10"W	Staff
14206500	Tualatin River @ Farmington, OR	33.3	45°26'58"N	122°57'02"W	*Logger
14202510	Tualatin River @ Gaston, OR	62.3	45°26'21"N	123°07'85"W	*Logger
14204800	Tualatin River @ Golf Course Rd near Cornelius, OR	51.5	45°30'08"N	123°03'22"W	*Logger
14202450	Tualatin River below Lee Falls near Cherry Grove, OR	70.7	45°30'21"N	123°13'06"W	*Logger
14206295	Tualatin River @ Rood Bridge Rd near Hillsboro, OR	38.4	45°29'24"N	122°57'06"W	*Logger
14206956	Tualatin River @ Tualatin (station number formerly 14206960) (stage only)	8.9	45°23'14"N	122°45'46"W	*Logger
WAPO	Wapato Canal near Gaston, OR (from Tualatin River)	61.9	45°26'29"N	123°07'17"W	Staff

*Telemetry

Drought 2015

The 2015 year marked the hottest average global temperature year on record at 58.6 degrees Fahrenheit (National Atmospheric and Oceanic Administration). This weather trend was felt in most of Oregon as the majority of its landscape was hit with exceptionally hot and dry conditions during the summer months. By September 16th, 2015 Governor Kate Brown had declared drought in 25 of the 36 counties in Oregon. The figure below shows the drought conditions across the state at the end of water year 2015 on September 29th (US Drought Monitor).

Oregon Drought – End of Water Year 2015



Although Washington County and the Tualatin River Basin had no official drought declaration, abnormally lengthy warm and arid conditions were endured across the region. Small amounts of precipitation caused low stream flow levels throughout the summer and into early fall. Due to the drier than average conditions during the irrigation season, regulation on the main stem of the Tualatin River and its tributaries occurred uncommonly far back in priority date in order to satisfy the needs of senior water right holders.

Regulatory Overview 2015

This hot and dry weather was reflected in the historic levels of surface water regulation that occurred in the main stem of the Tualatin River. Previously to 2015, shut off notices on the main stem of the Tualatin River had regulated junior water right holders as far back in priority date as August 16th, 1930. But the summer of 2015 would break new ground by going back to August 25th, 1919 in priority date and sending out shut off notices to 12 additional water right holders in the upper Tualatin River Basin, all of whom had never received a regulation pertaining to their surface water permit.

2015 WATER RIGHTS REGULATION SUMMARY

Date	On/Off	Regulatory Activity	River Mile	Priority Date
5/8	Off	City of Beaverton (P-45455, 7/15/1980) – Tualatin River City of Forest Grove (P-40615, 4/28/1976) – Tualatin River City of Hillsboro (P-46423,2/6/1974) – Tualatin River *(Hillsboro still has 14 cfs available from the Tualatin River)* City of Hillsboro (P-50879, 6/9/1988) – Scoggins Creek		2/6/1974
5/8	Off	TVID (P-35792, 2/20/1963) – Scoggins Creek (partial regulation—20 cfs)		2/20/1963
5/22	Off	TVID (P-35792, 2/20/1963) – Scoggins Creek		2/20/1963
5/29	Off	Tualatin River & tributaries above Spring Hill Pump Plant Tualatin River — 11, 2/20/1963 Gales Creek — 62, 9/24/1963 Carpenter Creek — 4, 7/10/1967 Scoggins Creek — 3, 7/28/1975	> 56.09	2/20/1963

2015 WATER RIGHTS REGULATION SUMMARY

Date	On/Off	Regulatory Activity	River Mile	Priority Date
6/9	Off	City of Hillsboro (P-2443, 5/1/1915) – Sain Creek (2 cfs)		5/1/1915
6/24	Off	Tualatin River & tributaries above Spring Hill Pump Plant Tualatin River — 18, 4/14/1949 Gales Creek — 38, 4/18/1949 Carpenter Creek — 5, 8/22/1949 Scoggins Creek — 5, 4/18/1955	> 56.09	4/14/1949
7/1	Off	*EF Dairy Creek and tributaries above RM 13–EF Dairy Creek— 12	=10.56 >13	3/6/1967
7/1	Off	City of Hillsboro (P-1136, 1/22/1912) – Sain Creek (3 cfs)		1/22/1912
7/2	Off	Stimson Lumber Co (P-10633, 4/1/1932) – Scoggins Creek	>56.09	4/1/1932
7/2	Off	City of Forest Grove (P-12034, 4/16/35) Gales Cr		4/16/1935
7/2	Off	Tualatin River & tributaries above Spring Hill Pump Plant Tualatin River — 22, 3/18/1936 Gales Creek — 33, 9/6/1932 Carpenter Creek — 7, 3/25/1935 Scoggins Creek — 8, 4/1/1932	> 56.09	4/1/1932
7/17	Off	City of Hillsboro (P-10408, 1/22/1912) – Tualatin River (4 cfs) *5 cfs still available*		1/22/1912
7/30	Off	City of Hillsboro (P-10408, 1/22/1912) – Tualatin River		1/22/1912
7/31	Off	Tualatin River & tributaries above Spring Hill Pump Plant Tualatin River — 4, 8/26/1919 Gales Creek — 7, 1/23/1923 Carpenter Creek — 1, 10/21/1924	> 56.09	8/26/1919
8/6	On	City of Hillsboro (P-10408, 1/22/1912) – Tualatin River *5 cfs is back on; 4 cfs is still off*		1/22/1912
8/14	Off	*McKay Creek and tributaries above Northrup Rd McKay Creek—6 EF McKay Creek—2	=44.73 =2.26 >15.5	8/8/1966
8/26	On	City of Hillsboro (P-10408, 1/22/1912) – Tualatin River		1/22/1912
10/26	On	City of Forest Grove (P-12034, 4/16/35) Gales Cr		4/16/1935
10/27	On	City of Beaverton (P-45455, 7/15/1980) – Tualatin River City of Forest Grove (P-40615, 4/28/1976) – Tualatin River City of Hillsboro (P-46423,2/6/1974) – Tualatin River City of Hillsboro (P-50879, 6/9/1988) – Scoggins Creek		2/6/1974
10/27	On	City of Hillsboro (P-1136, 1/22/1912) – Sain Creek (3 cfs)		1/22/1912
10/27	On	TVID (P-35792, 2/20/1963) – Scoggins Creek		2/20/1963
10/27	On	Stimson Lumber Co (P-10633, 4/1/1932) – Scoggins Creek	>56.09	4/1/1932
11/3	On	City of Hillsboro (P-2443, 5/15/1915) – Sain Creek (2 cfs)		5/1/1915

*Instream Senior Water Right; (An instream water right protects a specified amount of flow within the stream.); all other water rights are for water diversion.

New Assistant Watermaster

On the lighter side of District 18 news, the office welcomed Jeffrey Dillon as the new District 18 Assistant Watermaster. Previously to his commencement date in July 2015, Jeff worked as a Water Resources Aide in the District 18 office in conjunction with being employed as the seasonal District 20 Assistant Watermaster. The primary functions of the District 18 Assistant Watermaster include conducting surface water discharge measurements, streamflow gaging station maintenance, and groundwater monitoring.

SCOGGINS DAM/HENRY HAGG LAKE

BY WALLY OTTO, RETIRED, TVID,
JOHN GOANS, RESERVOIR SUPERINTENDENT, TVID,
BERNIE BONN,
AND TOM VANDERPLAAT, CLEAN WATER SERVICES

Scoggins Dam/Henry Hagg Lake is located on Scoggins Creek in the upper part of the Tualatin Basin. Scoggins Dam is an earthfill dam constructed during 1972–75 to store water during the winter for summer and fall use. The Dam is owned by the Bureau of Reclamation (BOR) and managed by the Tualatin Valley Irrigation District (TVID). Stored water from Hagg Lake is used for irrigation, municipal and industrial use, and flow augmentation in the Tualatin Basin to support water quality and protect fish and wildlife.

Scoggins Dam

Three tributaries flow into Hagg Lake—Sain, Scoggins and Tanner Creeks. Flows in Sain and Scoggins Creeks are monitored by Oregon Water Resources Department gages; flow in Tanner Creek is monitored by daily readings of a staff plate by TVID personnel. Outflow is measured by a BOR stream gage in Scoggins Creek at RM 4.8. Oregon Water Resources Department maintains the rating curves for Tanner Creek, Sain Creek, and for Scoggins Creek at RM 4.8.

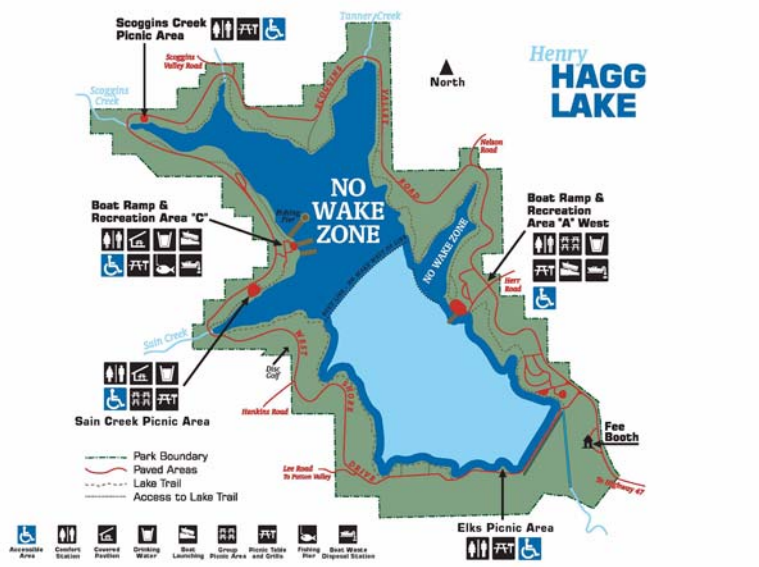
Scoggins Dam stores 53,640 acre-feet of water in Henry Hagg Lake as active storage—the amount of water that can be moved in or out of the reservoir between the intake structure and the top of the spillway gates. Another 7,000 acre-feet of stored water that is not engineered to be removed exists below the intake structure. It is reserved for the protection of fish if the lake were to be drafted down completely to the intake structure.

ALLOCATION OF WATER FROM SCOGGINS RESERVOIR

Contracted To	Water Use	Available Volume	
		ac-ft	as percent
Tualatin Valley Irrigation District	Irrigation (up to 17,000 acres)	27,022	50%
Joint Water Commission	Municipal and industrial	13,500	25%
City of Beaverton		*4,000*	
City of Forest Grove		*4,500*	
City of Hillsboro		*5,000*	
Clean Water Services	Instream water quality	12,618	24%
Lake Oswego Corporation	Irrigation	500	1%
Total		**53,640**	**100%**

Scoggins Dam is authorized by the U.S. Congress to provide flood control for communities located downstream, including Gaston, Cornelius and Forest Grove. The dam controls runoff from a 39 square mile watershed (about 5% of the Tualatin Basin). From November 1st to January 15th, 20,000 acre-feet are designated for flood control storage. The dam does not generate electricity.

During the summer months, recreation is a major activity at Hagg Lake and the surrounding area. Washington County maintains and operates the 2,851 acre Scoggins Valley Park/Henry Hagg Lake recreational facility. In addition to the 1,100 acre lake, the park includes picnic areas, hiking trails, two boat launching facilities, and observation decks for bird and wildlife watching. The lake is stocked for fishing. Most of the park's facilities were designed to be accessible for disabled visitors. The park is open year round and is for day-use only.



http://www.co.washington.or.us/Support_Services/Facilities/Parks/Hagglake/index.cfm

2015 Water Use

Water year 2015 marks the 41st year since Scoggins Dam began storing and releasing water for downstream beneficial use. A total of 49,644 acre-feet were delivered in 2015 bringing the total delivery from the Project to more than 1.3 million acre-feet.

2015 flow regulation began on May 9th for the Joint Water Commission and TVID. With the exception of TVID's extended season irrigators, all users were permitted to return to natural flow use in the Tualatin River on October 27, 2015. As usual, TVID continued to deliver a small amount of storage water primarily to nurseries and greenhouses beginning in March and continuing until the end of November as permitted by the Oregon Water Resources Department.

2015 WATER DELIVERIES FROM SCOGGINS RESERVOIR

Delivered to	Volume (ac-ft)
Tualatin Valley Irrigation District	25,852
Clean Water Services	12,304
Municipal Use (Cities of Beaverton, Forest Grove and Hillsboro)	9,902
Lake Oswego Corporation	500
Other (includes two golf courses, from TVID allocation)	1,050
Total	**49,26**

Events in 2015

Recreation: In 2015 there were 700,000 users recorded at Scoggins Valley Park/Henry Hagg Lake. In addition to the usual recreational uses, numerous races were held including triathlons.

Coho Salmon: Seven Coho were spotted in Scoggins Creek below the dam on November 2nd.

Lake Fish Habitat: Over the previous years, the Oregon Panfish Club anchored a total of 183 fish habitat structures (8' diameter) in the upper reaches of Henry Hagg Lake. These have caused no problems in terms of operation and maintenance of Scoggins Dam. They have remained in place weighted down with concrete anchors.

Elk Mitigation: Roughly 50% of the fir trees planted in February 2012 remain standing and continue to form a visual barrier for the elk along the side of the Control House entry road. The field remains off limits to all trespassers including dogs. On numerous occasions, elk were observed grazing in the pasture.

Endangered species: As part of the consultation, BOR committed to avoid or minimize impacts to Fender's Blue Butterfly (FBB) and Kincaid's lupine. The Master Trail that traversed prairie patches containing FBB and Kincaid's lupine was relocated and trail maintenance practices modified to support Kincaid's lupine or FBB. Reclamation has also committed to work with partner agencies to study and control invasive weeds.

Scoggins Dam Security

Department of Homeland Security Alert Levels: The Project follows the Department of Homeland Security (DHS) alert levels as required by BOR. No incidences of heightened security level occurred at Scoggins Dam in 2015 due to any specific terrorist alerts.

Scoggins Dam Safety

At Scoggins Dam, earthquake activity, weather including temperature and precipitation, river stage levels, and water surface elevation are reported and recorded electronically. In addition, key dam behavioral instruments report electronically over BOR's Hydromet system. The data is collected, stored and transmitted via satellite to BOR's Pacific Northwest Regional office in Boise. It is available on the Internet through both secure and non-secure channels. Many of these electronic reporting stations have alarms to alert operators if sudden or unusual conditions develop including earthquakes and flooding. While operators are not on site 24/7, the Project is monitored 24/7, both by BOR and TVID personnel.

Operator Training: The primary operator, John Goans, and the back-up operator, Chad Peterson, attended the BOR Dam Tenders Training in Bend, Oregon on December 8–9, 2015.

Spills and Water Quality: No spills or accidents that jeopardized the water quality in Henry Hagg Lake occurred in 2015 and the BOR on-site Response Trailer was not needed for emergency response. No containment booms were deployed to contain any contaminant spills during 2015.

Drownings: No drownings were reported for the year 2015, thankfully!

Earthquakes in 2014: There were no earthquakes reported in 2015 that were near enough to the Dam that inspection of the facility was required.

Future of the Project

Tualatin Basin Water Supply: In 2001, the water resource agencies in the Tualatin Basin (except TVID) began to explore and compare alternatives for providing the additional water needed to meet future needs. TVID was not part of this group because it is limited to serving 17,000 acres of irrigated land and the current supply is adequate. After studying many different options as well as seismic issues, the municipal and industrial water providers decided to focus on the Willamette River for future water supply.

Clean Water Services is continuing to collaborate with BOR on the Tualatin Basin Water Supply Project. The goals include developing alternatives that strengthen the dam to reduce risk from a Cascadia Subduction Zone earthquake and ensuring that future water supply needs are met for the maintenance and improvement of water quality in the Tualatin River. At the end of 2015, the Federal 2016 Omnibus Spending Bill contained provisions granting BOR the statutory authority to pursue conservation storage (and other benefits) plus dam safety improvements. The Bill was expected to pass Congress in early 2016.

BOR expects to complete the Scoggins Dam Corrective Action Study in 2016, and to select a preferred alternative for simultaneously addressing dam safety and additional storage. Two alternatives that are under consideration are: A) strengthening and raising Scoggins Dam in its current location, and B) replacing the existing dam with a new dam located downstream at a narrow gap in the valley.

More information about the Tualatin Basin Water Supply Project and updates can be found at:
http://www.tualatinbasinwatersupply.org

TUALATIN VALLEY IRRIGATION DISTRICT

BY WALLY OTTO, RETIRED, TVID
UPDATED BY JOHN GOANS, RESERVOIR SUPERINTENDENT, TVID

Tualatin Valley Irrigation District Overview

The Tualatin Valley Irrigation District (TVID), located in Forest Grove, Oregon, is the agricultural water service agency in the Tualatin Basin. In the early twentieth century, relatively little agricultural land was irrigated in Washington County: about 15 acres in 1915 and about 130 acres in 1933. By 1951, however, 18,455 acres had water rights registered in the county. When the TVID was formed in 1962, the total had grown to 33,885 acres. TVID was formed to assist in the delivery of irrigation water to about half of those acres (17,000) in the Tualatin Basin. The water was supplied from natural flow and return flows, and was extremely limited due to early summer withdrawals from the Tualatin River and increasing demands for water for irrigation and municipal use and for maintaining instream water quality and fish. The only storage at this time was Barney Reservoir which stored 4000 acre-feet for municipal use. Beginning in 1975, additional stored water became available behind the newly completed Bureau of Reclamation Project, Scoggins Dam. Approximately half of the water stored in Scoggins Reservoir (Henry Hagg Lake) is allocated to TVID.

Most of the water supplied by TVID is pumped from the Tualatin River at the Spring Hill Pump Plant and delivered to TVID patrons via approximately 120 miles of pressurized pipeline. Additionally, water in both Scoggins Creek and the Tualatin River is withdrawn by irrigators for use on land abutting the river. They are known as “river users” and pay for their own pumping costs because they are not associated with the pressure pipeline or the Spring Hill Pumping Plant. When natural flow no longer meets demand, the District 18 Watermaster begins regulating water users with “junior” (or more recent) water rights off, starting with users with the most recent water right. The TVID storage right is dated 1963, so TVID patrons with water rights after that date must stop withdrawing natural and return flow water, and all water withdrawals must be supplied from storage. Storage water is discharged from Scoggins Reservoir to either augment the river flow or supply the entire need of the TVID patrons, both the pump plant/pressure pipeline users and the river users. Water for some of the TVID members on the lower Tualatin River is supplied by water discharged from Clean Water Services’ Rock Creek Wastewater Treatment Facility. Crops irrigated with District water range from row crops including blueberries, blackcaps, corn, pumpkins and other vegetables to nursery stock.

TVID is allowed to use storage water early and late in the year because of an extended season for irrigation made possible by an agreement with the Oregon Water Resources Department. The early season begins March 1 and the extended season ends November 30. All water used outside the normal irrigation season (May through September) must come from TVID's annual contracted storage allotment of 27,022 acre-feet. TVID's total contracted amount with Reclamation is 37,000 acre-feet with the additional coming from natural and return flows in the Tualatin River and its tributaries.

The extension of the irrigation season for the Tualatin Valley Irrigation District has made growing specialty crops within the District much more appealing. During the extended spring season, the water is used primarily for berries and nurseries; during the extended fall season, water is primarily used for the nurseries. A more diverse nursery stock is now possible, including flowers which are raised well into November when protected by greenhouses. Water availability and moderate temperatures make the Tualatin Valley Irrigation District home to many small specialty nurseries along with several large operations.

2015 TVID Water Use

For the 2015 irrigation season (March through the end of November), TVID took delivery of 25,852 acre-feet of water from storage in Henry Hagg Lake—up 6,899 ac-ft from 2014 and the largest amount delivered on record. The least amount was 8,333 ac-ft in 1993; the previous largest seasonal delivery was 22,188 ac-ft in 2007. TVID 2015 peak use from storage was 129 cfs on June 26th.

WEATHER STATISTICS AT SCOGGINS DAM 2015

Month	Description	Precipitation		Average Temperature		Other
		2015	[average 1970-2015]	Low	High	
January	dry	4.36”	[7.85”]	33 ºF	50 ºF	
February	wet	7.79”	[6.14]	40 ºF	56 ºF	
March	average	5.42”	[5.69]	39 ºF	61ºF	
April	dry	1.49”	[3.44”]	38 ºF	61 ºF	
May	dry, warm	0.54”	[2.21”]	47 ºF	69 ºF	3 days 80 ºF or higher
June	dry, warm	0.65”	[1.49”]	51 ºF	81 ºF	6 days 90 ºF or higher
July	dry, warm	0.23”	[0.43”]	54 ºF	85 ºF	12 days 90 ºF or higher
August	average	0.77”	[0.67”]	54 ºF	84 ºF	4 days 90 ºF or higher
September	warm	1.33”	[1.53”]	48 ºF	73 ºF	6 days 80 ºF or higher
October	average precip, warm	3.35”	[3.51”]	47 ºF	68 ºF	1 days 80 ºF or higher
November	average	8.38”	[7.76”]	36 ºF	51 ºF	
December	very, very wet	19.38” Rec	[9.14”]	38 ºF	45 ºF	

*Rec= The average December rainfall was the highest on record.

2015 TVID Operation and Maintenance

The year was uneventful from an operations standpoint. A “moratorium” remains in place regarding new turn-out deliveries. No new deliveries were added to the delivery system during 2015.

Pipeline Maintenance: TVID delivers irrigation water by high pressure pipeline to customers from Gaston to North Plains and from west of Forest Grove to Highway 219 south of Hillsboro. The water is withdrawn from the Tualatin River at the Spring Hill Pump Plant and lifted by pumps to a water regulating tank off Winter’s Road. From there it flows under gravity pressure to all points of delivery through 120 miles of pipeline. Preventative maintenance continues to keep service delivery as dependable as possible. Several minor disruptions of service occurred during the year, but were quickly isolated and repaired. Service was restored in minutes in some cases or in up to a day if conditions did not allow quick access. There were no long term disruptions of service to District patrons.

Tributary Flow Restoration Projects: TVID and Clean Water Services continue their cooperative effort using the TVID water distribution network to supply water to West Fork Dairy Creek, Gales Creek, East Fork Dairy Creek, Blackjack Creek and McKay Creek. Each site consists of a metered pipeline with a diffuser at the outlet. All sites are located near delivery lines for the Irrigation District. Flow augmentation occurs during the summer and fall. The water not only adds to streamflow, but it cools the stream as well. The partnership between the Tualatin Valley Irrigation District and Clean Water Services is a novel way to improve the water quality of these streams at minimal cost.

WATER QUALITY
BY BERNIE BONN

Concern about water quality in the Tualatin River is longstanding. Until the formation of Clean Water Services (formerly the Unified Sewerage Agency of Washington County), numerous small towns and cities discharged minimally treated sewage into the river and its tributaries. Water use by agricultural activities in the basin depleted river flow in the summer and contributed nutrients and sediment. By the 1960s, the local newspaper documented the poor water quality in the Tualatin River. In 1984, the Oregon Department of Environmental Quality (ODEQ) included sections of the Tualatin River on the 303d list as being water quality limited. Water quality issues in the Tualatin Basin have included elevated pH and nuisance algae, low dissolved oxygen, high temperatures, and excess bacteria. Many groups have worked to improve water quality in the Tualatin Basin, including Clean Water Services, the Tualatin River Watershed Council, the Tualatin Riverkeepers and others. Part of the reason for the formation of the Flow Committee is to manage river flow to improve and preserve water quality.

Algal growth and pH

In the reservoir section (about RM 3.4-30), the Tualatin River is wide and slow moving. Because the river is so broad, streamside vegetation cannot adequately shade the full width and consequently much of the water surface is in sun. Nutrients, both naturally occurring and anthropogenic, are ample. These conditions—slow movement, sunlight, and ample nutrients— are ideal for algal growth during summer. Most of the algae in the Tualatin River are phytoplankton that float in the upper few feet of the water. During the day, photosynthesis by algae converts carbon dioxide dissolved in the water into biomass. As the concentration of dissolved carbon dioxide decreases, the pH of the water increases. High pH values can negatively affect aquatic resources.

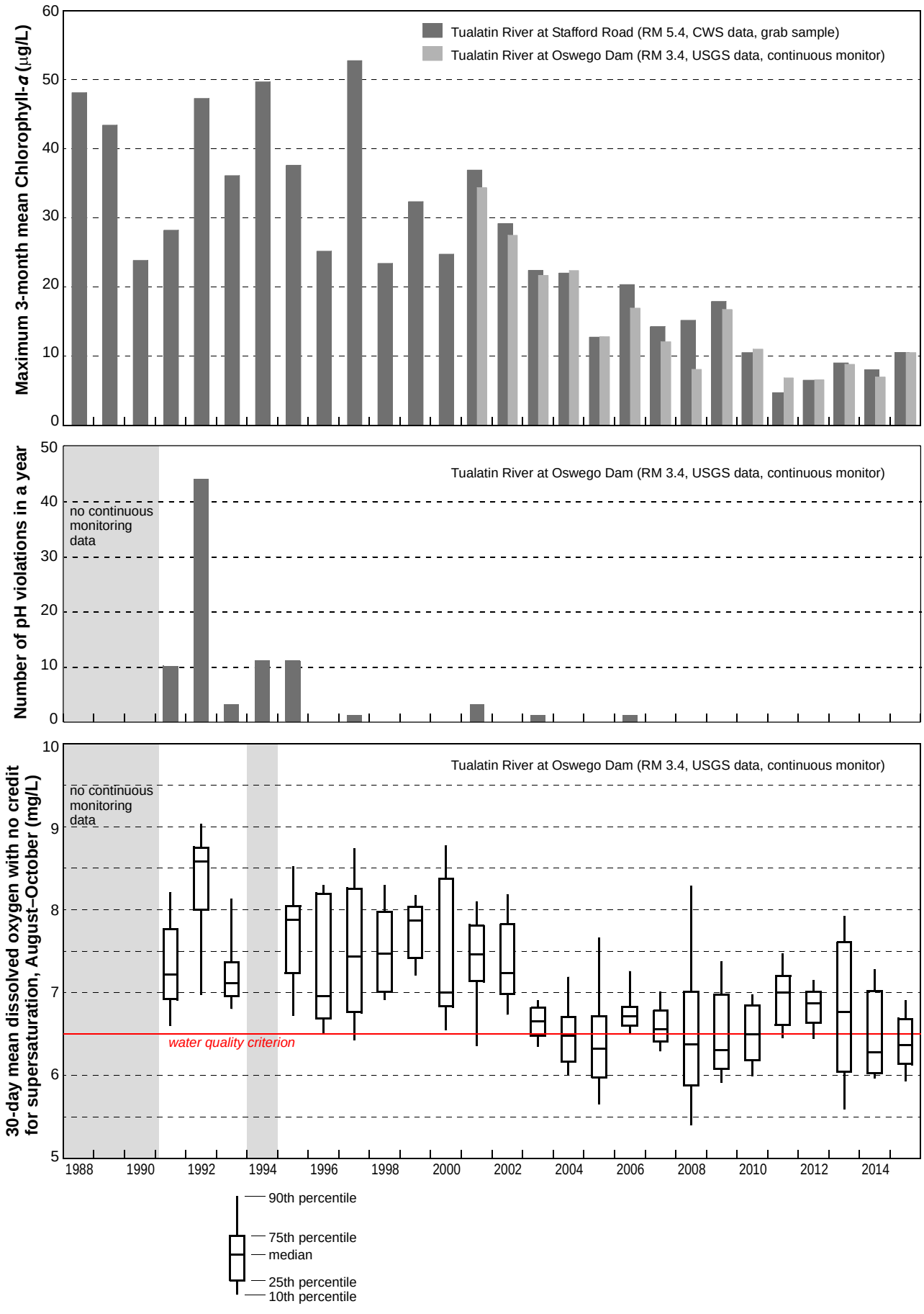
In the 1980s the lower section of the Tualatin River was listed by the ODEQ for elevated pH (>8.5) and degraded aesthetics due to nuisance algal growth. To address these water quality problems, the ODEQ developed a TMDL for phosphorus to limit nutrient availability. Since then, advanced wastewater treatment by Clean Water Services has dramatically decreased phosphorus concentrations in the river. In addition, summertime flows in the Tualatin River have increased due to Clean Water Services' releases from Hagg Lake as well as increased discharge from the wastewater treatment facilities.

Chlorophyll-*a* concentrations are an indicator of the amount of algae in the river. Clean Water Services measures chlorophyll-*a* in water samples at several sites and since 2001, chlorophyll-*a* is measured hourly at the Oswego Dam (RM 3.4) by the USGS as part of a cooperative agreement with Clean Water Services. Chlorophyll-*a* levels have decreased substantially since the 1990s (see the figure on the following page). Compared to the past 4 years, chlorophyll-*a* levels in 2015 were a bit higher, especially in the June when the unseasonable warm sunny weather lead to an early season algal bloom. The maximum 3-month average chlorophyll-*a* concentration in 2015 was 10.6 μg/L.

Because the algal population has declined, high pH values have become rare. The pH is monitored hourly at RM 3.4 (Oswego Dam, year-round) and at RM 24.5 (summer only). In 2015, no pH values at either site exceeded 8.5. In addition to pH data from continuous monitors, weekly pH measurements are taken at a number of sites during the summer by Clean Water Services. None of these data showed values greater than 8.5. Low pH values (<6.5) are not a problem in the Tualatin River system.

Dissolved oxygen

The amount of oxygen dissolved in water is the net result of processes that contribute oxygen and processes that consume oxygen. In the lower Tualatin River the primary sources of oxygen are photosynthesis by algae in the daytime and inflow of oxygen rich water. The processes that consume oxygen are biochemical oxygen demand and sediment oxygen demand (from substances that decompose in the water and at the sediment water interface, respectively) and respiration by algae at night. Because the lower section of the river moves slowly and is not turbulent, oxygen exchange with the atmosphere is slow. Conse-


Maximum 3-month mean Chlorophyll-a (µg/L)
Tualatin River at Stafford Road (RM 5.4, CWS data, grab sample)
Tualatin River at Oswego Dam (RM 3.4, USGS data, continuous monitor)
Number of pH violations in a year
Tualatin River at Oswego Dam (RM 3.4, USGS data, continuous monitor)
no continuous monitoring data
30-day mean dissolved oxygen with no credit for supersaturation, August–October (mg/L)
Tualatin River at Oswego Dam (RM 3.4, USGS data, continuous monitor)
no continuous monitoring data
water quality criterion
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
90th percentile
75th percentile
median
25th percentile
10th percentile

quently, if dissolved oxygen becomes depleted, it cannot be quickly replenished from the air. Similarly, if dissolved oxygen is in excess, the river water stays supersaturated for a prolonged period of time.

In the 1980s the lower section of the Tualatin River was listed by the ODEQ for low dissolved oxygen that could impair fish health. The water quality criteria for this section of the river, which is considered 'Cool Water Habitat,' are:

- Grab samples: dissolved oxygen > 6.5 mg/L
- Continuous Monitoring:
  - 30-day average of daily mean dissolved oxygen > 6.5 mg/L (no credit for supersaturation)
  - 7-day average of daily minimum dissolved oxygen > 5.0 mg/L (no credit for supersaturation)
  - Daily minimum dissolved oxygen > 4.0 mg/L

ODEQ also developed a TMDL for ammonia which consumes oxygen as it decomposes into nitrate. Since then, Clean Water Services has dramatically decreased the amount of ammonia discharged to the river.

Streamflow in the Tualatin River during the summer has increased since the TMDLs were instituted in 1988. Increased river flow affects two different processes with opposite effects on oxygen. Faster river flow decreases the amount of time water is in contact with sediment, thereby decreasing the extent to which sediment oxygen demand can be exerted and the resultant amount of oxygen depleted. Faster river flow also decreases the time available for algal populations to grow, which in turn decreases photosynthetic oxygen production. The net effect of decreased oxygen production plus decreased oxygen consumption is variable and not well predicted. In general, low dissolved oxygen is still an issue in the lower Tualatin River periodically during the late summer through fall (see the figure on the previous page).

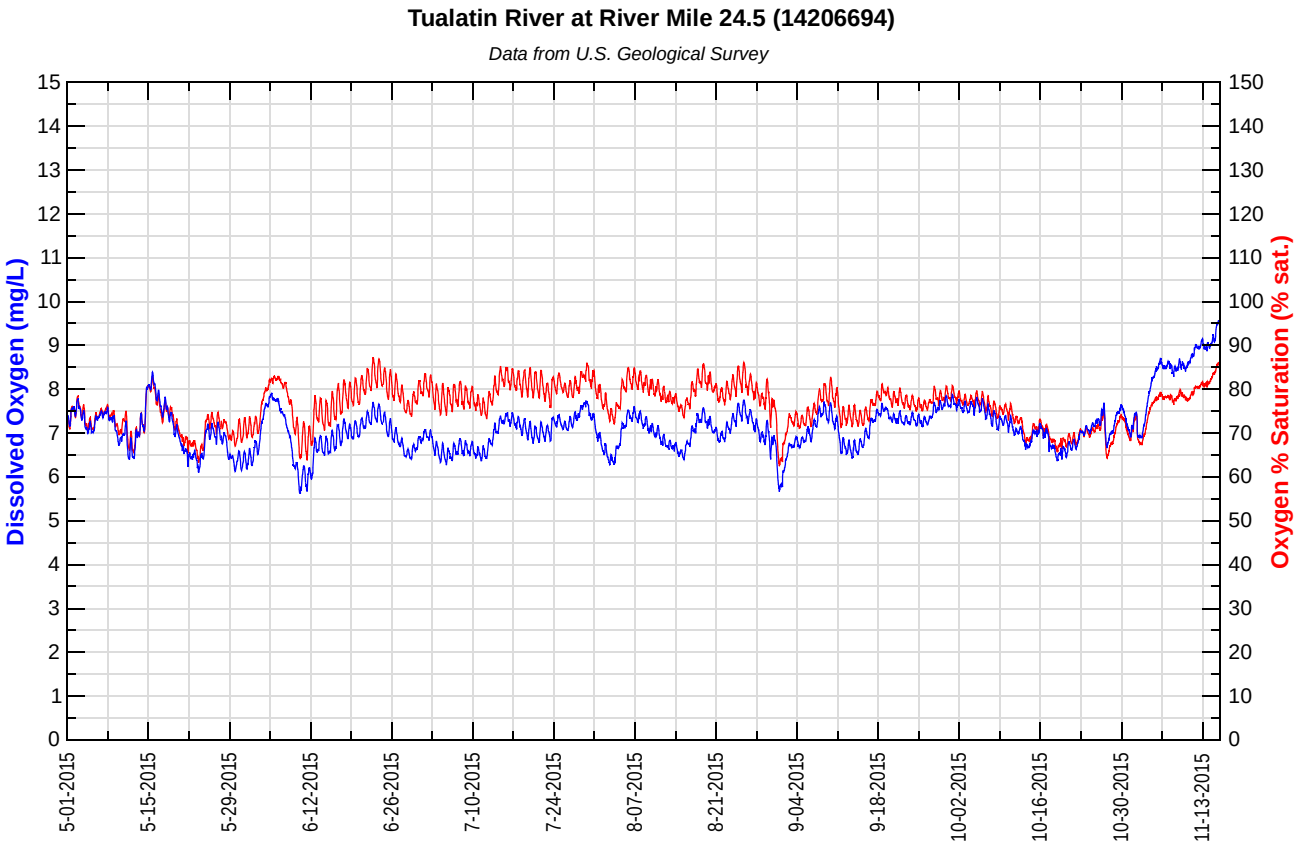
Dissolved oxygen conditions in the Tualatin River in 2015 met criteria from early through mid-summer. Some cloudy days and small rainstorms in mid-late July decreased the algal population and led to 7 days in early August (5th–11th) that were just below the 30-day dissolved oxygen criterion at the Oswego Dam. Dissolved oxygen concentrations recovered during the remainder of August until a larger storm on August 29-30 not only decreased the algal population, but also transported additional oxygen demand to the river. Dissolved oxygen concentrations at Oswego Dam decreased quickly in response to oxygen demand transported from Fanno Creek. Lack of sunlight and increased flow prevented recovery of the algae population and although dissolved oxygen concentrations slowly recovered, the 30-day mean remained below the criterion until November 2nd due to previous low concentrations. Dissolved oxygen concentrations were never below the 7-day or daily criteria during 2015. Dissolved oxygen concentrations farther upstream at RM 24.5 were at or above criteria throughout the low flow season.

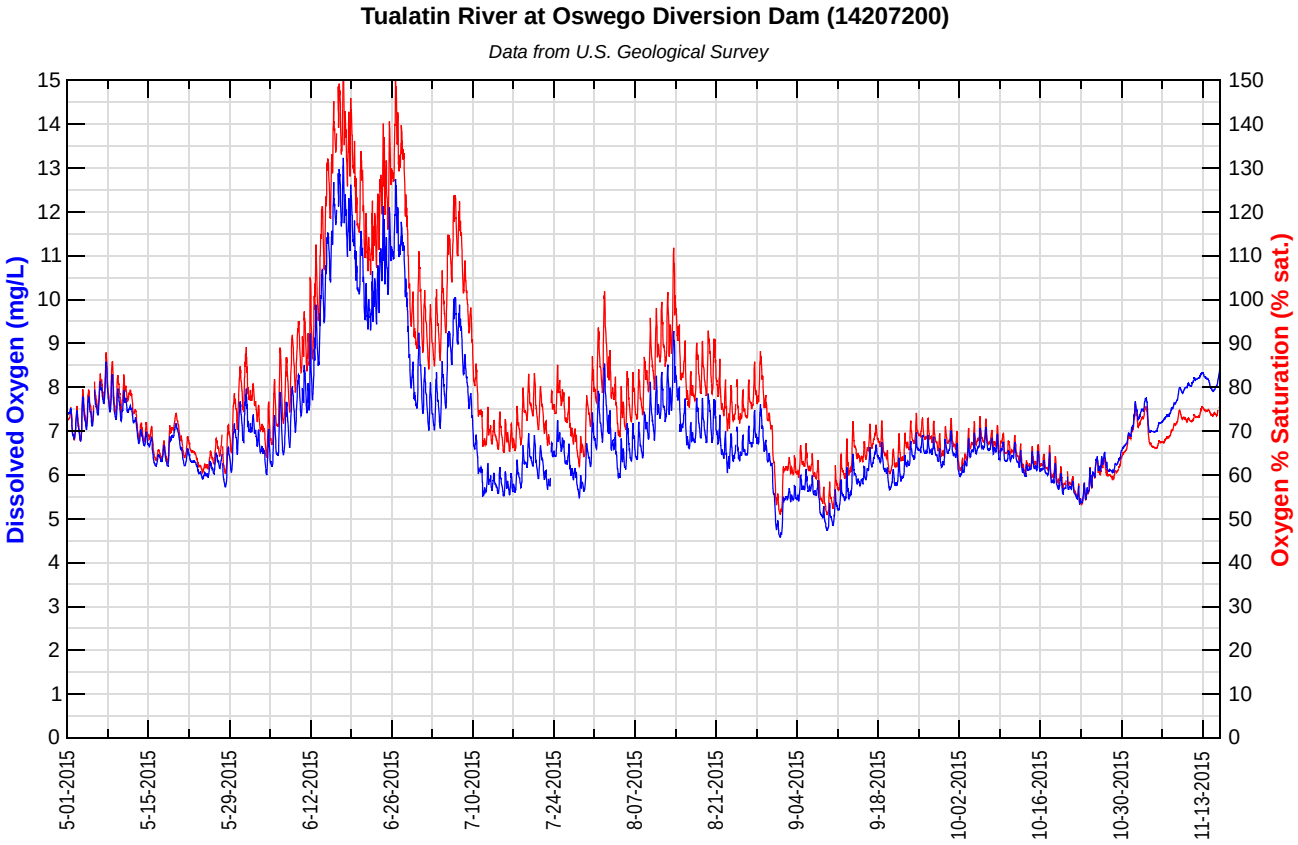
Continuous monitors are deployed at two locations in the reservoir section of the river. Data are available at: http://or.water.usgs.gov/cgi-bin/grapher/table_setup.pl?basin_id=tualatin

The following table shows the river conditions relative to dissolved oxygen criteria at these locations. Graphs of the dissolved oxygen concentrations at these two locations are shown on the following page.

NUMBER OF DAYS THAT DID NOT MEET DISSOLVED OXYGEN CRITERIA IN 2015

Criterion	May	June	July	Aug	Sept	Oct	May–October Percentage
Tualatin River at RM 24.5							
30 day	0	0	0	0	0	0	0%
7 day	0	0	0	0	0	0	0%
Daily	0	0	0	0	0	0	0%
Tualatin River at Oswego Dam (RM 3.4)							
30 day	0	0	0	7	22	31	33%
7 day	0	0	0	0	0	0	0%
Daily	0	0	0	0	0	0	0%


Tualatin River at River Mile 24.5 (14206694)
Data from U.S. Geological Survey
Dissolved Oxygen (mg/L)
Oxygen % Saturation (% sat.)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
5-01-2015
5-15-2015
5-29-2015
6-12-2015
6-26-2015
7-10-2015
7-24-2015
8-07-2015
8-21-2015
9-04-2015
9-18-2015
10-02-2015
10-16-2015
10-30-2015
11-13-2015


Tualatin River at Oswego Diversion Dam (14207200)
Data from U.S. Geological Survey
Dissolved Oxygen (mg/L)
Oxygen % Saturation (% sat.)
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
5-01-2015
5-15-2015
5-29-2015
6-12-2015
6-26-2015
7-10-2015
7-24-2015
8-07-2015
8-21-2015
9-04-2015
9-18-2015
10-02-2015
10-16-2015
10-30-2015
11-13-2015

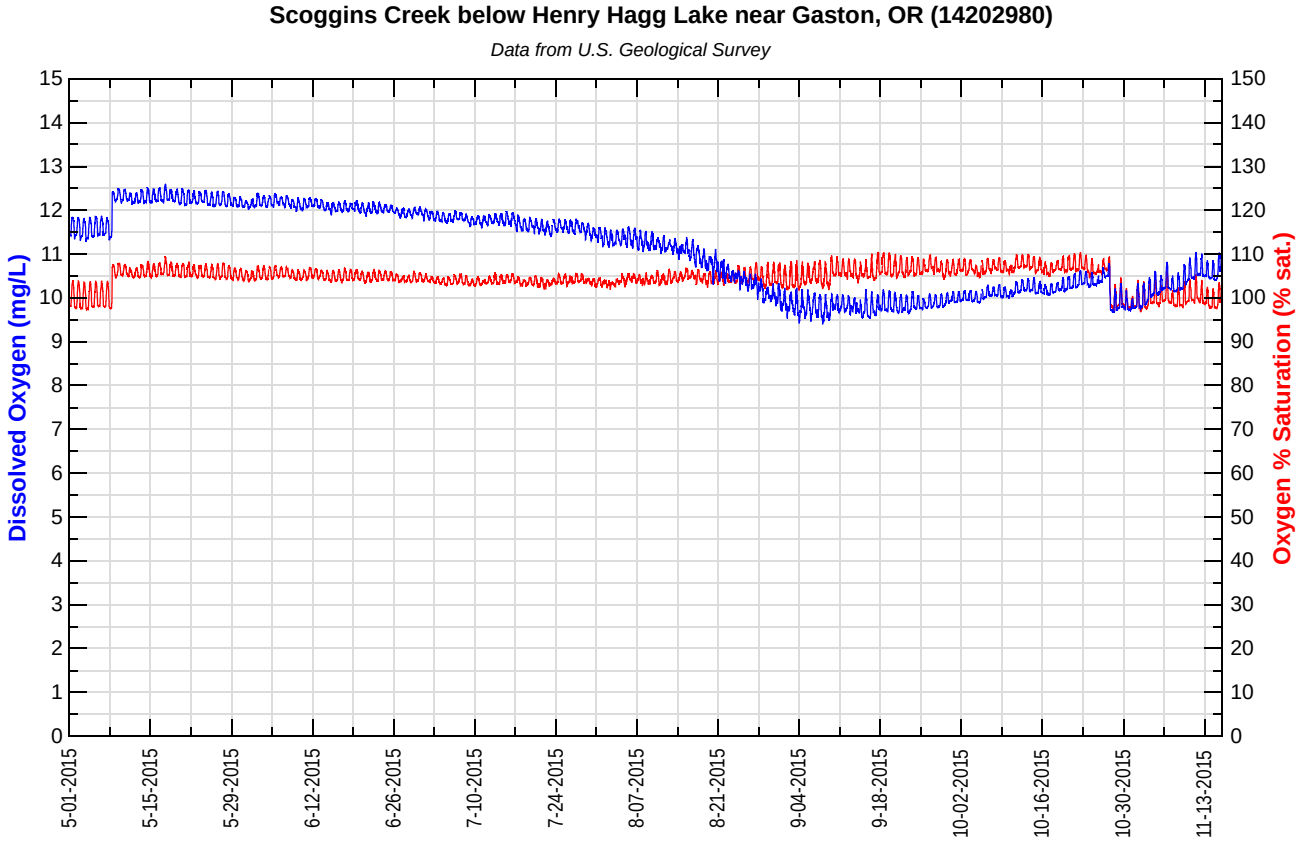
Dissolved Oxygen Status in Tributaries

Some of the tributaries in the Tualatin Basin have also had low dissolved oxygen levels. In general, the slow moving, valley bottom streams are more likely to have low dissolved oxygen than faster moving headwaters streams. It is thought that sediment oxygen demand is largely responsible for the low oxygen levels in the tributaries. The following graphs show the dissolved oxygen levels at several tributaries during the summer period as measured by the USGS using continuous monitors. These data are available at http://or.water.usgs.gov/cgi-bin/grapher/graph_setup.pl?basin_id=tualatin.

Note that continuous monitoring was discontinued at two sites in 2012:

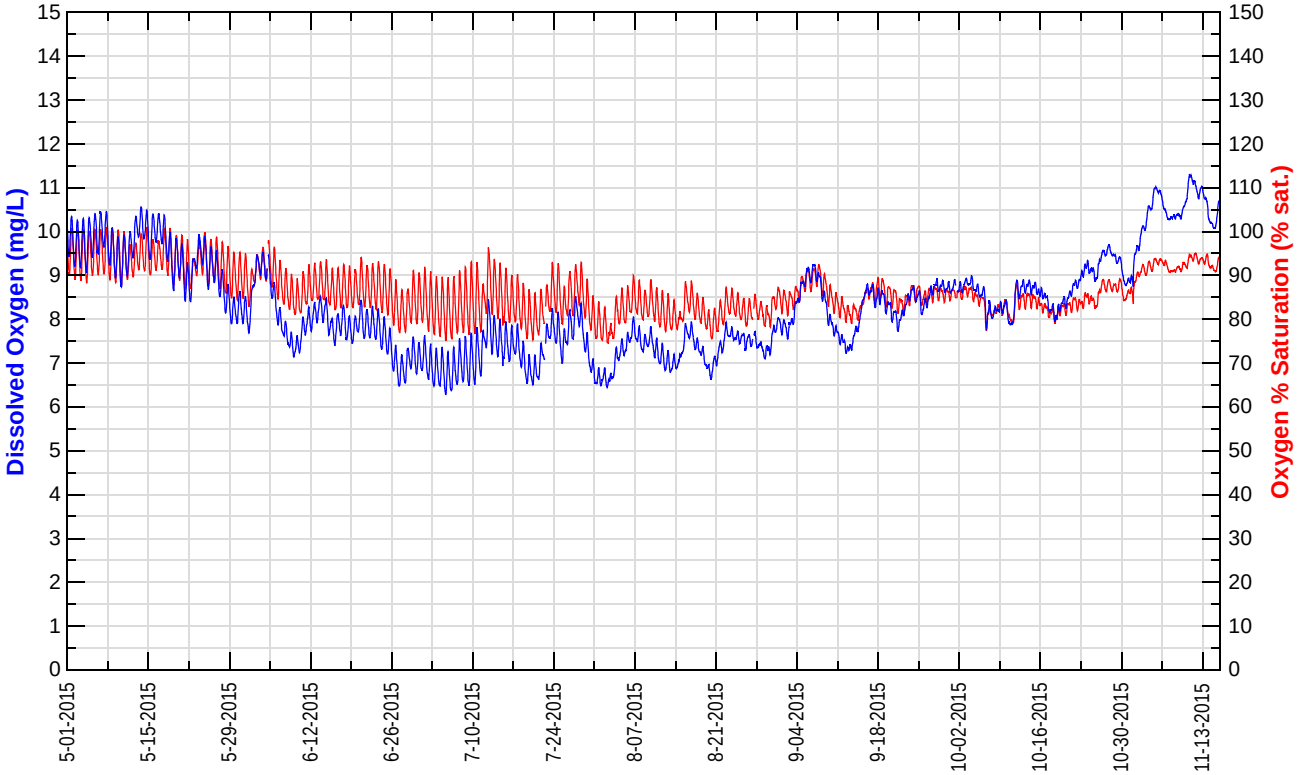
Dairy Creek at Hwy 8 (site ID=453113123003501), and

Chicken Creek at Roy Rogers Road (site ID=452230122512201)



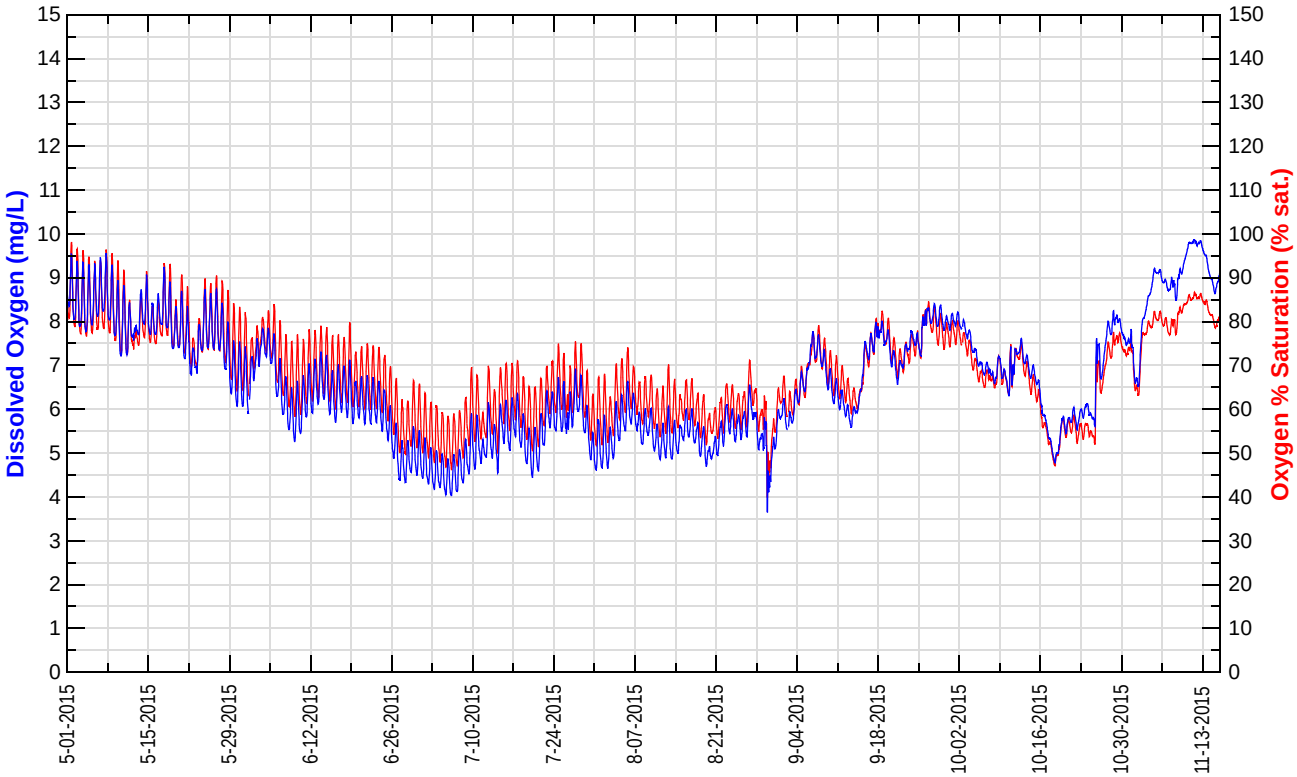
Gales Creek at Old Hwy 47, Forest Grove, OR (453040123065201)

Data from U.S. Geological Survey



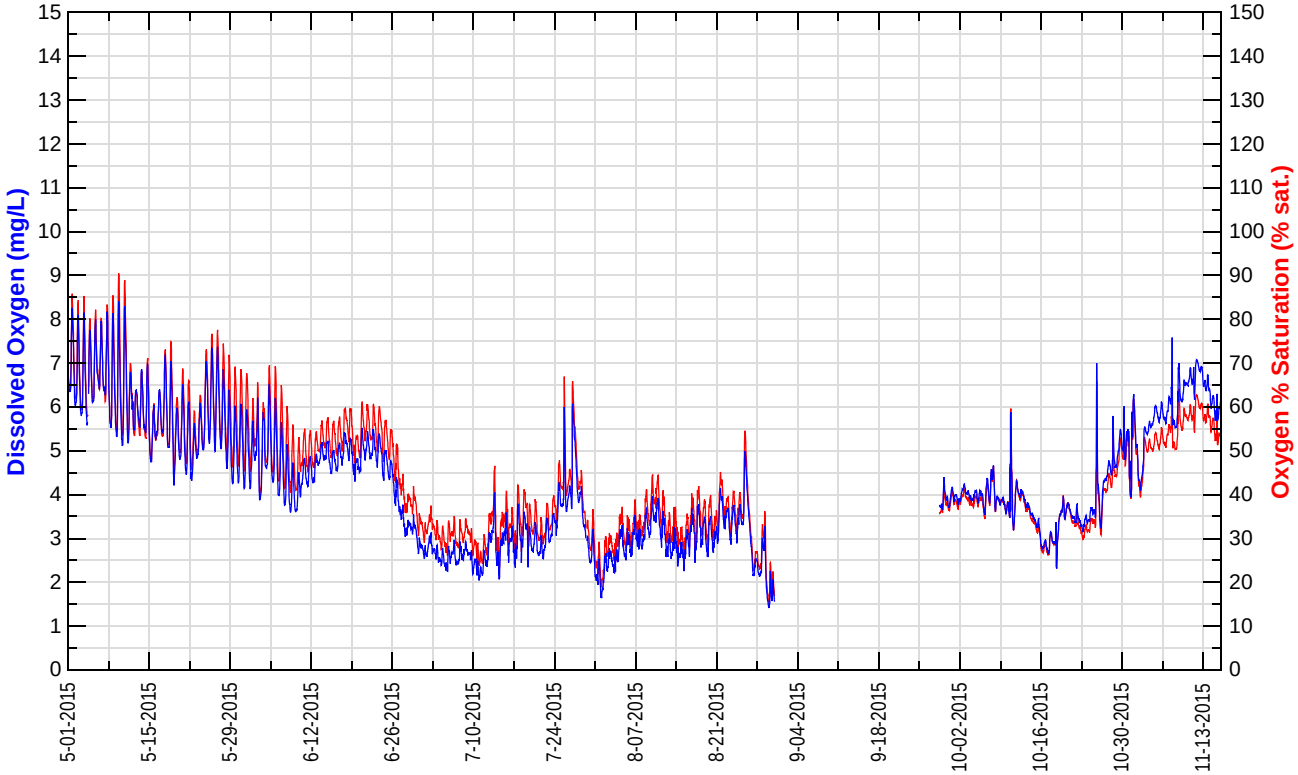
Rock Creek at Brookwood Ave, Hillsboro, OR (453030122560101)

Data from U.S. Geological Survey



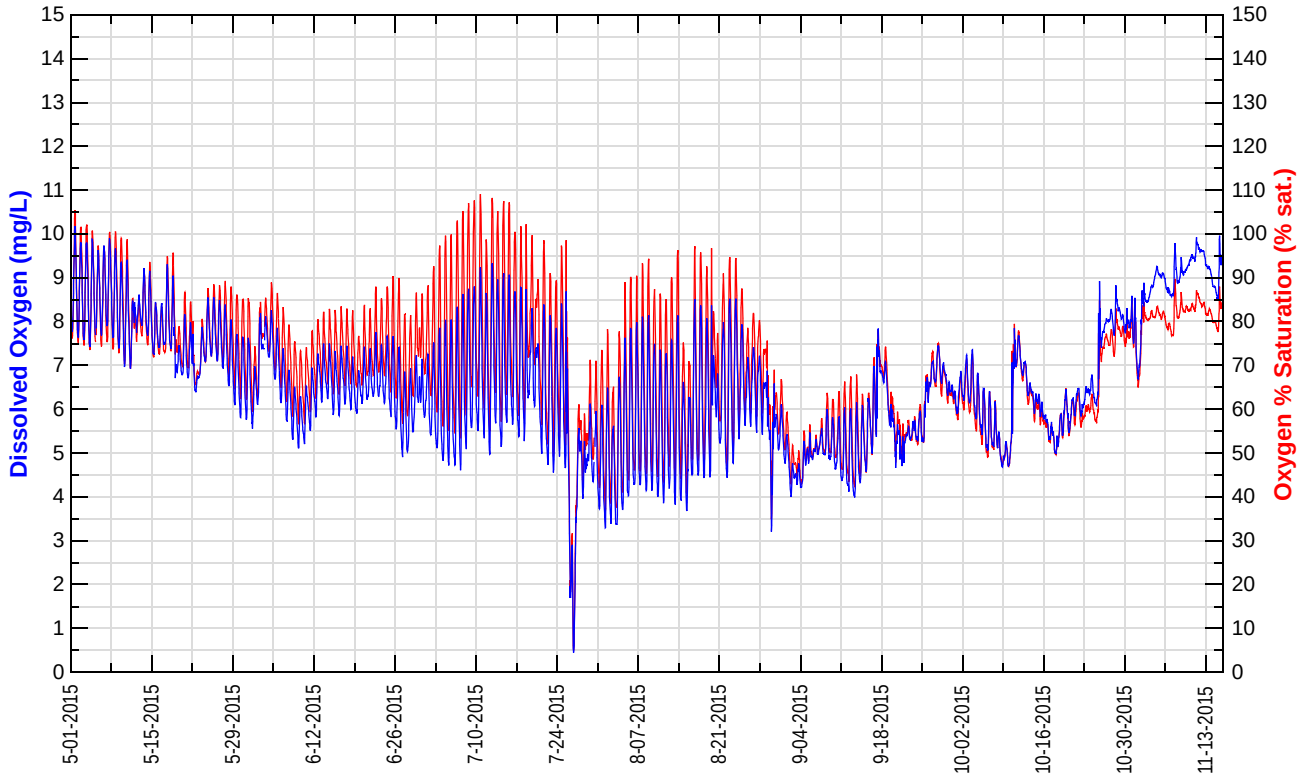
Beaverton Creek at 170th Ave, Beaverton, OR (453004122510301)

Data from U.S. Geological Survey



Fanno Creek at Durham Road (14206950)

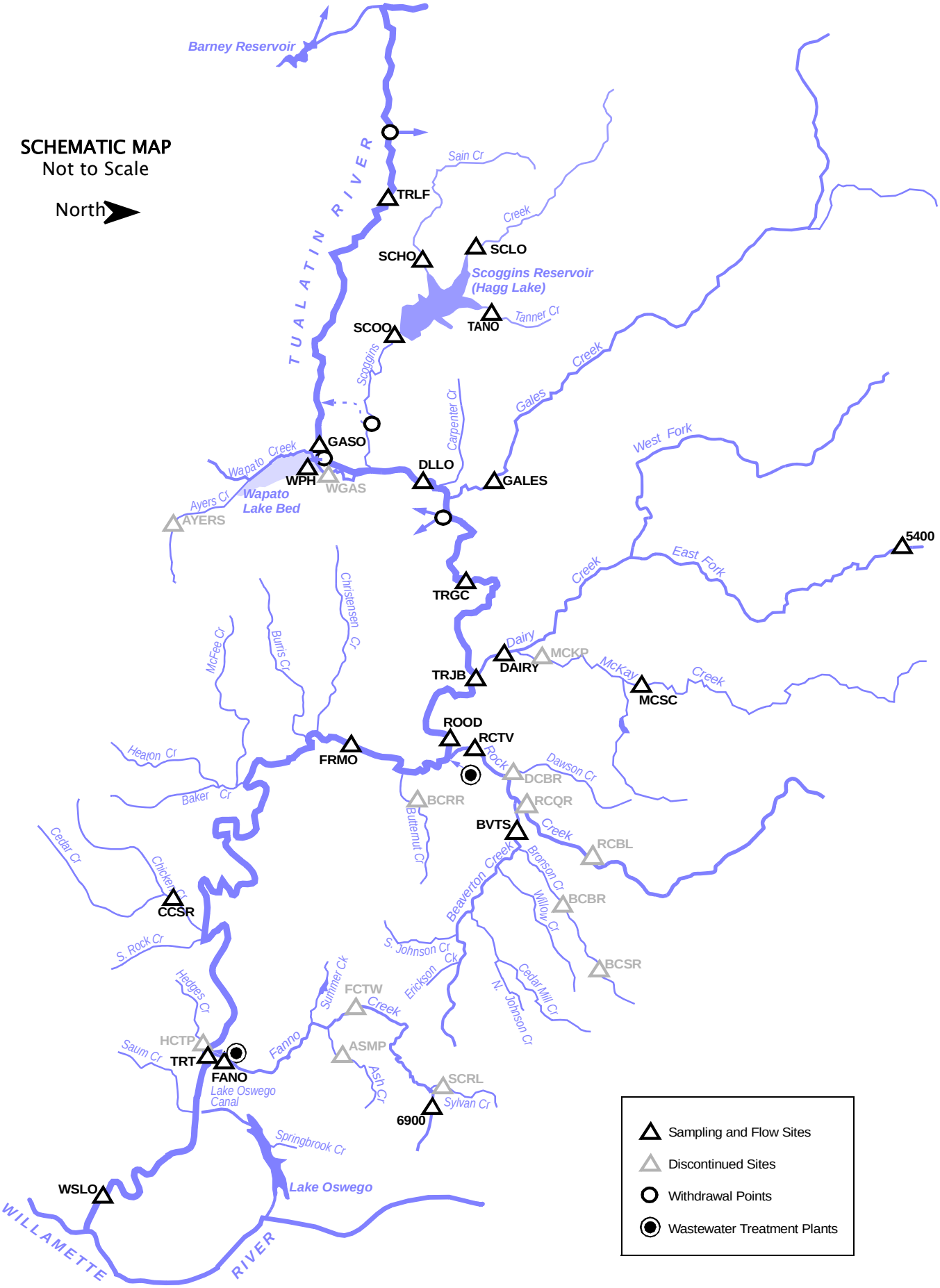
Data from U.S. Geological Survey



Appendix A

Stream Gage Records

STREAM GAGE SITES — LOCATIONS



STREAM GAGE SITES — ALPHABETICAL LISTING BY SITE CODE

SITE CODE	SITE NAME	RIVER MILE	STATION ID	PAGE
5400	East Fork Dairy Creek near Meacham Corner, OR	12.4	14205400	A-14
6900	Fanno Creek at 56th Avenue	11.9	14206900	A-23
BVTS	Beaverton Creek at NE Guston Court near Orenco, Oregon	1.2	14206435	A-19
CCSR	Chicken Creek at Roy Rogers Road near Sherwood, Oregon	2.3	14206750	A-22
DAIRY	Dairy Creek at Hwy 8 near Hillsboro, Oregon	2.06	14206200	A-16
DLLO	Tualatin River at Dilley, Oregon	58.8	14203500	A-11
FANO	Fanno Creek at Durham Road near Tigard, Oregon	1.2	14206950	A-24
FRMO	Tualatin River at Farmington, Oregon	33.3	14206500	A-21
GALES	Gales Creek at Old Hwy 47 near Forest Grove, Oregon	2.36	14204530	A-12
GASO	Tualatin River at Gaston, Oregon	62.3	14202510	A-5
MCSC	McKay Creek at Scotch Church Rd above Waible Ck near North Plains, Oregon	6.3	14206070	A-15
RCTV	Rock Creek at Hwy 8 near Hillsboro, Oregon	1.2	14206451	A-20
ROOD	Tualatin River at Rood Bridge Road near Hillsboro, Oregon	38.4	14206295	A-18
SCHO	Sain Creek above Henry Hagg Lake near Gaston, Oregon	1.6	14202920	A-8
SCLO	Scoggins Creek above Henry Hagg Lake near Gaston, Oregon	9.3	14202850	A-7
SCOO	Scoggins Creek below Henry Hagg Lake near Gaston, Oregon	4.80	14202980	A-10
TANO	Tanner Creek above Henry Hagg Lake near Gaston, Oregon	1.6	14202860	A-9
TRGC	Tualatin River at Golf Course Road near Cornelius, Oregon	51.5	14204800	A-13
TRJB	Tualatin River at Hwy 219 Bridge	44.4	14206241	A-17
TRLF	Tualatin River below Lee Falls near Cherry Grove, Oregon	70.7	14202450	A-4
TRT	Tualatin River at Tualatin, Oregon	8.9	14206956	A-25
WPH	Wapato Canal at Pumphouse at Gaston, Oregon	—	14202630	A-6
WSLO	Tualatin River at West Linn	1.75	14207500	A-26

Sites with Historic Data (not currently being monitored)

ASMP	Ash Creek at Metzger Park at Metzger, Oregon	1.25	14206933	
AYERS	Ayers Creek at NE North Valley Road near Gaston, Oregon	—	14202550	
BCBR	Bronson Creek at Bronson Road near Orenco, Oregon	2.1	14206423	
BCRR	Butternut Creek at Rosa Road	1.0	14206483	
BCSR	Bronson Creek at Saltzman Road	5.1	14206419	
DCBR	Dawson Creek at Brookwood Road near Hillsboro, Oregon	0.7	14206443	
FCTW	Fanno Creek at Tuckerwood	7.3	14206927	
HCTP	Hedges Creek at Tualatin Park at Tualatin, Oregon	0.3	14206958	
MCKP	McKay Creek at Padgett Road near Hillsboro, Oregon	1.31	14206190	
RCBL	Rock Creek below Bethany Lake	8.9	14206340	
RCQR	Rock Creek at Quatama Road near Orenco, Oregon	4.9	14206347	
SCRL	Sylvan Creek at Raleighwood Lane near West Slope, Oregon	1.0	14206905	
WGAS	Wapato Creek at Gaston Road at Gaston, Oregon	—	14202650	

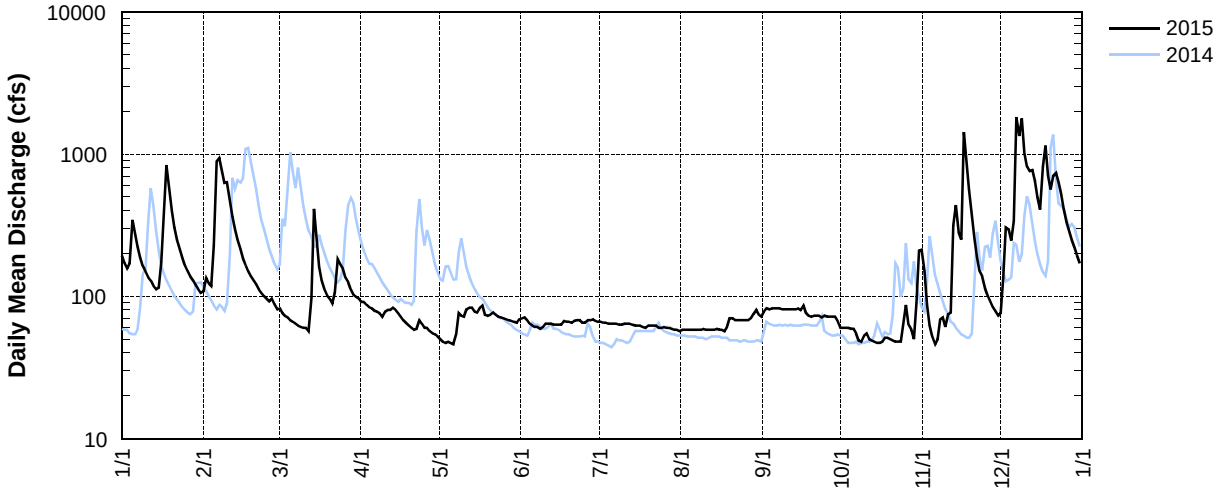
TRLF – 14202450 – TUALATIN RIVER BELOW LEE FALLS NEAR CHERRY GROVE, OREGON [RM 70.7]

Latitude: 45 30 21 Longitude: 123 13 06 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	193	109	81	97	52	69	66	57	72	60	213	76
2	171	134	82	91	50	70	66	58	78	60	151	135
3	157	123	76	91	48	71	65	58	82	60	87	305
4	171	118	73	87	47	68	65	58	81	60	62	295
5	345	227	71	84	48	64	64	58	82	59	52	247
6	278	893	68	82	47	62	64	58	82	59	46	338
7	222	938	66	79	46	61	64	58	82	55	50	1820
8	186	761	64	78	54	61	64	58	82	49	69	1340
9	163	628	62	76	76	59	63	58	81	48	71	1780
10	148	632	61	72	73	61	63	59	81	53	61	1020
11	136	473	60	78	72	64	64	58	81	55	75	814
12	129	365	60	80	81	64	64	58	81	50	77	759
13	119	297	57	80	83	64	64	58	81	49	316	769
14	112	250	97	83	83	63	63	58	81	48	438	645
15	115	215	412	80	78	63	62	59	82	47	281	493
16	174	185	248	76	77	63	62	58	80	47	251	408
17	372	165	161	72	83	63	62	58	86	48	1430	820
18	837	150	129	68	86	67	61	57	76	51	867	1150
19	572	139	111	65	74	66	60	61	73	51	565	701
20	399	129	101	62	73	66	62	70	72	50	377	564
21	303	121	96	60	74	65	62	70	73	49	255	702
22	249	112	89	58	77	67	62	68	73	48	188	737
23	212	106	106	59	74	68	62	68	73	48	150	630
24	185	100	182	68	72	68	60	68	71	48	138	523
25	164	96	167	64	71	65	60	68	73	64	114	409
26	150	92	156	60	70	65	61	68	72	87	101	330
27	138	96	135	60	69	68	60	68	72	63	92	286
28	129	88	125	57	68	68	60	70	72	58	84	249
29	120	—	111	55	67	69	59	75	72	50	78	222
30	112	—	102	54	66	67	58	80	67	90	73	195
31	106	—	99	—	65	—	58	74	—	210	—	171
TOTAL	6867	7742	3508	2176	2104	1959	1930	1952	2314	1874	6812	18933
MEAN	221.5	276.5	113.2	72.5	67.9	65.3	62.3	63.0	77.1	60.5	227.1	610.7
MAX	837	938	412	97	86	71	66	80	86	210	1430	1820
MIN	106	88	57	54	46	59	58	57	67	47	46	76
AC-FT	13620	15360	6960	4320	4170	3890	3830	3870	4590	3720	13510	37560

† Provisional data–subject to revision

TRLF — 14202450 — Tualatin River below Lee Falls near Cherry Grove, Oregon [RM 70.7]



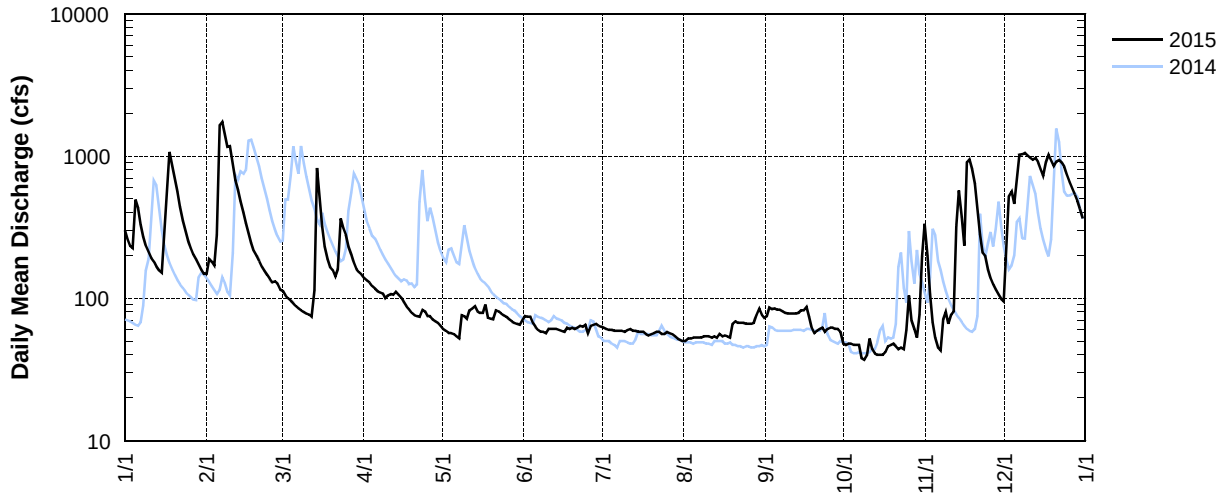
GASO – 14202510 – TUALATIN RIVER AT GASTON, OREGON [RM 62.3]

Latitude: 45 26 21 Longitude: 123 07 85 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	300	148	115	147	64	70	63	50	73	48	334	95
2	260	188	113	138	61	75	62	50	75	47	199	193
3	233	181	105	133	59	74	61	52	86	48	107	523
4	225	170	100	129	57	74	60	52	84	48	68	564
5	493	279	96	122	57	67	60	53	85	47	53	462
6	431	1650	92	117	56	63	59	53	83	47	45	667
7	329	1740	88	112	54	60	59	53	83	47	43	1020
8	271	1410	85	110	52	58	59	53	81	38	71	1030
9	234	1160	82	108	76	58	59	54	79	37	80	1050
10	211	1170	80	100	75	57	58	54	78	40	66	1010
11	192	876	78	105	72	61	60	54	78	52	77	971
12	182	676	77	107	82	61	61	53	78	44	81	941
13	167	579	74	106	85	61	59	54	78	41	322	967
14	156	482	114	111	88	61	59	53	79	40	575	910
15	151	401	824	106	81	60	58	56	82	40	374	806
16	284	337	496	101	79	59	58	54	82	40	234	723
17	525	288	321	94	79	58	58	55	87	42	904	912
18	1070	245	230	88	90	62	56	54	74	46	946	1020
19	848	216	188	84	73	61	55	53	62	47	818	930
20	693	198	165	79	72	62	56	66	57	48	640	852
21	563	183	158	76	71	61	57	69	59	46	426	914
22	438	167	142	75	82	62	58	67	61	44	282	937
23	350	156	160	74	81	64	58	67	62	45	210	902
24	298	146	364	83	78	63	56	67	58	44	199	840
25	255	137	312	81	76	65	56	66	61	60	159	741
26	226	130	279	75	74	57	58	66	62	105	138	654
27	203	132	232	75	71	64	57	66	62	70	125	593
28	187	127	203	71	69	65	56	67	61	61	115	535
29	172	—	178	69	67	66	54	76	61	53	106	483
30	159	—	160	67	66	64	52	85	58	77	99	425
31	148	—	152	—	65	—	51	77	—	197	—	363
TOTAL	10254	13572	5863	2943	2212	1893	1793	1849	2169	1689	7896	23033
MEAN	330.8	484.7	189.1	98.1	71.4	63.1	57.8	59.6	72.3	54.5	263.2	743.0
MAX	1070	1740	824	147	90	75	63	85	87	197	946	1050
MIN	148	127	74	67	52	57	51	50	57	37	43	95
AC-FT	20340	26920	11630	5840	4390	3760	3560	3670	4300	3350	15660	45690

† Provisional data–subject to revision

GASO — 14202510 — Tualatin River at Gaston, Oregon [RM 62.3]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

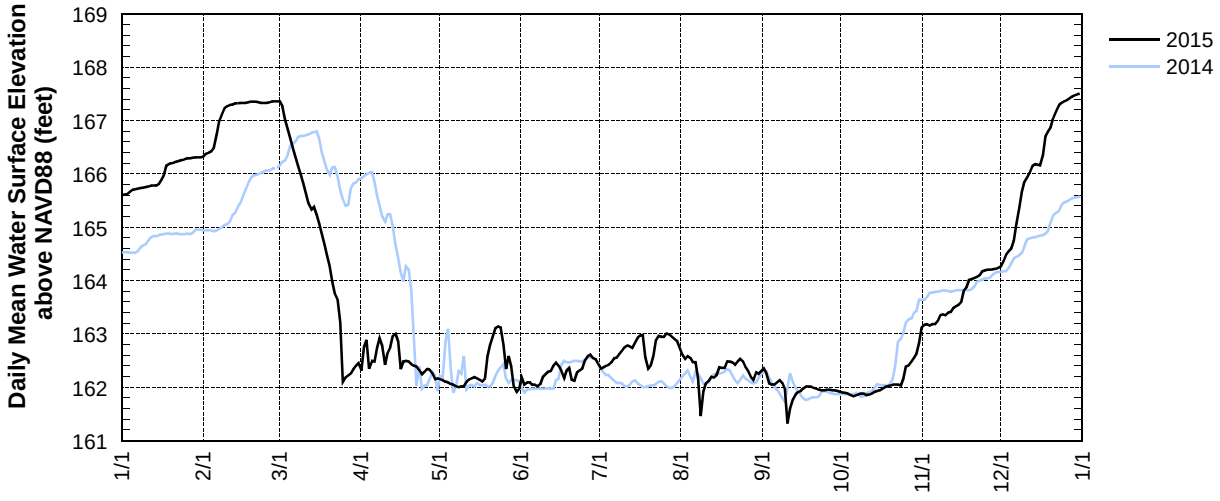
STATION NUMBER: 14202630 WAPATO CANAL AT PUMPHOUSE AT GASTON, OREG.

LATITUDE: 452625 LONGITUDE: 1230731

Water Surface Elevation above NAVD88, in feet, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	165.60	166.33	167.36	162.45	162.17	161.97	162.44	162.74	162.30	161.91	163.11	164.26
2	165.61	166.38	167.36	162.31	162.15	162.18	162.35	162.61	162.35	161.90	163.17	164.36
3	165.62	166.40	167.27	162.75	162.13	162.05	162.37	162.53	162.26	161.89	163.18	164.48
4	165.66	166.42	167.03	162.89	162.10	162.09	162.40	162.58	162.07	161.88	163.16	164.55
5	165.70	166.49	166.83	162.35	162.09	162.09	162.42	162.55	162.05	161.85	163.18	164.60
6	165.71	166.74	166.66	162.49	162.06	162.04	162.47	162.47	162.05	161.83	163.18	164.75
7	165.72	167.00	166.48	162.48	162.05	162.05	162.54	162.47	162.09	161.85	163.24	165.06
8	165.73	167.12	166.32	162.74	162.02	162.02	162.55	162.15	162.13	161.87	163.35	165.36
9	165.74	167.23	166.15	162.92	162.00	162.06	162.62	161.46	162.08	161.88	163.37	165.66
10	165.75	167.27	165.98	162.78	162.01	162.19	162.68	161.91	161.96	161.88	163.35	165.85
11	165.76	167.29	165.81	162.42	162.02	162.24	162.75	162.07	161.32	161.85	163.40	165.93
12	165.78	167.30	165.63	162.65	162.10	162.29	162.78	162.12	161.60	161.86	163.41	166.02
13	165.78	167.32	165.44	162.75	162.15	162.30	162.77	162.20	161.77	161.88	163.49	166.15
14	165.78	167.32	165.33	162.96	162.17	162.41	162.74	162.18	161.86	161.91	163.52	166.18
15	165.81	167.33	165.38	163.00	162.19	162.46	162.84	162.22	161.91	161.93	163.55	166.17
16	165.89	167.33	165.24	162.86	162.17	162.40	162.93	162.37	161.93	161.94	163.60	166.16
17	165.98	167.33	165.07	162.34	162.14	162.31	162.97	162.36	161.98	161.97	163.81	166.35
18	166.16	167.34	164.88	162.48	162.11	162.17	162.98	162.36	162.01	162.00	163.87	166.71
19	166.19	167.35	164.67	162.49	162.16	162.31	162.56	162.48	162.01	162.02	164.01	166.80
20	166.20	167.35	164.46	162.48	162.58	162.36	162.35	162.48	162.01	162.03	164.03	166.87
21	166.22	167.35	164.27	162.43	162.79	162.14	162.41	162.46	161.99	162.05	164.05	167.05
22	166.23	167.34	163.98	162.40	162.96	162.12	162.58	162.42	161.97	162.05	164.07	167.18
23	166.25	167.33	163.75	162.39	163.11	162.28	162.88	162.48	161.95	162.05	164.10	167.28
24	166.26	167.33	163.63	162.32	163.14	162.32	162.96	162.53	161.94	162.03	164.17	167.33
25	166.28	167.33	163.22	162.24	163.12	162.35	162.94	162.48	161.94	162.16	164.19	167.36
26	166.29	167.34	162.10	162.29	162.79	162.50	162.94	162.37	161.95	162.39	164.20	167.38
27	166.29	167.36	162.18	162.34	162.34	162.58	163.01	162.30	161.95	162.41	164.20	167.41
28	166.30	167.36	162.22	162.33	162.58	162.61	162.99	162.20	161.94	162.48	164.21	167.45
29	166.31	—	162.26	162.26	162.39	162.55	162.94	162.14	161.94	162.55	164.22	167.47
30	166.31	—	162.34	162.15	162.01	162.53	162.90	162.28	161.93	162.63	164.24	167.49
31	166.31	—	162.40	—	161.91	—	162.87	162.25	—	162.83	—	167.50
MEAN	164.77	165.48	166.25	164.26	162.20	162.23	162.10	162.19	161.95	162.33	163.87	164.91
MAX	166.31	167.36	167.36	163.00	163.14	162.61	163.01	162.74	162.35	162.83	164.24	167.50
MIN	165.60	166.33	162.10	162.15	161.91	161.97	162.35	161.46	161.32	161.83	163.11	164.26

14202630 — Wapato Canal Pumphouse at Gaston, Oregon



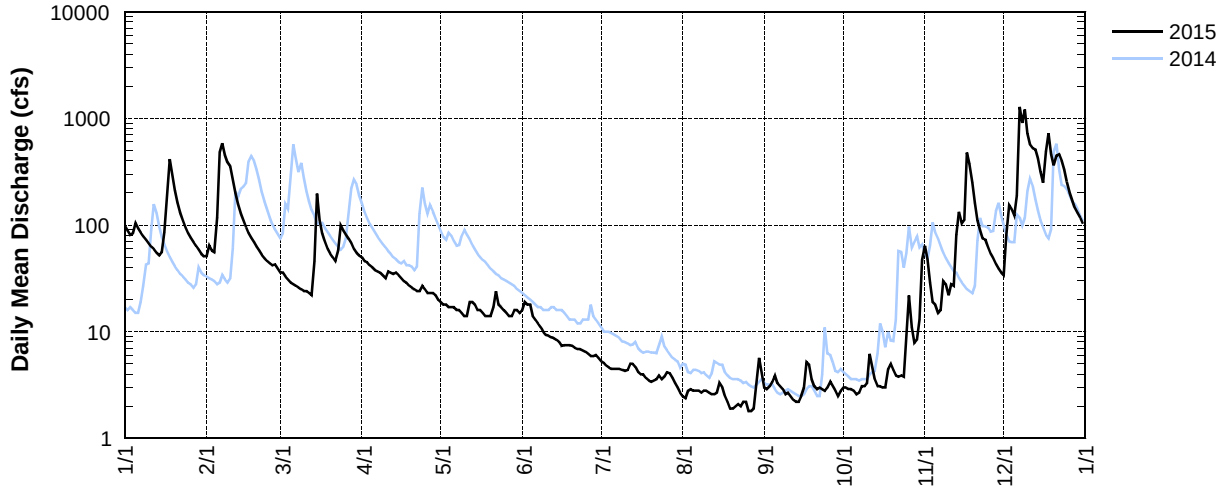
SCLO – 14202850 – SCOGGINS CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 9.3]

Latitude: 45 30 06 Longitude: 123 15 06 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	98	51	36	50	19	16	5.3	2.5	3.0	3.0	64	34
2	89	64	36	46	18	19	5.1	2.4	2.9	3.0	48	80
3	81	58	33	45	18	18	4.8	2.8	3.1	2.9	29	153
4	84	56	31	42	17	18	4.6	2.9	3.4	2.9	19	140
5	104	118	29	40	17	14	4.5	2.8	3.9	2.8	18	123
6	93	483	28	38	17	13	4.5	2.8	3.3	2.6	15	190
7	85	585	27	37	16	12	4.5	2.8	3.1	2.7	16	e1290
8	79	457	26	36	16	11	4.5	2.7	2.9	3.1	30	908
9	73	390	25	34	15	10	4.4	2.8	2.6	3.1	28	1220
10	68	356	24	32	14	9	4.3	2.8	2.7	3.3	22	723
11	63	265	24	37	14	9	4.4	2.7	2.5	6.2	28	574
12	60	200	23	36	19	9	5.0	2.6	2.3	4.7	27	528
13	55	158	22	35	19	9	5.0	2.6	2.2	3.6	81	512
14	52	129	46	36	18	8	4.7	2.7	2.2	3.1	133	422
15	56	111	198	34	16	8	4.2	3.3	2.5	3	104	316
16	86	96	112	32	16	7	4.0	3.0	3.0	3	112	250
17	185	84	84	30	15	8	4.0	2.5	5.2	3.0	480	493
18	418	76	69	29	14	8	3.7	2.2	4.9	4.5	374	730
19	294	69	60	27	14	8	3.5	1.9	3.6	5.0	251	461
20	212	63	54	26	14	7	3.4	1.9	3.1	4.4	162	363
21	163	58	50	25	17	7	3.5	2.0	2.9	4	111	451
22	132	53	46	24	24	7	3.6	2.1	3.0	4	90	463
23	110	49	58	24	18	7	3.9	2.0	2.9	4	75	402
24	95	46	99	27	17	7	3.6	2.2	2.8	4	73	332
25	84	44	89	25	16	7	3.8	2.2	3.0	10	62	256
26	76	42	81	23	15	6	4.2	1.8	3.4	22	54	202
27	69	43	74	23	14	6	4.1	1.8	3.1	11	49	171
28	64	39	68	23	14	6	3.7	1.9	2.8	8	43	145
29	59	—	60	22	16	6	3.3	3.5	2.5	9	39	131
30	54	—	55	20	16	6	3.0	5.7	2.8	13	36	117
31	51	—	52	—	15	—	2.7	4.1	—	47	—	103
TOTAL	3292	4243	1719	958	508	284.6	127.8	82	91.6	204.8	2673	12283
MEAN	106.2	151.5	55.5	31.9	16.4	9.5	4.1	2.6	3.1	6.6	89.1	396.2
MAX	418	585	198	50	24	19	5	5.7	5.2	47	480	1290
MIN	51	39	22	20	14	6	2.7	1.8	2.2	2.6	15	34
AC-FT	6530	8420	3410	1900	1010	560	250	160	180	410	5300	24370

† Provisional data–subject to revision; e=estimated value

SCLO — 14202850 — Scoggins Creek above Henry Hagg Lake near Gaston, Oregon [RM 9.3]



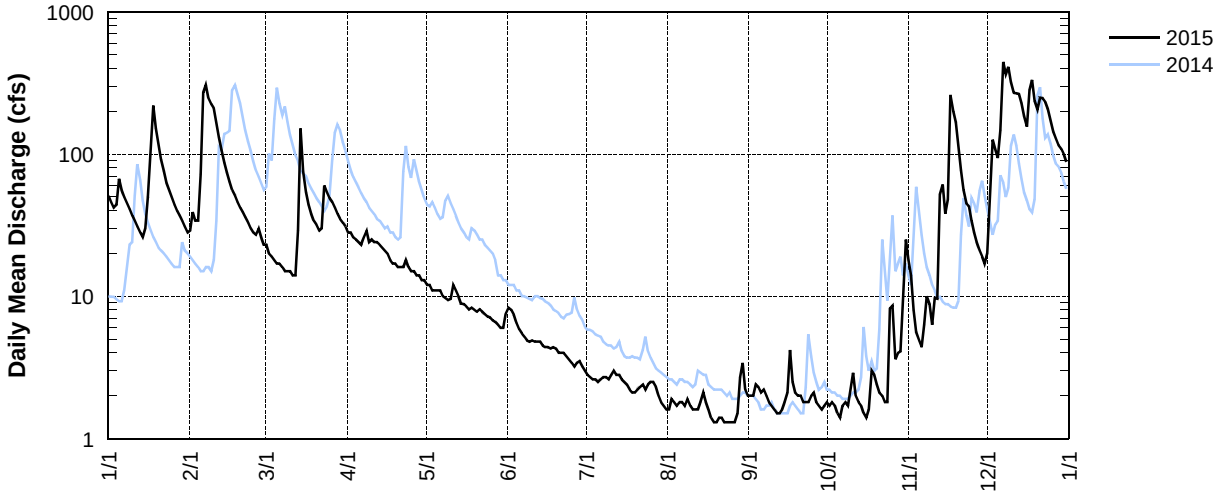
SCHO – 14202920 – SAIN CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 1.6]

Latitude: 45 28 50 Longitude: 123 14 40 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	51	29	23	31	13	8	3.0	1.6	2.0	1.8	18	20
2	46	39	23	28	12	8	2.8	1.6	2.0	1.7	14	50
3	42	34	20	28	12	8	2.7	1.9	2.0	1.8	8.0	126
4	44	34	19	26	11	7	2.6	1.8	2.4	1.7	5.6	108
5	67	72	18	25	11	7	2.6	1.7	2.3	1.5	4.9	94
6	56	271	17	24	11	6	2.5	1.8	2.1	1.4	4.4	147
7	50	306	17	23	11	6	2.6	1.8	2.2	1.7	6.3	444
8	45	247	16	26	10	5	2.7	1.7	2.0	1.8	10	364
9	41	224	15	29	10	5	2.7	1.9	1.8	1.7	8.8	410
10	37	210	15	24	9	5	2.6	1.7	1.7	2.2	6.3	320
11	34	164	15	25	10	5	2.8	1.6	1.6	2.9	9.7	268
12	31	131	14	24	12	5	3.0	1.6	1.5	2.0	9.6	267
13	28	107	14	24	11	5	2.8	1.6	1.5	1.8	52	264
14	26	87	29	23	10	5	2.8	1.8	1.6	1.7	61	228
15	30	74	151	22	9	5	2.6	2.1	1.8	1.5	38	185
16	50	64	76	21	9	4.4	2.5	1.8	2.1	1.4	48	156
17	115	56	54	20	9	4.4	2.4	1.6	4.2	1.6	261	282
18	220	51	44	18	8	4.3	2.2	1.4	2.5	3.0	200	333
19	152	46	38	17	8	4.4	2.1	1.3	2.1	2.8	167	237
20	117	42	34	17	8	4.3	2.1	1.3	2.0	2.4	114	206
21	92	39	32	16	8	4.0	2.2	1.4	2.0	2.1	77	248
22	76	36	29	16	8	4.0	2.3	1.4	1.8	2.0	56	247
23	63	33	30	16	8	4.0	2.4	1.3	1.8	1.8	45	234
24	56	30	60	18	8	3.8	2.2	1.3	1.8	1.8	43	208
25	50	28	54	16	7	3.6	2.4	1.3	2.0	8.2	34	171
26	44	27	49	15	7	3.4	2.5	1.3	2.1	8.6	28	144
27	40	30	46	15	7	3.2	2.5	1.3	1.8	3.6	24	129
28	37	26	42	14	7	3.4	2.3	1.5	1.7	4.0	21	116
29	34	—	38	14	6	3.5	2.0	2.7	1.6	4.1	19	109
30	31	—	35	13	6	3.2	1.8	3.4	1.7	10	17	100
31	28	—	33	—	6	—	1.7	2.2	—	25	—	88
TOTAL	1833	2537	1100	628	280.5	145.8	76.4	52.7	59.7	109.6	1410.6	6303
MEAN	59.1	90.6	35.5	20.9	9.0	4.9	2.5	1.7	2.0	3.5	47.0	203.3
MAX	220	306	151	31	13	8	3.0	3.4	4.2	25	261	444
MIN	26	26	14	13	6	3.2	1.7	1.3	1.5	1.4	4	20
AC-FT	3640	5030	2180	1250	560	290	150	100	120	220	2800	12500

† Provisional data–subject to revision

SCHO — 14202920 — Sain Creek above Henry Hagg Lake near Gaston, Oregon [RM 1.6]



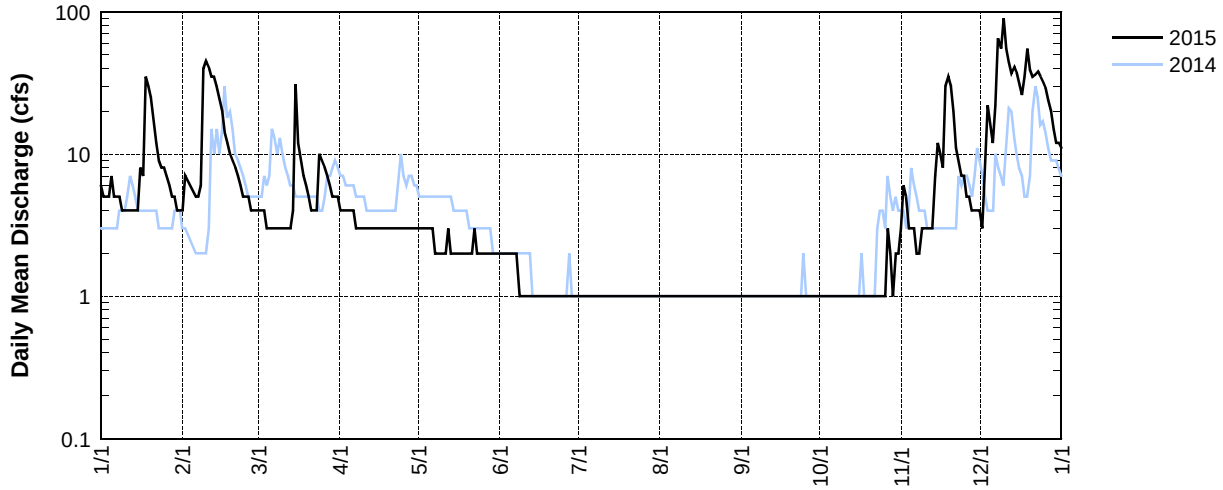
TANO – 14202860 – TANNER CREEK ABOVE HENRY HAGG LAKE NEAR GASTON, OREGON [RM 1.6]

Latitude: 45 30 21 Longitude: 123 13 10 Source Agency: Tualatin Valley Irrigation District

Day	2015 Daily Mean Discharge in Cubic Feet per Second[a]											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	6	4	4	4	3	2	1	1	1	1	6	3
2	5	7	4	4	3	2	1	1	1	1	5	9
3	5	7	4	4	3	2	1	1	1	1	3	22
4	5	7	3	4	3	2	1	1	1	1	3	16
5	7	7	3	4	3	2	1	1	1	1	3	12
6	5	5	3	4	3	2	1	1	1	1	2	22
7	5	5	3	3	2	2	1	1	1	1	2	65
8	5	6	3	3	2	1	1	1	1	1	3	55
9	4	40	3	3	2	1	1	1	1	1	3	90
10	4	45	3	3	2	1	1	1	1	1	3	55
11	4	40	3	3	2	1	1	1	1	1	3	44
12	4	35	3	3	3	1	1	1	1	1	3	37
13	4	35	3	3	2	1	1	1	1	1	7	41
14	4	30	4	3	2	1	1	1	1	1	12	37
15	4	25	31	3	2	1	1	1	1	1	10	31
16	8	20	12	3	2	1	1	1	1	1	8	26
17	7	14	9	3	2	1	1	1	1	1	30	35
18	35	12	7	3	2	1	1	1	1	1	35	55
19	30	10	6	3	2	1	1	1	1	1	30	39
20	25	9	5	3	2	1	1	1	1	1	20	35
21	18	8	4	3	2	1	1	1	1	1	11	36
22	12	7	4	3	3	1	1	1	1	1	9	38
23	9	6	4	3	2	1	1	1	1	1	7	35
24	8	5	10	3	2	1	1	1	1	1	7	32
25	8	5	9	3	2	1	1	1	1	1	5	29
26	7	5	8	3	2	1	1	1	1	3	5	24
27	6	4	7	3	2	1	1	1	1	2	4	20
28	5	4	6	3	2	1	1	1	1	1	4	15
29	5	—	5	3	2	1	1	1	1	2	4	12
30	4	—	5	3	2	1	1	1	1	2	4	12
31	4	—	5	—	2	—	1	1	—	3	—	11
TOTAL	262	386	183	96	70	37	31	31	30	38	251	993
AC-FT	520	770	360	190	140	70	60	60	60	80	500	1970

[a]Values are read from a staff plate. Values may be daily readings taken at about 0800 or averages over several days

TANO — 14202860 — Tanner Creek above Henry Hagg Lake near Gaston, Oregon [RM 1.6]

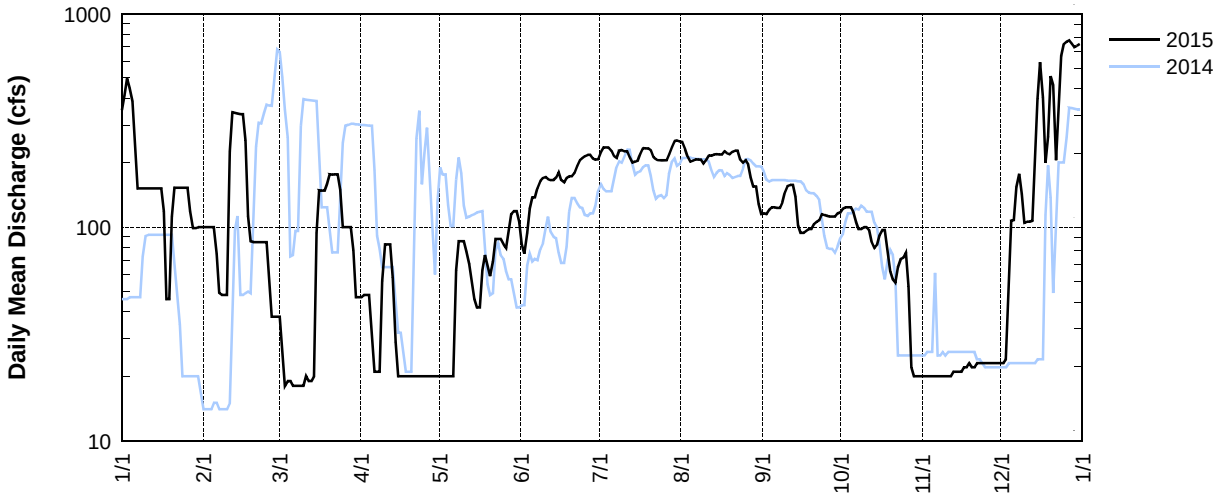


SCOO – 14202980 – SCOGGINS CREEK BELOW HENRY HAGG LAKE NEAR GASTON, OREGON [RM 4.8]

Latitude: 45 28 10 Longitude: 123 11 56 Source Agency: Bureau of Reclamation & District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	354	100	38	47	20	106	208	252	115	117	20	23
2	415	100	38	47	20	83	225	251	116	122	20	23
3	498	100	27	48	20	75	236	232	115	124	20	24
4	449	100	18	48	20	94	236	214	121	124	20	52
5	389	100	19	48	20	122	236	203	124	124	20	107
6	252	75	19	31	20	138	228	205	124	117	20	108
7	152	49	18	21	20	138	215	208	123	106	20	154
8	152	48	18	21	63	153	211	207	123	98	20	178
9	152	48	18	21	86	165	228	207	131	98	20	143
10	152	48	18	56	86	170	230	199	146	100	20	105
11	152	227	18	83	86	172	227	206	156	100	20	106
12	152	345	20	83	77	168	227	217	158	97	20	106
13	152	343	19	83	67	166	212	216	158	85	21	107
14	152	341	19	58	56	166	201	219	139	80	21	190
15	152	339	20	29	46	171	203	220	102	83	21	399
16	152	338	94	20	42	181	205	219	94	92	21	594
17	119	255	149	20	42	166	221	219	94	97	22	407
18	46	113	148	20	63	162	235	227	96	97	22	200
19	46	86	148	20	74	170	234	222	98	77	23	266
20	112	85	160	20	66	173	234	220	98	62	22	510
21	153	85	177	20	59	173	229	226	103	57	22	463
22	153	85	176	20	69	179	213	228	106	55	23	206
23	153	85	177	20	88	194	208	228	108	65	23	386
24	153	85	177	20	88	206	206	208	115	71	23	634
25	153	85	150	20	88	211	206	201	114	72	23	722
26	153	57	100	20	83	215	206	206	113	76	23	742
27	119	38	100	20	80	218	206	197	112	53	23	751
28	99	38	100	20	97	218	220	171	112	22	23	725
29	99	—	100	20	115	210	238	155	112	20	23	699
30	100	—	78	20	119	207	253	155	116	20	23	709
31	100	—	47	—	119	—	255	128	—	20	—	723
TOTAL	5635	3798	2408	1024	1999	4970	6892	6466	3542	2531	642	10562
MEAN	182	136	78	34	64	166	222	209	118	82	21	341
MAX	498	345	177	83	119	218	255	252	158	124	23	751
MIN	46	38	18	20	20	75	201	128	94	20	20	23
AC-FT	11177	7533	4776	2031	3965	9858	13670	12825	7025	5020	1273	20949

SCOO — 14202980 — Scoggins Creek below Henry Hagg Lake near Gaston, Oregon [RM 4.8]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

STATION NUMBER: 14203500 TUALATIN RIVER NEAR DILLEY, OREG.

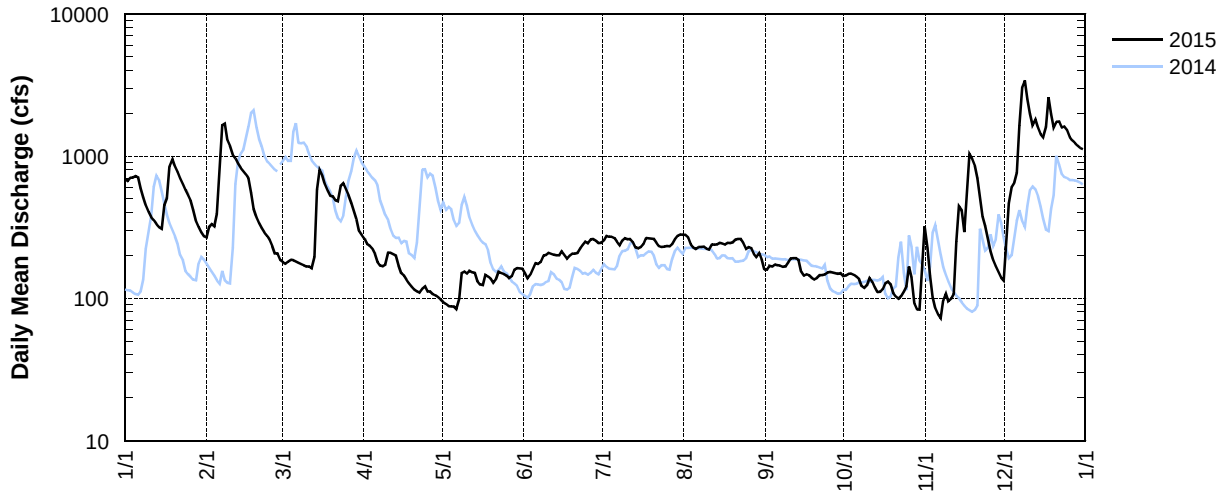
LATITUDE: 452830 LONGITUDE: 1230723 DRAINAGE AREA: 125.00 DATUM: 147.57

Discharge, Cubic Feet per Second, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC†
1	689	268	185	279	98	161	244	280	159	143	321	133
2	668	317	179	263	94	150	256	279	159	144	225	248
3	702	330	175	241	91	138	275	268	168	148	144	467
4	705	318	181	236	88	147	271	240	167	149	102	607
5	725	390	186	225	87	161	270	227	172	146	85	649
6	711	876	185	204	87	177	264	222	171	142	77	762
7	592	1650	181	180	84	174	249	229	170	137	72	1640
8	513	1690	178	170	98	180	236	229	166	122	97	3080
9	449	1290	174	168	151	199	254	230	167	118	108	3410
10	402	1180	170	172	154	202	263	223	178	124	95	2510
11	371	1020	167	208	149	209	260	220	190	139	100	1980
12	353	965	167	209	156	205	261	238	191	131	108	1650
13	333	887	162	204	152	202	249	238	191	119	250	1810
14	316	828	195	200	150	201	227	239	185	110	443	1590
15	307	782	583	169	132	200	224	245	153	111	414	1420
16	451	742	798	150	125	214	229	243	144	116	292	1350
17	506	694	731	144	124	202	240	239	147	128	521	1600
18	851	554	637	135	146	190	264	245	145	131	1030	2590
19	951	425	572	127	142	200	263	244	139	125	955	1980
20	845	368	526	121	137	206	262	246	135	109	850	1590
21	773	336	520	115	128	205	261	258	139	102	695	1740
22	699	310	489	112	137	207	245	261	145	99	520	1750
23	632	291	480	110	153	225	233	261	145	103	374	1590
24	577	275	616	117	151	238	229	246	147	111	322	1610
25	530	257	642	121	148	251	231	222	152	121	260	1540
26	485	233	587	112	144	244	233	229	153	167	213	1360
27	417	207	532	112	138	259	231	226	152	140	186	1290
28	346	206	469	107	143	260	240	206	150	92	168	1240
29	315	—	411	105	158	255	260	195	148	84	152	1190
30	291	—	360	102	162	244	274	207	149	83	139	1140
31	273	—	297	—	162	—	280	187	—	172	—	1120
TOTAL	16778	17689	11735	4918	4069	6106	7778	7322	4777	3866	9318	46636
MEAN	541	632	379	164	131	204	251	236	159	125	311	1504
MAX	951	1690	798	279	162	260	280	280	191	172	1030	3410
MIN	273	206	162	102	84	138	224	187	135	83	72	133
AC-FT	33280	35090	23280	9750	8070	12110	15430	14520	9480	7670	18480	92500

†Provisional data (12/1–12/31)–subject to revision

DLLO — 14203500 — Tualatin River near Dilley, Oregon [RM 58.8]



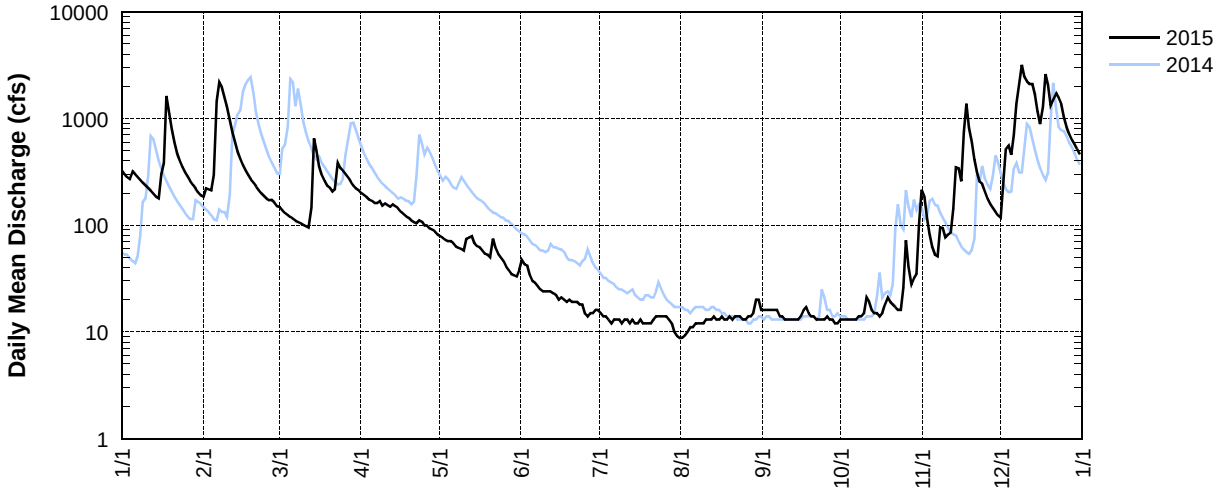
GALES – 14204530 – GALES CREEK AT OLD HWY 47 NEAR FOREST GROVE, OREGON [RM 2.36]

Latitude: 45 30 39 Longitude: 123 06 56 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	326	185	150	213	82	38	16	9	16	13	215	117
2	302	222	148	199	79	47	15	9	16	13	183	237
3	281	217	138	191	76	43	14	9	16	13	116	517
4	270	212	130	183	73	42	14	10	16	13	82	560
5	318	295	124	174	71	34	13	11	16	13	63	458
6	301	1460	120	169	71	30	12	11	16	13	53	699
7	283	2180	115	161	68	29	13	12	16	13	51	e1370
8	267	1960	110	161	63	27	13	12	14	14	95	e2110
9	251	1600	107	168	61	25	13	12	14	14	94	e3180
10	236	1290	104	152	60	24	12	12	13	15	77	e2450
11	223	958	101	160	58	24	13	13	13	21	82	e2230
12	211	748	98	155	75	24	13	13	13	19	85	2110
13	198	601	95	149	77	24	12	13	13	16	143	2110
14	185	492	146	157	79	23	13	14	13	15	347	1670
15	179	416	650	150	68	22	12	13	13	15	339	1170
16	300	364	492	143	64	20	12	13	14	14	257	890
17	383	326	355	134	62	21	13	14	16	15	750	1290
18	1630	296	295	127	58	20	12	13	17	18	1380	e2610
19	1110	271	259	121	54	19	12	13	15	21	814	e2050
20	787	250	234	117	53	20	12	14	14	19	597	1330
21	599	231	224	111	50	19	12	13	14	18	411	1510
22	477	213	207	107	75	19	13	14	13	17	312	1720
23	398	200	216	104	61	19	14	14	13	16	256	1560
24	349	188	382	111	54	18	14	14	13	16	244	1370
25	313	177	343	108	50	18	14	13	13	26	203	1040
26	286	171	325	99	46	15	14	13	14	72	176	826
27	260	172	303	99	41	14	14	14	13	41	158	712
28	238	163	279	93	38	15	13	14	13	28	145	631
29	219	—	254	91	35	15	12	15	12	32	133	573
30	204	—	235	87	34	16	10	20	12	35	123	519
31	191	—	222	—	33	—	9	20	—	103	—	460
TOTAL	11575	15858	6961	4194	1869	724	398	403.8	424	711	7984	40079
MEAN	373.4	566.4	224.5	139.8	60.3	24.1	12.8	13.0	14.1	22.9	266.1	1292.9
MAX	1630	2180	650	213	82	47	16	20	17	103	1380	3180
MIN	179	163	95	87	33	14	9	9	12	13	51	117
AC-FT	22960	31460	13810	8320	3710	1440	790	800	840	1410	15840	79500

† Provisional data–subject to revision; e=estimated value

GALES — 14204530 — Gales Creek at Old Hwy 47 near Forest Grove, Oregon [RM 2.36]



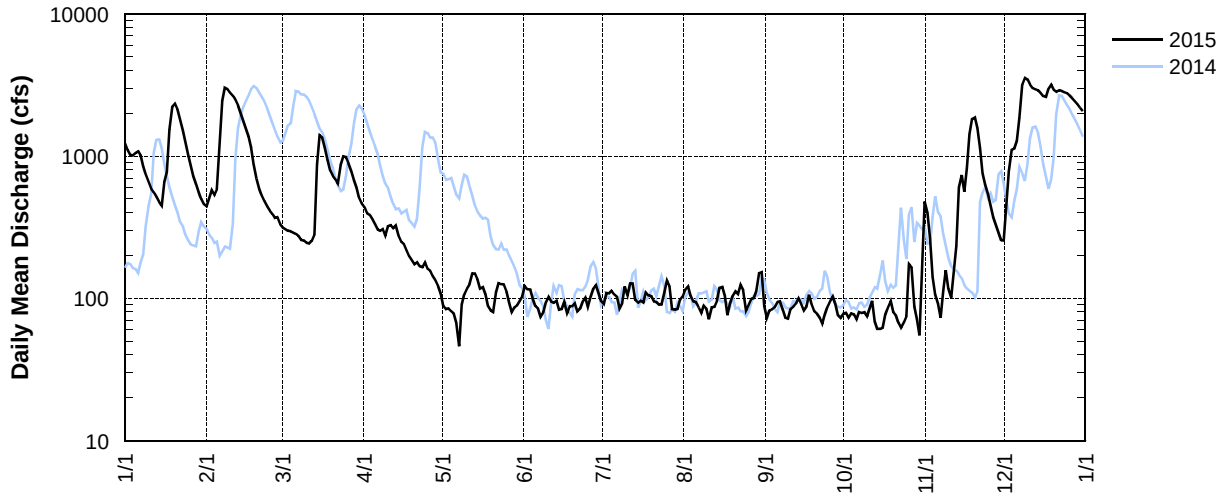
TRGC – 14204800 – TUALATIN RIVER AT GOLF COURSE ROAD NEAR CORNELIUS, OREGON [RM 51.5]

Latitude: 45 30 08 Longitude: 123 03 22 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	1230	443	331	466	109	103	96	103	88	78	478	254
2	1100	504	315	439	89	122	91	115	73	79	398	433
3	1020	573	306	398	84	116	109	121	82	73	262	783
4	1010	534	299	386	85	115	108	103	84	78	141	1110
5	1050	587	296	361	81	99	113	95	87	77	106	1130
6	1080	1370	289	332	78	88	106	94	94	71	91	1280
7	1010	2450	283	305	67	85	102	86	95	80	73	1860
8	846	3030	274	298	46	74	85	79	83	79	112	3210
9	738	2960	257	307	90	80	92	89	73	80	158	3560
10	658	2800	254	275	107	94	121	85	72	75	117	3470
11	589	2660	245	323	117	102	105	71	84	85	101	3190
12	557	2490	243	327	125	95	127	86	87	96	150	3010
13	516	2280	253	311	149	93	127	87	92	69	233	2950
14	474	2020	282	324	149	96	97	96	100	61	600	2910
15	447	1770	872	273	136	83	93	118	91	61	734	2780
16	658	1560	1400	249	117	84	96	120	82	62	561	2640
17	775	1380	1350	240	120	94	93	104	88	77	824	2610
18	1540	1150	1150	218	107	79	110	76	106	86	1430	2980
19	2230	872	934	198	88	88	105	92	90	96	1820	3170
20	2330	691	791	184	82	88	103	104	81	80	1870	2920
21	2130	591	727	173	80	92	95	112	78	76	1570	2830
22	1810	529	689	179	110	81	94	107	73	67	1140	2900
23	1510	484	640	168	128	85	90	124	66	62	756	2880
24	1250	443	867	165	126	95	90	114	77	68	630	2820
25	1030	414	994	179	125	101	110	82	87	75	540	2770
26	862	394	981	161	111	87	133	90	96	174	450	2660
27	729	368	890	156	93	103	121	99	103	165	374	2550
28	635	371	784	143	80	117	84	100	91	87	331	2440
29	560	—	682	133	86	124	83	112	76	71	289	2320
30	500	—	603	122	89	109	84	151	73	55	255	2200
31	458	—	510	—	96	—	98	153	—	160	—	2070
TOTAL	31332	35718	18791	7793	3150	2872	3161	3168	2552	2603	16594	74690
MEAN	1010.7	1275.6	606.2	259.8	101.6	95.7	102.0	102.2	85.1	84.0	553.1	2409.4
MAX	2330	3030	1400	466	149	124	133	153	106	174	1870	3560
MIN	447	368	243	122	46	74	83	71	66	55	73	254
AC-FT	62150	70850	37280	15460	6250	5700	6270	6280	5060	5160	32920	148160

† Provisional data–subject to revision

TRGC — 14204800 — Tualatin River at Golf Course Road near Cornelius, Oregon [RM 51.5]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

STATION NUMBER: 14205400 EAST FORK DAIRY CREEK NEAR MEACHAM CORNER, OR

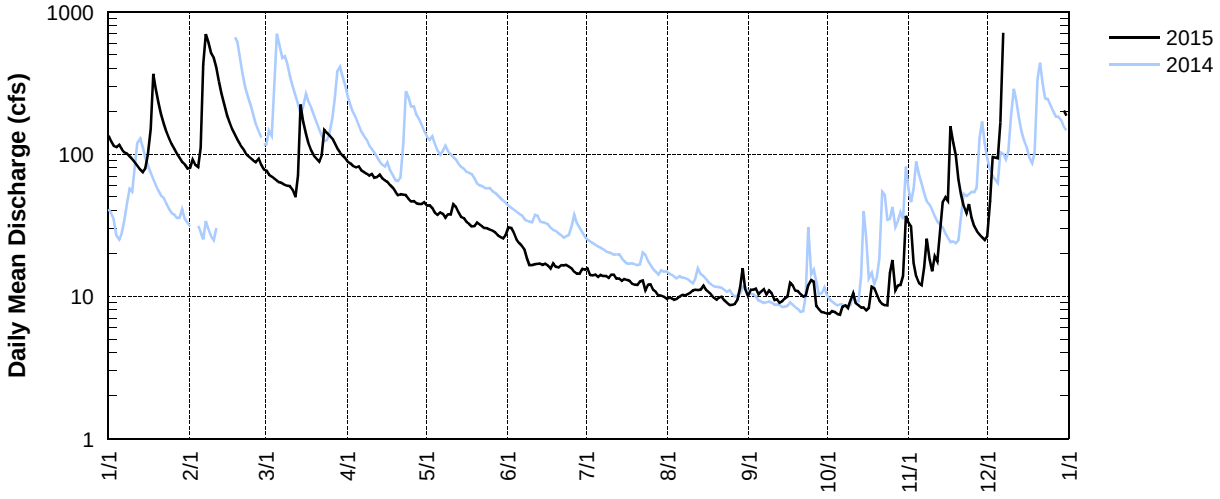
LATITUDE: 454051 LONGITUDE: 1230412 DRAINAGE AREA: 32.92 DATUM: 290

Discharge, Cubic Feet per Second, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV†	DEC†*
1	135	80	78	93	46	27	15	9.6	10	7.6	33	27
2	123	91	77	88	43	31	16	9.7	11	7.5	31	47
3	114	84	72	86	43	30	14	9.7	11	7.8	17	96
4	112	81	69	82	42	28	14	9.4	11	7.7	14	94
5	116	111	67	81	39	25	14	9.6	10	7.5	12	93
6	108	428	65	82	37	24	14	10	11	7.4	12	166
7	103	696	63	77	39	23	14	10	11	8.5	16	712
8	101	613	62	75	38	21	14	10	10	8.6	26	
9	96	509	61	73	36	19	14	10	11	8.2	18	
10	92	473	60	70	38	17	13	11	11	9.5	15	
11	88	404	60	72	38	17	14	11	9.4	11	19	
12	83	323	56	68	44	17	14	11	9.6	8.9	17	
13	78	266	50	69	43	17	13	11	9	8.6	28	
14	75	221	71	72	39	17	13	11	9.2	8.3	46	
15	79	189	223	67	36	17	13	12	9.7	8.3	50	
16	99	167	169	65	36	17	13	11	10	8	47	
17	151	150	138	64	33	16	13	11	12	8.3	157	
18	366	136	118	60	32	16	13	10	12	12	119	
19	285	125	106	58	31	17	12	9.8	11	11	97	
20	230	117	98	54	31	16	12	9.4	11	10	66	
21	191	110	93	52	33	16	12	9.8	10	9.3	52	
22	163	103	89	52	32	16	13	9.9	10	8.8	43	
23	143	97	98	52	31	16	13	9.4	10	8.6	38	
24	129	93	149	52	30	17	11	8.9	12	8.6	45	
25	117	90	142	49	30	16	12	8.7	13	14	36	
26	108	88	135	46	29	16	12	8.7	13	18	31	
27	100	93	129	47	29	15	11	8.8	8.6	11	29	
28	94	84	118	45	28	14	11	9.5	8.1	12	27	
29	88	—	109	44	27	15	10	12	7.7	12	26	
30	84	—	102	45	26	16	10	16	7.7	14	25	202
31	79	—	97	—	26	—	9.9	11	—	37	—	186
TOTAL	3930	6022	3024	1940	1085	569	396.9	318.9	310	328	1192	
MEAN	127	215	97.5	64.7	35	19	12.8	10.3	10.3	10.6	39.7	
MAX	366	696	223	93	46	31	16	16	13	37	157	
MIN	75	80	50	44	26	14	9.9	8.7	7.7	7.4	12	
AC-FT	7800	11940	6000	3850	2150	1130	787	633	615	651	2364	

†Provisional data (11/19–12/31)–subject to revision; *incomplete record (monthly totals were computed when at least 80% of the record was complete for the month)

5400 — 14205400 — East Fork Dairy Creek near Meacham Corner, Oregon [RM 12.4]

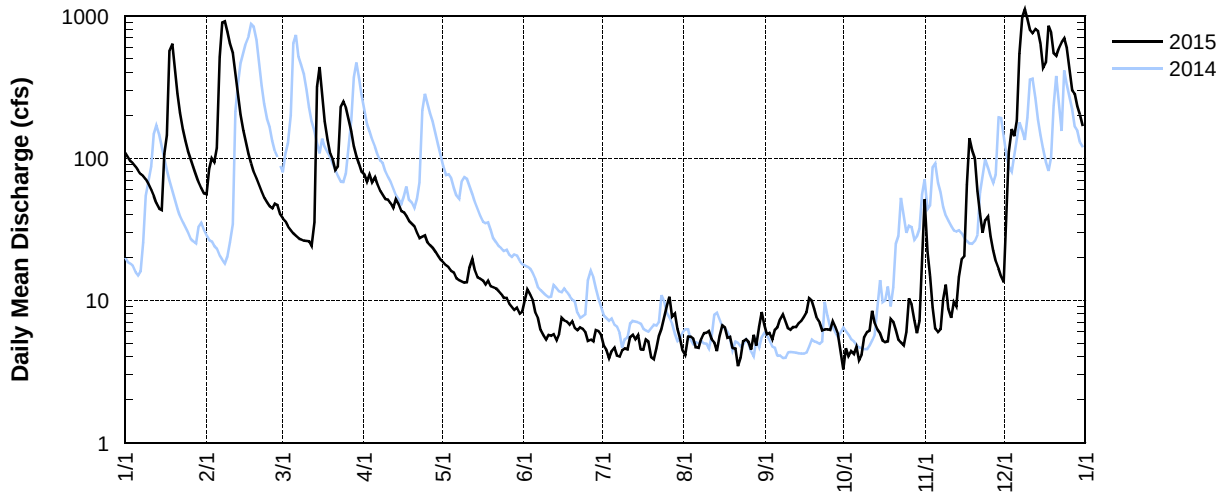


MCSC – 14206070 – MCKAY CREEK AT SCOTCH CHURCH RD ABOVE WAIBLE CREEK NEAR NORTH PLAINS, OREGON [RM 6.3]

Latitude: 45 57 21 Longitude: 122 99 18 Source Agency: WEST Consultants for Clean Water Services

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	109	56	40	81	19	8.3	5.7	4.4	6.7	3.3	51	13
2	102	84	38	77	19	10	4.8	4.1	5.8	4.6	22	43
3	96	99	36	68	18	12	4.5	5.5	5.9	4.1	15	111
4	93	93	33	77	17	11	3.9	5.5	5.3	4.4	8.9	160
5	87	118	31	68	16	10	4.4	5.4	6.2	4.2	6.3	143
6	82	512	30	74	16	8.2	4.6	4.7	6.4	4.7	6.0	184
7	77	900	28	65	14	7.5	4.1	4.6	7.3	3.8	6.3	540
8	75	919	27	59	14	6.2	4.0	5.4	7.9	4.2	10	982
9	71	773	27	55	14	5.7	4.5	5.9	7.2	5.5	13	1110
10	65	637	26	51	13	5.3	4.6	5.9	6.4	6.0	8.7	953
11	60	549	26	51	13	5.7	4.5	6.1	6.2	6.1	7.5	798
12	54	387	26	48	17	5.6	5.5	5.3	6.5	8.4	9.7	759
13	48	277	24	44	20	5.8	5.7	5.0	6.5	6.9	9.0	804
14	44	203	36	51	16	5.2	5.3	4.4	6.9	6.2	15	782
15	43	156	317	47	15	5.8	5.7	5.5	7.1	5.8	20	636
16	107	128	438	43	14	7.5	4.5	6.7	7.6	5.2	21	433
17	145	107	273	42	14	7.2	4.5	6.4	8.3	5.1	65	474
18	572	92	181	39	13	7.1	5.3	5.5	10	5.1	138	852
19	638	80	134	36	14	6.8	5.1	5.6	9.9	7.4	114	764
20	418	72	108	35	13	7.1	4.0	4.6	8.7	7.1	99	547
21	285	65	98	33	12	6.4	3.8	4.6	7.5	6.2	59	524
22	208	58	83	30	12	6.1	4.6	3.4	7.0	5.3	41	600
23	159	53	87	27	12	6.4	5.6	3.9	6.2	5.1	30	655
24	132	49	230	28	11	6.3	6.3	5.2	6.3	4.8	37	698
25	112	46	250	29	10	6.0	7.7	5.3	6.2	6.0	39	598
26	99	44	226	26	10	5.2	9.1	5.1	6.2	10	28	409
27	87	48	190	24	9.5	5.3	11	4.5	7.1	9.4	22	299
28	76	47	154	23	9.0	5.1	7.7	5.7	6.5	7.2	19	283
29	67	—	121	22	8.6	6.2	8.1	4.8	5.8	5.9	17	231
30	61	—	103	21	8.9	6.1	6.3	6.5	4.4	7.2	15	202
31	57	—	92	—	8.0	—	5.4	8.2	—	17	—	168
TOTAL	4329	6652	3513	1374	420	207.1	170.8	163.7	206	192.2	952.4	15755
MEAN	139.6	237.5	113.3	45.7	13.5	6.9	5.5	5.3	6.9	6.2	31.7	508.2
MAX	638	919	438	81	20	12	11	8.2	10	17	138	1110
MIN	43	44	24	21	8.0	5.1	3.8	3.4	4.4	3.3	6.0	13
AC-FT	8586	13190	6968	2725	833	411	339	325	409	381	1889	31250

MCSC — 14206070 — McKay Creek at Scotch Church Road above Waible Creek near North Plains, Oregon [RM 6.3]



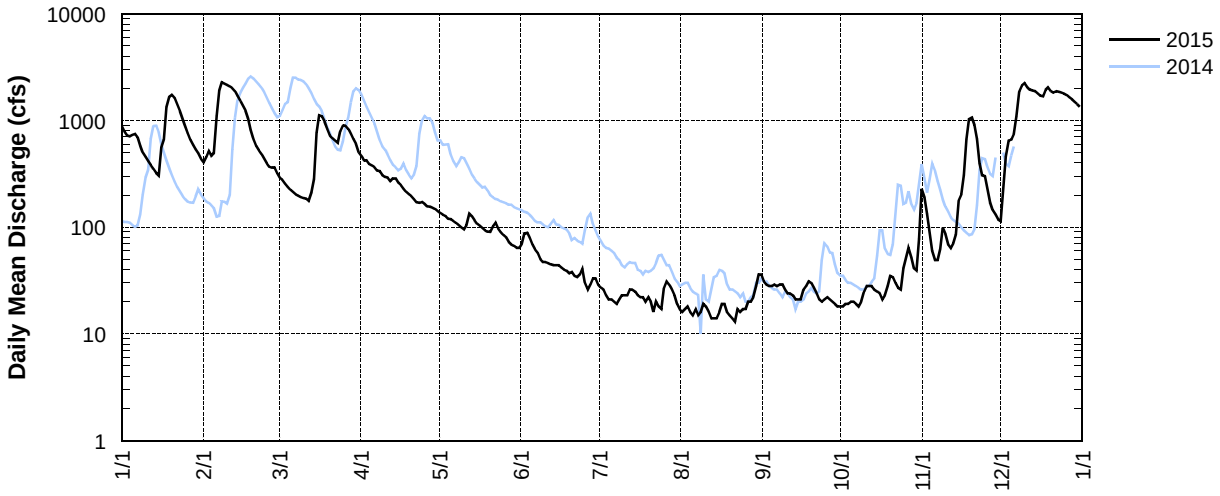
DAIRY – 14206200 – DAIRY CREEK AT HWY 8 NEAR HILLSBORO, OREGON [RM 2.06]

Latitude: 45 30 38 Longitude: 123 06 56 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	881	407	319	506	141	64	29	17	36	18	229	114
2	783	454	290	465	136	70	27	16	31	18	190	234
3	722	519	278	422	131	87	26	17	29	19	134	e459
4	710	466	257	423	127	88	23	18	28	19	88	e651
5	734	493	239	393	120	79	21	16	28	20	60	e663
6	750	1110	225	380	119	69	21	15	29	20	49	e751
7	697	1910	213	363	114	62	20	17	28	19	49	e1090
8	580	2280	204	339	109	58	19	15	29	18	62	e1880
9	501	2230	198	335	104	50	21	16	29	20	99	e2140
10	454	2160	192	309	99	47	23	19	26	25	87	e2240
11	414	2090	188	296	95	47	23	18	24	28	69	e2060
12	382	2000	185	292	104	46	23	16	24	28	64	e1950
13	355	1880	176	270	134	45	26	14	23	28	71	e1910
14	321	1700	212	286	126	44	26	14	21	26	85	e1880
15	303	1520	282	286	116	44	25	14	21	25	180	e1800
16	557	1370	769	261	108	44	23	16	21	24	204	e1710
17	662	1240	1120	248	103	42	22	19	26	21	309	e1690
18	1330	1050	1100	230	98	40	22	19	28	23	e669	e1930
19	1670	817	977	215	93	39	20	16	31	28	e1030	e2050
20	1750	662	831	204	91	37	22	15	30	35	e1070	e1900
21	1640	579	727	196	90	38	20	14	27	34	e914	e1830
22	1430	529	680	184	102	35	16	13	24	30	e674	e1880
23	1230	491	652	171	110	34	20	17	21	27	396	e1860
24	1040	439	614	169	97	36	18	16	20	26	306	e1830
25	884	398	801	173	90	41	17	17	21	41	299	e1790
26	761	368	901	165	84	30	27	17	22	51	225	e1730
27	662	362	895	157	80	26	31	20	21	64	170	e1650
28	592	363	831	156	73	29	29	20	20	52	144	e1580
29	537	—	750	152	69	33	26	22	19	41	131	e1500
30	494	—	669	148	67	33	23	28	18	39	118	e1430
31	440	—	603	—	64	—	19	36	—	78	—	e1340
TOTAL	24266	29887	16378	8194	3194	1437	708	547	755	945	8175	47522
MEAN	782.8	1067.4	528.3	273.1	103.0	47.9	22.8	17.6	25.2	30.5	272.5	1533.0
MAX	1750	2280	1120	506	141	88	31	36	36	78	1070	2240
MIN	303	362	176	148	64	26	16	13	18	18	49	114
AC-FT	48140	59290	32490	16250	6340	2850	1400	1090	1500	1870	16220	94270

†Provisional data–subject to revision; e=estimated value

DAIRY — 14206200 — Dairy Creek at Hwy 8 near Hillsboro, Oregon [RM 2.06]



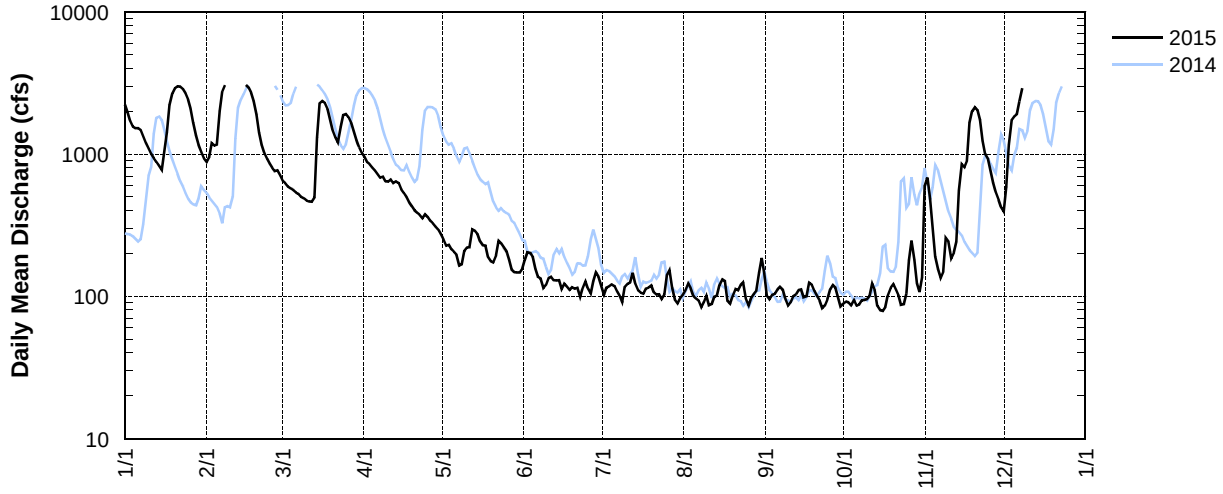
TRJB – 14206241 – TUALATIN RIVER AT HWY 219 BRIDGE [RM 44.4]

Latitude: 45 30 01 Longitude: 122 59 24 Source Agency: Jackson Bottom Wetland Education Center

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB*	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC*
1	2226	883	704	1025	275	156	119	102	146	89	596	394
2	1965	956	646	952	253	181	103	110	101	92	682	588
3	1712	1190	624	877	227	204	115	123	96	91	487	1161
4	1564	1149	592	852	230	202	117	114	103	87	294	1739
5	1517	1166	572	810	215	188	121	101	104	94	190	1844
6	1521	2011	556	766	207	156	118	96	111	86	154	1905
7	1473	2776	536	723	198	138	108	93	116	87	135	2347
8	1327	3064	525	683	165	134	101	84	111	93	149	2900
9	1194		501	694	168	114	91	91	95	94	258	
10	1089		488	644	209	121	116	101	86	96	244	
11	1000		472	640	220	134	123	87	91	100	186	
12	935		465	664	221	137	125	88	100	123	203	
13	882		462	627	296	130	146	99	103	110	242	
14	820		497	642	290	129	123	101	110	86	556	
15	771		1308	626	275	130	110	120	112	80	852	
16	1037	3058	2271	565	244	112	106	132	98	79	813	
17	1423	2930	2366	534	228	123	104	128	100	84	902	
18	2201	2697	2285	498	227	117	113	93	124	102	1659	
19	2678	2362	2064	459	188	111	115	89	121	115	1999	
20	2901	1892	1726	429	177	116	120	100	109	122	2142	
21	2998	1414	1454	404	173	113	107	113	101	112	2042	
22	2974	1159	1311	387	195	115	103	110	93	102	1734	
23	2859	1019	1205	374	246	99	103	120	83	87	1239	
24	2675	925	1548	355	235	115	95	125	86	88	998	
25	2419	854	1890	376	221	128	103	95	95	104	921	
26	2081	800	1921	362	207	113	142	86	112	180	763	
27	1666	761	1826	341	181	105	153	98	120	247	626	
28	1350	767	1649	328	154	127	116	104	115	181	538	
29	1163	—	1432	310	147	147	95	109	99	123	476	
30	1034	—	1256	296	147	137	89	148	85	107	421	
31	938	—	1118	—	147	—	97	187	—	136	—	
TOTAL	52390		36269	17244	6565	4031	3496	3348	3126	3375	22499	
MEAN	1690		1170	575	212	134	113	108	104	109	750	
MAX	2998		2366	1025	296	204	153	187	146	247	2142	
MIN	771		462	296	147	99	89	84	83	79	135	
AC-FT	103914		71938	34203	13021	7996	6935	6641	6200	6694	44626	

*Incomplete record (monthly totals were computed when at least 80% of the record was complete for the month).

TRJB — 14206241 —Tualatin River at Hwy 219 Bridge [RM 44.4]



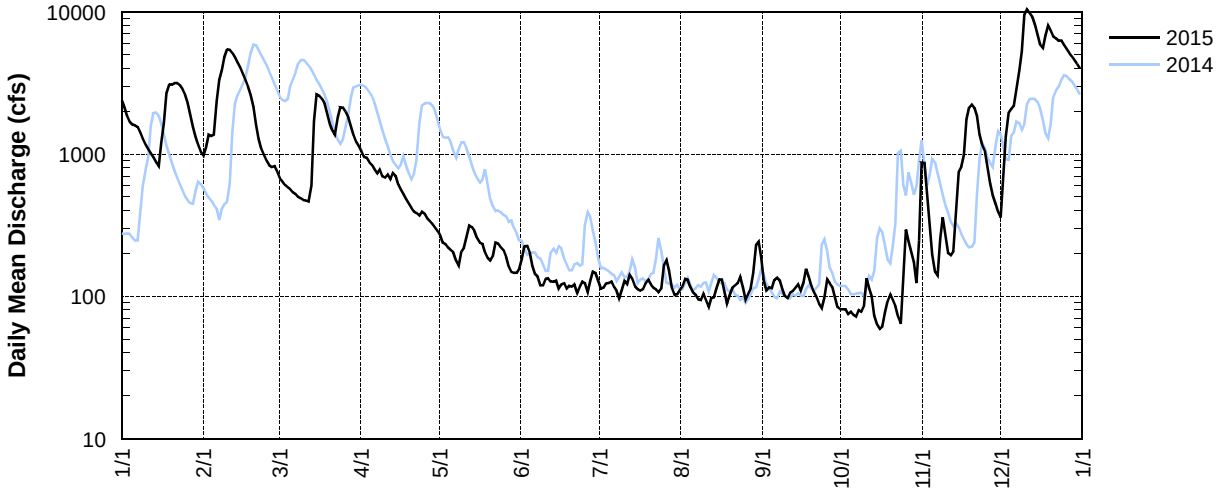
ROOD – 14206295 – TUALATIN RIVER AT ROOD BRIDGE ROAD NEAR HILLSBORO, OREGON [RM 38.4]

Latitude: 45 29 24 Longitude: 122 57 06 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	2380	979	750	1140	288	156	130	110	187	81	866	357
2	2120	1120	675	1040	267	182	113	117	128	81	862	711
3	1850	1370	641	951	239	224	115	132	110	81	537	1330
4	1680	1340	606	941	233	226	123	131	115	75	329	1960
5	1610	1370	582	880	220	202	124	116	114	78	197	2080
6	1590	2360	563	837	211	164	127	107	130	74	148	2180
7	1550	3320	539	778	203	144	116	102	135	72	139	2830
8	1420	3870	524	730	177	138	109	95	129	80	251	3840
9	1280	4820	502	779	164	119	97	94	112	78	359	e5260
10	1160	5430	487	697	206	119	110	104	100	86	270	e9590
11	1080	5390	472	682	219	132	128	94	97	134	200	e10400
12	1010	5130	471	718	259	134	122	84	106	114	194	e9870
13	947	4780	464	667	315	127	141	97	109	100	207	e9200
14	873	4390	600	738	307	126	132	98	115	73	401	8130
15	818	4030	1710	703	288	129	117	113	121	63	750	6960
16	1210	3650	2630	609	257	113	112	131	109	59	817	5900
17	1650	3300	2580	562	237	121	110	131	125	61	980	5570
18	2670	2960	2460	522	234	124	112	107	156	76	1750	6820
19	3080	2600	2260	482	203	113	123	89	138	93	2110	7960
20	3070	2140	1930	446	186	118	130	101	119	103	2230	7380
21	3150	1610	1640	417	179	117	121	115	107	94	2110	6710
22	3150	1270	1460	395	193	121	115	119	98	85	1850	6520
23	3040	1090	1360	384	239	106	112	124	88	72	1370	6250
24	2860	979	1800	369	235	117	107	137	82	64	1160	6270
25	2620	895	2130	392	222	127	114	115	97	129	1040	5880
26	2300	832	2110	381	211	124	165	95	131	294	801	5450
27	1900	810	1990	354	189	107	180	104	123	244	623	5120
28	1540	823	1810	339	162	128	151	114	116	202	513	4860
29	1320	—	1570	322	148	149	114	146	99	173	446	4570
30	1160	—	1360	305	146	146	102	230	84	124	390	4290
31	1040	—	1220	—	146	—	103	242	—	245	—	3990
TOTAL	57128	72658	39896	18560	6783	4153	3775	3694	3480	3388	23900	168238
MEAN	1842.8	2594.9	1287.0	618.7	218.8	138.4	121.8	119.2	116.0	109.3	796.7	5427.0
MAX	3150	5430	2630	1140	315	226	180	242	187	294	2230	10400
MIN	818	810	464	305	146	106	97	84	82	59	139	357
AC-FT	113320	144130	79140	36820	13460	8240	7490	7330	6900	6720	47410	333730

† Provisional data–subject to revision; e=estimated value

ROOD — 14206295 — Tualatin River at Rood Bridge Road near Hillsboro, Oregon [RM 38.4]

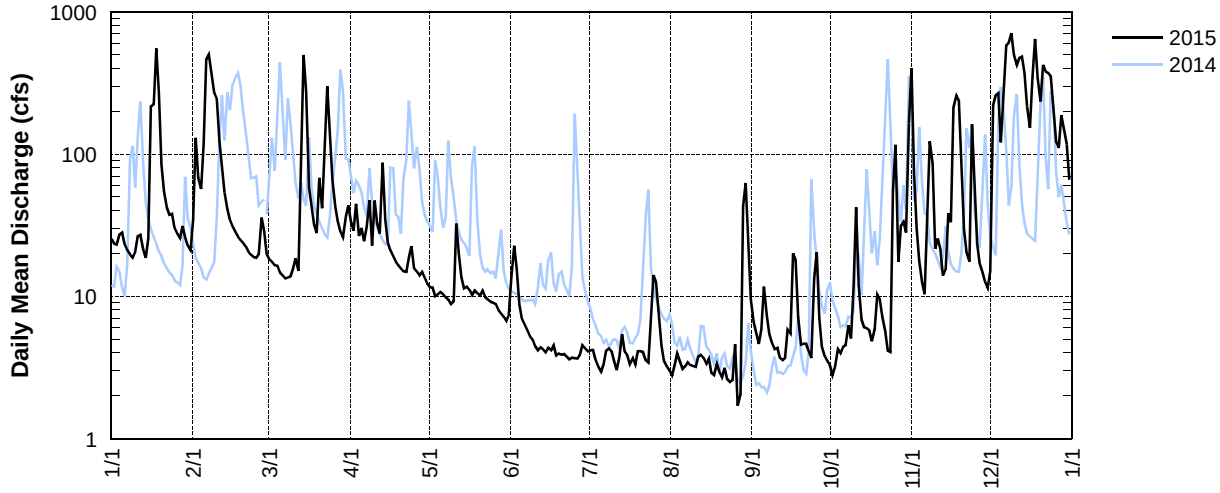


BVTS – 14206435 – BEAVERTON CREEK AT NE GUSTON COURT NEAR ORENCO, OREGON [RM 1.2]

Latitude: 45 31 15 Longitude: 122 53 59 Source Agency: WEST Consultants for Clean Water Services

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	25	35	20	44	12	7.5	4.1	3.0	9.5	3.3	403	15
2	23	130	18	34	12	14	4.2	2.8	6.6	2.8	74	221
3	23	68	18	29	12	23	4.2	3.3	5.5	3.2	30	259
4	27	57	17	45	10	16	3.6	4.0	4.6	4.2	18	269
5	28	119	16	27	10	8.8	3.2	3.5	5.9	4.0	13	121
6	23	465	15	30	11	6.9	2.9	3.1	12	4.4	10	230
7	21	502	14	24	10	6.3	3.3	3.2	7.3	4.5	33	580
8	20	373	13	31	9.9	5.7	4.1	3.5	5.4	6.2	123	608
9	19	268	14	47	9.4	5.2	4.3	3.3	4.7	5.1	86	708
10	21	243	14	23	8.8	5.0	4.1	3.2	4.3	12	22	498
11	27	124	16	47	9.2	4.5	3.5	3.2	4.3	42	25	424
12	27	80	18	32	33	4.2	3.0	3.8	3.7	12	22	474
13	21	54	15	28	20	4.4	3.7	3.9	3.5	6.8	14	486
14	19	41	99	87	14	4.2	5.4	3.7	3.7	6.1	16	371
15	26	34	499	35	11	4.1	4.1	3.3	5.8	5.9	38	216
16	216	31	276	24	12	4.3	3.8	3.7	5.5	5.7	33	153
17	224	29	58	21	11	4.2	3.3	2.9	20	4.8	213	351
18	553	26	43	19	10	4.5	3.7	2.8	18	5.9	256	644
19	270	25	32	18	11	3.8	3.3	3.3	7.1	10	236	345
20	85	24	28	17	11	4.0	4.1	2.9	4.6	9.4	92	235
21	55	22	68	16	10	3.9	4.1	2.7	4.6	7.2	30	424
22	42	21	42	15	11	3.9	4.1	3.1	4.6	5.7	20	380
23	38	20	108	15	9.9	3.8	3.5	2.6	4.1	4.2	18	372
24	38	19	299	19	9.5	3.6	3.4	2.5	3.7	4.1	162	354
25	30	19	140	23	9.1	3.7	7.1	2.6	13	55	56	198
26	27	20	67	16	9.0	3.7	14	4.6	20	116	24	121
27	26	36	43	15	8.9	3.7	13	1.7	7.0	18	17	111
28	31	29	34	14	8.1	3.9	7.6	2.0	4.4	32	15	188
29	26	—	29	15	7.6	4.5	4.5	43	3.8	33	13	145
30	23	—	26	14	7.2	4.3	3.5	63	3.5	28	11	117
31	21	—	36	—	6.7	—	3.2	27	—	164	—	66
TOTAL	2055	2914	2135	824	344.3	179.6	143.9	221.2	210.7	625.5	2123	9684
MEAN	66.2	104.0	68.8	27.3	11.1	5.9	4.6	7.1	7.0	20.2	70.7	312.4
MAX	553	502	499	87	33	23	14	63	20	164	403	708
MIN	19	19	13	14	6.7	3.6	2.9	1.7	3.5	2.8	10	15
AC-FT	4076	5780	4235	1634	683	356	285	439	418	1241	4211	19210

BVTS — 14206435 — Beaverton Creek at NE Guston Court near Orenco, Oregon [RM 1.2]



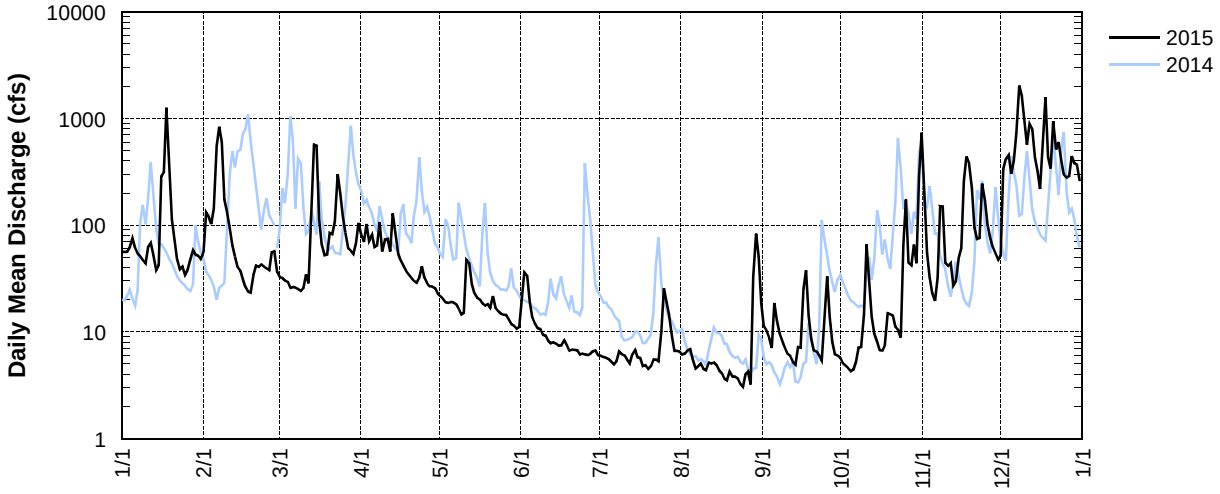
RCTV – 14206451** – ROCK CREEK AT HWY 8 NEAR HILLSBORO, OREGON [RM 1.2]

Latitude: 45 30 08 Longitude: 122 56 52 Source Agency: WEST Consultants for Clean Water Services

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	56	57	36	105	23	11	6.0	6.5	19	5.7	e736	52
2	56	131	32	80	22	21	6.0	6.1	11	5.0	e150	334
3	56	120	32	70	20	36	5.8	6.3	10	4.8	55	417
4	62	103	30	103	19	34	5.7	6.7	8.7	4.6	33	457
5	75	143	29	71	19	19	5.5	6.9	7.1	4.3	23	304
6	61	553	26	82	19	14	5.2	5.5	19	4.4	20	402
7	54	837	26	63	19	12	5.0	4.5	13	5.2	32	e729
8	51	603	26	65	18	11	5.3	4.8	9.5	7.1	150	e2030
9	48	174	25	107	16	11	6.5	5.0	8.2	7.2	149	e1630
10	44	135	24	57	14	9.4	6.2	4.5	7.1	15	45	946e
11	63	e93	26	73	15	9.2	6.0	4.4	6.2	66	42	e572
12	68	e65	34	74	47	8.3	5.5	5.2	6.0	29	44	e890
13	53	e51	28	57	44	7.8	5.0	5.1	5.2	14	27	e782
14	38	e41	108	129	28	8.0	6.1	5.2	4.9	9.7	30	e433
15	42	e37	571	80	23	7.7	6.8	4.9	7.2	8.1	49	e323
16	288	e31	557	54	21	7.4	5.8	4.3	7.1	6.7	61	e218
17	315	26	115	46	20	7.4	5.7	4.1	25	6.7	e260	e664
18	e1260	24	66	42	18	8.3	4.8	3.6	38	7.5	442	e1580
19	e372	23	52	38	18	7.5	4.9	3.5	14	15	382	e434
20	e114	34	53	34	18	6.7	4.5	4.2	8.6	15	224	e339
21	74	42	85	32	17	6.8	4.7	3.8	6.7	14	95	e944
22	48	41	82	30	22	6.8	5.5	3.8	6.5	11	74	e515
23	39	43	107	29	17	6.7	5.5	3.7	6.0	10	76	e601
24	41	41	301	32	16	6.1	5.3	3.3	5.3	8.9	245	e408
25	34	39	199	41	15	6.3	10	3.1	11	65	170	e300
26	38	38	122	32	14	6.1	26	4.0	33	174	101	e279
27	47	56	85	29	14	6.0	19	4.2	14	44	77	e290
28	58	57	60	27	13	6.2	14	3.2	8.0	42	63	445
29	52	—	58	27	12	6.6	9.2	33	6.2	66	54	383
30	52	—	54	26	11	6.7	6.6	84	6.0	44	48	372
31	48	—	67	—	11	—	6.6	51	—	e284	—	260
TOTAL	3707	3638	3116	1735	603	321	224.7	298.4	337.5	1003.9	3957	18333
MEAN	119.6	129.9	100.6	57.8	19.5	10.7	7.3	9.6	11.3	32.4	131.8	591.7
MAX	1260	837	571	129	47	36	26	84	38	284	736	2030
MIN	34	23	24	26	11	6.0	4.5	3.1	4.9	4.3	20	52
AC-FT	7353	7216	6180	3441	1196	637	446	592	669	1991	7849	36360

**Site moved 120 feet downstream in 2012, previous ID was 14205450; e=estimated value

RCTV — 14206451 — Rock Creek at Hwy 8 near Hillsboro, Oregon [RM 1.2]



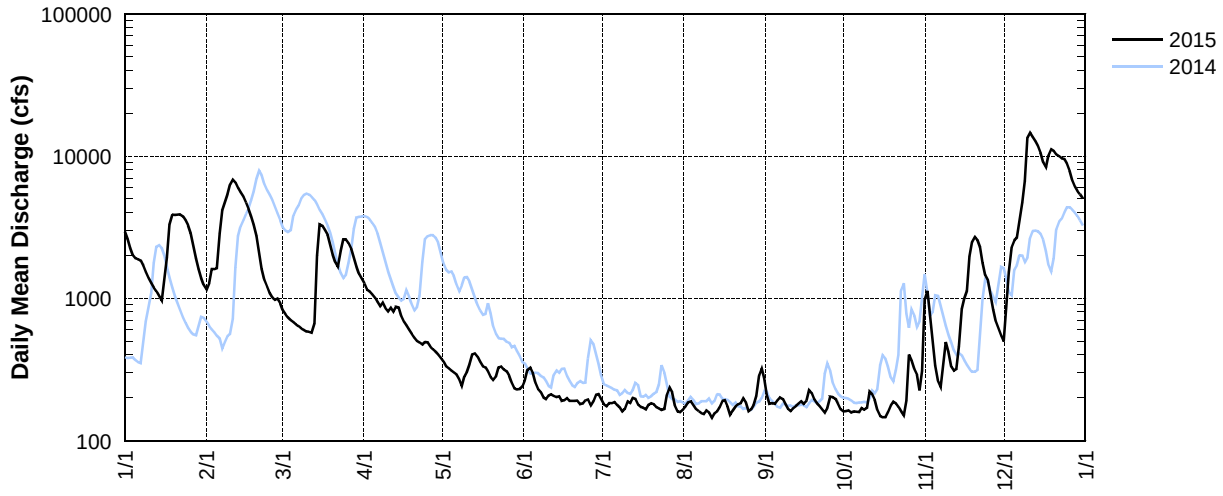
FRMO – 14206500 – TUALATIN RIVER AT FARMINGTON, OREGON [RM 33.3]

Latitude: 45 26 58 Longitude: 122 57 02 Source Agency: District 18 Watermaster

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	2940	1150	921	1380	384	240	196	164	273	160	968	497
2	2620	1280	824	1270	362	266	179	173	208	161	1130	818
3	2270	1600	774	1150	332	313	174	186	181	162	752	1530
4	2020	1600	732	1120	322	325	183	189	183	157	508	2300
5	1910	1630	701	1070	310	298	183	177	181	160	337	2550
6	1880	2870	679	1010	301	255	187	167	192	159	260	2670
7	1840	4170	654	942	291	231	178	161	201	158	237	3510
8	1700	4730	636	878	268	220	171	156	196	169	349	4710
9	1530	5360	616	931	241	201	160	153	180	165	493	6710
10	1380	6290	599	855	281	196	167	162	167	170	422	13500
11	1280	6830	583	809	304	207	189	157	161	220	331	14600
12	1190	6530	581	857	343	212	184	144	168	211	311	13600
13	1120	5990	572	805	404	206	200	155	175	193	318	12700
14	1030	5560	664	871	410	202	197	160	182	164	458	11700
15	961	5160	1990	860	389	204	178	171	189	149	840	10500
16	1340	4700	3320	748	358	190	172	190	181	146	1000	9070
17	1930	4240	3240	686	332	192	170	192	191	146	1130	8310
18	3290	3770	3040	644	327	199	166	174	226	158	1970	10200
19	3860	3290	2790	602	305	190	178	152	216	176	2490	11200
20	3840	2740	2390	561	280	190	183	162	195	188	2710	10900
21	3870	2070	2020	528	267	190	180	174	183	183	2570	10300
22	3880	1600	1790	502	283	191	172	180	175	173	2290	9990
23	3770	1350	1660	489	326	180	168	183	166	161	1770	9610
24	3550	1200	2160	473	332	182	164	198	157	150	1450	9520
25	3260	1090	2600	491	317	192	167	184	169	191	1330	8870
26	2880	1010	2590	490	307	195	212	161	203	402	1050	7830
27	2380	977	2450	459	285	176	236	166	202	367	834	6750
28	1900	998	2220	440	255	189	218	178	197	317	688	6110
29	1600	—	1930	422	233	209	175	205	181	290	609	5690
30	1390	—	1670	404	229	211	160	288	166	225	545	5380
31	1240	—	1480	—	230	—	158	322	—	308	—	5030
TOTAL	69651	89785	48876	22747	9608	6452	5605	5584	5645	6139	30150	236655
MEAN	2246.8	3206.6	1576.6	758.2	309.9	215.1	180.8	180.1	188.2	198.0	1005.0	7634.0
MAX	3880	6830	3320	1380	410	325	236	322	273	402	2710	14600
MIN	0	977	572	404	229	176	158	144	157	146	237	497
AC-FT	138170	178110	96960	45120	19060	12800	11120	11080	11200	12180	59810	469450

† Provisional data–subject to revision

FRMO — 14206500 — Tualatin River at Farmington, Oregon [RM 33.3]

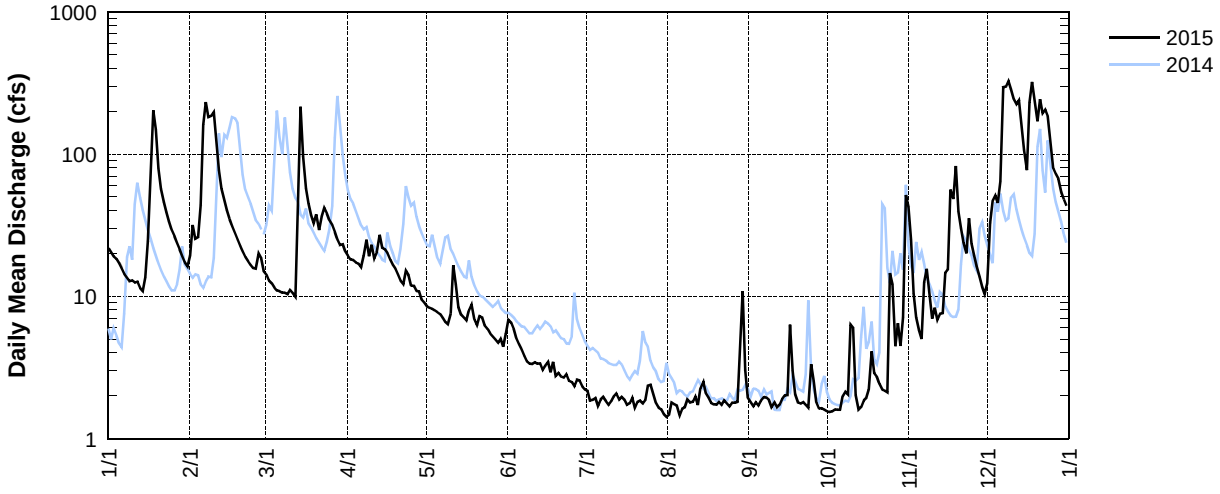


CCSR – 14206750 – CHICKEN CREEK AT ROY ROGERS ROAD NEAR SHERWOOD, OREGON [RM 2.3]

Latitude: 45 22 31 Longitude: 122 51 24 Source Agency: WEST Consultants for Clean Water Services

Day	2015 Daily Mean Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	22	19	15	21	9.1	5.4	2.2	1.4	1.9	1.6	42	12
2	20	32	14	19	8.5	6.8	2.2	1.5	1.8	1.5	25	33
3	19	25	13	18	8.3	6.5	1.9	1.8	1.7	1.6	10	47
4	18	26	12	18	8.2	5.9	1.9	1.8	1.8	1.6	7.1	51
5	17	44	11	17	8.0	5.1	1.9	1.7	1.7	1.6	5.7	46
6	16	161	11	17	7.7	4.6	1.7	1.5	1.8	1.6	5.0	64
7	14	232	11	16	7.5	4.2	1.9	1.6	2.0	2.0	13	295
8	13	182	11	19	7.0	3.8	2.0	1.7	1.9	2.1	16	298
9	13	186	11	25	6.6	3.5	1.8	1.9	1.9	2.0	9.9	328
10	13	198	10	19	6.4	3.4	1.7	1.8	1.7	6.3	7.0	286
11	12	121	11	23	7.5	3.3	1.8	1.8	1.8	6.0	8.3	242
12	13	77	11	18	16	3.4	2.0	2.0	1.7	2.0	6.9	224
13	11	57	9.9	21	12	3.4	2.1	1.7	1.7	1.6	7.5	240
14	11	47	30	27	8.4	3.4	1.9	2.3	1.9	1.7	7.6	164
15	14	40	215	22	7.4	3.0	2.0	2.5	2.0	1.8	15	107
16	24	35	97	21	7.1	3.3	1.9	2.1	2.0	1.9	15	77
17	70	31	57	20	6.8	3.5	1.7	1.9	6.3	2.2	56	231
18	203	28	45	18	8.0	2.9	1.8	1.8	3.0	4.1	48	322
19	149	25	37	17	8.8	3.5	1.9	1.7	2.1	2.9	83	235
20	80	23	33	16	6.8	2.8	1.6	1.7	1.8	2.7	39	170
21	57	21	38	14	6.2	2.9	1.8	1.8	1.8	2.4	30	244
22	46	19	29	13	7.3	2.7	1.8	1.7	1.8	2.2	24	194
23	39	18	36	12	7.1	2.7	1.8	1.9	1.7	2.2	20	205
24	33	17	42	15	6.2	2.8	1.9	1.8	1.6	2.1	35	184
25	29	16	38	14	5.9	2.5	2.4	1.7	3.3	15	23	121
26	27	16	34	12	5.5	2.5	2.4	1.8	2.5	12	19	80
27	24	20	32	12	5.2	2.3	2.1	1.8	1.8	4.5	16	72
28	21	18	28	11	5.0	2.6	1.8	1.8	1.6	6.5	14	67
29	19	—	25	11	4.7	2.6	1.7	4.8	1.6	4.5	12	54
30	17	—	23	9.5	5.0	2.3	1.6	11	1.6	7.1	10	48
31	16	—	23	—	4.4	—	1.5	3.0	—	51	—	43
TOTAL	1080	1734	1012.9	515.5	228.6	107.6	58.7	69.3	61.8	158.3	630	4784
MEAN	34.9	61.9	32.7	17.2	7.4	3.6	1.9	2.2	2.1	5.1	21.1	154.3
MAX	203	232	215	27	16	6.8	2.4	11	6.3	51	83	328
MIN	11	16	9.9	9.5	4.4	2.3	1.5	1.4	1.6	1.5	5.0	12
AC-FT	2142	3439	2009	1022	453	213	116	137	123	314	1250	9489

CCSR — 14206750 — Chicken Creek at Roy Rogers Road near Sherwood, Oregon [RM 2.3]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

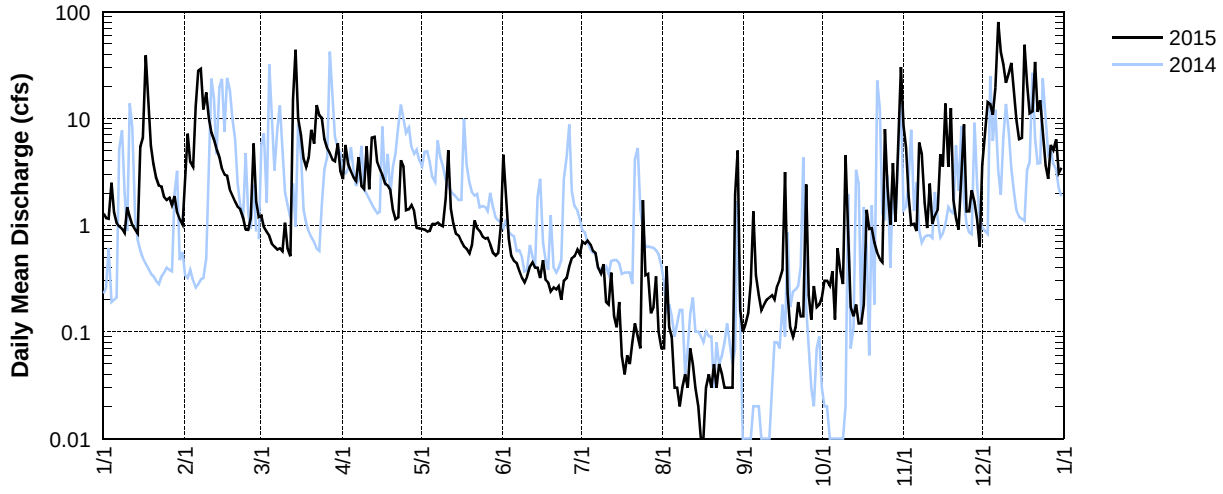
STATION NUMBER 14206900 FANNO CREEK AT 56TH AVENUE

LATITUDE: 452917 LONGITUDE: 1224401 DRAINAGE AREA: 2.37

Discharge, Cubic Feet per Second, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1.3	2.9	1.2	3.2	0.93	0.98	0.53	0.07	0.1	0.21	8.5	3.7
2	1.2	7.2	1.2	2.7	0.92	4.6	0.7	0.07	0.12	0.3	5.3	7.1
3	1.2	3.9	0.95	5.7	0.91	1.7	0.67	0.41	0.15	0.3	1.9	14
4	2.5	3.5	0.86	3.8	0.87	0.75	0.72	0.11	0.29	0.27	1	14
5	1.3	13	0.79	3.2	0.88	0.51	0.66	0.09	1.3	0.37	1	11
6	1.1	28	0.67	2.8	1	0.46	0.57	0.03	0.34	0.13	0.88	19
7	0.98	29	0.63	2.6	1	0.44	0.55	0.03	0.21	0.61	6	80
8	0.92	12	0.58	4.3	1.1	0.37	0.4	0.02	0.16	0.37	4.7	42
9	0.84	18	0.61	2.3	1	0.31	0.35	0.02	0.18	0.27	1.6	32
10	1.5	10	0.57	2.2	0.98	0.28	0.43	0.04	0.2	4.5	0.94	22
11	1.2	7.4	1.1	5.5	1.8	0.33	0.19	0.03	0.21	1.2	2.5	27
12	1	6.4	0.61	2.2	5.1	0.4	0.18	0.07	0.21	0.17	1	33
13	0.9	5.2	0.51	6.6	1.4	0.45	0.36	0.05	0.2	0.14	1.2	17
14	0.83	4.3	15	6.7	1	0.4	0.14	0.03	0.27	0.18	1.4	9.6
15	5.4	3.4	44	3.9	0.83	0.4	0.11	0.03	0.3	0.12	4.6	6.4
16	6.6	3	10	3.4	0.79	0.31	0.19	0.01	0.37	0.12	3.5	6.6
17	39	2.9	7	3	0.7	0.47	0.06	0.01	3.1	0.17	14	49
18	17	2.1	4.2	2.4	0.63	0.3	0.04	0.03	0.23	1.4	3.5	21
19	5.6	1.9	3.5	2.3	0.6	0.28	0.05	0.04	0.11	0.92	12	11
20	3.7	1.7	4.3	2.1	0.54	0.23	0.05	0.03	0.09	0.94	1.7	12
21	2.8	1.5	7.8	1.4	0.65	0.25	0.08	0.05	0.11	0.69	1.2	34
22	2.4	1.4	5.8	1.1	1.1	0.25	0.12	0.03	0.19	0.55	0.91	12
23	2.3	1.2	13	1.2	0.94	0.26	0.09	0.05	0.14	0.48	2.5	15
24	1.8	0.91	11	4.1	0.88	0.2	0.07	0.04	0.14	0.45	8.8	7.1
25	1.7	0.9	10	3.6	0.78	0.3	1.7	0.03	2.4	8	1.4	3.6
26	1.8	1.2	6.4	1.4	0.75	0.32	0.33	0.03	0.22	2.3	1.4	2.7
27	1.5	5.8	5.2	1.4	0.76	0.41	0.35	0.03	0.13	1	2.1	5.7
28	1.9	1.7	4.7	1.6	0.66	0.49	0.15	0.03	0.27	3.8	1.6	5
29	1.3	—	4.1	1.4	0.55	0.51	0.17	1.9	0.17	1.1	1.1	6.4
30	1.1	—	4	0.94	0.52	0.59	0.33	5	0.18	5	0.63	3.1
31	1	—	5.9	—	0.54	—	0.1	0.16	—	30	—	3.4
TOTAL	113.67	180.41	176.18	89.04	31.11	17.55	10.44	8.57	12.09	66.06	98.86	535.4
MEAN	3.67	6.44	5.68	2.97	1	0.58	0.34	0.28	0.4	2.13	3.3	17.3
MAX	39	29	44	6.7	5.1	4.6	1.7	5	3.1	30	14	80
MIN	0.83	0.9	0.51	0.94	0.52	0.2	0.04	0.01	0.09	0.12	0.63	2.7
AC-FT	225	358	349	177	62	35	21	17	24	131	196	1060

6900 — 14206900 — Fanno Creek at 56th Avenue [RM 11.9]



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY – OREGON WATER SCIENCE CENTER

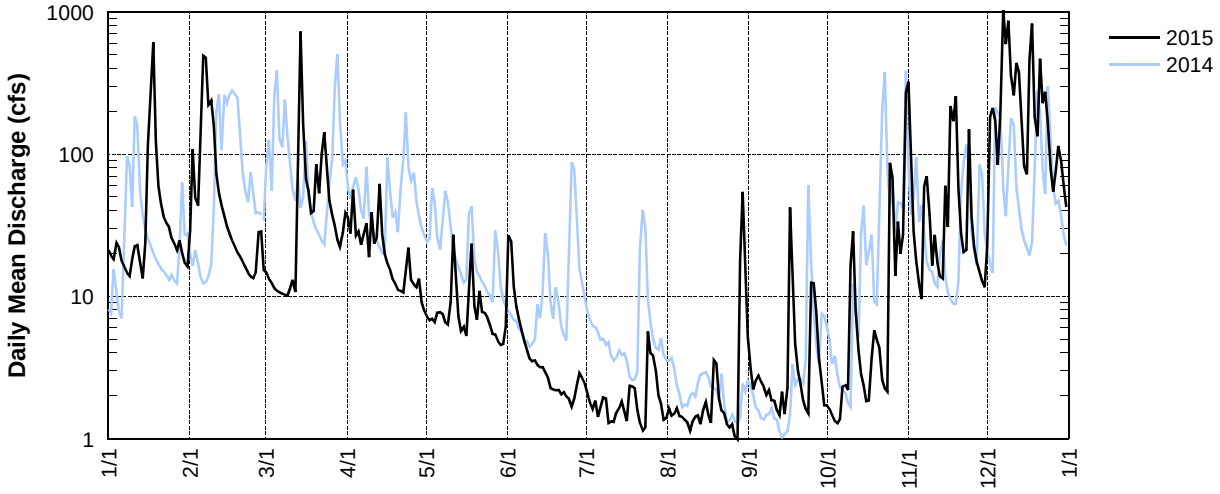
STATION NUMBER 14206950 FANNO CREEK AT DURHAM

LATITUDE: 452413 LONGITUDE: 1224513 DRAINAGE AREA: 31.50

Day	Discharge, Cubic Feet per Second, Calendar Year January to December 2015 Daily Mean Values											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	21	e47	15	39	7.9	6.1	2.4	1.4	5.3	1.7	334	22
2	19	e103	15	36	7.2	27	2.1	1.6	3.1	1.6	93	183
3	18	49	13	28	6.8	24	1.8	1.4	2.2	1.5	29	211
4	24	43	12	56	7	12	1.6	1.5	2.5	1.3	18	173
5	22	134	11	27	6.6	8.5	1.9	1.6	2.8	1.3	12	84
6	18	491	11	29	7.6	7	1.4	1.4	2.5	1.4	9.6	195
7	16	475	11	23	7.8	5.7	1.7	1.4	2.3	2.4	59	1030
8	15	224	10	27	7.5	4.8	1.9	1.4	2	2.4	70	593
9	14	239	10	33	6.6	4.2	1.9	1.3	2.2	2.2	37	868
10	18	159	10	19	6.3	3.7	1.3	1.2	1.9	17	17	360
11	22	73	11	39	9.2	3.5	1.3	1.3	1.8	29	27	260
12	23	54	13	24	27	3.5	1.3	1.4	1.6	7.9	18	437
13	17	44	11	26	13	3.3	1.5	1.5	1.5	4.2	14	376
14	13	37	114	62	7.3	3.2	1.6	1.2	2.1	2.8	13	183
15	24	31	729	28	5.7	3.2	1.8	1.6	1.5	2.4	60	83
28	114	28	165	20	6.1	2.9	1.6	1.8	2.3	1.8	30	72
17	286	25	67	17	5.3	2.7	1.3	1.5	42	1.9	217	465
18	610	22	55	15	9.9	2.3	2.3	1.3	11	3.7	171	828
19	123	20	39	13	23	2.2	2.3	3.6	4.7	5.8	256	184
20	60	19	40	12	8.5	2.2	2.3	3.4	2.9	5	57	133
21	45	17	85	11	6.9	2.2	1.6	1.9	2.4	4.3	28	467
22	36	16	53	11	11	2.1	1.3	1.6	1.8	2.6	20	228
23	33	15	100	11	7.8	2.1	1.1	1.5	1.6	2.3	21	275
24	31	14	143	16	7.7	2	1.2	1.3	1.5	2.1	148	170
25	26	13	82	22	7	1.9	5.5	1.2	12	87	37	80
26	23	15	47	13	6.2	1.7	4	1.3	12	69	22	54
27	21	28	37	12	5.5	1.9	3.8	1	7.8	14	18	76
28	25	28	31	12	5.4	2.4	3	1	3.7	33	15	115
29	20	—	25	13	4.8	2.9	2	18	2.4	20	13	89
30	17	—	22	9.1	4.5	2.7	1.7	55	1.7	27	12	60
31	e17	—	28	—	4.6	—	1.4	16	—	270	—	42
TOTAL	1771	2463	2015	703.1	257.7	153.9	61.9	132.6	145.1	628.6	1875.6	8396
MEAN	57.1	88	65	23.4	8.31	5.13	2	4.28	4.84	20.3	62.5	271
MAX	610	491	729	62	27	27	5.5	55	42	270	334	1030
MIN	13	13	10	9.1	4.5	1.7	1.1	1	1.5	1.3	9.6	22
AC-FT	3510	4890	4000	1390	511	305	123	263	288	1250	3720	16650

e=estimated value

FANO — 14206950 — Fanno Creek at Durham Road near Tigard, Oregon [RM 1.2]



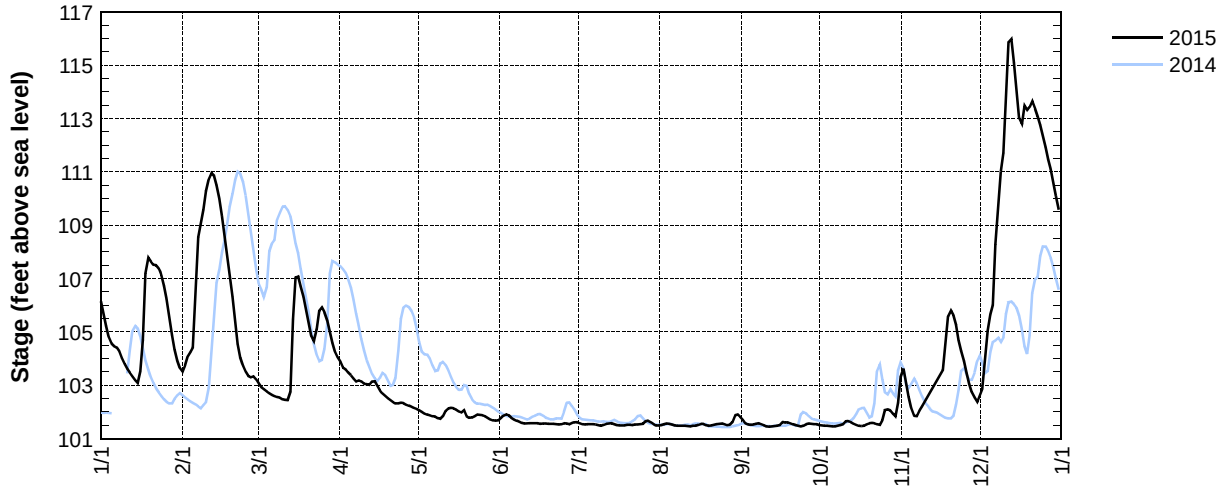
TRT – 14206956 (formerly 14206960) – TUALATIN RIVER AT TUALATIN, OREGON [RM 8.9]

Latitude: 45 23 14 Longitude: 122 45 46 Source Agency: District 18 Watermaster

Day	Daily Elevation in Feet above Mean Sea Level for 2015†											
	JAN*	FEB	MAR	APR	MAY	JUN*	JUL*	AUG	SEP	OCT	NOV*	DEC*
1	106.14	103.51	103.22	104.04	102.11	101.68	101.61	101.49	101.81	101.50	103.31	
2	105.70	103.76	103.06	103.88	102.06	101.76	101.57	101.50	101.70	101.49	103.62	102.87
3	105.22	104.08	102.92	103.66	102.00	101.86	101.53	101.53	101.57	101.48	103.10	103.91
4	104.81	104.24	102.84	103.60	101.93	101.91	101.52	101.56	101.52	101.47	102.56	105.05
5	104.56	104.41	102.76	103.48	101.90	101.87	101.54	101.55	101.51	101.46	102.14	105.64
6	104.46	106.36	102.70	103.37	101.87	101.78	101.54	101.52	101.52	101.45	101.85	106.00
7	104.41	108.56	102.64	103.25	101.84	101.71	101.54	101.49	101.55	101.45	101.84	108.29
8	104.27	109.08	102.59	103.14	101.82	101.67	101.52	101.48	101.57	101.47	102.04	109.80
9	104.02	109.58	102.56	103.18	101.76	101.63	101.50	101.47	101.54	101.50	102.20	111.02
10	103.79	110.27	102.53	103.14	101.74	101.58	101.48	101.47	101.50	101.53		111.71
11	103.61	110.74	102.47	103.05	101.83	101.56	101.51	101.48	101.45	101.64		
12	103.47	110.96	102.45	103.04	102.03		101.55	101.46	101.44	101.65		115.87
13	103.33	110.86	102.44	103.01	102.12	101.57	101.56	101.45	101.45	101.62		115.98
14	103.19	110.50	102.76	103.13	102.15	101.57	101.57	101.47	101.46	101.56		115.10
15	103.08	109.98	105.47	103.14	102.13	101.57		101.48	101.48	101.51		114.01
16	103.51	109.35	107.04	102.97	102.09	101.57	101.50	101.51	101.50	101.48		113.02
17	104.70	108.61	107.08	102.81	102.01	101.55	101.49	101.55	101.62	101.46	103.58	112.79
18	107.20	107.85	106.70	102.69	101.98	101.56	101.49	101.55	101.60	101.48	104.50	113.48
19	107.77	107.09	106.30	102.60	102.06	101.56	101.49	101.50	101.61	101.53	105.58	113.32
20	107.63	106.32	105.79	102.51	101.84	101.55	101.51	101.47	101.57	101.57	105.79	113.44
21	107.51	105.39	105.33	102.43	101.78	101.55	101.51	101.49	101.53	101.58	105.61	113.66
22	107.50	104.55	104.83	102.36	101.79	101.55	101.50	101.51	101.50	101.57	105.27	113.37
23	107.37	104.04	104.64	102.31	101.83		101.52	101.53	101.48	101.54	104.68	113.08
24	107.12	103.72	105.10	102.31	101.89	101.52	101.52	101.55	101.45	101.51	104.28	112.75
25	106.72	103.50	105.79	102.34	101.88	101.54		101.56	101.48	101.69	103.90	112.36
26	106.23	103.35	105.91	102.33	101.87	101.57	101.55	101.53	101.53	102.06	103.46	111.91
27	105.59	103.30	105.73	102.27	101.83	101.56	101.64	101.50	101.56	102.09	103.05	111.46
28	104.88	103.33	105.42	102.23	101.78	101.54	101.67	101.51	101.55	102.05	102.74	111.09
29	104.33	—	105.01	102.20	101.71	101.58	101.61	101.61	101.53	101.93	102.53	110.58
30	103.94	—	104.58	102.15	101.68	101.61	101.53	101.87	101.53	101.84	102.38	110.09
31	103.66	—	104.25	—	101.67	—	101.49	101.90	—	102.34	—	109.57
MEAN	105.15	106.69	104.29	102.89	101.90	101.63	101.54	101.53	101.54	101.63		111.08
MAX	107.77	110.96	107.08	104.04	102.15	101.91	101.67	101.90	101.81	102.34		115.98
MIN	103.08	103.30	102.44	102.15	101.67	101.52	101.48	101.45	101.44	101.45		102.87

† Preliminary data–subject to revision; *Incomplete record (monthly totals were computed when at least 80% of the record was complete for the month)

TRT — 14206956 (formerly 14206960) **— Tualatin River at Tualatin, Oregon [RM 8.9]**



UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - OREGON WATER SCIENCE CENTER

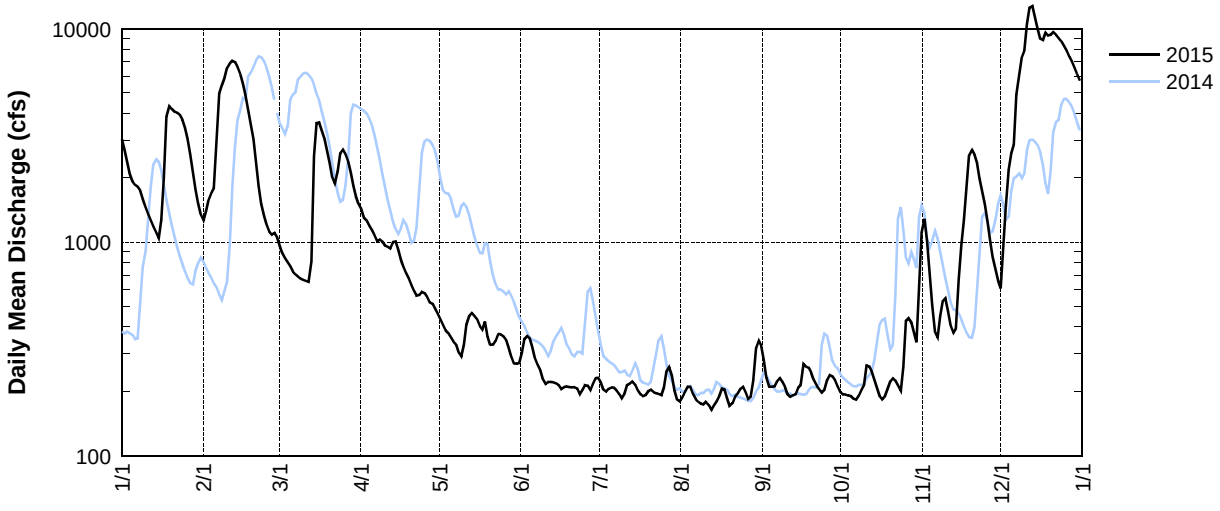
STATION NUMBER: 14207500 TUALATIN RIVER AT WEST LINN, OREG.

LATITUDE: 452103 LONGITUDE: 1224030 DRAINAGE AREA: 706.00 DATUM: 85.61

Discharge, Cubic Feet per Second, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3030	1260	1050	1510	463	271	232	179	327	197	1100	607
2	2710	1400	960	1420	436	301	219	187	281	193	1290	902
3	2380	1590	885	1300	412	351	203	200	232	193	1010	1470
4	2100	1700	839	1260	386	362	199	210	210	191	725	2190
5	1930	1790	800	1200	374	354	206	210	210	189	509	2600
6	1850	3130	768	1140	358	320	208	195	210	185	377	2860
7	1820	4980	728	1070	343	286	207	184	223	183	357	4920
8	1740	5430	705	1010	331	266	202	178	230	191	450	6130
9	1590	5850	689	1030	304	250	195	175	221	202	529	7390
10	1450	6530	673	1010	291	227	186	174	210	214	546	7940
11	1350	6890	665	962	329	216	195	179	194	264	471	10500
12	1260	7090	658	950	412	221	214	173	189	262	404	12600
13	1180	6970	652	937	452	221	217	164	192	248	377	12800
14	1110	6620	812	999	466	220	222	171	194	227	393	11300
15	1040	6110	2530	1010	452	218	215	179	208	206	672	10100
16	1270	5510	3610	922	437	213	202	191	214	190	965	9030
17	2000	4870	3640	832	404	205	193	206	268	183	1260	8850
18	3870	4220	3340	767	390	209	190	204	260	189	1810	9580
19	4340	3620	3030	718	425	211	192	186	258	206	2550	9290
20	4200	3040	2670	673	360	209	200	171	244	223	2700	9380
21	4080	2390	2350	630	330	209	204	176	226	230	2580	9640
22	4040	1830	2010	591	331	209	199	188	213	224	2350	9350
23	3940	1510	1880	562	346	206	196	195	205	213	1980	9060
24	3730	1330	2150	565	371	194	195	204	197	201	1730	8720
25	3430	1200	2610	584	369	203	192	210	203	261	1490	8320
26	3050	1120	2710	578	362	213	208	198	226	427	1250	7880
27	2600	1090	2590	553	348	212	248	184	239	440	1020	7420
28	2120	1100	2380	523	320	203	260	189	235	419	848	7040
29	1760	—	2110	514	290	217	236	224	226	378	740	6580
30	1520	—	1840	487	270	230	201	321	211	338	660	6150
31	1350	—	1640	—	269	—	183	345	—	563	—	5710
TOTAL	73840	100170	53974	26307	11431	7227	6419	6150	6756	7830	33143	226309
MEAN	2382	3578	1741	877	369	241	207	198	225	253	1105	7300
MAX	4340	7090	3640	1510	466	362	260	345	327	563	2700	12800
MIN	1040	1090	652	487	269	194	183	164	189	183	357	607
AC-FT	146500	198700	107100	52180	22670	14330	12730	12200	13400	15530	65740	448900

WSLO — 14207500 —Tualatin River at West Linn, Oregon [RM 1.75]

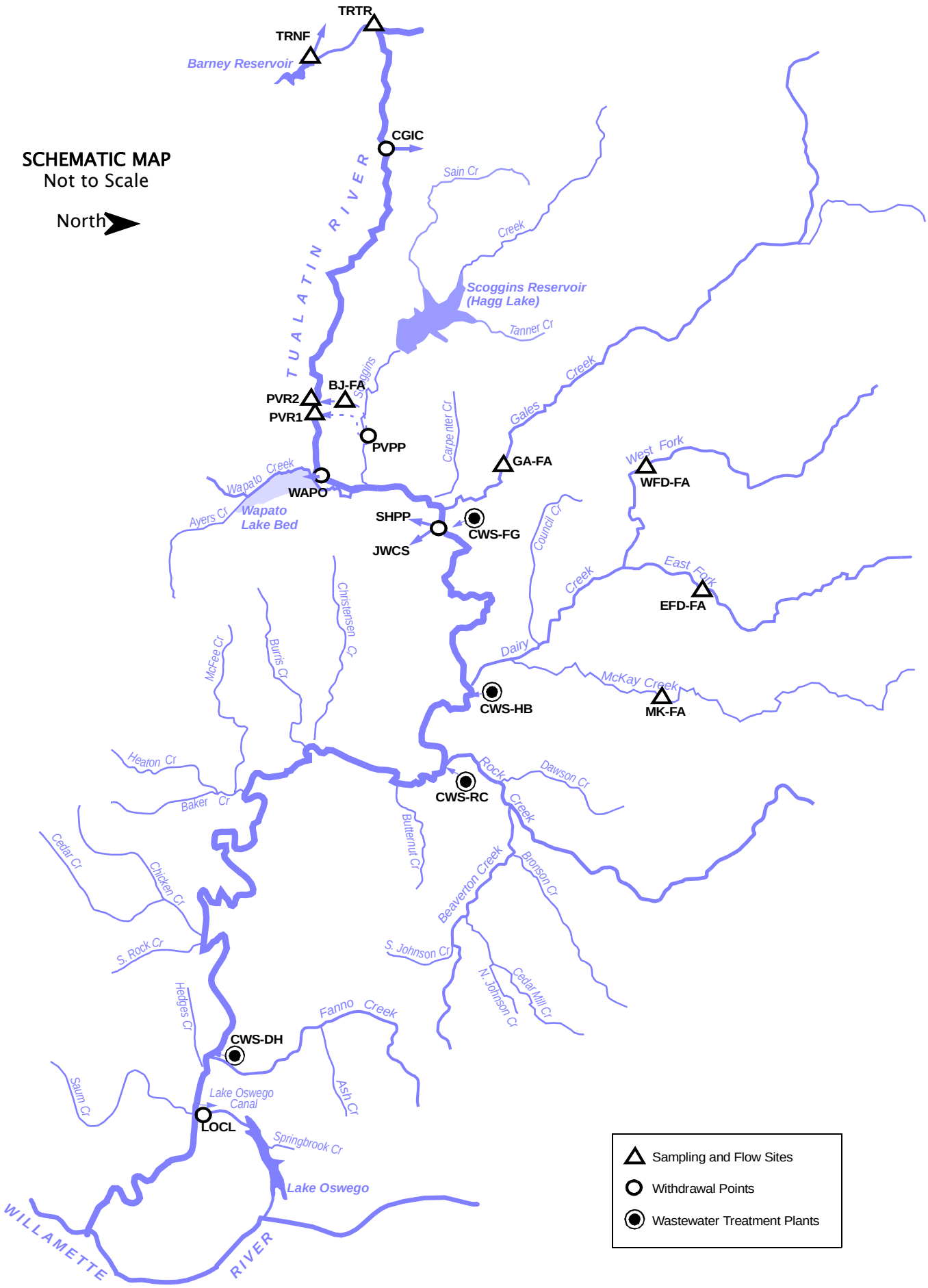


Appendix B

Selected Releases and Withdrawals

The following information is for selected water releases to and withdrawals from the Tualatin River and its tributaries. It is not a comprehensive listing of releases and withdrawals. Some of the data represent daily mean flows and some represent instantaneous measurements. All streamflow measurements are in Appendix A.

SELECTED RELEASES AND WITHDRAWALS — LOCATIONS



SELECTED RELEASE AND WITHDRAWAL SITES — ALPHABETICAL LISTING BY SITE CODE

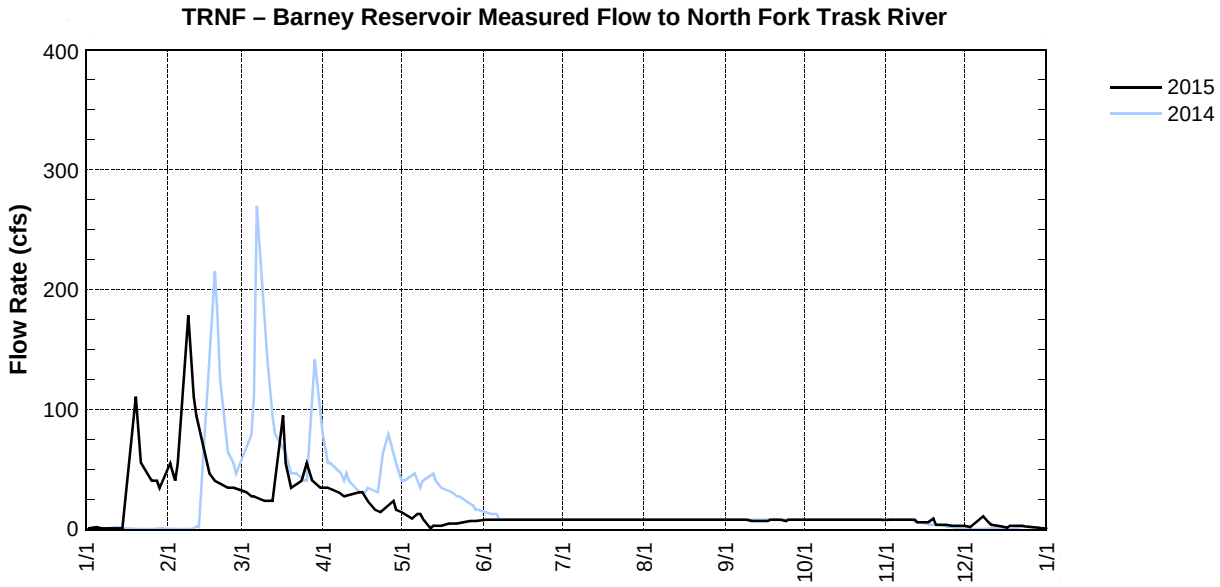
SITE CODE	SITE NAME	RIVER MILE	PAGE
BJ-FA	CWS Black Jack Creek Flow Augmentation with TVID	—	B-13
CGIC	City of Hillsboro Withdrawal at Cherry Grove	73.3	B-6
CWS-DH	CWS Durham WWTF Release	9.33	B-12
CWS-FG	CWS Forest Grove WWTF Release	55.2	B-9
CWS-HB	CWS Hillsboro WWTF Release	43.8	B-10
CWS-RC	CWS Rock Creek WWTF Release	38.08	B-11
EFD-FA	CWS East Fork Dairy Flow Augmentation with TVID	4.9	B-13
GA-FA	CWS Gales Creek Flow Augmentation with TVID	5.0	B-13
JWCS	Joint Water Commission Withdrawal at Spring Hill Pump Plant	56.1	B-8
LOCL	Lake Oswego Corp. Canal Diversion	6.7	*
MK-FA1	CWS McKay Creek Flow Augmentation with TVID	7.0	B-13
PVPP	TVID Withdrawal at Patton Valley Pump Plant	1.71	**
PVR1	TVID—Patton Valley River Turnout #1 Release	63.13	**
PVR2	TVID—Patton Valley River Turnout #2 Release	64.26	**
SHPP	TVID–Withdrawal at Spring Hill Pump Plant	56.1	B-7
TRNF	Barney Reservoir Measured Flow to North Fork Trask River	—	B-4
TRTR	Barney Reservoir Release to Tualatin River	78.0	B-5
WAPO	Wapato Canal Diversion	62.0	**
WFD-FA	CWS West Fork Dairy Flow Augmentation with TVID	5.2	B-13

*Monitoring of the Lake Oswego Canal Diversion was discontinued 8/23/2012.
**Withdrawals and releases at Patton Valley Pump Plant, Patton Valley River turnouts and Wapato Canal Diversion were not measured in 2015.

TRNF – BARNEY RESERVOIR MEASURED FLOW TO NORTH FORK TRASK RIVER

Source Agency: Barney Reservoir Joint Ownership Commission

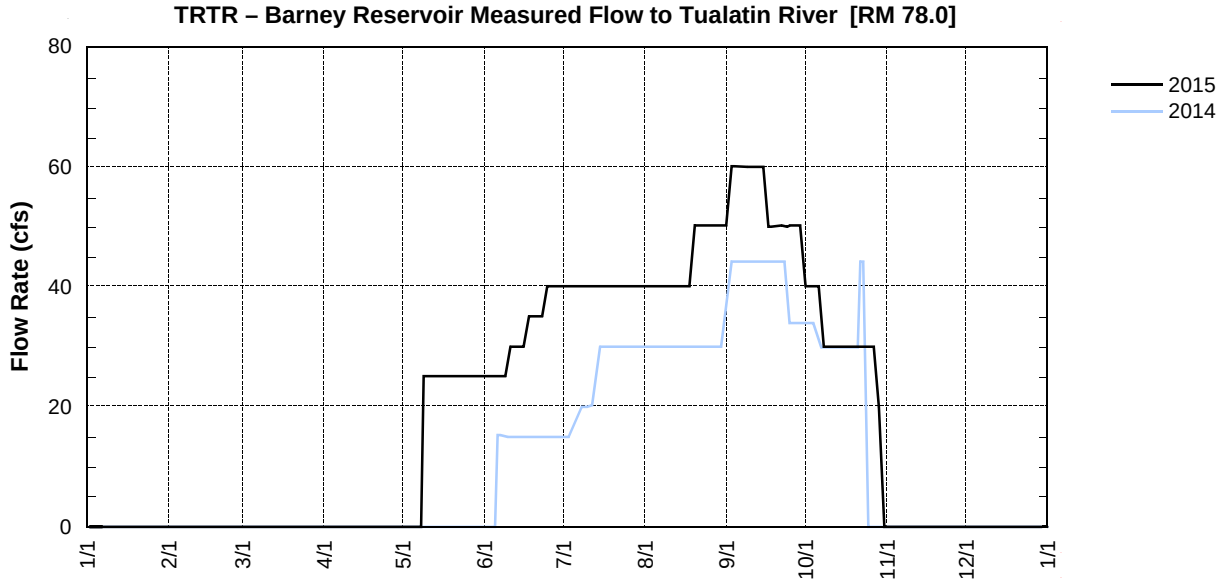
Day	2015 — Instantaneous Measured Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				35.0		8.4	8.4			8.4		
2	1.1	55.5	31.3	35.0			8.4		8.4		8.4	2.3
3								8.4	8.4			
4		41.0	27.6		9.5	8.4					8.4	
5	2.3	55.5	27.6					8.4		8.4	8.4	
6				31.3	13.0		8.4					
7	1.1				13.0					8.4		11.3
8				27.6	9.5	8.4	8.4		8.4			
9	1.1	178.6	23.9							8.4	8.4	6.2
10						8.4		8.4	7.3			4.0
11		110.8	23.9		1.1				7.3		8.4	
12		95.2	23.9		3.4			8.4			6.2	
13	1.1				3.4		8.4	8.4		8.4		
14				31.3					7.3	8.4		2.8
15	1.1			31.3	3.4	8.4	8.4			8.4		
16			95.2				8.4		7.3		6.2	1.7
17		47.0	55.5	23.9		8.4		8.4	8.4			3.4
18					5.1	8.4					9.5	
19		41.0	35.0					8.4		8.4	4.0	
20	110.8			16.5	5.1		8.4	8.4				
21					5.1				8.4	8.4		3.4
22	55.5			14.8		8.4	8.4			8.4		3.4
23			41.0	16.5			8.4		7.3		4.0	2.8
24		35.0				8.4		8.4	8.4			
25		35.0	55.5			8.4					3.4	
26	41.0	35.0			7.3			8.4		8.4		
27			41.0	23.9	7.3		8.4					
28	41.0			16.5	7.3				8.4	8.4		1.7
29	35.0	—				8.4	8.4			8.4		1.1
30		—	35.0	14.8			8.4		8.4	8.0	3.4	
31		—		—		—		8.4	—		—	1.1



TRTR — BARNEY RESERVOIR MEASURED FLOW TO TUALATIN RIVER [RM 78.0]

Source Agency: Barney Reservoir Joint Ownership Commission

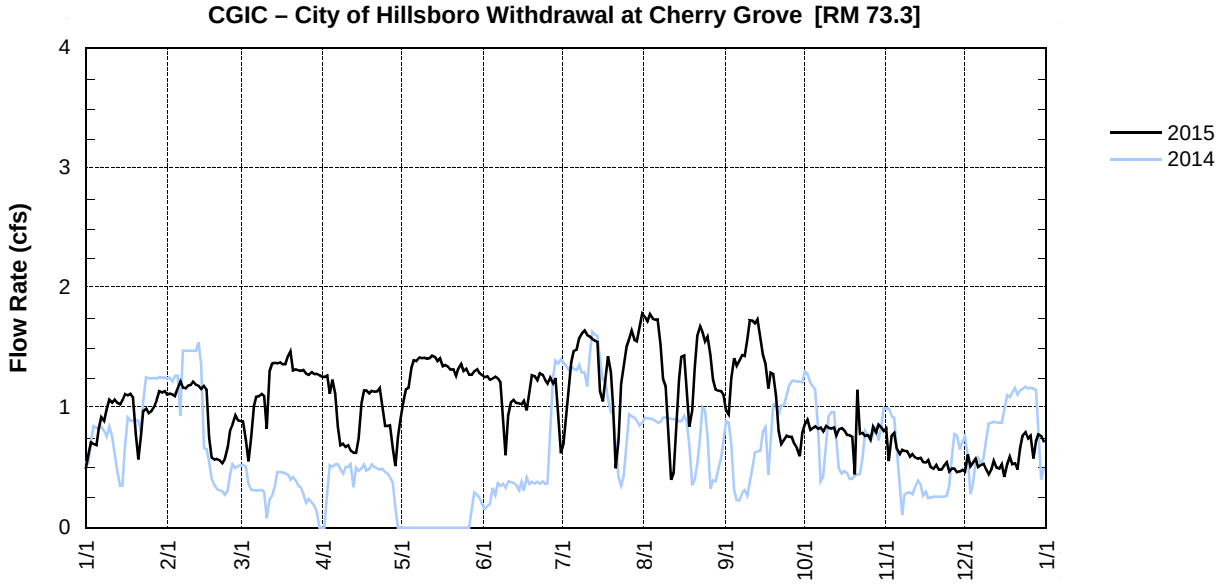
Day	2015 — Instantaneous Measured Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				0.0		25.1	40.1			40.1		
2	0.0	0.0	0.0	0.0			40.1		60.1		0.0	0.0
3								40.1	60.1			
4		0.0	0.0		0.0	25.1					0.0	
5	0.0	0.0	0.0					40.1		40.1	0.0	
6				0.0	0.0		40.1					
7	0.0				0.0					30.0		0.0
8				0.0	25.1	25.1	40.1		60.0			
9	0.0	0.0	0.0							30.0	0.0	0.0
10						30.0		40.1	60.0			0.0
11		0.0	0.0		25.1				60.0		0.0	
12		0.0	0.0		25.1			40.1			0.0	
13	0.0				25.1		40.1	40.1		30.0		
14				0.0					60.0	30.0		0.0
15	0.0			0.0	25.1	30.0	40.1			30.0		
16			0.0				40.1		50.0		0.0	0.0
17		0.0	0.0	0.0		35.1		40.1	50.0			0.0
18					25.1	35.1					0.0	
19		0.0	0.0					50.2		30.0	0.0	
20	0.0			0.0	25.1		40.1	50.2				
21					25.1				50.2	30.0		0.0
22	0.0			0.0		35.1	40.1			30.0		0.0
23			0.0	0.0			40.1		50.0		0.0	0.0
24		0.0				40.1		50.2	50.2			
25		0.0	0.0			40.1					0.0	
26	0.0	0.0			25.1			50.2		30.0		
27			0.0	0.0	25.1		40.1					
28	0.0			0.0	25.1				50.2	20.0		0.0
29	0.0	—				40.1	40.1			9.8		0.0
30		—	0.0	0.0			40.1		40.1	0.0	0.0	
31		—		—		—		50.2	—		—	0.0



CGIC — CITY OF HILLSBORO WITHDRAWAL AT CHERRY GROVE [RM 73.3]

Source Agency: Barney Reservoir Joint Ownership Commission

Day	2015 — Calculated Average Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.50	1.11	0.89	1.25	1.05	1.26	0.70	1.76	0.97	0.86	0.83	0.47
2	0.61	1.12	0.73	1.27	1.16	1.27	0.93	1.72	0.94	0.90	0.56	0.61
3	0.71	1.11	0.56	1.12	1.17	1.23	1.17	1.78	1.24	0.82	0.77	0.52
4	0.70	1.10	0.74	1.24	1.34	1.25	1.38	1.74	1.42	0.83	0.79	0.54
5	0.69	1.17	1.01	1.12	1.39	1.26	1.48	1.73	1.35	0.85	0.66	0.58
6	0.82	1.22	1.09	0.85	1.39	1.24	1.49	1.74	1.39	0.82	0.61	0.51
7	0.92	1.17	1.10	0.69	1.42	1.21	1.58	1.53	1.44	0.83	0.65	0.52
8	0.89	1.16	1.12	0.70	1.41	0.91	1.62	1.24	1.43	0.80	0.64	0.53
9	0.99	1.19	1.10	0.67	1.42	0.60	1.64	1.18	1.57	0.85	0.64	0.49
10	1.07	1.19	0.82	0.69	1.41	0.93	1.61	0.82	1.73	0.83	0.59	0.45
11	1.04	1.22	1.31	0.64	1.42	1.05	1.60	0.40	1.73	0.83	0.61	0.49
12	1.07	1.19	1.37	0.63	1.43	1.07	1.58	0.46	1.71	0.84	0.59	0.56
13	1.04	1.19	1.38	0.63	1.43	1.04	1.56	0.86	1.74	0.77	0.58	0.50
14	1.03	1.16	1.37	0.75	1.39	1.04	1.55	1.24	1.59	0.82	0.59	0.49
15	1.06	1.18	1.38	1.04	1.41	1.03	1.14	1.43	1.44	0.83	0.55	0.53
16	1.12	1.15	1.36	1.14	1.35	1.06	1.05	1.44	1.36	0.81	0.55	0.43
17	1.10	0.75	1.36	1.15	1.36	0.98	1.25	1.15	1.16	0.78	0.57	0.53
18	1.12	0.58	1.43	1.12	1.34	1.13	1.43	0.84	1.30	0.77	0.51	0.59
19	1.09	0.57	1.47	1.14	1.32	1.27	1.30	0.98	1.28	0.76	0.49	0.53
20	0.78	0.57	1.31	1.13	1.32	1.26	1.01	1.34	1.10	0.45	0.52	0.54
21	0.57	0.56	1.32	1.14	1.27	1.23	0.50	1.60	0.81	1.15	0.48	0.49
22	0.77	0.54	1.31	1.17	1.33	1.29	0.74	1.68	0.70	0.79	0.49	0.66
23	0.97	0.57	1.31	1.02	1.37	1.27	1.20	1.63	0.74	0.79	0.52	0.77
24	0.99	0.67	1.32	0.85	1.31	1.23	1.35	1.55	0.77	0.77	0.55	0.80
25	0.96	0.82	1.29	0.85	1.32	1.20	1.51	1.59	0.76	0.77	0.47	0.74
26	0.97	0.86	1.28	0.86	1.27	1.25	1.57	1.44	0.76	0.74	0.49	0.77
27	1.01	0.94	1.30	0.66	1.27	1.20	1.64	1.23	0.70	0.84	0.49	0.58
28	1.06	0.89	1.28	0.52	1.30	1.25	1.57	1.15	0.67	0.80	0.47	0.72
29	1.14	—	1.28	0.76	1.32	0.96	1.55	1.14	0.60	0.86	0.47	0.78
30	1.13	—	1.27	0.91	1.29	0.62	1.66	1.14	0.79	0.84	0.48	0.76
31	1.14	—	1.26	—	1.27	—	1.79	1.10	—	0.81	—	0.72

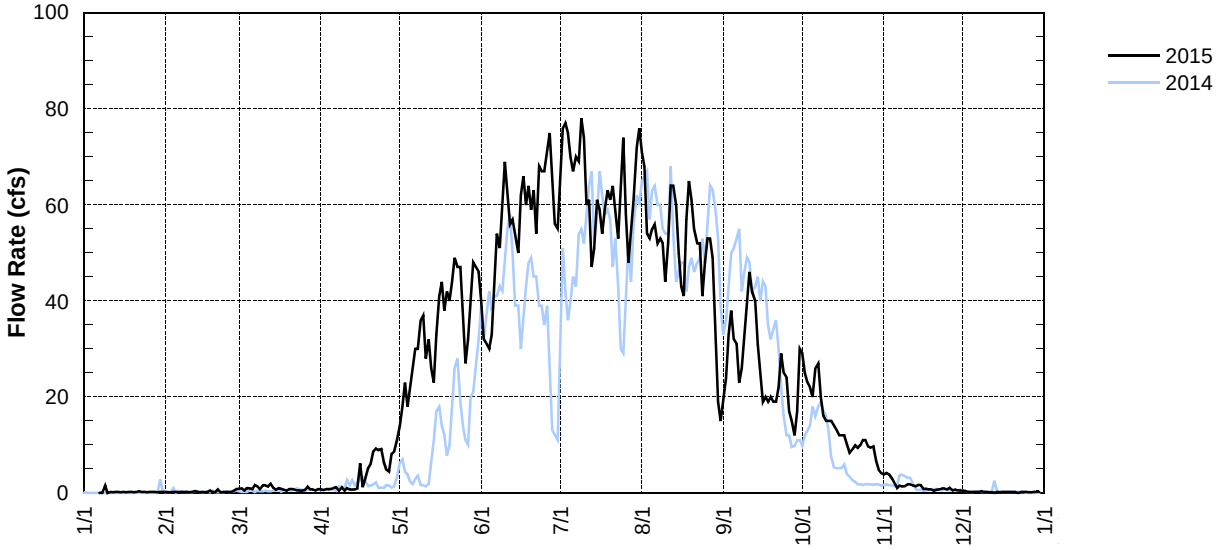


SHPP – TVID WITHDRAWAL AT SPRING HILL PUMP PLANT [RM 56.1]

Source Agency: US Geological Survey, Oregon Water Science Center

Day	2015 — Mean Daily Water Withdrawal in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		0.2	1.0	0.6	18.0	32.0	76.0	68.0	24.0	25.0	4.2	0.4
2		0.2	0.5	0.8	23.0	31.0	77.0	54.0	33.0	23.0	3.9	0.2
3		0.2	1.0	0.7	18.0	30.0	75.0	53.0	38.0	22.0	3.0	0.2
4		0.2	0.9	0.8	22.0	33.0	70.0	55.0	32.0	20.0	2.0	0.2
5		0.2	0.8	1.1	26.0	45.0	67.0	56.0	31.0	26.0	1.0	0.2
6		0.2	1.7	1.2	30.0	54.0	70.0	52.0	23.0	27.0	1.5	0.2
7	0.0	0.2	1.4	0.4	30.0	51.0	69.0	53.0	26.0	20.0	1.3	0.4
8	0.0	0.2	0.8	1.2	36.0	61.0	78.0	52.0	33.0	16.0	1.4	0.2
9	1.6	0.2	1.6	0.4	37.0	69.0	74.0	44.0	40.0	15.0	1.8	0.2
10	0.0	0.2	1.6	1.0	28.0	63.0	60.0	52.0	46.0	15.0	1.8	0.2
11	0.2	0.2	1.3	0.7	32.0	56.0	61.0	64.0	42.0	15.0	1.5	0.2
12	0.2	0.4	1.9	0.7	26.0	57.0	47.0	64.0	40.0	14.0	1.4	0.0
13	0.2	0.3	1.1	0.7	23.0	54.0	51.0	60.0	31.0	13.0	1.7	0.2
14	0.2	0.2	0.7	0.9	33.0	50.0	61.0	50.0	25.0	12.0	1.6	0.2
15	0.2	0.2	1.0	6.2	41.0	62.0	59.0	43.0	19.0	12.0	0.8	0.2
16	0.2	0.2	0.8	1.2	44.0	66.0	54.0	41.0	20.0	12.0	0.9	0.2
17	0.2	0.2	0.7	3.0	38.0	60.0	59.0	57.0	19.0	10.0	0.7	0.2
18	0.2	0.5	0.4	5.2	42.0	64.0	63.0	65.0	20.0	8.4	0.7	0.2
19	0.2	0.2	0.8	6.1	40.0	59.0	61.0	61.0	19.0	9.1	0.4	0.2
20	0.2	0.2	0.8	8.7	44.0	63.0	64.0	55.0	19.0	9.9	0.7	0.2
21	0.2	0.7	0.7	9.2	49.0	54.0	59.0	52.0	22.0	9.4	0.7	0.0
22	0.4	0.2	0.5	8.9	47.0	68.0	53.0	52.0	29.0	9.9	1.0	0.2
23	0.2	0.2	0.4	9.1	47.0	67.0	64.0	41.0	25.0	11.0	1.0	0.2
24	0.2	0.2	0.4	6.4	36.0	67.0	74.0	48.0	24.0	11.0	0.7	0.2
25	0.2	0.2	0.6	4.8	27.0	71.0	58.0	53.0	17.0	9.7	1.1	0.2
26	0.2	0.2	1.3	4.4	32.0	75.0	48.0	53.0	15.0	9.5	0.5	0.2
27	0.2	0.5	0.7	8.1	40.0	66.0	55.0	49.0	12.0	9.7	0.7	0.2
28	0.2	0.8	0.7	8.6	48.0	56.0	61.0	36.0	17.0	6.6	0.5	0.2
29	0.2	—	0.5	11.0	47.0	55.0	72.0	19.0	30.0	4.8	0.4	0.2
30	0.2	—	0.8	14.0	46.0	66.0	76.0	15.0	29.0	4.1	0.4	0.2
31	0.2	—	0.7	—	40.0	—	71.0	19.0	—	3.9	—	0.2

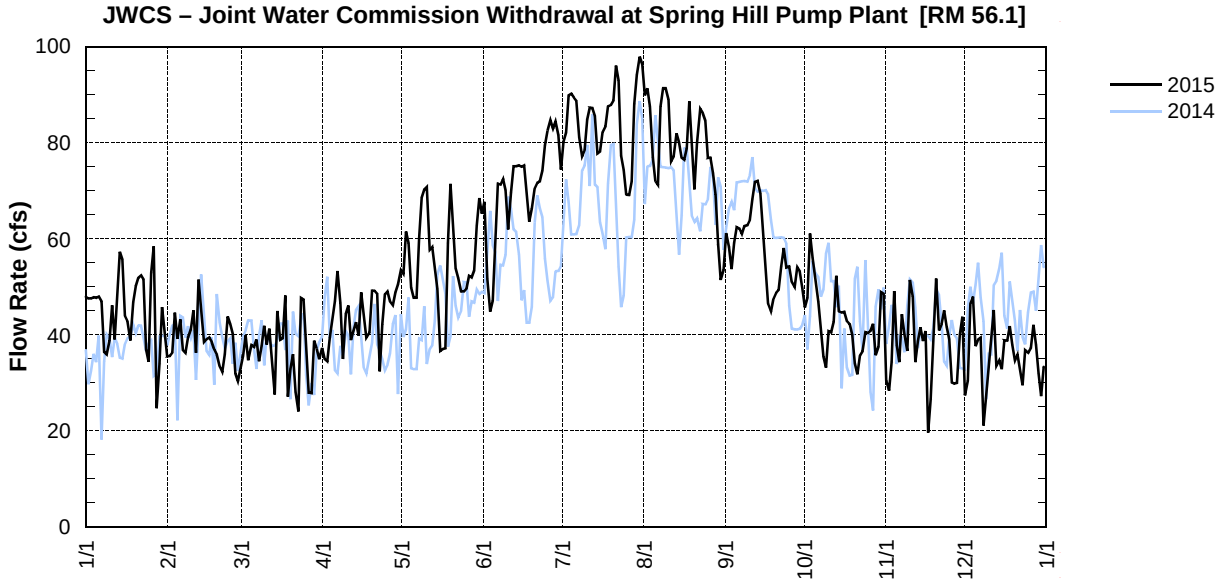
SHPP – Tualatin Valley Irrigation District Withdrawal at Spring Hill Pump Plant [RM 56.1]



JWCS – JOINT WATER COMMISSION WITHDRAWAL AT SPRING HILL PUMP PLANT [RM 56.1]

Source Agency: Joint Water Commission

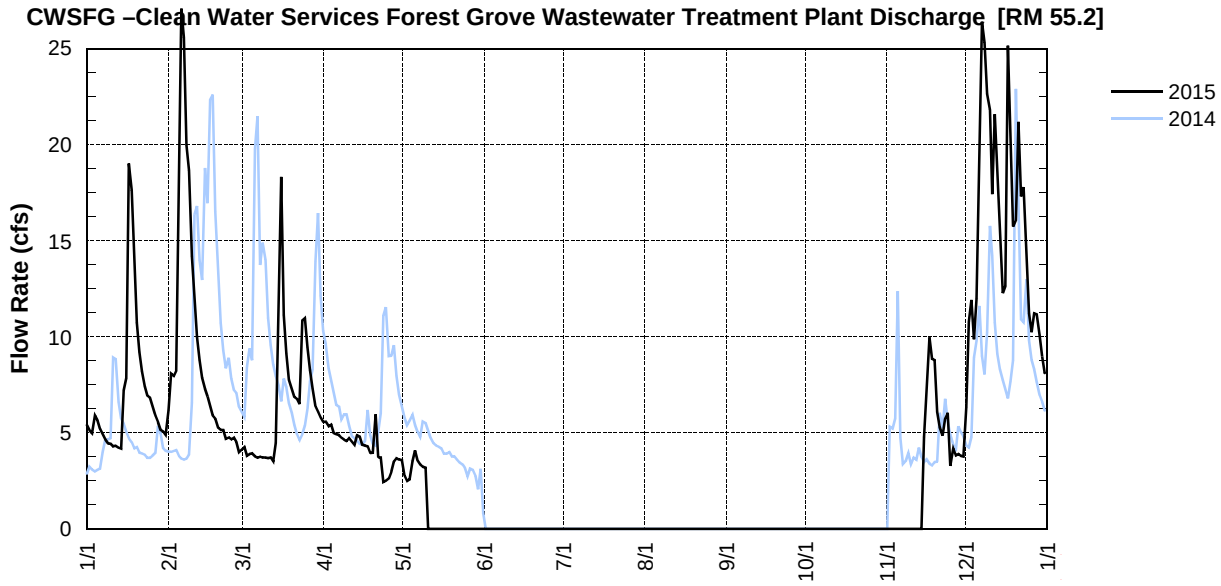
Day	2015 — Calculated Average Flow Rate in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	47.9	35.5	35.6	34.9	52.7	67.7	80.3	89.9	61.1	45.7	30.5	27.4
2	47.6	35.6	39.9	34.4	61.5	51.8	82.1	91.3	58.2	47.7	28.4	30.5
3	47.6	36.3	34.7	39.4	59.1	44.9	89.9	87.5	53.7	61.1	34.4	46.6
4	47.8	44.6	37.9	43.4	49.9	47.1	90.2	77.0	59.1	56.1	49.2	48.0
5	47.7	39.1	37.4	47.1	47.7	60.8	89.4	72.0	62.5	52.2	37.9	37.7
6	48.0	43.2	39.0	53.3	47.7	71.5	88.8	71.2	62.2	46.9	34.3	39.1
7	46.9	36.9	34.5	46.7	60.2	71.3	81.2	87.6	61.0	41.0	44.3	39.5
8	36.4	36.2	37.7	35.0	68.5	72.5	77.3	91.4	62.6	35.5	40.1	21.1
9	36.0	39.5	41.9	44.4	70.3	70.1	78.6	91.4	62.9	33.2	36.7	27.4
10	38.8	41.2	38.0	46.2	70.8	62.0	84.9	89.0	63.9	40.8	51.4	32.5
11	46.2	45.1	41.3	38.9	57.8	69.7	87.3	76.2	68.3	40.6	48.0	38.6
12	39.1	36.2	35.5	40.8	58.3	75.1	87.2	77.1	71.9	42.7	34.3	45.2
13	49.1	51.5	27.6	42.7	54.2	75.1	85.5	82.0	72.1	52.3	38.8	33.6
14	57.3	44.8	45.0	39.9	49.5	75.3	77.8	80.0	69.4	44.9	41.6	34.7
15	55.8	38.6	39.0	48.8	36.7	75.0	78.2	76.8	61.1	44.7	38.7	32.9
16	43.9	39.1	39.3	44.3	37.0	75.3	82.3	76.5	52.9	44.8	40.8	38.9
17	42.8	39.5	48.2	39.4	37.2	69.0	83.4	78.8	46.5	42.9	19.7	38.8
18	38.8	38.6	27.1	40.6	59.1	63.6	87.7	88.7	44.8	42.2	26.7	41.9
19	46.9	36.9	32.9	49.2	71.4	66.3	87.9	78.2	47.6	40.0	39.9	37.9
20	50.2	35.9	36.0	49.2	61.7	70.6	88.8	70.3	48.8	34.1	51.8	34.8
21	51.9	33.4	28.1	48.6	53.8	71.7	96.1	79.9	49.4	31.8	40.9	36.0
22	52.4	32.3	24.0	32.4	51.9	72.0	93.0	87.1	54.3	35.7	42.3	32.9
23	51.5	36.0	47.7	42.3	49.1	74.1	77.3	86.2	58.1	36.6	45.1	29.5
24	37.0	43.9	47.4	48.4	49.1	79.5	74.4	84.6	54.1	40.6	41.7	36.8
25	34.4	42.2	36.2	49.1	49.6	82.5	69.2	76.8	54.2	40.4	39.0	36.3
26	52.9	40.2	28.0	46.9	52.3	84.7	69.1	76.9	51.0	40.9	30.2	37.3
27	58.5	32.0	27.9	46.2	52.0	83.0	72.0	73.7	49.9	42.4	29.8	42.1
28	24.8	30.4	38.8	48.9	53.4	84.4	88.1	69.2	54.0	35.8	30.0	37.9
29	34.0	—	37.1	50.5	62.8	81.6	94.2	58.9	53.2	37.6	40.0	32.0
30	45.7	—	35.0	53.4	68.5	74.5	98.0	51.4	49.7	49.0	43.8	27.3
31	40.2	—	37.3	—	65.3	—	96.4	53.5	—	48.6	—	33.3



CWSFG – CLEAN WATER SERVICES FOREST GROVE WASTEWATER TREATMENT FACILITY DISCHARGE [RM 55.2]

Source Agency: Clean Water Services

Day	2015 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.4	6.2	4.3	5.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0	6.3
2	5.1	8.1	3.8	5.3	2.5	0.0	0.0	0.0	0.0	0.0	0.0	10.8
3	5.0	8.0	3.9	5.4	2.6	0.0	0.0	0.0	0.0	0.0	0.0	11.9
4	5.9	8.2	3.9	5.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	9.9
5	5.6	17.8	3.8	4.9	4.1	0.0	0.0	0.0	0.0	0.0	0.0	12.0
6	5.2	27.1	3.7	4.9	3.6	0.0	0.0	0.0	0.0	0.0	0.0	17.8
7	4.9	25.6	3.8	4.7	3.4	0.0	0.0	0.0	0.0	0.0	0.0	26.4
8	4.7	20.0	3.7	4.6	3.2	0.0	0.0	0.0	0.0	0.0	0.0	25.3
9	4.5	18.7	3.7	4.6	3.2	0.0	0.0	0.0	0.0	0.0	0.0	22.7
10	4.4	14.2	3.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
11	4.3	11.8	3.7	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4
12	4.3	10.0	3.5	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.6
13	4.2	8.8	4.5	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8
14	4.2	7.9	11.5	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.4
15	7.2	7.3	18.3	4.4	0.0	0.0	0.0	0.0	0.0	0.0	4.8	12.3
16	7.8	6.9	11.2	4.3	0.0	0.0	0.0	0.0	0.0	0.0	7.0	12.6
17	19.0	6.4	9.2	4.3	0.0	0.0	0.0	0.0	0.0	0.0	10.0	25.2
18	17.7	5.9	7.8	3.9	0.0	0.0	0.0	0.0	0.0	0.0	8.9	21.4
19	13.5	5.7	7.3	4.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	15.7
20	10.7	5.3	6.9	6.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	16.1
21	9.2	5.2	6.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	5.3	21.2
22	8.2	5.2	6.5	3.7	0.0	0.0	0.0	0.0	0.0	0.0	4.9	17.3
23	7.4	4.7	10.9	2.4	0.0	0.0	0.0	0.0	0.0	0.0	5.8	17.8
24	6.9	4.8	11.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	6.0	14.3
25	6.8	4.7	9.5	2.6	0.0	0.0	0.0	0.0	0.0	0.0	3.3	11.2
26	6.4	4.7	8.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	10.2
27	5.9	4.5	7.3	3.5	0.0	0.0	0.0	0.0	0.0	0.0	3.8	11.2
28	5.6	4.0	6.4	3.7	0.0	0.0	0.0	0.0	0.0	0.0	3.9	11.2
29	5.2	—	6.1	3.6	0.0	0.0	0.0	0.0	0.0	0.0	3.8	10.1
30	5.1	—	5.8	3.6	0.0	0.0	0.0	0.0	0.0	0.0	3.8	9.0
31	4.9	—	5.6	—	0.0	—	0.0	0.0	—	0.0	—	8.1

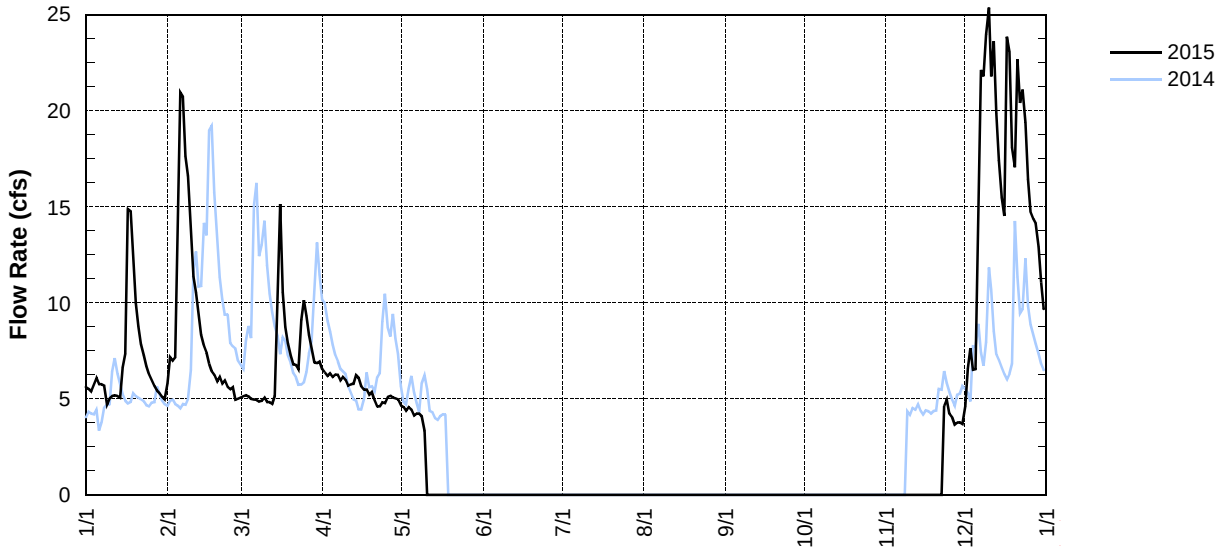


CWSHB – CLEAN WATER SERVICES HILLSBORO WASTEWATER TREATMENT FACILITY DISCHARGE [RM 43.8]

Source Agency: Clean Water Services

Day	2015 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5.6	5.8	5.1	6.4	4.6	0.0	0.0	0.0	0.0	0.0	0.0	4.6
2	5.5	7.2	5.2	6.2	4.4	0.0	0.0	0.0	0.0	0.0	0.0	6.6
3	5.4	7.0	5.1	6.3	4.6	0.0	0.0	0.0	0.0	0.0	0.0	7.6
4	5.8	7.2	5.0	6.2	4.4	0.0	0.0	0.0	0.0	0.0	0.0	6.5
5	6.1	13.1	5.0	6.3	4.1	0.0	0.0	0.0	0.0	0.0	0.0	6.5
6	5.8	20.9	5.0	6.2	4.2	0.0	0.0	0.0	0.0	0.0	0.0	11.9
7	5.8	20.7	4.9	6.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	22.1
8	5.7	17.6	4.9	6.2	4.1	0.0	0.0	0.0	0.0	0.0	0.0	21.8
9	4.7	16.6	5.1	6.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	24.0
10	5.0	13.7	4.8	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.4
11	5.2	11.4	4.8	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.8
12	5.2	10.5	4.7	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.6
13	5.1	9.4	5.1	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.9
14	5.1	8.3	9.5	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4
15	6.7	7.7	15.1	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5
16	7.3	7.4	10.6	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5
17	14.9	6.8	8.8	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.9
18	14.8	6.5	7.9	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.1
19	12.2	6.3	7.2	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.1
20	10.0	5.9	6.8	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1
21	8.8	6.2	6.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.7
22	7.8	5.8	6.5	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.4
23	7.3	6.0	9.1	4.8	0.0	0.0	0.0	0.0	0.0	0.0	4.6	21.1
24	6.7	5.6	10.1	4.8	0.0	0.0	0.0	0.0	0.0	0.0	5.0	19.4
25	6.3	5.5	9.3	5.1	0.0	0.0	0.0	0.0	0.0	0.0	4.3	16.4
26	6.0	5.6	8.3	5.2	0.0	0.0	0.0	0.0	0.0	0.0	4.1	14.7
27	5.7	5.0	7.6	5.1	0.0	0.0	0.0	0.0	0.0	0.0	3.7	14.4
28	5.4	5.0	6.9	5.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	14.1
29	5.3	—	6.9	5.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8	12.9
30	5.1	—	6.9	4.7	0.0	0.0	0.0	0.0	0.0	0.0	3.7	11.1
31	5.0	—	6.6	—	0.0	—	0.0	0.0	—	0.0	—	9.7

CWSHB – Clean Water Services Hillsboro Wastewater Treatment Plant Discharge [RM 43.8]

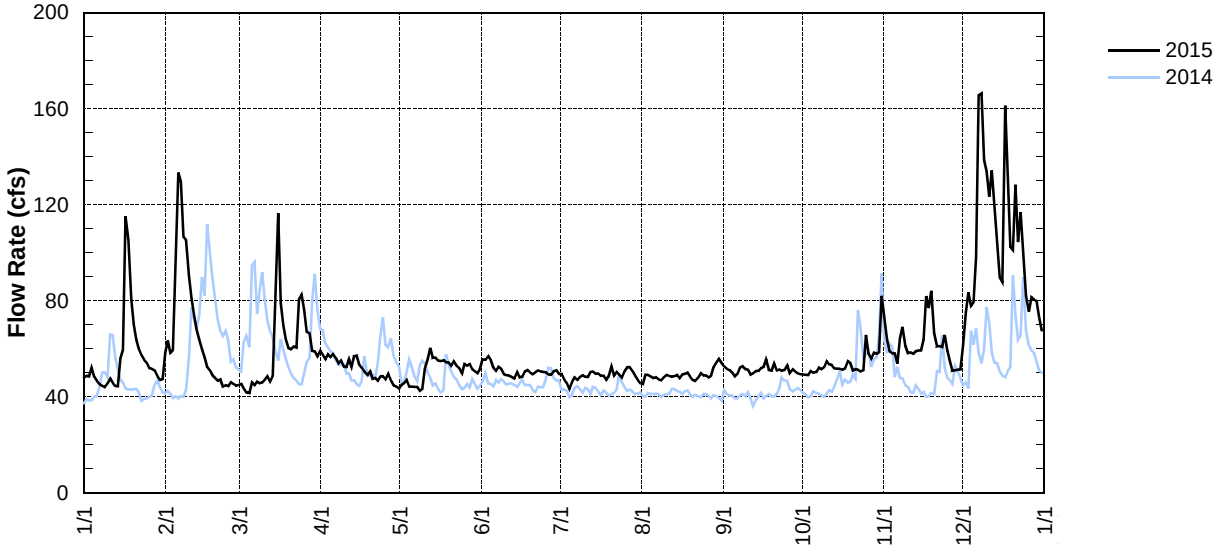


CWSRC – CLEAN WATER SERVICES ROCK CREEK WASTEWATER TREATMENT FACILITY DISCHARGE [RM 38.08]

Source Agency: Clean Water Services

Day	2015 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	48.0	58.3	45.5	57.5	45.1	55.6	49.6	45.3	52.8	49.4	73.3	61.1
2	48.8	63.5	43.5	55.6	45.8	55.4	47.4	49.2	51.5	49.2	63.7	75.3
3	48.5	58.4	41.9	57.7	47.1	56.9	45.8	49.2	51.3	49.1	59.0	83.6
4	52.1	59.4	41.6	56.7	44.2	55.3	43.4	48.5	50.1	50.8	58.2	78.0
5	48.4	89.1	46.0	57.7	44.2	52.2	46.1	47.9	48.4	50.1	58.2	79.5
6	46.7	133.3	45.0	56.4	44.1	50.9	48.1	48.1	49.6	50.4	53.8	98.4
7	45.3	129.5	46.4	53.9	44.1	52.5	47.1	47.3	52.2	52.2	64.3	165.7
8	44.7	106.8	45.7	55.2	42.5	51.7	48.3	46.9	52.8	51.5	69.2	166.5
9	44.1	105.5	46.0	52.6	43.3	49.6	49.1	48.1	51.6	52.4	61.2	138.6
10	45.8	90.8	47.2	52.4	51.7	49.1	48.3	49.2	51.3	55.0	58.2	133.9
11	47.6	81.3	48.6	55.7	55.7	48.9	48.3	48.7	49.4	53.6	58.6	123.4
12	45.8	74.3	46.4	52.6	60.4	48.3	50.3	48.4	49.9	53.4	58.0	134.4
13	44.5	68.1	49.0	56.9	56.2	47.8	50.5	48.5	50.8	51.8	59.1	119.4
14	44.4	64.0	81.7	57.1	56.5	50.4	49.5	49.2	50.8	51.7	59.3	103.9
15	55.9	59.8	116.4	53.4	55.1	48.1	49.7	47.8	51.9	51.7	59.3	89.6
16	59.5	56.6	79.1	52.0	55.0	48.4	48.7	49.3	52.5	51.3	63.8	87.7
17	115.4	52.5	69.9	50.4	55.4	50.7	48.8	49.6	55.6	51.8	82.0	161.2
18	105.5	51.2	63.8	49.3	54.4	51.3	47.2	50.0	51.2	55.0	77.0	131.2
19	80.7	49.1	60.4	50.6	54.5	50.2	49.0	48.5	51.0	54.1	84.2	102.5
20	70.0	48.0	59.8	47.6	53.0	49.5	52.7	47.2	53.8	51.1	66.5	101.1
21	63.7	46.9	60.9	47.9	54.9	50.2	49.0	46.6	51.1	51.6	61.0	128.4
22	59.6	47.4	60.5	46.7	52.9	51.1	50.3	48.0	51.4	51.3	61.2	104.5
23	57.3	44.4	80.9	48.5	51.9	50.7	49.3	49.8	51.0	50.6	60.8	117.0
24	55.5	45.0	82.6	48.6	49.7	50.3	48.1	48.9	51.2	51.3	65.9	100.4
25	54.2	44.5	76.4	47.4	53.8	50.2	50.8	48.9	53.1	65.9	59.5	81.9
26	51.9	46.2	67.2	49.8	53.0	49.3	52.3	48.1	50.0	57.8	54.9	75.6
27	51.7	45.5	66.5	46.9	53.7	49.2	52.4	48.9	51.5	56.0	50.9	81.5
28	51.0	44.6	59.1	44.7	51.4	50.7	50.9	52.4	50.5	58.5	51.1	80.5
29	48.5	—	58.9	44.4	50.5	51.1	49.0	54.2	49.8	58.0	51.4	80.0
30	47.2	—	57.0	43.5	49.8	49.5	47.0	55.8	49.4	58.6	51.5	73.0
31	47.5	—	59.1	—	51.6	—	45.8	54.1	—	82.1	—	67.7

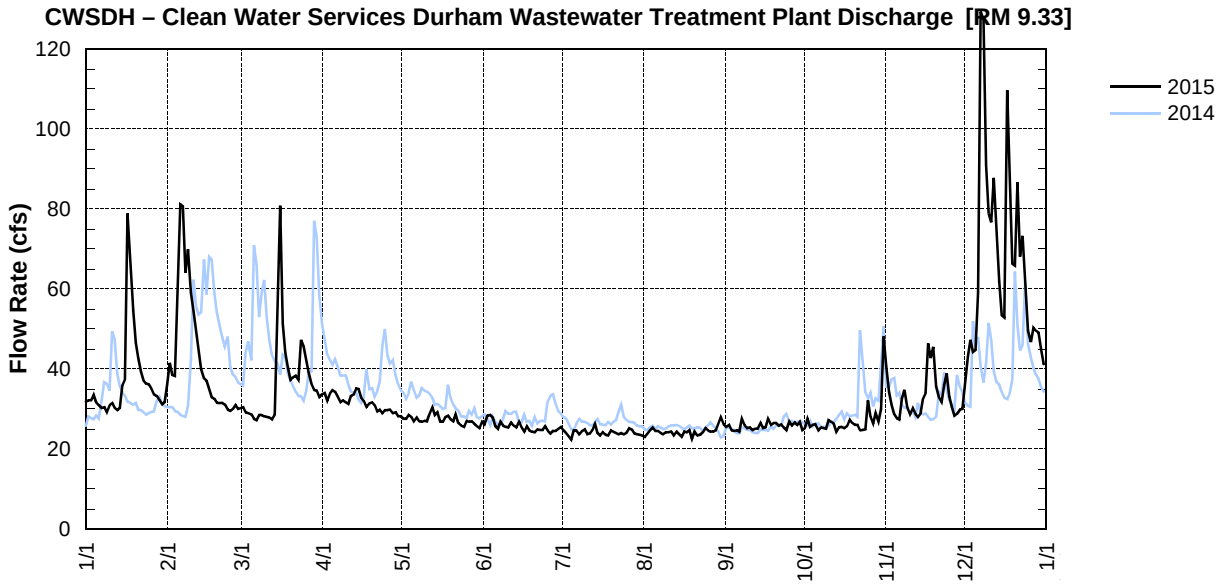
CWSRC – Clean Water Services Rock Creek Wastewater Treatment Plant Discharge [RM 38.08]



CWSDH – CLEAN WATER SERVICES DURHAM WASTEWATER TREATMENT FACILITY DISCHARGE [RM 9.33]

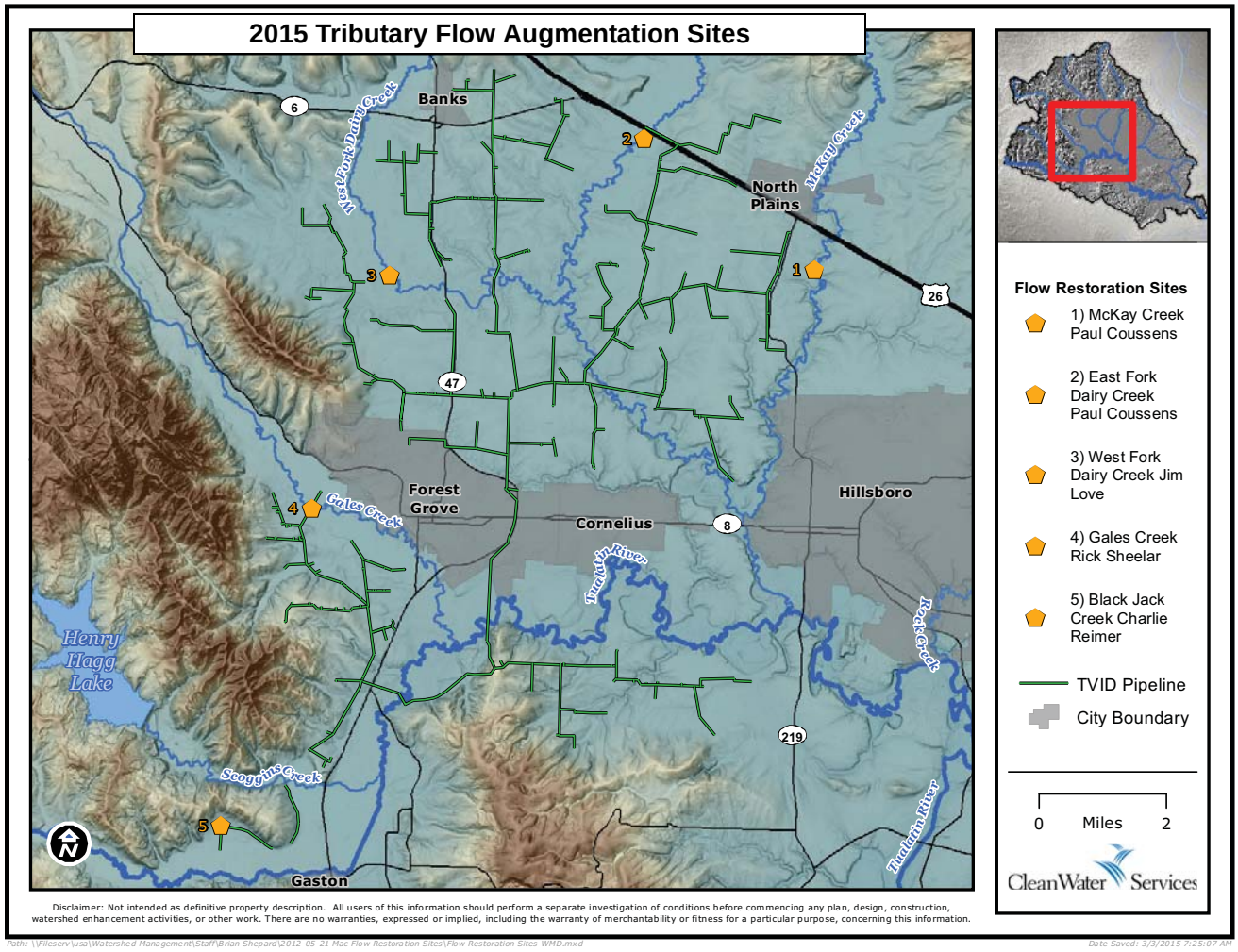
Source Agency: Clean Water Services

Day	2015 — Mean Daily Water Discharge in Cubic Feet per Second											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	31.9	36.2	30.5	34.0	27.5	26.1	24.6	23.1	25.5	25.2	40.8	36.5
2	32.2	41.5	29.1	32.2	27.5	28.3	24.0	23.8	26.0	27.5	34.2	43.0
3	32.2	38.5	28.9	33.9	28.5	28.5	23.2	24.6	24.6	25.5	30.9	47.3
4	33.6	38.2	28.6	34.7	28.0	27.8	22.3	25.4	24.4	26.0	28.6	44.2
5	31.7	59.4	27.5	34.3	26.9	25.7	24.6	24.4	24.8	26.1	27.7	44.7
6	30.9	81.1	27.2	33.1	27.8	25.1	24.6	24.4	24.3	24.6	27.4	59.1
7	30.2	80.6	28.5	31.7	26.9	26.8	23.7	24.0	27.5	25.4	32.5	129.3
8	30.5	64.0	28.5	32.2	26.8	25.8	24.4	23.7	26.0	25.2	34.8	127.3
9	29.2	69.9	28.2	31.7	27.1	25.5	24.9	24.1	25.2	25.1	30.3	91.0
10	30.9	59.1	28.0	31.2	26.9	25.4	23.7	24.1	25.4	27.2	28.6	78.9
11	31.4	54.6	27.8	33.3	28.9	26.6	23.8	24.3	24.8	26.8	30.2	76.6
12	30.2	49.5	27.4	33.6	30.5	25.8	24.8	23.4	25.1	26.3	28.8	87.7
13	29.7	44.9	28.6	35.1	28.5	25.4	26.3	24.3	25.1	24.3	28.0	75.3
14	30.2	39.9	57.1	35.0	29.1	26.8	24.0	23.7	26.5	25.4	28.8	62.0
15	36.0	37.6	80.8	32.8	26.8	25.4	23.4	23.1	25.2	25.5	32.6	53.4
16	37.4	37.0	51.4	32.0	26.8	24.3	24.1	24.3	25.4	25.2	34.0	52.8
17	78.9	35.0	44.1	30.5	28.0	25.7	23.5	24.1	27.5	25.7	46.4	109.7
18	68.4	33.0	40.4	31.4	28.3	24.6	23.4	24.8	26.0	27.4	42.7	85.5
19	54.6	32.5	37.3	31.7	27.4	24.3	24.6	22.6	26.5	26.5	45.5	66.2
20	46.6	31.6	37.9	30.9	26.9	24.1	24.3	24.3	26.5	26.0	35.6	65.7
21	42.5	31.4	38.4	29.4	28.6	24.9	24.0	23.4	25.8	26.0	32.8	86.6
22	39.3	31.6	37.3	29.9	26.5	24.8	23.7	23.5	26.1	24.6	31.7	68.1
23	37.1	31.1	47.3	28.9	25.8	24.8	24.0	24.1	25.4	24.8	35.9	73.3
24	36.4	29.9	45.6	29.7	25.5	25.7	23.7	25.2	24.8	24.9	38.8	61.4
25	36.2	29.5	42.4	29.7	27.1	24.6	24.0	24.6	26.8	32.2	33.1	49.5
26	35.1	30.0	39.0	29.9	26.8	23.8	25.2	24.3	25.8	28.0	30.5	46.7
27	33.7	30.9	36.2	28.9	26.9	24.4	24.9	24.3	26.6	26.3	28.3	50.3
28	33.3	30.0	34.7	29.2	26.3	24.4	23.8	24.6	26.0	28.9	28.8	49.5
29	32.2	—	34.5	28.2	25.7	25.1	23.7	26.3	26.8	26.9	29.9	49.0
30	31.1	—	33.0	28.2	25.2	25.5	23.5	28.0	24.8	30.0	30.0	44.9
31	31.7	—	33.7	—	26.8	—	23.4	26.1	—	48.1	—	41.2



RELEASES FOR CLEAN WATER SERVICES TRIBUTARY FLOW AUGMENTATION AT TVID RELEASE POINTS

Map #	Site Name	River Mile	Start Date	End Date	Average Flow (cfs)	Average Daily Release (ac-ft)	Total Release (ac-ft)
1	**McKay Creek**	7.0	6/30/2015	10/30/2015	2.1	4.2	512
2	**East Fork Dairy Creek**	4.9	6/30/2015	10/30/2015	1.6	3.2	395
3	**West Fork Dairy Creek**	5.2	6/30/2015	10/30/2015	0.7	1.3	158
4	**Gales Creek**	5.0	6/30/2015	10/30/2015	1.3	2.6	315
5	**Black Jack Creek**	1.0	6/30/2015	10/30/2015	1.0	1.9	234



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Appendix C

Scoggins Reservoir Operations Monthly Records

The information presented here regarding water allocations is provisional. Final allocations for municipal use can be found in the Appendix E of this report.

SCOGGINS DAM -- RESERVOIR OPERATIONS

January 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO	SCLO	TANO	TOT INFLO	W.S. ELEV	STOR CONT	CHNG STOR	CHNG STOR	REL	COMP INFLO	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PRECIP	TEMP MAX	TEMP MIN	TVID	CWS	LO	MUNI	OTHR
	(cfs) [1]	(cfs) [2]	(cfs) [3]	(cfs) [4]	(ft) [5]	(ac-ft) [6]	(ac-ft) [7]	(cfs) [8]	(cfs) [9]	(cfs) [10]	(cfs) [11]	(cfs) [12]	(cfs) [13]	(cfs) [14]	(cfs) [15]	(cfs) [16]	(inches) [17]	(°F) [18]	(°F) [19]	(cfs) [20]	(cfs) [21]	(cfs) [22]	(cfs) [23]	(cfs) [24]
1	60	78	6	144	287.20	36457	-316	-159	358	199	313	579	1250	2410	2990	3090	0.00	39	23	0	0	0	0	0
2	55	71	5	131	286.80	36076	-381	-192	357	165	274	564	1120	na	2680	2750	0.00	43	23	0	0	0	0	0
3	49	65	5	119	286.13	35441	-635	-320	508	188	247	na	1020	1890	2320	2420	0.00	41	26	0	0	0	0	0
4	48	63	5	116	285.40	34754	-687	-346	455	109	231	587	1010	1690	2040	2120	0.08	42	35	0	0	0	0	0
5	84	84	7	175	284.86	34249	-505	-255	424	169	495	594	1030	1600	1920	1930	0.42	52	40	0	0	0	0	0
6	68	75	5	148	284.48	33895	-354	-178	347	169	444	598	1080	1590	1880	1850	0.00	53	42	0	0	0	0	0
7	58	69	5	132	284.48	33895	0	0	155	155	343	526	1040	1560	1860	1820	0.00	49	36	0	0	0	0	0
8	52	65	5	122	284.46	33876	-19	-10	155	145	288	457	865	1440	1730	1760	0.00	56	33	0	0	0	0	0
9	42	60	4	106	284.49	33904	28	14	155	169	250	405	750	1290	1550	1610	0.00	51	33	0	0	0	0	0
10	38	58	4	100	284.45	33867	-37	-19	155	136	227	364	664	1170	1400	1460	0.00	51	36	0	0	0	0	0
11	35	53	4	92	284.40	33821	-46	-23	155	132	207	334	592	1090	1290	1350	0.01	45	40	0	0	0	0	0
12	32	52	4	88	284.37	33793	-28	-14	155	141	196	317	558	1010	1190	1270	0.12	46	42	0	0	0	0	0
13	29	48	4	81	284.31	33737	-56	-28	155	127	181	303	510	955	1130	1190	0.01	48	36	0	0	0	0	0
14	26	55	4	85	284.22	33654	-83	-42	155	113	169	288	465	877	1040	1120	0.00	52	36	0	0	0	0	0
15	25	52	4	81	284.16	33598	-56	-28	155	127	160	277	428	813	963	1030	0.01	49	32	0	0	0	0	0
16	50	94	8	152	284.22	33654	56	28	155	183	348	413	611	1110	1220	1230	0.99	44	37	0	0	0	0	0
17	46	82	7	135	284.26	33691	37	19	155	174	252	402	717	1520	1780	1780	0.32	55	38	0	0	0	0	0
18	226	424	35	685	285.47	34819	1128	569	47	616	1129	628	1410	2560	3140	1900	1.82	57	42	0	0	0	0	0
19	161	310	30	501	286.71	35990	1171	590	47	637	937	761	2180	3080	3860	1130	0.46	43	41	0	0	0	0	0
20	121	224	25	370	287.53	36773	783	395	47	442	743	674	2350	3060	3830	4330	0.01	47	36	0	0	0	0	0
21	93	172	18	283	287.92	37147	374	189	156	345	576	631	2180	3140	3860	4070	0.00	51	34	0	0	0	0	0
22	79	141	12	232	288.19	37407	260	131	156	287	450	590	1870	3160	3890	4040	0.00	51	34	0	0	0	0	0
23	63	117	9	189	288.36	37571	164	83	156	239	359	550	1560	3080	3800	3960	0.00	51	39	0	0	0	0	0
24		102	8	110	288.50	37706	135	68	156	224	311	508	1300	2900	3600	3770	0.07	48	44	0	0	0	0	0
25		90	8	98	288.57	37774	68	34	156	190	271	469	1060	2660	3310	3480	0.00	54	41	0	0	0	0	0
26		82	7	89	288.61	37813	39	20	156	176	242	432	889	2360	2950	3120	0.01	57	38	0	0	0	0	0
27	40	75	6	121	288.61	37813	0	0	156	156	218	391	750	1960	2470	2690	0.00	45	38	0	0	0	0	0
28	38	70	5	113	288.70	37900	87	44	102	146	201	315	635	1580	1950	2180	0.02	48	39	0	0	0	0	0
29	34	65	5	104	288.76	37958	58	29	102	131	186	321	566	1350	1640	1800	0.00	53	41	0	0	0	0	0
30	31	60	4	95	288.82	38016	58	29	102	131	173	294	499	1170	1410	1540	0.01	56	33	0	0	0	0	0
31	29	56	4	89	288.85	38045	29	15	102	117	162	275	449	1050	1250	1360	0.00	57	33	0	0	0	0	0
TOTALS																	4.36 inches							
cfs	1712	3112	262	5086				641	5795	6436	10583	13847	31408	55125	69943	69150	MAX	57	44	0	0	0	0	0
ac-ft	3396	6173	520	10088			1272	1272	11494	12766	20991	27466	62298	109340	138732	137159	MIN	39	23	0	0	0	0	0

Water storage elevation ± to fill curve:	**1.94**
Water storage in ac-ft ± to fill curve:	**1860.92**
Percentage of full reservoir:	**71.3%**

SNOTEL Summary for Water Year 2015

Updated: January 31, 2015

SECO W/Y pc:	33.8"	sno depth/water content	0
SDMO W/Y pc:	52.6"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	0	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	0	13500
planning purposes only	Other	0	

SCOGGINS DAM -- RESERVOIR OPERATIONS
February 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	29	56	4	89	288.87	38065	20	10	102	112	154	261	430	967	1140	1250	0.15	53	33	0	0	0	0	0
2	46	84	7	137	288.98	38171	106	53	102	155	173	281	451	1040	1190	1350	0.66	45	40	0	0	0	0	0
3	35	68	5	108	289.07	38259	88	44	102	146	186	331	583	1370	1580	1530	0.10	56	40	0	0	0	0	0
4	36	68	5	109	289.13	38317	58	29	102	131	176	315	535	1350	1600	1700	0.21	51	43	0	0	0	0	0
5	39	78	6	123	289.22	38405	88	44	102	146	184	328	539	1310	1560	1680	0.32	53	46	0	0	0	0	0
6	287	504	40	831	290.12	39285	880	444	105	549	1085	708	1200	2130	2530	2730	2.22	56	48	0	0	0	0	0
7	334	687	45	1066	292.28	41429	2144	1081	49	1130	1149	1370	2330	3220	4050	4840	1.79	55	50	0	0	0	0	0
8	255	490	40	785	294.29	43466	2037	1027	49	1076	1093	1590	3030	3740	4650	5430	0.87	58	46	0	0	0	0	0
9	199	364	35	598	295.62	44836	1370	691	49	740	929	1190	2980	4670	5200	5590	0.51	55	47	0	0	0	0	0
10	219	384	35	638	296.94	46213	1377	694	49	743	974	1080	2830	5410	6130	6460	0.52	53	44	0	0	0	0	0
11	168	299	30	497	297.93	47258	1045	527	50	577	825	937	2680	5430	6860	6820	0.00	53	41	0	0	0	0	0
12	134	227	25	386	298.16	47502	244	123	349	472	679	904	2530	5170	6640	7070	0.00	55	40	0	0	0	0	0
13	112	185	20	317	298.16	47502	0	0	347	347	570	838	2320	4840	6050	7030	0.01	51	38	0	0	0	0	0
14	90	156	14	260	298.11	47449	-53	-27	345	318	478	785	2060	4450	5620	6680	0.00	55	39	0	0	0	0	0
15	75	133	12	220	297.93	47258	-191	-96	344	248	399	738	1810	4100	5230	6190	0.00	61	38	0	0	0	0	0
16		117	10	127	297.71	47025	-233	-117	342	225	337	701	1600	3710	4790	5610	0.00	63	40	0	0	0	0	0
17	56	104	9	169	297.44	46740	-285	-144	340	196	291	668	1410	3370	4310	4970	0.00	62	41	0	0	0	0	0
18	51	94	8	153	297.42	46718	-22	-11	160	149	252	554	1210	3010	3850	4310	0.00	64	34	0	0	0	0	0
19	47	84	7	138	297.56	46866	148	75	86	161	224	409	905	2670	3370	3720	0.00	57	41	0	0	0	0	0
20	43	78	6	127	297.67	46983	117	59	89	148	203	351	706	2240	2850	3130	0.00	59	38	0	0	0	0	0
21	40	75	5	120	297.76	47078	95	48	87	135	190	317	595	1690	2160	2500	0.00	58	37	0	0	0	0	0
22	37	68	5	110	297.85	47173	95	48	87	135	174	292	531	1330	1650	1840	0.00	59	38	0	0	0	0	0
23	34	63	5	102	297.89	47215	42	21	87	108	163	270	479	1140	1380	1540	0.00	55	34	0	0	0	0	0
24	31	60	4	95	297.94	47269	54	27	87	114	153	257	426	1030	1210	1350	0.00	58	29	0	0	0	0	0
25	29	56	4	89	297.98	47311	42	21	87	108	144	237	395	954	1100	1210	0.00	58	31	0	0	0	0	0
26	27	55	4	86	298.00	47332	21	11	87	98	137	225	374	871	1020	1120	0.00	52	43	0	0	0	0	0
27	28	56	4	88	298.12	47460	128	65	40	105	137	185	330	846	970	1080	0.10	52	44	0	0	0	0	0
28	27	50	4	81	298.24	47587	127	64	40	104	136	193	353	857	1000	1111	0.33	55	35	0	0	0	0	0
TOTALS																	7.79 inches							
cfs	2508	4743	398	7649				4811	3865	8676	11595	16315	35622	72915	89690	99841	MAX	64	50	0	0	0	0	0
ac-ft	4975	9408	789	15172			9542	9542	7666	17208	22999	32361	70656	144627	177900	198035	MIN	45	29	0	0	0	0	0

Water storage elevation ± to fill curve:	**0.04**
Water storage in ac-ft ± to fill curve:	**37.8139**
Percentage of full reservoir:	**89.2%**

SNOTEL Summary for Water Year 2015
Updated: February 28, 2015

SECO W/Y pc:	42.8"	sno depth/water content	0
SDMO W/Y pc:	64.2"	sno depth/water content	0

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS

These allocations, amounts used and remaining are provisional and subject to daily changes as the WS elevation rises and falls. These numbers are for planning purposes only.

	USED	REMAINING
TVID	0	
CWS	0	12615
LO	0	500
MUNI	0	13500
Other	0	

SCOGGINS DAM -- RESERVOIR OPERATIONS
March 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO	SCLO	TANO	TOT INFLO	W.S. ELEV	STOR CONT	CHNG STOR	CHNG STOR	REL	COMP INFLO	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PRECIP	TEMP MAX	TEMP MIN	TVID	CWS	LO	MUNI	OTHR
	(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ac-ft)	(ac-ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(inches)	(°F)	(°F)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]
1	24	48	4	76	298.32	47672	85	43	40	83	122	169	303	792	938	1060	0.00	57	29	1	0	0	0	0
2	24	49	4	77	298.42	47779	107	54	40	94	120	161	277	711	831	968	0.08	56	33	1	0	0	0	0
3	21	44	4	69	298.48	47848	69	35	40	75	114	154	277	675	777	887	0.00	53	30	0	0	0	0	0
4	20	42	3	65	298.56	47928	80	40	19	59	108	162	257	639	735	839	0.00	55	27	1	0	0	0	0
5	18	40	3	61	298.65	48024	96	48	19	67	104	167	252	612	702	799	0.00	59	30	1	0	0	0	0
6	18	39	3	60	298.73	48109	85	43	19	62	100	167	248	593	680	771	0.00	60	33	1	0	0	0	0
7	17	37	3	57	298.82	48206	97	49	19	68	97	164	282	566	657	726	0.00	66	34	1	0	0	0	0
8	16	36	3	55	298.89	48281	75	38	19	57	94	160	279	552	638	705	0.00	70	36	0	0	0	0	0
9	16	35	3	54	298.98	48377	96	48	19	67	91	157	259	534	619	683	0.00	72	36	1	0	0	0	0
10	15	34	3	52	299.05	48452	75	38	19	57	88	154	261	512	598	663	0.00	68	36	1	0	0	0	0
11	15	34	3	52	299.12	48527	75	38	18	56	86	149	248	495	581	662	0.07	62	37	2	0	0	0	1
12	14	33	3	50	299.19	48602	75	38	18	56	86	149	243	499	579	651	0.08	57	48	1	0	0	0	0
13	14	31	3	48	299.26	48677	75	38	19	57	82	145	249	491	569	641	0.00	66	46	2	0	0	0	1
14	24	324	4	352	299.37	48795	118	59	19	78	91	170	246	528	586	743	0.67	65	48	1	0	0	0	0
15	232	138	31	401	299.93	49399	604	305	22	327	na	512	581	1300	1450	2220	2.70	57	50	0	0	0	0	0
16	80	138	12	230	300.59	50115	716	361	18	379	564	789	1410	2720	3290	3560	0.09	60	39	0	0	0	0	0
17	57	106	9	172	300.75	50289	174	88	150	238	356	725	1390	2610	3288	3690	0.00	63	39	0	0	0	0	0
18	43	86	7	136	300.81	50354	65	33	150	183	250	633	1200	2480	3080	3380	0.10	56	40	0	0	0	0	0
19	39	76	6	121	300.82	50365	11	6	149	155	198	564	971	2310	2860	3090	0.00	62	39	1	0	0	0	0
20	35	70	5	110	300.80	50343	-22	-11	150	139	170	518	820	2010	2490	2720	0.00	65	39	1	0	0	0	0
21	32	60	4	96	300.73	50267	-76	-38	178	140	163	508	733	1680	2060	2420	0.10	59	44	1	0	0	0	0
22	28	53	4	85	300.63	50158	-109	-55	178	123	146	480	706	1520	1840	2040	0.06	59	41	1	0	0	0	0
23	31	56	4	91	300.54	50060	-98	-49	178	129	143	455	639	1380	1640	1870	0.32	56	41	0	0	0	0	0
24	61	119	10	190	300.63	50158	98	49	178	227	438	592	797	1730	2010	2090	0.83	54	41	0	0	0	0	0
25	53	104	9	166	300.69	50223	65	33	178	211	323	626	985	2150	2580	2560	0.28	55	51	1	0	0	0	0
26	49	94	8	151	300.81	50354	131	66	126	192	301	578	1000	2140	2610	2720	0.00	59	43	0	0	0	0	0
27	45	86	7	138	300.93	50485	131	66	100	166	251	529	913	2040	2490	2610	0.00	71	43	1	0	0	0	0
28	41	80	6	127	301.04	50605	120	61	100	161	215	464	814	1860	2270	2420	0.01	66	41	1	0	0	0	0
29	37	71	5	113	301.11	50682	77	39	101	140	186	406	704	1640	1990	2160	0.01	61	41	1	0	0	0	0
30	33	65	5	103	301.16	50736	54	27	101	128	166	363	621	1420	1720	1870	0.00	68	40	1	0	0	0	0
31	31	61	5	97	301.27	50856	120	61	58	119	159	287	521	1270	1510	1660	0.02	66	43	1	0	0	0	0
TOTALS																	5.42 inches							
cfs	1183	2289	183	3655				1648	2442	4090	5412	11257	18486	40459	48668	53878	MAX	72	51	24	0	0	0	2
ac-ft	2346	4540	363	7250			3269	3269	4844	8113	10735	22328	36667	80250	96533	106867	MIN	53	27	48	0	0	0	4

Water storage elevation ± to fill curve:	**-0.36**
Water storage in ac-ft ± to fill curve:	**-391.73**
Percentage of full reservoir:	**95.4%**

SNOTEL Summary for Water Year 2015

Updated: March 31, 2015

SECO W/Y pc:	48.8"	sno depth/water content	0
SDMO W/Y pc:	72.1"	sno depth/water content	0

Minimum Required Discharges

Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS

These allocations, amounts used and remaining are provisional and subject to daily changes as the WS elevation rises and falls. These numbers are for planning purposes only.

	USED	REMAINING
TVID	48	
CWS	0	12615
LO	0	500
MUNI	0	13500
Other	4	

SCOGGINS DAM -- RESERVOIR OPERATIONS
April 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO	SCLO	TANO	TOT INFLO	W.S. ELEV	STOR CONT	CHNG STOR	CHNG STOR	REL	COMP INFLO	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PRECIP	TEMP MAX	TEMP MIN	TVID	CWS	LO	MUNI	OTHR
	(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ac-ft)	(ac-ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(inches)	(°F)	(°F)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]
1	29	60	4	93	301.37	50966	110	55	47	102	152	272	474	1200	1410	1510	0.05	53	38	1	0	0	0	0
2	25	55	4	84	301.48	51087	121	61	47	108	146	256	452	1090	1280	1450	0.09	51	35	0	0	0	0	0
3	23	52	4	79	301.55	51163	76	38	47	85	137	229	405	959	1170	1310	0.00	56	35	1	0	0	0	0
4	22	50	4	76	301.66	51284	121	61	47	108	136	225	397	930	1120	1280	0.22	51	33	0	0	0	0	0
5	20	49	4	73	301.72	51350	66	33	47	80	129	218	364	880	1080	1210	0.00	54	33	1	0	0	0	0
6	19	46	4	69	301.79	51427	77	39	47	86	126	202	337	843	1020	1140	0.02	56	34	0	0	0	0	0
7	18	45	3	66	301.89	51537	110	55	20	75	121	173	305	792	957	1080	0.04	54	40	1	0	0	0	0
8	17	42	3	62	301.99	51647	110	55	20	75	114	161	302	723	879	1010	0.04	60	44	0	0	0	0	0
9	24	42	3	69	302.11	51779	132	67	20	87	117	164	326	789	936	1030	0.18	58	36	1	0	0	0	0
10	20	40	3	63	302.21	51890	111	56	20	76	108	150	274	709	877	1010	0.00	65	37	0	0	0	0	0
11	20	44	3	67	302.23	51912	22	11	82	93	108	197	315	648	788	955	0.06	59	41	1	0	0	0	0
12	20	44	3	67	302.25	51934	22	11	82	93	114	198	330	722	866	943	0.15	54	37	1	0	0	0	0
13	17	41	3	61	302.25	51934	0	0	82	82	110	193	312	667	811	930	0.01	56	40	1	0	0	0	0
14	18	44	3	65	302.27	51956	22	11	82	93	116	201	323	722	848	994	0.22	51	35	0	0	0	0	0
15	17	41	3	61	302.32	52011	55	28	41	69	112	165	268	729	890	1010	0.01	52	33	1	0	0	0	0
16	16	40	3	59	302.40	52100	89	45	19	64	107	143	252	620	765	936	0.00	59	35	3	0	0	0	0
17	15	37	3	55	302.49	52199	99	50	19	69	101	139	240	564	693	834	0.00	72	40	2	0	0	0	0
18	14	36	3	53	302.55	52266	67	34	19	53	95	128	222	526	654	771	0.00	73	39	3	0	0	0	1
19	14	34	3	51	302.62	52348	82	41	19	60	90	121	197	484	609	721	0.00	76	38	4	0	0	0	0
20	13	33	3	49	302.69	52421	73	37	19	56	85	114	188	449	568	672	0.00	77	41	5	0	0	0	1
21	14	31	3	48	302.75	52488	67	34	19	53	81	108	175	418	532	625	0.00	81	43	7	0	0	0	0
22	12	30	3	45	302.78	52521	33	17	19	36	79	105	180	393	506	589	0.00	61	36	7	0	0	0	1
23	12	29	3	44	302.83	52576	55	28	19	47	78	102	176	383	492	557	0.00	60	37	7	0	0	0	0
24	19	34	3	56	302.87	52621	45	23	19	42	82	106	162	361	471	547	0.07	53	41	7	0	0	0	1
25	16	30	3	49	302.95	52710	89	45	19	64	88	115	186	382	484	578	0.16	55	41	5	0	0	0	0
26	15	28	3	46	303.01	52776	66	33	19	52	79	105	165	383	498	573	0.04	60	36	5	0	0	0	1
27	16	28	3	47	303.07	52843	67	34	19	53	81	106	163	353	463	552	0.07	54	42	4	0	0	0	0
28	14	26	3	43	303.13	52910	67	34	19	53	75	100	149	339	444	512	0.00	79	54	7	0	0	0	1
29	14	26	3	43	303.17	52954	44	22	19	41	71	97	139	320	423	512	0.05	62	37	7	0	0	0	0
30	13	25	3	41	303.21	52999	45	23	19	42	69	96	130	305	405	482	0.01	63	38	9	0	0	0	1
TOTALS																	1.49 inches							
cfs	526	1162	96	1784				1080	1016	2096	3107	4689	7908	18683	22939	26323	MAX	81	54	91	0	0	0	7
ac-ft	1043	2305	190	3539			2143	2143	2015	4158	6163	9301	15686	37058	45500	52212	MIN	51	33	180	0	0	0	14

Water storage elevation ± to fill curve:	**-0.25**
Water storage in ac-ft ± to fill curve:	**-279.56**
Percentage of full reservoir:	**99.4%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2015
Updated: January 00, 1900

SECO W/Y pc:	76.3"	sno depth/water content	0
SDMO W/Y pc:	51.2"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	228	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	0	13500
planning purposes only.	Other	18	

SCOGGINS DAM -- RESERVOIR OPERATIONS
May 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	14	24	3	41	303.25	53044	45	23	19	42	66	92	117	287	385	459	0.00	70	44	0	0	0	0	0
2	13	23	3	39	303.28	53077	33	17	18	35	63	88	102	265	365	432	0.00	72	38	0	0	0	0	0
3	13	22	3	38	303.31	53110	33	17	19	36	61	85	88	235	333	410	0.00	69	37	0	0	0	0	0
4	12	21	3	36	303.34	53144	34	17	19	36	59	81	102	229	319	380	0.00	76	41	0	0	0	0	0
5	12	21	3	36	303.36	53166	22	11	19	30	58	80	92	218	311	368	0.01	62	43	0	0	0	0	0
6	11	21	3	35	303.38	53189	23	12	18	30	59	81	86	207	299	352	0.06	60	43	0	0	0	0	0
7	11	20	2	33	303.40	53211	22	11	18	29	57	78	82	201	290	336	0.00	61	38	0	0	0	0	0
8	11	20	2	33	303.41	53222	11	6	18	24	54	75	54	183	276	321	0.00	70	40	0	0	0	0	0
9	11	23	2	36	303.36	53166	-56	-28	84	56	80	145	86	154	240	299	0.00	79	43	20	0	0	35	0
10	10	22	2	34	303.28	53077	-89	-45	84	39	78	145	107	197	268	275	0.00	83	45	20	0	0	35	0
11	10	22	2	34	303.20	52988	-89	-45	84	39	73	141	114	214	295	310	0.00	71	50	20	0	0	35	0
12	13	25	3	41	303.14	52921	-67	-34	82	48	81	148	103	241	324	397	0.29	60	48	20	0	0	34.99	0
13	11	17	2	30	303.09	52865	-56	-28	71	43	87	147	155	309	386	445	0.07	54	45	20	0	0	20	0
14	11	19	2	32	303.07	52843	-22	-11	65	54	94	150	151	310	411	459	0.01	58	42	20	0	0	15	0
15	9	16	2	27	303.06	52832	-11	-6	50	44	83	126	139	294	389	445	0.00	67	44	20	0	0	0	0
16	9	15	2	26	303.05	52821	-11	-6	43	37	80	118	121	259	358	436	0.00	61	47	20	0	0	0	0
17	9	14	2	25	303.03	52799	-22	-11	43	32	79	117	119	233	329	401	0.00	61	50	20	0	0	0	0
18	9	14	2	25	303.03	52799	0	0	43	43	95	130	125	236	324	372	0.00	68	45	20	0	0	0	0
19	9	13	2	24	302.98	52743	-56	-28	75	47	76	136	90	206	309	441	0.00	76	51	20	0	0	30	0
20	8	13	2	23	302.91	52665	-78	-39	75	36	74	134	86	189	278	360	0.00	65	50	20	0	0	30	0
21	8	13	2	23	302.89	52621	-44	-22	62	40	72	119	84	170	265	325	0.00	76	54	20	0	0	20	0
22	8	24	3	35	302.86	52610	-11	-6	59	53	88	127	96	180	278	321	0.10	75	53	20	0	0	15	0
23	8	18	2	28	302.79	52532	-78	-39	90	51	83	145	127	233	315	333	0.00	59	52	44	0	0	15	3
24	8	16	2	26	302.72	52454	-78	-39	90	51	80	143	125	233	330	360	0.00	64	51	46	0	0	15	3
25	8	15	2	25	302.63	52354	-100	-50	90	40	77	140	127	216	316	364	0.00	67	50	47	0	0	15	3
26	7	15	2	24	302.56	52277	-77	-39	90	51	76	139	114	209	307	348	0.00	69	49	48	0	0	15	3
27	7	14	2	23	302.48	52188	-89	-45	82	37	74	131	96	190	289	344	0.00	72	47	41	0	0	14.99	3
28	7	13	2	22	302.40	52100	-88	-44	81	37	71	128	81	160	260	314	0.00	79	50	41	0	0	15	3
29	7	15	2	24	302.30	51989	-111	-56	110	54	69	148	86	141	232	289	0.00	84	53	58	0	0	25	3
30	7	14	2	23	302.15	51824	-165	-83	121	38	68	154	88	136	227	262	0.00	82	48	64	0	0	32	3
31	6	14	2	22	302.02	51680	-144	-73	121	48	66	153	89	140	225	258	0.00	79	54	64	0	0	32	3
TOTALS																	0.54 inches							
cfs	297	556	70	923				-665	1943	1278	2281	3824	3232	6675	9533	11216	MAX	84	54	733	0	0	449	27
ac-ft	589	1103	139	1831			-1319	-1319	3854	2535	4524	7585	6411	13240	18909	22247	MIN	54	37	1454	0	0	891	54

Water storage elevation ± to fill curve:	**-1.48**
Water storage in ac-ft ± to fill curve:	**-1643**
Percentage of full reservoir:	**96.9%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2015
Updated: May 31, 2015

SECO W/Y pc:	52.4"	sno depth/water content	0
SDMO W/Y pc:	78.1"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	1682	
remaining are provisional and subject	CWS	0	12615
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	891	12609
planning purposes only.	Other	71	

SCOGGINS DAM -- RESERVOIR OPERATIONS
June 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO	SCLO	TANO	TOT INFLO	W.S. ELEV	STOR CONT	CHNG STOR	CHNG STOR	REL	COMP INFLO	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PRECIP	TEMP MAX	TEMP MIN	TVID	CWS	LO	MUNI	OTHR
	(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ac-ft)	(ac-ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(inches)	(°F)	(°F)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]
1	7	14	2	23	301.89	51537	-143	-72	121	49	68	154	93	149	232	258	0.27	84	53	63	0	0	32	3
2	9	18	2	29	301.80	51438	-99	-50	98	48	76	148	117	173	252	278	0.25	59	53	41	0	0	26	3
3	7	16	2	25	301.75	51383	-55	-28	76	48	75	128	111	216	298	340	0.11	61	53	38	0	0	10	3
4	8	18	2	28	301.70	51328	-55	-28	76	48	77	133	107	231	326	352	0.02	63	46	35	0	0	10	3
5	7	14	2	23	301.58	51196	-132	-67	106	39	68	147	101	206	302	352	0.00	73	51	54	0	0	25	4
6	7	13	2	22	301.42	51021	-175	-88	140	52	65	168	93	159	259	317	0.00	85	52	74	0	0	40	4
7	6	11	2	19	301.24	50824	-197	-99	140	41	62	165	82	138	233	278	0.00	89	54	77	0	0	40	4
8	5	11	1	17	301.07	50638	-186	-94	140	46	60	162	84	133	219	258	0.00	91	55	79	0	0	40	4
9	5	10	1	16	300.83	50376	-262	-132	169	37	60	192	90	114	204	246	0.00	93	52	99	10	0	40	4
10	5	9	1	15	300.58	50104	-272	-137	172	35	58	192	98	112	197	221	0.00	89	42	113	10	0	30	4
11	5	9	1	15	300.34	49843	-261	-132	175	43	64	201	99	124	204	204	0.00	81	45	111	10	0	35	4
12	5	9	1	15	300.07	49550	-293	-148	175	27	63	198	96	130	210	210	0.00	80	44	107	10	0	40	3
13	5	9	1	15	299.81	49269	-281	-142	168	26	62	191	91	120	206	215	0.00	72	40	100	10	0	40	3
14	5	9	1	15	299.56	49000	-269	-136	169	33	63	191	91	114	199	213	0.00	75	41	101	10	0	40	3
15	4	9	1	14	299.33	48752	-248	-125	168	43	61	189	89	124	202	210	0.00	85	50	101	10	0	40	3
16	4	8	1	13	299.08	48484	-268	-135	184	49	60	205	86	105	190	207	0.00	87	46	118	10	0	40	3
17	4	7	1	12	298.79	48174	-310	-156	184	28	59	203	99	108	187	193	0.00	77	43	119	10	0	40	3
18	4	8	1	13	298.56	47928	-246	-124	159	35	63	178	82	115	198	199	0.00	81	54	108	10	0	25	3
19	4	8	1	13	298.33	47683	-245	-124	169	45	62	188	91	102	187	204	0.00	80	56	106	20	0	25	5
20	4	8	1	13	298.06	47396	-287	-145	177	32	64	196	95	107	188	201	0.00	73	44	107	20	0	32	5
21	4	7	1	12	297.79	47110	-286	-144	177	33	62	194	89	105	188	199	0.00	79	54	108	20	0	32	5
22	4	7	1	12	297.52	46824	-286	-144	176	32	61	195	93	111	189	201	0.00	81	47	107	20	0	32	5
23	4	7	1	12	297.25	46539	-285	-144	186	42	66	207	89	96	184	199	0.00	77	48	117	20	0	32	5
24	3	7	1	11	296.94	46213	-326	-164	204	40	63	223	103	100	178	185	0.00	83	55	118	30	0	40	5
25	4	7	1	12	296.61	45867	-346	-174	214	40	69	241	113	108	190	193	0.00	85	54	127	30	0	40	5
26	3	6	1	10	296.28	45522	-345	-174	214	40	58	226	96	118	203	207	0.00	90	59	129	30	0	40	5
27	3	6	1	10	295.93	45158	-364	-184	222	38	66	246	103	94	179	210	0.00	95	64	127	40	0	40	5
28	3	6	1	10	295.57	44784	-374	-189	221	32	66	247	113	108	184	196	0.00	94	64	126	40	0	40	5
29	3	6	1	10	295.22	44422	-362	-183	221	38	68	250	133	128	204	210	0.00	85	60	126	40	0	40	5
30	3	6	1	10	294.89	44081	-341	-172	208	36	66	229	124	125	215	224	0.00	90	57	125	40	0	28	5
TOTALS																	0.65 inches							
cfs	144	283	37	464				-3831	5009	1178	1935	5787	2951	3873	6407	6980	MAX	95	64	2961	450	0	1014	121
ac-ft	286	561	73	920			-7599	-7599	9935	2336	3838	11479	5853	7682	12708	13845	MIN	59	40	5873	893	0	2011	240

Water storage elevation ± to fill curve:	**-8.61**
Water storage in ac-ft ± to fill curve:	**-9242**
Percentage of full reservoir:	**82.7%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2015
Updated: January 00, 1900

SECO W/Y pc:	53.4"	sno depth/water content	0
SDMO W/Y pc:	78.5"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	7555	
remaining are provisional and subject	CWS	893	11722
to daily changes as the WS elevation	LO	0	500
rises and falls. These numbers are for	MUNI	2902	10598
planning purposes only.	Other	311	

SCOGGINS DAM -- RESERVOIR OPERATIONS
July 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	3	5	1	9	294.53	43711	-370	-187	211	24	64	231	111	109	202	227	0.00	91	53	122	40	0	35	5
2	2	5	1	8	294.19	43363	-348	-175	211	36	63	229	98	95	188	215	0.00	94	57	123	40	0	35	5
3	2	5	1	8	293.79	42955	-408	-206	240	34	63	261	121	86	174	199	0.00	96	57	128	50	0	49	5
4	2	4	1	7	293.38	42538	-417	-210	239	29	61	256	116	102	189	190	0.00	96	55	128	50	0	49	5
5	2	4	1	7	292.98	42133	-405	-204	239	35	61	256	123	98	185	196	0.00	95	59	128	50	0	49	5
6	2	4	1	7	292.56	41710	-423	-213	238	25	60	255	119	104	192	201	0.00	93	54	127	50	0	49	5
7	2	4	1	7	292.16	41309	-401	-202	226	24	60	240	109	95	186	201	0.00	92	53	124	50	0	40	5
8	2	4	1	7	291.81	40958	-351	-177	211	34	60	221	92	91	174	193	0.00	88	54	114	50	0	35	5
9	3	4	1	8	291.43	40580	-378	-191	220	29	59	232	95	74	164	190	0.00	92	58	116	50	0	35	5
10	2	4	1	7	291.02	40173	-407	-205	238	33	59	251	126	77	166	177	0.00	88	60	132	50	3	42	3
11	2	4	1	7	290.60	39758	-415	-209	230	21	60	244	103	110	192	182	0.00	77	61	121	50	3	45	3
12	3	5	1	9	290.18	39344	-414	-209	230	21	62	246	122	94	185	207	0.00	71	58	120	50	3	45	3
13	2	5	1	8	289.80	38971	-373	-188	230	42	60	245	140	117	201	210	0.03	79	59	121	50	3	45	3
14	3	5	1	9	289.45	38629	-342	-172	204	32	61	214	103	116	206	213	0.00	78	50	114	40	3	35	3
15	2	4	1	7	289.10	38288	-341	-172	204	32	59	208	100	91	184	210	0.00	81	49	116	40	3	35	3
16	2	4	1	7	288.74	37939	-349	-176	208	32	58	213	103	98	178	196	0.00	80	53	115	40	3	40	3
17	2	4	1	7	288.37	37581	-358	-180	208	28	59	214	95	102	175	188	0.00	79	48	113	40	3	40	4
18	2	4	1	7	287.94	37166	-415	-209	239	30	58	249	118	96	168	182	0.00	85	55	125	50	3	50	4
19	2	4	1	7	287.52	36763	-403	-203	238	35	56	247	109	110	184	182	0.00	95	58	124	50	3	50	4
20	2	3	1	6	287.09	36352	-411	-207	238	31	56	246	115	115	188	190	0.00	93	54	125	50	3	50	4
21	2	4	1	7	286.66	35943	-409	-206	238	32	57	248	95	115	189	196	0.00	86	52	116	50	3	58	4
22	2	4	1	7	286.22	35526	-417	-210	228	18	58	237	96	105	176	190	0.00	75	52	109	40	3	65	4
23	3	4	1	8	285.85	35177	-349	-176	210	34	59	215	92	100	174	188	0.00	69	52	110	40	3	45	4
24	2	4	1	7	285.47	34819	-358	-180	209	29	57	231	87	100	173	188	0.00	79	50	110	50	3	38	4
25	2	4	1	7	285.12	34491	-328	-165	210	45	56	213	97	94	166	182	0.12	81	57	116	50	3	30	4
26	2	4	1	7	284.75	34146	-345	-174	209	35	58	214	127	147	204	193	0.02	71	53	115	50	3	30	4
27	2	5	1	8	284.37	33793	-353	-178	209	31	59	213	132	163	229	236	0.06	70	48	114	50	3	30	4
28	2	4	1	7	284.00	33450	-343	-173	209	36	58	211	85	155	227	252	0.00	75	47	105	40	3	50	4
29	2	4	1	7	283.58	33062	-388	-196	232	36	56	235	90	105	177	236	0.00	85	55	121	40	3	57	4
30	2	3	1	6	283.12	32640	-422	-213	247	34	54	252	87	92	161	199	0.00	96	56	122	50	3	62	4
31	2	3	1	6	282.64	32201	-439	-221	263	42	53	265	102	89	155	180	0.00	104	56	122	60	3	67	5
TOTALS																	0.23 inches							
cfs	67	128	31	226				-5990	6966	976	1824	7292	3308	3245	5712	6189	MAX	104	61	3696	1460	66	1385	127
ac-ft	133	254	61	448			#####	#####	13817	1937	3618	14464	6561	6436	11330	12276	MIN	69	47	7331	2896	131	2747	252

Water storage elevation ± to fill curve:	**-20.86**
Water storage in ac-ft ± to fill curve:	**-21122**
Percentage of full reservoir:	**60.4%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2015
Updated: July 01, 2015

SECO W/Y pc:	53.6"	sno depth/water content	0
SDMO W/Y pc:	79.8"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	14886	
remaining are provisional and subject	CWS	3788	8827
to daily changes as the WS elevation	LO	131	369
rises and falls. These numbers are for	MUNI	5649	7851
planning purposes only.	Other	563	

SCOGGINS DAM -- RESERVOIR OPERATIONS
August 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	2	3	1	6	282.15	31755	-446	-225	256	31	51	260	103	99	161	170	0.00	101	50	122	60	3	60	5
2	1	3	1	5	281.64	31294	-461	-232	255	23	51	260	110	103	166	170	0.00	99	58	123	60	3	60	5
3	2	3	1	6	281.17	30871	-423	-213	255	42	53	261	121	116	177	190	0.00	80	63	122	60	3	60	5
4	2	3	1	6	280.73	30477	-394	-199	221	22	53	224	100	123	186	199	0.00	82	51	110	50	3	47	5
5	2	3	1	6	280.32	30111	-366	-185	215	30	54	216	93	110	173	204	0.00	80	49	111	50	3	40	5
6	2	3	1	6	279.94	29774	-337	-170	201	31	54	198	96	99	162	190	0.00	76	49	102	50	3	35	5
7	2	3	1	6	279.55	29430	-344	-173	211	38	54	211	92	91	158	175	0.00	80	51	94	50	3	55	3
8	2	3	1	6	279.16	29087	-343	-173	211	38	54	211	81	87	152	172	0.00	86	53	94	50	3	55	3
9	2	3	1	6	278.75	28727	-360	-182	210	28	56	211	94	78	146	170	0.00	79	51	93	50	3	55	3
10	2	3	1	6	278.36	28387	-340	-171	210	39	56	211	98	91	155	165	0.00	83	57	93	50	3	55	3
11	2	3	1	6	278.00	28075	-312	-157	198	41	55	195	79	90	156	172	0.00	82	57	98	50	3	38	3
12	1	3	1	5	277.58	27712	-363	-183	219	36	56	219	91	71	138	170	0.00	89	58	120	50	3	38	3
13	1	3	1	5	277.17	27360	-352	-177	219	42	56	220	91	88	147	157	0.00	89	54	105	60	3	43	3
14	1	3	1	5	276.74	26992	-368	-186	219	33	54	217	97	87	150	162	0.00	86	58	104	60	3	43	4
15	2	4	1	7	276.29	26608	-384	-194	223	29	58	226	119	97	158	170	0.03	70	58	95	60	3	54	4
16	2	4	1	7	275.86	26244	-364	-184	222	38	57	225	125	118	178	180	0.00	76	49	96	60	3	52	4
17	1	3	1	5	275.42	25874	-370	-187	222	35	56	222	121	121	182	196	0.00	83	56	98	60	3	51.99	4
18	1	3	1	5	274.99	25513	-361	-182	222	40	56	219	82	106	175	196	0.00	89	55	98	50	3	62	4
19	1	3	1	5	274.52	25122	-391	-197	233	36	55	230	97	77	145	180	0.00	96	58	104	60	3	57	4
20	1	2	1	4	274.08	24757	-365	-184	220	36	67	224	105	92	151	162	0.00	97	55	109	60	3	40	4
21	1	3	1	5	273.61	24370	-387	-195	224	29	71	235	120	103	162	165	0.00	80	50	107	60	3	45.01	4
22	1	2	1	4	273.13	23977	-393	-198	232	34	68	243	109	110	171	177	0.00	78	47	106	60	3	55	4
23	1	2	1	4	272.66	23595	-382	-193	232	39	68	241	129	106	170	188	0.00	84	52	106	60	3	55	4
24	1	2	1	4	272.18	23206	-389	-196	232	36	69	240	129	128	188	190	0.00	88	49	106	60	3	54.99	4
25	1	3	1	5	271.79	22893	-313	-158	198	40	68	201	89	113	180	201	0.00	83	46	96	50	3	39.99	4
26	1	2	1	4	271.38	22565	-328	-165	208	43	68	211	100	84	152	190	0.00	84	50	97	60	3	40	4
27	1	2	1	4	270.96	22230	-335	-169	210	41	64	215	106	93	155	177	0.00	88	50	106	60	3	33	4
28	2	2	1	5	270.58	21927	-303	-153	196	43	64	198	103	105	169	180	0.09	88	54	97	60	3	28	3
29	3	3	1	7	270.31	21713	-214	-108	157	49	73	178	102	116	187	210	0.24	76	61	78	43	3	23	3
30	4	7	1	12	270.02	21484	-229	-115	157	42	82	190	146	198	264	275	0.41	72	57	76	40	3	23	3
31	2	5	1	8	269.72	21247	-237	-119	157	38	76	189	172	243	325	336	0.00	70	57	80	40	3	23	3
TOTALS																	0.77 inches							
cfs	50	94	31	175				-5523	6645	1122	1877	6801	3300	3343	5339	5839	MAX	101	63	3146	1693	93	1421	119
ac-ft	99	186	61	347			#####	#####	13180	2226	3723	13490	6546	6631	10590	11582	MIN	70	46	6240	3358	184	2819	236

Water storage elevation ± to fill curve:	**-33.78**
Water storage in ac-ft ± to fill curve:	**-32076**
Percentage of full reservoir:	**39.8%**

SNOTEL Summary for Water Year 2015

Updated: January 00, 1900

SECO W/Y pc:	54.6"	sno depth/water content	0
SDMO W/Y pc:	81.4"	sno depth/water content	0

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	21126	
remaining are provisional and subject	CWS	7147	5468
to daily changes as the WS elevation	LO	315	185
rises and falls. These numbers are for	MUNI	8467	5033
planning purposes only.	Other	799	

SCOGGINS DAM -- RESERVOIR OPERATIONS
September 2015

	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
DAY	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	2	4	1	7	269.53	21097	-150	-76	115	39	72	148	93	195	282	325	0.00	72	58	64	20	3	18	3
2	2	4	1	7	269.29	20909	-188	-95	120	25	72	150	77	124	211	282	0.00	71	53	59	30	3	18	3
3	2	4	1	7	269.07	20736	-173	-87	117	30	85	157	85	101	178	230	0.00	70	43	59	40	3	5	3
4	2	4	1	7	268.88	20588	-148	-75	117	42	81	156	87	107	179	204	0.43	63	43	60	40	3	5	2
5	3	5	1	9	268.65	20408	-180	-91	127	36	84	163	89	104	178	204	0.01	62	45	63	40	3	10	2
6	2	4	1	7	268.43	20237	-171	-86	127	41	82	162	95	117	181	201	0.08	65	43	65	40	3	10	2
7	2	4	1	7	268.20	20058	-179	-90	126	36	83	162	101	123	197	215	0.00	64	49	64	40	3	10	2
8	2	4	1	7	267.97	19880	-178	-90	126	36	81	160	93	122	195	221	0.00	75	49	64	40	3	10	2
9	2	4	1	7	267.76	19718	-162	-82	124	42	79	156	82	107	180	218	0.00	80	52	62	40	3	10	2
10	2	3	1	6	267.49	19510	-208	-105	138	33	78	166	79	94	166	204	0.00	83	52	77	40	3	10	2
11	2	3	1	6	267.23	19310	-200	-101	156	55	78	182	90	88	160	188	0.00	88	53	79	50	3	15	3
12	1	3	1	5	266.91	19066	-244	-123	161	38	76	185	91	97	166	182	0.00	95	55	80	50	3	20	3
13	1	3	1	5	266.58	18814	-252	-127	161	34	76	186	96	98	173	185	0.00	91	51	80	50	3	20	3
14	2	3	1	6	266.24	18556	-258	-130	161	31	76	185	103	104	178	180	0.00	75	46	79	50	3	20	3
15	2	3	1	6	265.98	18359	-197	-99	116	17	80	155	94	110	185	199	0.00	61	43	54	40	3	10	3
16	2	4	1	7	265.80	18224	-135	-68	96	28	82	142	86	104	181	207	0.05	62	46	53	30	3	0	3
17	4	5	1	10	265.68	18133	-91	-46	96	50	76	137	91	109	179	224	0.53	67	52	50	30	3	0	3
18	3	6	1	10	265.51	18006	-127	-64	96	32	78	145	121	153	225	249	0.02	67	48	50	30	3	0	2
19	2	5	1	8	265.32	17863	-143	-72	100	28	72	139	95	137	220	252	0.00	74	48	52	30	3	5	2
20	2	4	1	7	265.14	17728	-135	-68	100	32	68	135	85	115	197	239	0.00	79	50	53	30	3	5	2
21	2	4	1	7	264.95	17587	-141	-71	100	29	69	136	84	104	183	221	0.00	73	54	53	30	3	5	2
22	2	3	1	6	264.73	17423	-164	-83	110	27	72	145	79	96	175	207	0.00	69	42	49	40	3	10	2
23	2	3	1	6	264.52	17267	-156	-79	106	27	72	143	67	89	169	201	0.00	70	41	40	40	3	15	2
24	2	3	1	6	264.29	17097	-170	-86	113	27	69	145	86	78	157	190	0.00	73	45	42	50	3	10	2
25	2	3	1	6	264.10	16957	-140	-71	120	49	71	150	89	90	164	182	0.16	75	49	44	55	3	10	2
26	2	4	1	7	263.86	16780	-177	-89	115	26	73	153	99	137	198	218	0.05	64	50	38	55	3	10	2
27	2	4	1	7	263.62	16604	-176	-89	115	26	72	151	112	121	203	233	0.00	67	40	38	55	3	10	2
28	2	3	1	6	263.38	16429	-175	-88	115	27	72	151	102	121	201	230	0.00	69	42	39	55	3	10	2
29	2	3	1	6	263.15	16261	-168	-85	114	29	72	150	87	106	185	221	0.00	79	42	38	55	3	10	2
30	2	3	1	6	262.92	16094	-167	-84	115	31	71	148	78	91	170	207	0.00	80	44	44	55	3	5	2
TOTALS																	1.33 inches							
cfs	62	112	30	204				-2598	3603	1005	2272	4643	2716	3342	5616	6519	MAX	95	58	1692	1250	90	296	70
ac-ft	123	222	60	405			-5153	-5153	7147	1993	4507	9209	5387	6629	11139	12930	MIN	61	40	3356	2479	179	587	139

Water storage elevation ± to fill curve:	**-40.58**
Water storage in ac-ft ± to fill curve:	**-37229**
Percentage of full reservoir:	**30.2%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2015
Updated: September,30 2015

SECO W/Y pc:	56.0"	sno depth/water content	0
SDMO W/Y pc:	83.8"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	24482	
remaining are provisional and subject	CWS	9626	2989
to daily changes as the WS elevation	LO	494	6
rises and falls. These numbers are for	MUNI	9055	4445
planning purposes only.	Other	938	

SCOGGINS DAM -- RESERVOIR OPERATIONS
October 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	2	3	1	6	262.67	15913	-181	-91	120	29	61	143	85	85	159	190	0.00	71	46	49	55	3	5	2
2	2	3	1	6	262.43	15740	-173	-87	120	33	60	142	85	87	159	182	0.00	78	46	46	55	0	10	3
3	2	3	1	6	262.17	15554	-186	-94	128	34	60	148	80	87	163	185	0.00	64	43	36	55	0	28	3
4	2	3	1	6	261.92	15375	-179	-90	127	37	60	150	81	81	160	182	0.00	69	44	35	55	0	28	3
5	1	3	1	5	261.65	15182	-193	-97	127	30	60	148	87	89	161	182	0.00	78	45	36	55	0	28	3
6	1	3	1	5	261.40	15005	-177	-89	126	37	59	144	77	89	164	180	0.00	82	47	45	55	0	18	3
7	2	3	1	6	261.17	14842	-163	-82	115	33	59	139	83	83	159	175	0.06	74	48	41	55	0	10	3
8	2	4	1	7	260.96	14694	-148	-75	104	29	50	121	85	95	174	180	0.09	63	54	34	55	0	5	3
9	2	4	1	7	260.75	14546	-148	-75	98	23	49	117	85	94	172	196	0.00	72	49	29	55	0	5	2
10	2	4	1	7	260.56	14413	-133	-67	102	35	50	132	77	94	171	196	0.00	72	52	23	55	0	15	2
11	4	8	1	13	260.37	14280	-133	-67	102	35	68	140	74	155	216	265	0.25	67	48	17	55	0	15	2
12	2	6	1	9	260.17	14141	-139	-70	102	32	57	132	104	137	223	255	0.00	64	45	21	55	0	15	2
13	2	5	1	8	259.98	14009	-132	-67	96	29	53	122	73	130	210	242	0.00	68	46	21	35	0	30	2
14	2	4	1	7	259.81	13891	-118	-59	82	23	52	110	65	99	181	221	0.00	72	42	18	35	0	20	2
15	2	4	1	7	259.65	13781	-110	-55	82	27	52	109	64	85	164	204	0.00	73	43	18	35	0	20	2
16	2	4	1	7	259.47	13657	-124	-63	87	24	52	113	65	81	160	185	0.00	79	50	14	45	0	20	1
17	2	4	1	7	259.29	13533	-124	-63	99	36	53	127	77	80	158	177	0.10	74	51	16	55	0	20	1
18	2	4	1	7	259.07	13382	-151	-76	99	23	56	130	89	79	166	180	0.17	65	56	16	55	0	20	1
19	2	6	1	9	258.90	13266	-116	-58	99	41	58	132	102	109	183	196	0.07	62	51	14	55	0	20	1
20	2	6	1	9	258.78	13184	-82	-41	67	26	61	111	83	128	201	213	0.11	63	52	12	35	0	10	1
21	2	5	1	8	258.65	13096	-88	-44	62	18	58	104	80	119	198	224	0.00	66	45	13	35	0	5	1
22	2	5	1	8	258.55	13028	-68	-34	57	23	57	98	68	79	188	218	0.00	65	40	13	25	0	10	1
23	2	5	1	8	258.41	12933	-95	-48	57	9	57	99	63	66	179	207	0.00	65	38	13	25	0	10	1
24	2	5	1	8	258.27	12838	-95	-48	73	25	57	111	68	54	165	196	0.00	63	41	14	35	0	15	1
25	2	5	1	8	258.11	12730	-108	-54	73	19	56	111	70	65	170	188	0.05	68	47	14	35	0	15	1
26	11	32	3	46	258.17	12771	41	21	73	94	114	162	170	305	397	414	1.40	59	50	2	35	0	15	1
27	5	16	2	23	258.06	12697	-74	-37	82	45	85	151	191	241	375	445	0.07	58	42	10	15	0	20	0
28	4	10	1	15	258.03	12676	-21	-11	36	25	69	91	93	200	325	405	0.21	58	42	9	15	0	5	1
29	4	12	2	18	258.04	12683	7	4	20	24	55	82	76	187	305	380	0.19	60	50	5	15	0	0	0
30	6	11	2	19	258.06	12697	14	7	21	28	38	69	63	111	227	336	0.19	63	52	5	15	0	0	1
31	11	34	3	48	258.16	12764	67	34	20	54	151	165	127	154	242	454	0.39	63	55	4	15	0	0	0
TOTALS																	3.35 inches							
cfs	91	224	38	353				-1679	2656	977	1927	3853	2690	3548	6275	7453	MAX	82	56	643	1275	3	437	50
ac-ft	180	444	75	700			-3330	-3330	5268	1938	3822	7642	5336	7037	12446	14783	MIN	58	38	1275	2529	6	867	99

Water storage elevation ± to fill curve:	**-45.34**
Water storage in ac-ft ± to fill curve:	**-40559**
Percentage of full reservoir:	**23.9%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2016
Updated: October 31, 2015

SECO W/Y pc:	5.1"	sno depth/water content	0
SDMO W/Y pc:	11.0"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	25758	
remaining are provisional and subject	CWS	12155	460
to daily changes as the WS elevation	LO	500	0
rises and falls. These numbers are for	MUNI	9921	3579
planning purposes only.	Other	1037	

SCOGGINS DAM -- RESERVOIR OPERATIONS
November 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO (cfs) [1]	SCLO (cfs) [2]	TANO (cfs) [3]	TOT INFLO (cfs) [4]	W.S. ELEV (ft) [5]	STOR CONT (ac-ft) [6]	CHNG STOR (ac-ft) [7]	CHNG STOR (cfs) [8]	REL (cfs) [9]	COMP INFLO (cfs) [10]	GASO (cfs) [11]	DLLO (cfs) [12]	GOLF (cfs) [13]	ROOD (cfs) [14]	FRMO (cfs) [15]	WSLO (cfs) [16]	PRECIP (inches) [17]	TEMP MAX (°F) [18]	TEMP MIN (°F) [19]	TVID (cfs) [20]	CWS (cfs) [21]	LO (cfs) [22]	MUNI (cfs) [23]	OTHR (cfs) [24]
1	18	78	6	102	258.56	13014	250	126	21	147	356	382	546	762	873	1100	1.10	64	49	2	15	0	0	1
2	17	65	5	87	258.73	13150	136	69	21	90	220	246	397	926	1220	1310	0.21	59	46	2	15	0	0	0
3	10	42	3	55	258.85	13232	82	41	21	62	112	153	285	571	795	1060	0.15	55	38	2	15	0	0	1
4	5	28	3	36	258.90	13266	34	17	20	37	70	106	150	350	540	759	0.00	57	35	2	15	0	0	0
5	5	21	3	29	258.92	13280	14	7	20	27	54	87	110	201	350	532	0.05	47	36	2	15	0	0	1
6	5	17	2	24	258.95	13300	20	10	20	30	48	78	94	146	264	384	0.05	50	45	2	0	0	0	0
7	5	14	2	21	258.96	13307	7	4	20	24	40	71	75	118	225	310	0.01	58	42	2	0	0	0	1
8	10	34	3	47	259.08	13389	82	41	20	61	69	97	96	234	329	441	0.60	52	45	2	0	0	0	0
9	10	34	3	47	259.17	13451	62	31	20	51	82	112	160	379	504	507	0.23	49	44	2	0	0	0	1
10	7	25	3	35	259.21	13478	27	14	20	34	68	97	123	281	439	557	0.00	51	35	3	0	0	0	0
11	12	28	3	43	259.28	13526	48	24	20	44	62	89	99	196	334	473	0.25	45	36	4	0	0	0	1
12	8	30	3	41	259.34	13567	41	21	20	41	79	109	148	185	309	405	0.01	53	38	4	0	0	0	0
13	59	80	7	146	259.54	13705	138	70	20	90	317	227	141	202	315	368	0.48	51	41	4	0	0	0	0
14	66	138	12	216	260.00	14023	318	160	21	181	na	442	541	333	385	368	0.42	56	51	2	0	0	0	0
15	46	113	10	169	260.51	14378	355	179	21	200	452	439	757	697	782	578	0.13	58	42	1	0	0	0	0
16	31	100	8	139	260.84	14610	232	117	21	138	267	305	594	828	1030	930	0.11	48	34	2	0	0	0	0
17	190	342	30	562	261.78	15275	665	335	21	356	na	494	650	843	1020	1130	1.49	53	38	1	0	0	0	0
18	225	426	35	686	264.45	17215	1940	978	21	999	na	1040	1340	1670	1870	1740	1.47	57	37	1	0	0	0	0
19	207	307	30	544	265.77	18201	986	497	23	520	na	972	1780	2040	2400	2480	1.11	50	37	1	0	0	0	0
20	134	185	20	339	266.71	18913	712	359	22	381	na	878	1910	2250	2730	2700	0.02	48	33	1	0	0	0	0
21	89	128	11	228	267.31	19372	459	231	22	253	499	736	1640	2130	2610	2600	0.00	50	33	1	0	0	0	0
22	67	106	9	182	267.73	19695	323	163	23	186	332	555	1230	1910	2360	2360	0.00	51	29	1	0	0	0	0
23	53	88	7	148	268.04	19934	239	120	22	142	250	397	787	1440	1870	2060	0.00	47	29	0	0	0	0	0
24	57	88	7	152	268.36	20182	248	125	22	147	252	340	632	1120	1420	1790	0.48	39	30	1	0	0	0	0
25	42	75	5	122	268.60	20369	187	94	23	117	188	276	553	1070	1390	1520	0.01	42	29	0	0	0	0	0
26	39	66	5	110	268.78	20509	140	71	23	94	160	225	464	819	1100	1280	0.00	46	25	1	0	0	0	0
27	33	60	4	97	268.94	20634	125	63	23	86	143	196	381	634	871	1040	0.00	51	29	0	0	0	0	0
28	30	53	4	87	269.06	20728	94	47	23	70	130	178	341	510	705	863	0.00	50	31	1	0	0	0	0
29	29	49	4	82	269.17	20814	86	43	23	66	118	163	298	442	623	748	0.00	50	22	0	0	0	0	0
30	23	46	4	73	269.28	20901	87	44	23	67	109	149	261	385	556	667	0.00	44	20	1	0	0	0	0
TOTALS																	8.38 inches							
cfs	1532	2866	251	4649				4102	640	4742	4477	9639	16583	23672	30219	33060	MAX	64	51	48	75	0	0	6
ac-ft	3039	5685	498	9221			8137	8137	1269	9407	8880	19119	32892	46953	59939	65575	MIN	39	20	95	149	0	0	12

Water storage elevation ± to fill curve:	**-14.22**
Water storage in ac-ft ± to fill curve:	**-12088**
Percentage of full reservoir:	**39.2%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2016
Updated: November 30, 2015

SECO W/Y pc:	18.0"	sno depth/water content	0
SDMO W/Y pc:	28.4"	sno depth/water content	0

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	25853	
remaining are provisional and subject	CWS	12304	311
to daily changes as the WS elevation	LO	500	0
rises and falls. These numbers are for	MUNI	9921	3579
planning purposes only.	Other	1049	

SCOGGINS DAM -- RESERVOIR OPERATIONS
December 2015

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER			WATER DELIVERIES				
	SCHO	SCLO	TANO	TOT INFLO	W.S. ELEV	STOR CONT	CHNG STOR	CHNG STOR	REL	COMP INFLO	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PRECIP	TEMP MAX	TEMP MIN	TVID	CWS	LO	MUNI	OTHR
	(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ac-ft)	(ac-ft)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(inches)	(°F)	(°F)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]
1	22	41	3	66	269.38	20979	78	39	23	62	102	142	247	342	502	600	0.01	36	25	0	0	0	0	0
2	59	102	9	170	269.69	21223	244	123	23	146	265	260	348	629	726	881	1.09	44	34	0	0	0	0	0
3	153	197	22	372	270.26	21674	451	227	23	250	623	428	627	1200	1390	1380	1.29	43	38	0	0	0	0	0
4	125	166	16	307	271.03	22285	611	308	23	331	na	590	1100	1900	2210	2060	0.52	52	42	0	0	0	0	0
5	107	138	12	257	271.52	22676	391	197	106	303	491	625	1130	2090	2560	2560	0.18	49	40	0	0	0	0	56
6	159	200	22	381	272.17	23198	522	263	108	371	na	687	1220	2120	2610	2800	1.30	49	42	0	0	0	0	84
7	409	937	65	1411	273.83	24551	1353	682	116	798	na	892	1620	2500	3090	3760	2.24	53	48	0	0	0	0	84
8	351	758	55	1164	278.26	28301	3750	1891	177	2068	na	3070	3160	3790	4650	5920	1.46	61	48	0	0	0	0	77
9	470	1500	90	2060	281.81	31448	3147	1587	185	1772	na	2880	3420	5410	5630	7720	1.70	60	48	0	0	0	0	85
10	342	752	55	1149	284.46	33876	2428	1224	107	1331	na	2250	3540	na	13300	7670	0.88	55	45	0	0	0	0	0
11	300	575	44	919	286.42	35715	1839	927	104	1031	na	1780	3220	na	14700	10500	0.13	52	43	0	0	0	0	0
12	242	426	37	705	287.80	37032	1317	664	106	770	na	1360	3020	na	13600	13400	0.30	45	40	0	0	0	0	0
13	295	512	41	848	289.50	38678	1646	830	108	938	na	1600	2190	na	12800	13800	1.19	50	41	0	0	0	0	0
14	253	426	37	716	290.87	40024	1346	679	107	786	na	1360	2920	8270	11900	12800	0.37	44	35	0	0	0	0	0
15	214	326	31	571	291.60	40749	725	366	307	673	na	1250	2810	7150	10800	10100	0.11	41	35	0	0	0	0	0
16	176	257	26	459	291.64	40789	40	20	488	508	na	1180	2660	5980	9320	9110	0.07	41	36	0	0	0	0	0
17	257	378	35	670	291.33	40480	-309	-156	688	532	na	1270	2580	5490	8120	8530	1.13	40	40	0	0	0	0	0
18	379	752	55	1186	293.36	42518	2038	1027	203	1230	na	2300	2840	6520	9950	9600	2.03	53	39	0	0	0	0	0
19	271	478	39	788	294.89	44081	1563	788	196	984	na	1820	3220	7950	11100	9180	0.17	43	38	0	0	0	0	0
20	229	382	35	646	295.55	44763	682	344	419	763	na	1380	2950	7540	11100	9270	0.24	45	37	0	0	0	0	0
21	269	422	36	727	295.60	44815	52	26	600	626	na	1410	2830	6660	10200	9470	0.66	47	40	0	0	0	0	0
22	276	454	38	768	296.59	45846	1031	520	208	728	na	1550	2890	6600	na	9340	0.48	49	37	0	0	0	0	0
23	264	408	35	707	297.59	46898	1052	530	207	737	na	1310	2890	6220	9590	9000	0.58	44	37	0	0	0	0	0
24	231	346	32	609	297.93	47258	360	182	501	683	na	1370	2830	6310	9590	8750	0.36	44	35	0	0	0	0	0
25	199	271	29	499	297.47	46771	-487	-246	730	484	na	1340	2780	5940	9050	8360	0.09	39	32	0	0	0	0	0
26	168	218	24	410	296.81	46077	-694	-350	708	358	na	1210	2690	5490	8020	7970	0.00	37	33	0	0	0	0	0
27	138	185	20	343	295.94	45168	-909	-458	757	299	na	1150	2570	5150	6870	7490	0.02	39	34	0	0	0	0	0
28	132	161	15	308	295.08	44277	-891	-449	734	285	589	1100	2460	4900	6190	7200	0.64	35	33	0	0	0	0	0
29	121	146	12	279	294.08	43251	-1026	-517	708	191	533	1040	2340	4600	5740	6690	0.07	37	33	0	0	0	0	0
30	113	136	12	261	293.15	42305	-946	-477	681	204	489	1010	2230	4330	5430	6310	0.07	41	32	0	0	0	0	0
31	101	122	11	234	292.04	41188	-1117	-563	735	172	420	987	2090	4040	5100	5900	0.00	42	30	0	0	0	0	0
TOTALS																								
cfs	6825	12172	993	19990				10228	10186	20414	3512	40601	73422	129121	225838	228121	19.38 inches			0	0	0	0	386
ac-ft	13537	24143	1970	39650			20287	20287	20204	40491	6966	80532	145633	256112	447950	452478	MAX	61	48	0	0	0	0	766
																	MIN	35	25					

Water storage elevation ± to fill curve: **8.54**
Water storage in ac-ft ± to fill curve: **8199**
Percentage of full reservoir: **77.2%**

Minimum Required Discharges
Dec-Sept: 10 cfs Oct-Nov: 20 cfs

SNOTEL Summary for Water Year 2016
Updated: December 31, 2015

SECO W/Y pc:	43.1"	sno depth/water content	6"/ 1.4"
SDMO W/Y pc:	62.9"	sno depth/water content	22"/ 5.4"

RESERVOIR DELIVERY STATUS		USED	REMAINING
These allocations, amounts used and	TVID	25853	
remaining are provisional and subject	CWS	12304	311
to daily changes as the WS elevation	LO	500	0
rises and falls. These numbers are for	MUNI	9921	3579
planning purposes only.	Other	1815	

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Appendix D

Barney Reservoir Operations Monthly Records

Breakdown of allocations for municipal use by water provider can be found in Appendix E of this report.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF JANUARY 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	0	0	0	0	0	0
2	1635.8	17925	112	0.00	18	42	1.1	0.0	0	0	0	0	0	0
3								0.0	0	0	0	0	0	0
4								0.0	0	0	0	0	0	0
5	1636.7	18350	425	2.49	21	54	2.3	0.0	0	0	0	0	0	0
6								0.0	0	0	0	0	0	0
7	1637.4	18700	350	0.05	26	54	1.1	0.0	0	0	0	0	0	0
8								0.0	0	0	0	0	0	0
9	1637.6	18800	100	0.00	28	54	1.1	0.0	0	0	0	0	0	0
10								0.0	0	0	0	0	0	0
11								0.0	0	0	0	0	0	0
12								0.0	0	0	0	0	0	0
13	1638.5	19200	400	0.17	26	54	1.1	0.0	0	0	0	0	0	0
14								0.0	0	0	0	0	0	0
15	1638.7	19280	80	0.02	22	51	1.1	0.0	0	0	0	0	0	0
16								0.0	0	0	0	0	0	0
17								0.0	0	0	0	0	0	0
18								0.0	0	0	0	0	0	0
19								0.0	0	0	0	0	0	0
20	1640.8	20000	720	6.41	35	58	110.8	0.0	0	0	0	0	0	0
21								0.0	0	0	0	0	0	0
22	1640.7	20000	0	0.02	23	49	55.5	0.0	0	0	0	0	0	0
23								0.0	0	0	0	0	0	0
24								0.0	0	0	0	0	0	0
25								0.0	0	0	0	0	0	0
26	1640.7	20000	0	0.21	30	61	41.0	0.0	0	0	0	0	0	0
27								0.0	0	0	0	0	0	0
28	1640.7	20000	0	0.14	31	56	41.0	0.0	0	0	0	0	0	0
29	1640.7	20000	0	0.01	29	56	35.0	0.0	0	0	0	0	0	0
30								0.0	0	0	0	0	0	0
31								0.0	0	0	0	0	0	0
Monthly Totals			2,187	9.52						0		0		0
Year to Date Totals			2,187	9.52						0		0		0

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF FEBRUARY 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	0	0	0	0	0	0
2	1640.7	20000	0	1.09	26	55	55.5	0.0	0	0	0	0	0	0
3								0.0	0	0	0	0	0	0
4	1640.7	20000	0	0.39	29	55	41.0	0.0	0	0	0	0	0	0
5	1640.7	20000	0	0.75	34	53	55.5	0.0	0	0	0	0	0	0
6								0.0	0	0	0	0	0	0
7								0.0	0	0	0	0	0	0
8								0.0	0	0	0	0	0	0
9	1640.9	20000	0	7.51	33	57	178.6	0.0	0	0	0	0	0	0
10								0.0	0	0	0	0	0	0
11	1640.9	20000	0	0.78	30	56	110.8	0.0	0	0	0	0	0	0
12	1640.8	20000	0	0.00	34	55	95.2	0.0	0	0	0	0	0	0
13								0.0	0	0	0	0	0	0
14								0.0	0	0	0	0	0	0
15								0.0	0	0	0	0	0	0
16								0.0	0	0	0	0	0	0
17	1640.7	20000	0	0.00	28	58	47.0	0.0	0	0	0	0	0	0
18								0.0	0	0	0	0	0	0
19	1640.7	20000	0	0.00	27	58	41.0	0.0	0	0	0	0	0	0
20								0.0	0	0	0	0	0	0
21								0.0	0	0	0	0	0	0
22								0.0	0	0	0	0	0	0
23								0.0	0	0	0	0	0	0
24	1640.6	20000	0	0.00	23	56	35.0	0.0	0	0	0	0	0	0
25	1640.6	20000	0	0.01	29	57	35.0	0.0	0	0	0	0	0	0
26	1640.6	20000	0	0.04	32	52	35.0	0.0	0	0	0	0	0	0
27			0					0.0	0	0	0	0	0	0
28								0.0	0	0	0	0	0	0
Monthly Totals			0	10.57						0		0		0
Year to Date Totals			2,187	20.09						0		0		0

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF MARCH 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	0	0	0	0	0	0
2	1640.6	20000	0	0.59	20	54	31.3	0.0	0	0	0	0	0	0
3								0.0	0	0	0	0	0	0
4	1640.6	20000	0	0.00	21	53	27.6	0.0	0	0	0	0	0	0
5	1640.6	20000	0	0.00	23	55	27.6	0.0	0	0	0	0	0	0
6								0.0	0	0	0	0	0	0
7								0.0	0	0	0	0	0	0
8								0.0	0	0	0	0	0	0
9	1640.6	20000	0	0.00	26	66	23.9	0.0	0	0	0	0	0	0
10								0.0	0	0	0	0	0	0
11	1640.6	20000	0	0.02	31	64	23.9	0.0	0	0	0	0	0	0
12	1640.6	20000	0	0.21	36	56	23.9	0.0	0	0	0	0	0	0
13								0.0	0	0	0	0	0	0
14								0.0	0	0	0	0	0	0
15								0.0	0	0	0	0	0	0
16	1640.8	20000	0	3.97	26	63	95.2	0.0	0	0	0	0	0	0
17	1640.7	20000	0	0.00	28	56	55.5	0.0	0	0	0	0	0	0
18								0.0	0	0	0	0	0	0
19	1640.7	20000	0	0.02	29	57	35.0	0.0	0	0	0	0	0	0
20								0.0	0	0	0	0	0	0
21								0.0	0	0	0	0	0	0
22								0.0	0	0	0	0	0	0
23	1640.7	20000	0	0.97	27	60	41.0	0.0	0	0	0	0	0	0
24								0.0	0	0	0	0	0	0
25	1640.7	20000	0	1.59	28	54	55.5	0.0	0	0	0	0	0	0
26								0.0	0	0	0	0	0	0
27	1640.7	20000	0	0.05	33	62	41.0	0.0	0	0	0	0	0	0
28								0.0	0	0	0	0	0	0
29								0.0	0	0	0	0	0	0
30	1640.7	20000	0	0.26	28	63	35.0	0.0	0	0	0	0	0	0
31								0.0	0	0	0	0	0	0
Monthly Totals			0	7.68						0		0		0
Year to Date Totals			2,187	27.77						0		0		0

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF APRIL 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1640.6	20000	0	0.39	24	59	35.00	0.0	0	0	0	0	0	0
2	1640.6	20000	0	0.19	23	50	35.0	0.0	0	0	0	0	0	0
3								0.0	0	0	0	0	0	0
4								0.0	0	0	0	0	0	0
5								0.0	0	0	0	0	0	0
6	1640.6	20000	0	0.56	21	53	31.3	0.0	0	0	0	0	0	0
7								0.0	0	0	0	0	0	0
8	1640.6	20000	0	0.13	27	57	27.6	0.0	0	0	0	0	0	0
9								0.0	0	0	0	0	0	0
10								0.0	0	0	0	0	0	0
11								0.0	0	0	0	0	0	0
12								0.0	0	0	0	0	0	0
13								0.0	0	0	0	0	0	0
14	1640.6	20000	0	1.20	24	59	31.3	0.0	0	0	0	0	0	0
15	1640.6	20000	0	0.09	22	49	31.3	0.0	0	0	0	0	0	0
16								0.0	0	0	0	0	0	0
17	1640.6	20000	0	0.00	21	53	23.9	0.0	0	0	0	0	0	0
18								0.0	0	0	0	0	0	0
19								0.0	0	0	0	0	0	0
20	1640.6	20000	0	0.00	27	74	16.5	0.0	0	0	0	0	0	0
21								0.0	0	0	0	0	0	0
22	1640.6	20000	0	0.01	29	74	14.8	0.0	0	0	0	0	0	0
23	1640.6	20000	0	0.03	26	57	16.5	0.0	0	0	0	0	0	0
24								0.0	0	0	0	0	0	0
25								0.0	0	0	0	0	0	0
26								0.0	0	0	0	0	0	0
27	1640.6	20000	0	1.14	25	60	23.9	0.0	0	0	0	0	0	0
28	1640.6	20000	0	0.01	41	72	16.5	0.0	0	0	0	0	0	0
29								0.0	0	0	0	0	0	0
30	1640.6	20000	0	0.04	27	60	14.8	0.0	0	0	0	0	0	0
Monthly Totals			0	3.79						0		0		0
Year to Date Totals			2,187	31.56						0		0		0

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF MAY 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	0	0	0	0	0	0
2								0.0	0	0	0	0	0	0
3								0.0	0	0	0	0	0	0
4	1640.6	20000	0	0.00	28	69	9.5	0.0	0	0	0	0	0	0
5								0.0	0	0	0	0	0	0
6	1640.6	20000	0	0.29	30	58	13.0	0.0	0	0	0	0	0	0
7	1640.6	20000	0	0.02	26	63	13.0	0.0	0	0	0	0	0	0
8	1640.6	20000	0	0.00			9.5	0.0	0	0	0	0	25	50
9								0.0	0	0	0	0	25	50
10								0.0	0	0	0	0	25	50
11	1640.3	19920	-80	0.00	32	76	1.1	0.0	0	0	0	0	25	50
12	1640.3	19920	0				3.4	0.0	3	6	0	0	25	50
13	1640.2	19880	-40	0.65	33	58	3.4	0.0	3	6	0	0	25	50
14								0.0	3	6	0	0	25	50
15	1640.0	19800	-80	0.20	32	58	3.4	0.0	3	6	0	0	25	50
16								0.0	3	6	0	0	25	50
17								0.0	3	6	0	0	40	79
18	1639.6	19680	-120	0.00	34	63	5.1	0.0	5	10	0	0	25	50
19								0.0	5	10	0	0	25	50
20	1639.4	19560	-120	0.00	38	70	5.1	0.0	5	10	0	0	25	50
21	1639.3	19520	-40	0.00	41	71	5.1	0.0	5	10	0	0	25	50
22								0.0	5	10	0	0	25	50
23								0.0	5	10	0	0	25	50
24								0.0	5	10	0	0	25	50
25								0.0	5	10	0	0	25	50
26	1638.7	19280	-240	0.12	35	71	7.3	0.0	7	14	0	0	25	50
27	1638.6	19240	-40	0.00	36	66	7.3	0.0	7	14	0	0	25	50
28	1638.4	19160	-80	0.00	40	72	7.3	0.0	7	14	0	0	25	50
29								0.0	7	14	0	0	25	50
30								0.0	7	14	0	0	25	50
31								0.0	7	14	0	0	25	50
Monthly Totals			-840	1.28						198		0		1,218
Year to Date Totals			1,347	32.84						198		0		1,218

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF JUNE 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1637.9	18950	-210	0.30	37	77	8.40	0.0	8	16	0	0	25	50
2								0.0	8	16	0	0	25	50
3								0.0	8	16	0	0	25	50
4	1637.5	18750	-200	0.59	36	64	8.4	0.0	8	16	0	0	25	50
5								0.0	8	16	0	0	25	50
6								0.0	8	16	0	0	25	50
7								0.0	8	16	0	0	25	50
8	1636.9	18450	-300	0.00	36	86	8.4	0.0	8	16	0	0	25	50
9								0.0	8	16	0	0	25	50
10	1636.6	18300	-150	0.00	35	90	8.4	0.0	8	16	0	0	30	59
11								0.0	8	16	0	0	30	59
12								0.0	8	16	0	0	30	59
13								0.0	8	16	0	0	30	59
14								0.0	8	16	0	0	30	59
15	1635.7	17888	-412	0.00	31	77	8.4	0.0	8	16	0	0	30	59
16								0.0	8	16	0	0	30	59
17	1635.4	17775	-113	0.00	60	70	8.4	0.0	8	16	0	0	35	69
18	1635.2	17700	-75	0.00	50	64	8.4	0.0	8	16	0	0	35	69
19								0.0	8	16	0	0	35	69
20								0.0	8	16	0	0	35	69
21								0.0	8	16	0	0	35	69
22	1635.2	17325	-375	0.00	35	75	8.4	0.0	8	16	0	0	35	69
23								0.0	8	16	0	0	35	69
24	1633.7	17138	-187	0.00	37	76	8.4	0.0	8	16	0	0	40	79
25	1633.5	17063	-75	0.00	36	78	8.4	0.0	8	16	0	0	40	79
26								0.0	8	16	0	0	40	79
27								0.0	8	16	0	0	40	79
28								0.0	8	16	0	0	40	79
29	1632.5	16688	-375	0.00	46	88	8.4	0.0	8	16	0	0	40	79
30								0.0	8	16	0	0	40	79
Monthly Totals			-2,472	0.89						475		0		1,901
Year to Date Totals			-1,125	33.73						673				3,119

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF JULY 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1632.1	16538	-150	0.00	50	72	8.40	0.0	8	16	0	0	40	79
2	1631.8	16425	-113	0.00	50	86	8.4	0.0	8	16	0	0	40	79
3								0.0	8	16	0	0	40	79
4								0.0	8	16	0	0	40	79
5								0.0	8	16	0	0	40	79
6	1630.6	15975	-450	0.00	43	88	8.4	0.0	8	16	0	0	40	79
7								0.0	8	16	0	0	40	79
8	1630.1	15788	-187	0.00	42	82	8.4	0.0	8	16	0	0	40	79
9								0.0	8	16	0	0	40	79
10								0.0	8	16	0	0	40	79
11								0.0	8	16	0	0	40	79
12								0.0	8	16	0	0	40	79
13	1628.7	15263	-525	0.01	43	82	8.4	0.0	8	16	0	0	40	79
14								0.0	8	16	0	0	40	79
15	1628.2	15075	-188	0.00	40	77	8.4	0.0	8	16	0	0	40	79
16	1627.9	14963	-112	0.00	44	74	8.4	0.0	8	16	0	0	40	79
17								0.0	8	16	0	0	40	79
18								0.0	8	16	0	0	40	79
19								0.0	8	16	0	0	40	79
20	1626.8	14550	-413	0.00	38	88	8.4	0.0	8	16	0	0	40	79
21								0.0	8	16	0	0	40	79
22	1626.2	14325	-225	0.00	44	81	8.4	0.0	8	16	0	0	40	79
23	1625.9	14213	-112	0.00	40	66	8.4	0.0	8	16	0	0	40	79
24								0.0	8	16	0	0	40	79
25								0.0	8	16	0	0	40	79
26								0.0	8	16	0	0	40	79
27	1624.8	13800	-413	0.09	38	85	8.4	0.0	8	16	0	0	40	79
28								0.0	8	16	0	0	40	79
29	1624.3	13575	-225	0.00	38	84	8.4	0.0	8	16	0	0	40	79
30	1624.0	13500	-75	0.00	53	88	8.4	0.0	8	16	0	0	40	79
31								0.0	8	16	0	0	40	79
Monthly Totals			-3,188	0.10						491		0		2,455
Year to Date Totals			-4,313	33.83						1,164		0		5,574

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF AUGUST 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	8	16	0	0	40	79
2								0.0	8	16	0	0	40	79
3	1622.8	13050	-450	0.00	46	94	8.4	0.0	8	16	0	0	40	79
4								0.0	8	16	0	0	40	79
5	1622.2	12825	-225	0.00	40	79	8.4	0.0	8	16	0	0	40	79
6								0.0	8	16	0	0	40	79
7								0.0	8	16	0	0	40	79
8								0.0	8	16	0	0	40	79
9								0.0	8	16	0	0	40	79
10	1620.8	12300	-525	0.00	39	79	8.4	0.0	8	16	0	0	40	79
11								0.0	8	16	0	0	40	79
12	1620.2	12075	-225	0.00	46	80	8.4	0.0	8	16	0	0	40	79
13	1620.0	12000	-75	0.00	45	81	8.4	0.0	8	16	0	0	40	79
14								0.0	8	16	14	28	26	51
15								0.0	8	16	14	28	26	51
16								0.0	8	16	14	28	26	51
17	1618.9	11633	-367	0.16	40	80	8.4	0.0	8	16	14	28	26	51
18								0.0	8	16	14	28	26	51
19	1618.3	11433	-200	0.00	49	85	8.4	0.0	8	16	14	28	36	71
20	1617.9	11300	-133	0.00	47	89	8.4	0.0	8	16	14	28	36	71
21								0.0	8	16	14	28	36	71
22								0.0	8	16	14	28	36	71
23								0.0	8	16	10	20	40	79
24	1616.4	10800	-500	0.00	40	82	8.4	0.0	8	16	10	20	40	79
25								0.0	8	16	10	20	40	79
26	1615.6	10533	-267	0.00	43	77	8.4	0.0	8	16	10	20	40	79
27								0.0	8	16	10	20	40	79
28								0.0	8	16	10	20	40	79
29								0.0	8	16	10	20	40	79
30								0.0	8	16	10	20	40	79
31	1613.9	9975	-558	1.37	41	81	8.4	0.0	8	16	10	20	40	79
Monthly Totals			-3,525	1.53						491		429		2,285
Year to Date Totals			-7,838	35.36						1,655		429		7,859

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF SEPTEMBER 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	8	16	10	20	40	79
2	1613.1	9775	-200	0.22	42	67	8.4	0.0	8	16	10	20	50	99
3	1612.7	9675	-100	0.00	35	64	8.4	0.0	8	16	10	20	50	99
4								0.0	8	16	10	20	50	99
5								0.0	8	16	10	20	50	99
6								0.0	8	16	10	20	50	99
7								0.0	8	16	10	20	50	99
8	1610.5	9100	-575	0.42	33	68	8.4	0.0	8	16	10	20	50	99
9								0.0	8	16	10	20	50	99
10	1609.6	8866	-234	0.00	43	72	7.3	0.0	8	16	10	20	50	99
11	1609.1	8700	-166	0.00	43	76	7.3	0.0	8	16	10	20	50	99
12								0.0	8	16	10	20	50	99
13								0.0	8	16	10	20	50	99
14	1607.7	8233	-467	0.00	35	80	7.3	0.0	8	16	10	20	50	99
15								0.0	8	16	10	20	50	99
16	1606.7	7900	-333	0.11	39	58	7.3	0.0	8	16	10	20	40	79
17	1606.4	7800	-100	1.16	42	56	8.4	0.0	8	16	10	20	40	79
18								0.0	8	16	10	20	40	79
19								0.0	8	16	10	20	40	79
20								0.0	8	16	10	20	40	79
21	1604.7	7233	-567	0.29	38	67	8.4	0.0	8	16	10	20	40	79
22								0.0	8	16	10	20	40	79
23	1603.9	6975	-258	0.00	34	62	7.3	0.0	8	16	10	20	40	79
24	1603.4	6850	-125	0.00	39	65	8.4	0.0	8	16	10	20	40	79
25								0.0	8	16	10	20	40	79
26								0.0	8	16	10	20	40	79
27								0.0	8	16	10	20	40	79
28	1601.6	6400	-450	0.17	30	67	8.4	0.0	8	16	10	20	40	79
29								0.0	8	16	10	20	40	79
30	1600.6	6150	-250	0.00	36	67	8.4	0.0	8	16	10	20	30	59
Monthly Totals			-3,825	2.37						475		595		2,633
Year to Date Totals			-11,663	37.73						2,130		1,024		10,792

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF OCTOBER 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL*	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1	1600.2	6050	-100	0.00	37	65	8.40	0.0	8	16	10	20	30	59
2								0.0	8	16	10	20	30	59
3								0.0	8	16	10	20	30	59
4								0.0	8	16	10	20	30	59
5	1598.6	5900	-150	0.04	32	67	8.4	0.0	8	16	10	20	30	59
6								0.0	8	16	10	20	30	59
7	1597.8	5450	-450	0.17	40	67	8.4	0.0	8	16	10	20	20	40
8								0.0	8	16	10	20	20	40
9	1597.1	5275	-175	0.02	40	67	8.4	0.0	8	16	10	20	20	40
10								0.0	8	16	10	20	20	40
11								0.0	8	16	10	20	20	40
12								0.0	8	16	10	20	20	40
13	1595.9	4983	-292	0.82	45	58	8.4	0.0	8	16	10	20	20	40
14	1595.6	4932	-51	0.00	43	64	8.4	0.0	8	16	10	20	20	40
15	1595.3	4882	-50	0.00	39	55	8.4	0.0	8	16	10	20	20	40
16								0.0	8	16	10	20	20	40
17								0.0	8	16	10	20	20	40
18								0.0	8	16	10	20	20	40
19	1594.1	4683	-199	0.67	40	67	8.4	0.0	8	16	10	20	20	40
20								0.0	8	16	10	20	20	40
21	1593.4	4565	-118	0.05	36	60	8.4	0.0	8	16	10	20	20	40
22	1593.0	4499	-66	0.00	32	60	8.4	0.0	8	16	10	20	20	40
23								0.0	8	16	10	20	20	40
24								0.0	8	16	10	20	20	40
25								0.0	8	16	10	20	20	40
26	1592.1	4350	-149	2.44	37	60	8.4	0.0	8	16	10	20	20	40
27								0.0	8	16	10	20	20	40
28	1591.5	4293	-57	0.43	33	56	8.4	0.0	8	16	5	10	15	30
29	1591.3	4263	-30	0.21	40	63	8.4	0.0	8	16	0	0	10	20
30	1591.6	4293	30	0.97	39	58	8.0	0.0	8	16	0	0	0	0
31								0.0	8	16	0	0	0	0
Monthly Totals			-1,857	5.82						491		546		1,238
Year to Date Totals			-13,520	43.55						2,622		1,569		11,730

*In this table (Reservoir Operations), the amount of water released is recorded on the day it was released from the reservoir. In the Municipal Use tables (Appendix E), the released water is recorded on the day that it was available for use which one day later.

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF NOVEMBER 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL	
	feet	ac-ft	ac-ft	in.	°F	°F	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	8	16	0	0	0	0
2	1593.3	4548	255	4.83	33	60	8.4	0.0	8	16	0	0	0	0
3								0.0	8	16	0	0	0	0
4	1593.5	4581	33	0.07	25	53	8.4	0.0	8	16	0	0	0	0
5	1593.6	4597	16	0.12	29	51	8.4	0.0	8	16	0	0	0	0
6								0.0	8	16	0	0	0	0
7								0.0	8	16	0	0	0	0
8								0.0	8	16	0	0	0	0
9	1593.9	4648	51	1.23	32	53	8.4	0.0	8	16	0	0	0	0
10								0.0	8	16	0	0	0	0
11	1594.0	4666	18	0.10	25	49	8.4	0.0	8	16	0	0	0	0
12	1594.2	4699	33	0.55	25	50	6.2	0.0	6	12	0	0	0	0
13								0.0	6	12	0	0	0	0
14								0.0	6	12	0	0	0	0
15								0.0	6	12	0	0	0	0
16	1596.3	5075	376	4.00	23	57	6.2	0.0	6	12	0	0	0	0
17								0.0	6	12	0	0	0	0
18	1600.5	6125	1050	6.33	26	58	9.5	0.0	6	12	0	0	0	0
19	1601.7	6425	300	1.52	32	52	4.0	0.0	4	8	0	0	0	0
20								0.0	4	8	0	0	0	0
21								0.0	4	8	0	0	0	0
22								0.0	4	8	0	0	0	0
23	1603.6	6900	475	0.04	22	51	4.0	0.0	4	8	0	0	0	0
24								0.0	4	8	0	0	0	0
25	1604.1	7033	133	0.54	21	44	3.4	0.0	3	6	0	0	0	0
26								0.0	3	6	0	0	0	0
27								0.0	3	6	0	0	0	0
28								0.0	3	6	0	0	0	0
29								0.0	3	6	0	0	0	0
30	1604.7	7233	200	0.00	23	45	3.4	0.0	3	6	0	0	0	0
Monthly Totals			2,940	19.33						341		0		0
Year to Date Totals			-10,580	62.88						2,962		1,569		11,730

BARNEY RESERVOIR OPERATIONS FOR THE MONTH OF DECEMBER 2015

[See Appendix E for breakdown of municipal use by water provider.] Source: Barney Reservoir Joint Ownership Commission

DAY	SURFACE ELEVATION	STORAGE	CHANGE IN STORAGE	RAIN @ BARNEY	TEMP @ BARNEY		MEASURED FLOW TO		STORAGE RELEASED TO TRASK—ODFW		STORAGE RELEASED TO TUALATIN			
					Min	Max	TRASK	TUALATIN			CWS		MUNICIPAL	
	feet	ac-ft	ac-ft	in.	ºF	ºF	cfs	cfs	cfs	ac-ft	cfs	ac-ft	cfs	ac-ft
1								0.0	3	6	0	0	0	0
2	1605.2	7400	167	1.24	22	52	2.3	0.0	2	4	0	0	0	0
3								0.0	2	4	0	0	0	0
4								0.0	2	4	0	0	0	0
5								0.0	2	4	0	0	0	0
6								0.0	2	4	0	0	0	0
7	1609.4	8800	1400	7.96	48	52	11.3	0.0	2	4	0	0	0	0
8								0.0	2	4	0	0	0	0
9	1614.9	10300	1500	5.35	45	58	6.2	0.0	2	4	0	0	0	0
10	1616.5	10833	533	1.18	48	52	4.0	0.0	0	0	0	0	0	0
11								0.0	0	0	0	0	0	0
12								0.0	0	0	0	0	0	0
13								0.0	0	0	0	0	0	0
14	1621.2	12450	1617	4.77	24	50	2.8	0.0	0	0	0	0	0	0
15								0.0	0	0	0	0	0	0
16	1622.5	12938	488	0.42	21	46	1.7	0.0	0	0	0	0	0	0
17	1623.3	13238	300	1.64	28	46	3.4	0.0	0	0	0	0	0	0
18								0.0	0	0	0	0	0	0
19								0.0	0	0	0	0	0	0
20								0.0	0	0	0	0	0	0
21	1628.0	15000	1762	5.52	24	68	3.4	0.0	0	0	0	0	0	0
22	1629.1	15413	413	1.04	25	44	3.4	0.0	0	0	0	0	0	0
23	1630.1	15788	375	1.42	24	44	2.8	0.0	0	0	0	0	0	0
24								0.0	0	0	0	0	0	0
25								0.0	0	0	0	0	0	0
26								0.0	0	0	0	0	0	0
27								0.0	0	0	0	0	0	0
28	1632.8	16800	1012	1.59	20	40	1.7	0.0	0	0	0	0	0	0
29	1633.1	16913	113	0.08	24	38	1.1	0.0	0	0	0	0	0	0
30								0.0	0	0	0	0	0	0
31	1633.5	17063	150	0.07	18	40	1.1	0.0	0	0	0	0	0	0
Monthly Totals			9,830	32.28						38		0		0
Year to Date Totals			-750	95.16						3,000		1,569		11,730

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Appendix E

Municipal Water Use Allocations
Monthly Records

MONTHLY SUMMARIES OF MUNICIPAL ALLOCATIONS

MUNICIPAL ALLOCATIONS FOR THE MONTH OF MAY 2015

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1										
2										
3										
4										
5										
6										
7										
8	RELEASE SEASON BEGAN ON MAY 9, 2015									
9	60	25	35	3.1	20	0.0	0.9	2.2	14	20
10	60	25	35	3.0	20	0.0	0.2	2.2	15	20
11	60	25	35	1.5	21	0.0	0.2	1.0	14	23
12	60	25	35	0.7	21	0.0	0.3	0.4	14	24
13	45	25	20	3.3	11	0.0	0.2	2.5	8.5	19
14	40	25	15	4.4	8.6	0.0	0.2	3.2	6.2	17
15	25	25	0	7.2	0.0	0.1	0.0	7.6	0.0	10
16	25	25	0	2.5	0.0	0.2	0.0	10	0.0	12
17	25	25	0	3.2	0.0	0.2	0.0	10	0.0	12
18	40	40	0	20	0.0	0.1	0.0	9.2	0.0	11
19	55	25	30	9.5	21	0.0	0.2	3.8	8.5	12
20	55	25	30	7.4	19	0.0	0.2	4.4	11	13
21	45	25	20	7.7	12	0.0	0.6	4.3	7.0	13
22	40	25	15	7.8	8.3	0.0	1.1	5.2	5.6	12
23	40	25	15	7.4	8.6	0.0	0.2	5.2	6.1	12
24	40	25	15	7.4	8.7	0.0	0.2	5.3	6.2	12
25	40	25	15	8.0	9.1	0.0	0.1	5.1	5.8	12
26	40	25	15	7.6	9.0	0.0	0.2	4.9	5.8	13
27	40	25	15	4.5	6.6	0.0	1.4	4.8	7.0	16
28	40	25	15	7.4	7.0	0.0	2.2	6.1	5.8	11
29	50	25	25	8.0	15	0.0	1.4	4.3	8.2	13
30	57	25	32	3.9	20	0.0	0.6	2.2	11	19
Monthly Summary (beginning on the first day of release season, May 9, 2015)										
Mean daily cfs	45	26	20	6.1	12	0.0	0.5	4.6	7.4	15
Total ac-ft	2,057	1,168	889	278	530	1.3	22	210	336	678
Release Season Summary to Date (May 9 – May 31)										
Mean daily cfs	45	26	20	6.1	12	0.0	0.5	4.6	7.4	15
Total ac-ft	2,057	1,168	889	278	530	1.3	22	210	336	678

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF JUNE 2015

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	57	25	32	3.8	20	0.0	1.0	2.2	11	19
2	51	25	26	3.0	14	0.0	0.3	2.6	12	19
3	35	25	10	7.8	6	0.0	0.2	5.9	4.2	11
4	35	25	10	7.1	5	0.0	0.2	5.9	4.4	12
5	50	25	25	8.2	16	0.0	1.1	3.8	7.5	13
6	65	25	40	4.0	26	0.0	1.8	1.9	12	19
7	65	25	40	4.4	26	0.0	2.2	2.1	12	19
8	65	25	40	4.2	25	0.0	2.7	2.1	13	19
9	65	25	40	2.7	21	0.0	3.8	2.0	16	20
10	55	25	30	4.4	16	0.0	3.2	3.0	11	18
11	65	30	35	8.1	23	0.0	3.4	3.3	9.1	19
12	70	30	40	8.2	26	0.0	3.3	3.4	11	18
13	70	30	40	6.7	24	0.0	3.0	3.5	13	20
14	70	30	40	6.9	24	0.0	2.9	3.6	13	20
15	70	30	40	7.0	24	0.0	3.4	3.6	13	19
16	70	30	40	6.9	23	0.0	4.0	3.7	13	19
17	70	30	40	7.6	24	0.0	4.1	3.7	12	19
18	60	35	25	14	14	0.0	4.0	7.1	7.1	14
19	60	35	25	13	13	0.0	3.9	7.8	7.9	14
20	67	35	32	12	18	0.0	3.6	6.7	10	17
21	67	35	32	13	19	0.0	3.3	6.4	10	16
22	67	35	32	14	20	0.0	3.5	6.2	8.9	15
23	67	35	32	10	17	0.0	4.4	6.3	10	18
24	75	35	40	11	24	0.0	4.3	5.4	12	19
25	80	40	40	14	24	0.0	4.9	6.5	11	19
26	80	40	40	14	24	0.0	5.9	5.9	10	20
27	80	40	40	12	22	0.0	5.7	6.6	12	22
28	80	40	40	13	23	0.0	4.9	6.4	12	21
29	80	40	40	12	22	0.0	6.1	6.5	12	21
30	68	40	28	13	12	0.0	7.5	9.1	8.6	18
Monthly Summary (June)										
Mean daily cfs	65	32	34	8.8	20	0.0	3.4	4.8	11	18
Total ac-ft	3,879	1,871	2,008	522	1,175	0.0	203	284	629	1,065
Release Season Summary to Date (May 9–June 30)										
Mean daily cfs	57	29	28	7.6	16	0.0	2.1	4.7	9.2	17
Total ac-ft	5,936	3,039	2,897	800	1,706	1.3	225	494	965	1,743

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF JULY 2015

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	75	40	35	13	17	0.0	7.8	8.3	10	18
2	75	40	35	15	19	0.0	7.2	7.6	9.2	17
3	89	40	49	15	29	0.0	8.5	6.0	12	19
4	89	40	49	14	28	0.0	8.8	5.9	12	21
5	89	40	49	12	30	0.0	7.1	5.1	12	23
6	89	40	49	12	27	0.0	8.7	5.6	13	23
7	80	40	40	11	20	0.0	8.4	6.4	11	22
8	75	40	35	14	18	0.0	7.8	7.4	9.3	18
9	75	40	35	16	19	0.0	7.6	6.7	8.3	18
10	82	40	42	15	24	0.0	8.1	6.0	10	19
11	85	40	45	15	20	0.0	12	6.6	13	19
12	85	40	45	14	21	0.0	10	6.0	13	20
13	85	40	45	14	21	0.0	10	6.2	14	20
14	75	40	35	13	13	0.0	10	7.7	11	19
15	75	40	35	14	13	0.0	10	7.6	11	19
16	80	40	40	14	18	0.0	8.9	6.8	13	19
17	80	40	40	15	18	0.0	10	6.6	12	18
18	90	40	50	16	25	0.0	12	5.7	13	18
19	90	40	50	16	25	0.0	11	5.6	13	18
20	90	40	50	15	25	0.0	12	5.8	14	19
21	98	40	58	14	29	0.0	13	5.2	16	21
22	105	40	65	10	31	0.0	13	4.7	21	26
23	85	40	45	14	20	0.0	11	6.4	14	20
24	78	40	38	16	17	0.0	9.9	6.8	11	18
25	70	40	30	15	11	0.0	9.6	7.7	9.2	18
26	70	40	30	14	11	0.0	9.2	7.6	9.5	18
27	70	40	30	15	12	0.0	8.3	7.3	9.3	17
28	90	40	50	15	25	0.0	11	5.9	14	19
29	97	40	57	14	29	0.0	13	5.5	16	20
30	102	40	62	14	32	0.0	13	5.5	17	20
31	107	40	67	13	36	0.0	13	4.6	19	23
Monthly Summary (July)										
Mean daily cfs	85	40	45	14	22	0.0	10	6.3	13	20
Total ac-ft	5,198	2,455	2,742	866	1,353	0.0	613	389	777	1,200
Release Season Summary (May 9–July 31)										
Mean daily cfs	67	33	34	10	18	0.0	5.0	5.3	10	18
Total ac-ft	11,134	5,495	5,639	1,666	3,059	1.3	838	884	1,742	2,943

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF AUGUST 2015

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	100	40	60	14	30	0.0	13	5.4	17	21
2	100	40	60	13	30	0.0	12	5.3	18	22
3	100	40	60	13	30	0.0	12	5.3	18	22
4	87	40	47	13	21	0.0	12	6.6	15	20
5	80	40	40	15	18	0.0	10	6.9	12	18
6	75	40	35	16	15	0.0	9.3	7.1	10	17
7	95	40	55	14	27	0.0	12	5.2	15	21
8	95	40	55	15	28	0.0	12	5.6	15	19
9	95	40	55	14	29	0.0	11	5.1	15	21
10	95	40	55	13	27	0.0	11	5.7	17	21
11	78	40	38	14	16	0.0	10	7.4	12	19
12	78	40	38	14	16	0.0	10	6.6	11	19
13	83	40	43	16	21	0.0	10	6.1	12	18
14	83	40	43	15	20	0.0	11	6.3	13	19
15	80	26	54	6	29	0.0	10	2.2	15	18
16	78	26	52	7	28	0.0	11	2.3	14	17
17	78	26	52	7	24	0.0	11	0.8	17	18
18	88	26	62	6	30	0.0	11	0.6	20	20
19	83	26	57	7	28	0.0	11	0.8	18	18
20	76	36	40	17	13	0.0	10	1.8	17	18
21	81	36	45	16	18	0.0	10	1.7	18	19
22	91	36	55	14	24	0.0	11	1.5	20	21
23	91	36	55	15	26	0.0	11	1.6	19	20
24	95	40	55	17	25	0.0	11	1.9	19	21
25	80	40	40	20	16	0.0	9.7	2.2	14	18
26	80	40	40	21	15	0.0	9.3	2.3	15	17
27	73	40	33	21	7	0.0	10	2.3	16	17
28	68	40	28	23	5	0.0	9	2.5	14	15
29	63	40	23	29	3	0.0	8	3.2	11	8
30	63	40	23	31	3	0.0	8	3.5	13	5
31	63	40	23	29	3	0.0	7	3.2	12	8
Monthly Summary (August)										
Mean daily cfs	83	37	46	16	20	0.0	10	3.8	15	18
Total ac-ft	5,099	2,285	2,814	956	1237	0.0	641	236	935	1,093
Release Season Summary (May 9–August 31)										
Mean daily cfs	71	34	37	12	19	0.0	6.5	4.9	12	18
Total ac-ft	16,232	7,779	8,453	2,622	4,296	1.3	1,479	1,119	2,677	4,036

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF SEPTEMBER 2015

Source: Joint Water Commission

DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	58	40	18	16	5.0	0.0	8.0	8.6	5.0	15
2	58	40	18	16	5.2	0.0	7.5	8.6	5.3	15
3	55	50	5.0	21	0.0	0.8	5.0	10	0.0	17
4	55	50	5.0	21	0.0	0.5	5.0	11	0.0	17
5	60	50	10	26	0.6	0.0	7.4	11	2.0	14
6	60	50	10	25	0.6	0.0	7.3	11	2.1	14
7	60	50	10	25	0.8	0.0	7.0	11	2.2	14
8	60	50	10	25	0.7	0.0	7.2	11	2.1	14
9	60	50	10	22	0.3	0.0	7.5	12	2.2	16
10	60	50	10	20	0.4	0.0	7.2	13	2.4	17
11	65	50	15	21	3.1	0.0	7.8	11	4.1	17
12	70	50	20	21	5.6	0.0	8.7	11	5.8	18
13	70	50	20	21	6.0	0.0	8.1	11	5.9	18
14	70	50	20	21	6.0	0.0	8.1	11	6.0	19
15	60	50	10	23	0.6	0.0	6.9	11	2.5	17
16	50	50	0.0	18	0.0	5.3	0.0	9.6	0.0	17
17	40	40	0.0	15	0.0	4.1	0.0	8.6	0.0	12
18	40	40	0.0	16	0.0	4.8	0.0	9.0	0.0	11
19	45	40	5.0	19	0.0	0.3	5.0	9.6	0.0	11
20	45	40	5.0	21	0.5	0.0	4.2	8.6	0.3	10
21	45	40	5.0	22	0.3	0.0	4.6	8.0	0.1	10
22	50	40	10	20	1.0	0.0	7.1	9.5	1.9	11
23	55	40	15	19	4.1	0.0	7.2	8.4	3.7	12
24	50	40	10	19	1.5	0.0	6.2	9.6	2.3	11
25	50	40	10	15	0.8	0.0	6.8	12	2.4	13
26	50	40	10	16	1.2	0.0	6.2	9.5	2.6	14
27	50	40	10	18	1.2	0.0	6.5	8.7	2.3	13
28	50	40	10	20	1.5	0.0	6.2	8.2	2.3	12
29	50	40	10	21	1.4	0.0	6.7	8.6	1.9	10
30	45	40	5.0	19	0.0	0.5	5.0	8.7	0.0	12
Monthly Summary (September)										
Mean daily cfs	55	45	10	20	2	0.5	6	9.9	2	14
Total ac-ft	3,239	2,653	586	1192	96	32.2	357	590	133	839
Release Season Summary (May 9–September 30)										
Mean daily cfs	68	36	31	13	15	0	6	6	10	17
Total ac-ft	19,471	10,433	9,039	3,814	4,391	34	1,837	1,709	2,811	4,875

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

MUNICIPAL ALLOCATIONS FOR THE MONTH OF OCTOBER 2015

Source: Joint Water Commission

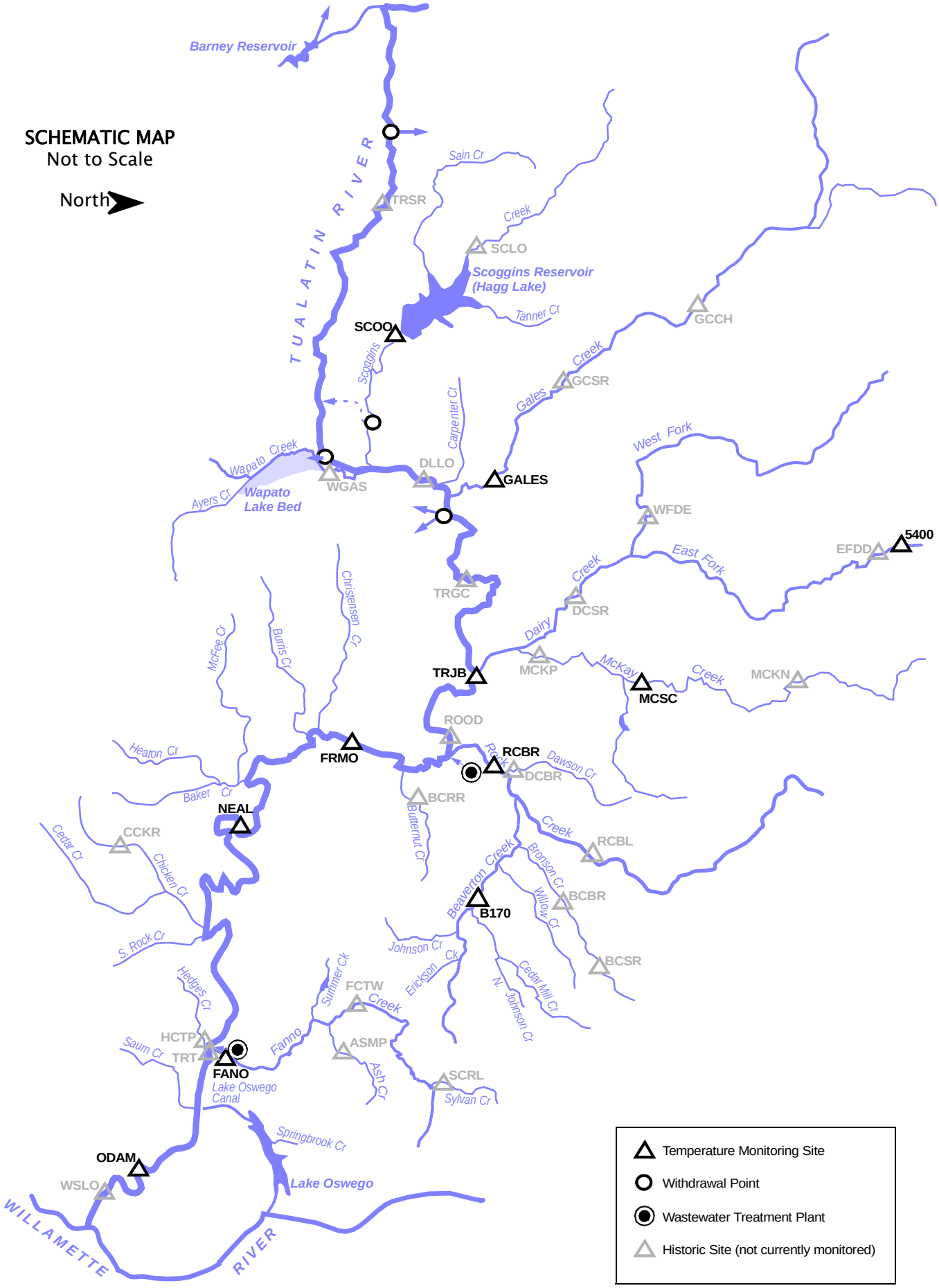
DAY	TOTAL MUNICIPAL USE	MUNICIPAL USE BY RESERVOIR		BREAKDOWN OF MUNCIPAL USE BY WATER PROVIDER†						
				HILLSBORO		FOREST GROVE		BEAVERTON		TVWD
		Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney	Scoggins	Barney
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
1	35	30	5.0	15	0.6	0.0	4.1	6.4	0.3	8.7
2	40	30	10	15	2.6	0.0	5.0	6.9	2.4	7.9
3	58	30	28	14	13	0.0	7.5	5.4	7.5	11
4	58	30	28	17	8.6	0.0	8.3	1.9	11	11
5	58	30	28	17	9.7	0.0	7.8	1.9	10	11
6	48	30	18	13	6.3	0.0	6.7	6.8	5.1	9.9
7	40	30	10	13	2.0	0.0	5.4	7.9	2.6	9.5
8	25	20	5.0	9	0.3	0.0	3.8	4.6	0.9	6.0
9	25	20	5.0	10	0.4	0.0	3.7	4.6	0.9	5.0
10	35	20	15	12	2.7	0.0	5.6	1.4	6.7	6.4
11	35	20	15	12	3.1	0.0	5.4	1.4	6.5	6.2
12	35	20	15	13	3.9	0.0	5.2	1.4	5.9	6.0
13	50	20	30	11	14	0.0	7.1	1.2	8.8	7.8
14	40	20	20	12	6.9	0.0	5.9	1.3	7.2	7.1
15	40	20	20	13	8.8	0.0	4.8	1.4	6.4	6.1
16	40	20	20	12	7.9	0.0	5.5	1.4	6.6	6.4
17	40	20	20	12	7.0	0.0	5.6	1.3	7.4	7.1
18	40	20	20	12	6.7	0.0	5.9	1.3	7.4	7.1
19	40	20	20	12	6.6	0.0	6.2	1.3	7.3	6.8
20	30	20	10	8.6	2.1	0.0	5.6	5.7	2.3	5.7
21	25	20	5.0	8.3	0.2	0.0	4.0	7.4	0.8	4.3
22	30	20	10	14	0.4	0.0	4.3	1.5	5.2	4.8
23	30	20	10	14	0.2	0.0	4.4	1.5	5.4	4.9
24	35	20	15	13	3.8	0.0	5.0	1.5	6.2	5.3
25	35	20	15	13	3.2	0.0	5.2	1.4	6.6	5.6
26	35	20	15	13	2.8	0.0	5.4	1.4	6.7	6.0
27	40	20	20	13	6.7	0.0	5.9	1.4	7.3	6.0
28	25	20	5.0	14	1.7	0.0	2.5	3.5	0.9	2.7
29	15	15	0.0	9.4	0.0	1.2	0.0	2.4	0.0	2.0
30	10	10	0.0	5.4	0.0	0.9	0.0	2.2	0.0	1.5
31	RELEASE SEASON ENDED ON OCTOBER 30, 2015									
Monthly Summary										
Mean daily cfs	36	22	15	12	4.4	0.1	5.1	3.0	5.1	6.5
Total ac-ft	2,162	1,297	865	727	262	4.2	300	177	303	388
Release Season Summary (May 9–October 30)										
Mean daily cfs	62	34	29	13	13	0.1	6.2	5.4	9.0	15
Total ac-ft	21,633	11,730	9,904	4,541	4,653	38	2,137	1,887	3,114	5,264

†In this table (Municipal Use), the amount of water allocated to each provider is recorded on the day that it was available. In the Barney Reservoir Operations table (Appendix D), the amount of water released is recorded on the day it was released from the reservoir, which is one day earlier than its availability.

Appendix F

Stream Temperature Records

STREAM TEMPERATURE SITES — LOCATIONS



STREAM TEMPERATURE SITES — ALPHABETICAL LISTING BY SITE CODE

SITE CODE	SITE NAME	RIVER MILE	STATION ID	PAGE
5400	East Fork Dairy Creek near Meacham Corner, OR	12.4	14205400	F-6
B170	Beaverton Creek at 170th Ave, Beaverton, Oregon	4.9	—	F-9
FANO	Fanno Creek at Durham Road near Tigard, Oregon	1.2	14206950	F-12
GALES	Gales Creek at Old Hwy 47 near Forest Grove, Oregon	2.36	14204530	F-5
MCSC	McKay Creek at Scotch Church Road above Waible Ck near North Plains, Oregon	6.3	14206070	F-7
NEAL	Tualatin River at RM 24.5 near Scholls, Oregon	24.5	14206694	F-11
ODAM	Tualatin River at Oswego Dam near West Linn, Oregon	3.4	14207200	F-13
RCBR	Rock Creek at Brookwood Avenue, Hillsboro, Oregon	2.4	—	F-10
SCOO	Scoggins Creek below Henry Hagg Lake near Gaston, Oregon	4.80	14202980	F-4
TRJB	Tualatin River at Hwy 219 Bridge	44.4	14206241	F-8

Sites with Historic Data (not currently being monitored)

ASMP	Ash Creek at Metzger Park at Metzger, Oregon	1.25	14206933
BCBR	Bronson Creek at Bronson Road near Orenco, Oregon	2.1	14206423
BCRR	Butternut Creek at Rosa Road near Farmington, Oregon	1.0	14206483
BCSR	Bronson Creek at Saltzman Road near Orenco, Oregon	5.1	14206419
CCKR	Chicken Creek at Kruger Road	4.5	—
DCBR	Dawson Creek at Brookwood Road near Hillsboro, Oregon	0.7	14206443
DCSR	Dairy Creek at Susbauer Road	6.02	—
DLLO	Tualatin River at Dilley, Oregon	58.8	14203500
EFDD	East Fork Dairy Creek near Dairy Creek Road near Mountaindale, Oregon	12.33	14205480
FCTW	Fanno Creek at Tuckerwood	7.3	14206927
FRMO	Tualatin River at Farmington, Oregon	33.3	14206500
GCCH	Gales Creek at Clapshaw Hill Road near Gales Creek, Oregon	12.36	14204540
GCSR	Gales Creek at Stringtown Road	6.98	—
HCTP	Hedges Creek at Tualatin Community Park at Tualatin, Oregon	0.3	14206958
MCKN	McKay Creek at Northrup Road near North Plains, Oregon	15.5	14205980
MCKP	McKay Creek at Padgett Road	1.31	14206190
RCBL	Rock Creek below Bethany Lake	8.9	14206340
ROOD	Tualatin River at Rood Bridge Road near Hillsboro, Oregon	38.4	14206295
SCLO	Scoggins Creek above Henry Hagg Lake near Gaston, Oregon	9.3	14202850
SCRL	Sylvan Creek at Raleighwood Lane near West Slope, Oregon	1.0	14206905
TRGC	Tualatin River at Golf Course Road near Cornelius, Oregon	51.5	14204800
TRSR	Tualatin River at South Road near Cherry Grove, Oregon	67.83	—
TRT	Tualatin River at Tualatin, Oregon	8.9	14206956
WFDE	West Fork Dairy Creek at Evers Road	1.96	14205160
WGAS	Wapato Creek at Gaston Road at Gaston, Oregon	—	14202650
WSLO	Tualatin River at West Linn	1.75	14207500

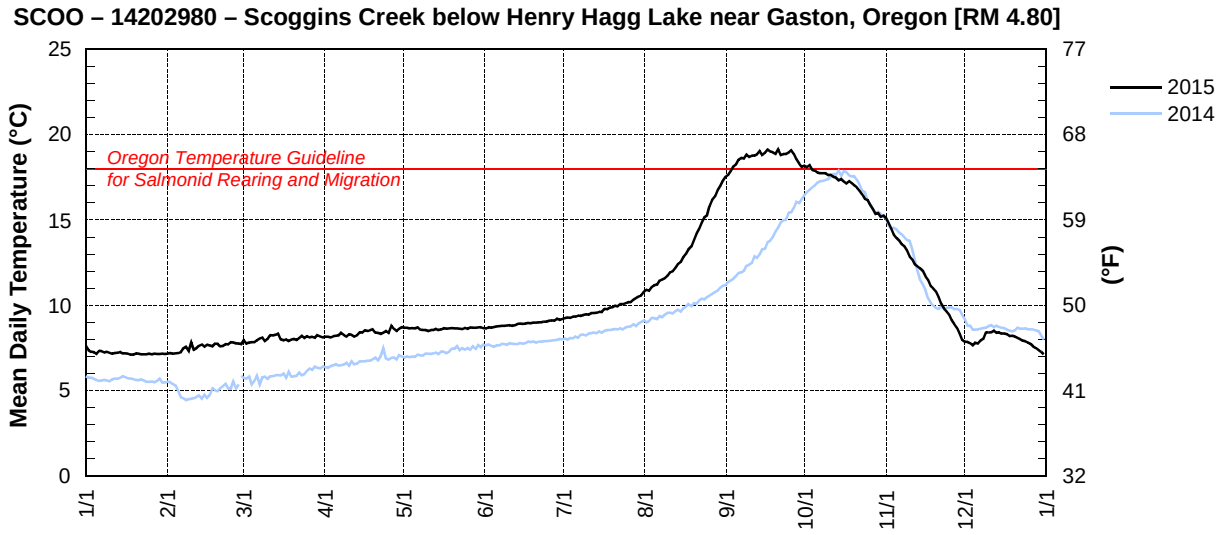
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14202980 SCOGGINS CK BLW HENRY HAGG LAKE, NR GASTON, OR

LATITUDE: 452810 LONGITUDE: 12311561

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	7.6	7.2	7.7	8.1	8.7	8.7	9.2	10.8	17.5	18.2	15.1	7.9
2	7.4	7.2	8.0	8.2	8.7	8.6	9.2	10.9	17.7	18.1	14.8	7.9
3	7.3	7.2	7.8	8.2	8.7	8.7	9.3	10.9	17.9	18.2	14.5	7.8
4	7.3	7.2	7.8	8.1	8.7	8.7	9.3	11.1	18.1	17.9	14.2	7.7
5	7.2	7.2	7.8	8.2	8.7	8.7	9.3	11.2	18.3	17.9	14.0	7.8
6	7.3	7.3	7.8	8.2	8.6	8.8	9.3	11.2	18.5	17.8	13.8	7.8
7	7.3	7.5	8.0	8.2	8.7	8.8	9.4	11.5	18.6	17.8	13.6	8.0
8	7.2	7.6	8.1	8.4	8.6	8.8	9.4	11.5	18.6	17.8	13.5	8.0
9	7.3	7.3	8.1	8.3	8.6	8.8	9.4	11.6	18.8	17.7	13.2	8.4
10	7.2	7.8	7.9	8.2	8.6	8.8	9.5	11.8	18.7	17.6	12.9	8.4
11	7.2	7.4	8.0	8.3	8.5	8.8	9.5	11.9	18.8	17.7	12.7	8.4
12	7.2	7.5	8.3	8.3	8.6	8.8	9.6	12.0	18.8	17.5	12.4	8.5
13	7.2	7.6	8.2	8.2	8.6	8.8	9.5	12.2	18.8	17.5	12.3	8.4
14	7.3	7.7	8.3	8.3	8.6	8.9	9.6	12.4	19.0	17.3	12.2	8.4
15	7.2	7.6	8.3	8.4	8.6	8.9	9.6	12.5	18.8	17.4	12.0	8.4
16	7.2	7.7	8.0	8.4	8.6	8.9	9.6	12.8	19.0	17.3	11.7	8.3
17	7.2	7.7	8.0	8.5	8.7	8.9	9.8	13.0	19.1	17.2	11.5	8.3
18	7.1	7.6	8.0	8.5	8.6	9.0	9.8	13.3	19.0	17.3	11.1	8.2
19	7.1	7.8	7.9	8.6	8.6	8.9	9.9	13.4	19.0	17.2	11.0	8.2
20	7.2	7.7	8.0	8.6	8.7	9.0	9.9	13.8	18.9	17.0	10.8	8.2
21	7.2	7.6	8.0	8.4	8.7	9.0	10.0	14.2	19.2	16.9	10.5	8.1
22	7.1	7.6	8.0	8.4	8.6	9.0	9.9	14.5	18.8	16.7	10.1	8.0
23	7.1	7.7	8.1	8.3	8.6	9.0	10.1	14.8	18.9	16.5	9.8	7.9
24	7.1	7.7	8.2	8.4	8.6	9.0	10.1	15.2	18.9	16.2	9.7	7.9
25	7.2	7.8	8.1	8.5	8.7	9.0	10.1	15.3	19.0	16.2	9.5	7.8
26	7.1	7.8	8.2	8.4	8.6	9.1	10.2	15.8	19.1	15.9	9.1	7.7
27	7.2	7.8	8.1	8.8	8.7	9.1	10.2	16.2	18.9	15.7	8.9	7.6
28	7.2	7.8	8.2	8.6	8.7	9.1	10.3	16.4	18.6	15.4	8.7	7.5
29	7.2	—	8.1	8.5	8.7	9.2	10.4	16.8	18.3	15.4	8.3	7.4
30	7.2	—	8.3	8.6	8.7	9.2	10.5	17.0	18.1	15.2	8.0	7.3
31	7.2	—	8.2	—	8.7	—	10.6	17.3	—	15.3	—	7.1
MEAN	7.2	7.6	8.0	8.4	8.6	8.9	9.8	13.3	18.7	17.0	11.7	8.0
MAX	7.6	7.8	8.3	8.8	8.7	9.2	10.6	17.3	19.2	18.2	15.1	8.5
MIN	7.1	7.2	7.7	8.1	8.5	8.6	9.2	10.8	17.5	15.2	8.0	7.1

† Provisional data beginning 10/4/2015–subject to revision



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

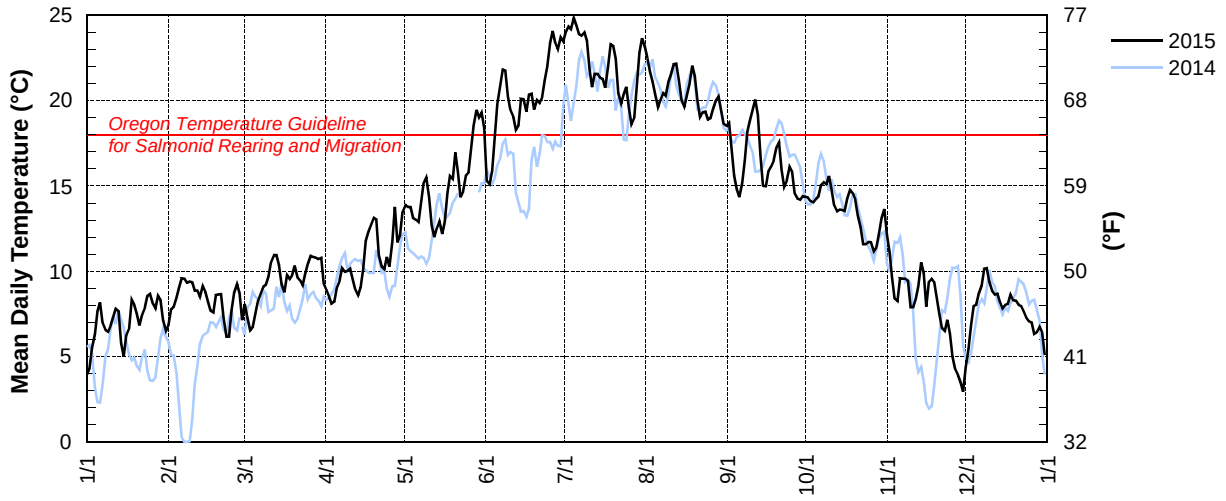
STATION NUMBER 453040123065201 GALES CREEK AT OLD HWY 47, FOREST GROVE, OR**

LATITUDE: 453039.75 LONGITUDE: 1230652.0

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	4.0	6.9	7.2	9.2	13.5	18.4	23.5	23.2	18.5	14.4	12.2	4.4
2	4.3	7.8	8.1	8.9	13.9	15.3	24.1	22.5	18.7	14.3	11.2	5.5
3	5.5	7.9	7.3	8.5	13.8	15.1	24.3	21.7	17.1	14.1	9.7	6.9
4	6.3	8.5	6.5	8.1	13.8	15.9	24.2	21.1	15.6	14.0	8.4	8.0
5	7.7	9.1	6.7	8.2	13.1	17.8	24.9	20.4	14.8	14.2	8.3	8.0
6	8.2	9.6	7.5	9.1	13.0	19.8	24.4	19.6	14.3	14.4	9.6	8.7
7	7.0	9.6	8.3	9.4	12.9	20.9	23.9	20.1	15.2	15.1	9.6	9.2
8	6.6	9.3	8.7	10.2	14.1	21.8	23.8	20.5	16.5	15.2	9.6	10.1
9	6.5	9.4	9.1	10.0	15.2	21.8	24.0	20.3	18.2	15.1	9.4	10.2
10	6.8	9.4	9.2	10.0	15.5	20.3	23.5	21.1	18.8	15.6	7.9	9.4
11	7.3	8.9	9.7	10.2	14.4	19.4	21.9	21.6	19.5	14.8	7.9	8.9
12	7.8	8.9	10.5	9.6	12.7	19.1	20.8	22.1	20.1	13.9	8.4	8.6
13	7.7	8.5	11.0	8.9	12.0	18.3	21.6	22.2	19.2	13.5	9.1	8.7
14	5.8	9.1	11.0	8.6	12.5	18.6	21.6	21.2	16.8	13.6	10.5	8.2
15	5.0	8.8	10.4	9.1	13.0	20.1	21.3	20.0	15.0	13.6	9.9	7.8
16	6.3	8.2	9.3	10.1	12.2	20.1	21.3	19.6	15.0	13.6	7.9	8.0
17	6.7	7.7	8.8	11.8	12.9	19.4	20.8	20.3	15.9	14.3	9.4	8.1
18	8.3	7.6	9.8	12.4	14.6	20.4	22.0	20.9	16.2	14.8	9.6	8.6
19	8.0	8.6	9.5	12.8	15.6	20.4	23.3	22.1	16.5	14.6	9.4	8.3
20	7.5	8.6	9.8	13.1	15.4	19.5	23.2	21.4	17.3	14.2	8.4	8.3
21	6.8	8.7	10.3	13.1	17.0	20.0	22.5	20.1	17.6	13.3	7.5	8.1
22	7.5	7.3	9.6	10.9	15.8	19.9	20.4	19.1	16.0	12.6	6.7	8.0
23	7.9	6.2	9.5	10.3	14.4	20.2	19.8	19.3	15.0	11.6	6.5	7.7
24	8.6	6.2	9.2	10.1	14.7	21.2	20.4	19.4	15.3	11.6	7.2	7.3
25	8.7	7.7	9.9	10.9	15.6	22.0	20.8	18.9	16.1	11.7	6.3	7.1
26	8.1	8.8	10.4	10.3	15.8	23.4	19.6	19.0	15.8	11.7	5.0	7.0
27	7.8	9.3	10.9	11.7	17.2	24.1	18.6	19.5	14.6	11.2	4.3	6.3
28	8.6	8.7	10.9	13.8	18.5	23.4	19.0	20.0	14.3	11.4	3.9	6.4
29	8.3	—	10.8	11.7	19.5	23.0	21.0	20.3	14.2	12.2	3.5	6.8
30	7.1	—	10.7	12.1	19.0	23.7	22.8	19.4	14.4	13.1	3.0	6.4
31	6.5	—	10.8	—	19.3	—	23.7	18.7	—	13.7	—	5.1
MEAN	7.1	8.4	9.4	10.4	14.9	20.1	22.2	20.5	16.4	13.6	8.0	7.7
MAX	8.7	9.6	11.0	13.8	19.5	24.1	24.9	23.2	20.1	15.6	12.2	10.2
MIN	4.0	6.2	6.5	8.1	12.0	15.1	18.6	18.7	14.2	11.2	3.0	4.4

† Provisional data–subject to revision

GALES – 453040123065201 – Gales Creek at Old Hwy 47 near Forest Grove, Oregon [RM 2.36]**



**USGS #453040123065201 is equivalent to OWRD #14204530.

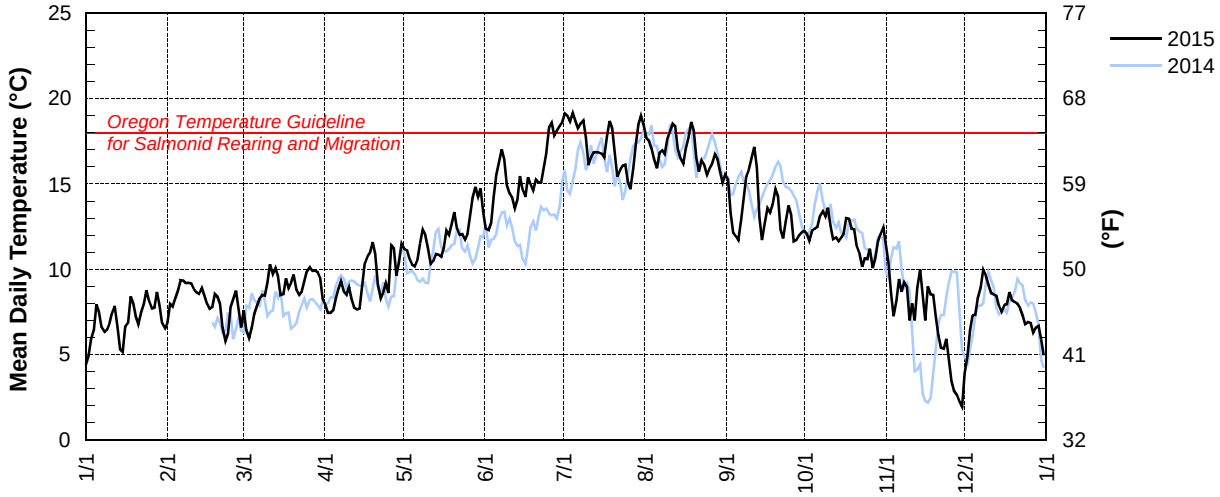
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER: 14205400 EAST FORK DAIRY CREEK NEAR MEACHAM CORNER, OR

LATITUDE: 454051 LONGITUDE: 1230412 DRAINAGE AREA: 32.92 DATUM: 290

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	4.4	6.9	6.6	8.2	11.5	13.4	18.6	18.4	15.6	12.3	11.5	3.9
2	4.9	8.0	7.6	7.9	11.2	12.4	19.1	17.7	15.2	12.1	10.4	5.0
3	5.9	7.8	6.5	7.5	11.1	12.3	19.0	17.5	13.3	11.7	8.6	6.5
4	6.5	8.3	6.0	7.4	10.6	12.7	18.7	17.1	12.2	12.3	7.3	7.3
5	8.0	8.8	6.6	7.6	10.3	14.3	19.2	16.5	11.9	12.4	8.2	7.3
6	7.5	9.4	7.4	8.3	10.2	15.5	18.7	15.9	11.7	12.5	9.4	8.3
7	6.6	9.3	7.8	8.9	10.6	16.3	18.3	16.8	12.9	13.1	8.7	8.9
8	6.3	9.2	8.3	9.3	11.5	17.0	18.5	17.0	14.2	13.4	9.2	10.0
9	6.5	9.2	8.5	8.7	12.3	16.4	18.7	16.7	15.5	13.1	9.0	9.6
10	6.9	9.2	8.5	8.5	12.0	14.9	17.7	17.7	15.9	13.6	7.0	9.1
11	7.5	8.9	9.2	8.9	11.2	14.5	16.1	18.1	16.6	12.6	8.0	8.6
12	7.9	8.7	10.3	8.3	10.3	14.2	16.6	18.5	17.2	11.8	7.0	8.5
13	6.6	8.6	9.7	7.8	10.5	13.6	16.9	18.4	16.0	11.9	8.9	8.5
14	5.3	8.9	10.1	7.7	10.9	14.1	16.9	17.1	13.1	11.6	10.0	7.9
15	5.2	8.5	9.6	7.7	10.9	15.5	16.9	16.5	11.7	11.9	8.6	7.5
16	6.7	8.0	8.5	9.1	10.7	14.7	16.8	16.2	12.8	12.1	7.0	7.9
17	6.9	7.7	8.6	10.4	11.3	14.3	16.6	17.1	13.6	13.0	9.0	8.0
18	8.4	7.8	9.5	10.8	12.3	15.4	17.8	17.7	13.3	13.0	8.5	8.7
19	8.0	8.6	8.9	11.0	12.0	15.0	18.7	18.7	13.8	12.4	8.5	8.2
20	7.2	8.4	9.2	11.6	12.7	14.6	18.3	18.1	14.7	12.4	7.2	8.1
21	6.8	8.0	9.7	10.9	13.4	15.3	16.9	16.5	14.3	11.4	6.1	8.0
22	7.5	6.6	8.8	9.1	12.4	15.1	15.4	15.7	12.3	10.9	5.4	7.7
23	8.0	5.8	8.5	8.3	12.0	15.1	15.8	16.4	11.8	10.1	5.4	7.3
24	8.8	6.3	8.7	8.7	12.1	15.9	16.1	16.1	12.8	10.6	5.9	6.8
25	8.2	7.8	9.3	9.2	11.7	16.8	16.2	15.5	13.8	10.6	4.6	6.9
26	7.7	8.3	9.9	8.6	12.1	18.4	15.2	15.9	13.2	11.2	3.4	6.9
27	7.7	8.8	10.1	11.4	13.1	18.6	14.7	16.2	11.7	10.1	2.9	6.3
28	8.7	7.6	9.9	11.3	14.2	17.9	16.0	16.7	11.7	10.7	2.6	6.6
29	7.9	—	9.9	9.6	14.8	18.1	17.4	16.4	12.0	11.6	2.2	6.7
30	6.9	—	9.9	10.4	14.3	18.4	18.5	15.7	12.2	12.1	1.9	5.9
31	6.5	—	9.5	—	14.8	—	19.0	15.1	—	12.5	—	5.0
MEAN	7.0	8.2	8.8	9.1	11.9	15.3	17.4	16.9	13.6	12.0	7.1	7.5
MAX	8.8	9.4	10.3	11.6	14.8	18.6	19.2	18.7	17.2	13.6	11.5	10.0
MIN	4.4	5.8	6.0	7.4	10.2	12.3	14.7	15.1	11.7	10.1	1.9	3.9

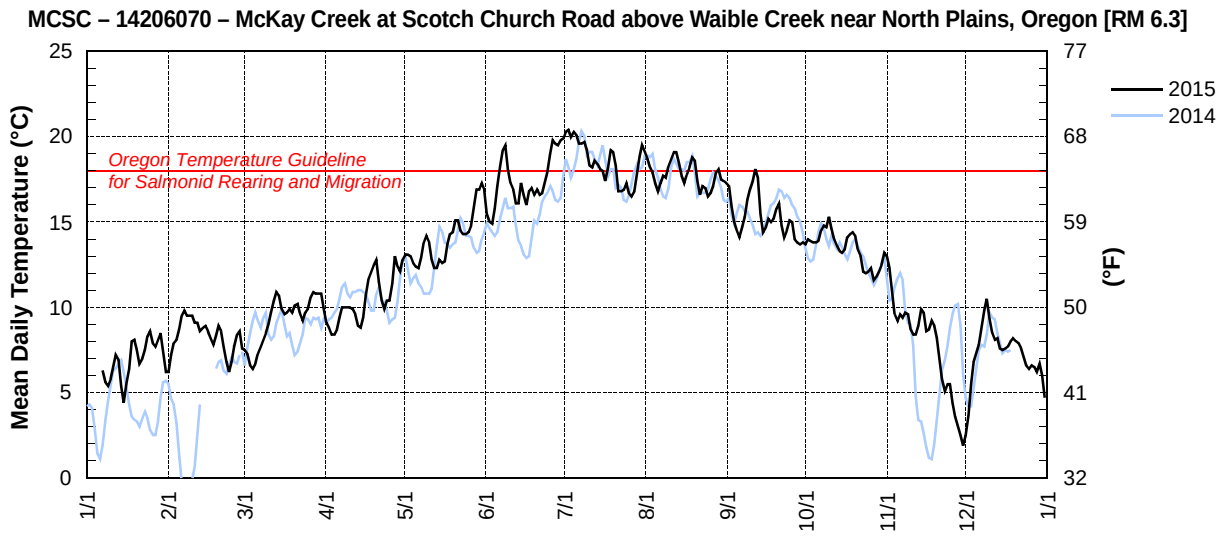
5400 — 14205400 — East Fork Dairy Creek near Meacham Corner, Oregon [RM 12.4]



**USGS #453040123065201 is equivalent to OWRD #14204530.

MCSC – 14206070 – MCKAY CREEK AT SCOTCH CHURCH ROAD ABOVE WAIBLE CREEK NEAR NORTH PLAINS, OREGON [RM 6.3]
Latitude: 45 57 21 Longitude: 122 99 18 Source Agency: WEST Consultants for Clean Water Services

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN*	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1		6.2	7.6	9.9	12.8	16.9	19.9	19.1	17.3	13.7	13.0	2.5
2		7.2	7.5	9.1	13.1	15.5	20.3	18.7	17.1	14.0	12.3	3.7
3		7.9	7.3	8.8	13.1	15.0	20.4	18.2	15.9	13.9	11.0	5.5
4		8.1	6.6	8.4	13.0	14.9	20.0	17.9	15.0	13.8	9.6	6.8
5		8.7	6.4	8.4	12.6	15.8	20.3	17.3	14.5	13.8	9.2	7.3
6		9.5	6.7	8.7	12.4	17.1	20.1	16.8	14.1	13.9	9.6	7.8
7	6.3*	9.8	7.3	9.4	12.3	18.3	19.6	17.3	14.7	14.5	9.4	8.9
8	5.6	9.5	7.7	10.0	12.9	19.2	19.6	17.7	15.3	14.8	9.7	9.8
9	5.4	9.5	8.1	10.0	13.8	19.5	19.7	17.6	16.3	14.7	9.6	10.5
10	5.8	9.5	8.5	10.0	14.2	18.1	19.2	18.3	16.9	15.3	8.7	9.4
11	6.5	9.1	9.0	10.0	13.8	17.3	18.3	18.7	17.4	14.6	8.4	8.5
12	7.2	9.1	9.7	9.9	12.8	16.9	18.2	19.1	18.1	14.0	8.4	8.1
13	6.9	8.6	10.4	9.6	12.3	16.1	18.6	19.1	17.6	13.6	8.9	8.2
14	5.4	8.8	10.9	8.9	12.3	16.1	18.4	18.5	15.5	13.3	9.9	7.6
15	4.4	8.9	10.7	8.8	12.8	17.3	18.1	17.7	14.4	13.2	9.7	7.5
16	5.5	8.6	9.9	9.4	12.6	16.6	18.0	17.3	14.7	13.4	8.6	7.6
17	6.4	8.2	9.6	10.7	12.7	16.0	17.4	17.8	15.2	14.1	8.7	7.7
18	8.0	7.8	9.7	11.7	13.7	16.8	18.2	18.2	15.0	14.3	9.2	8.0
19	8.1	8.3	9.9	12.1	14.3	17.0	19.2	18.8	15.2	14.4	8.9	8.2
20	7.5	8.9	9.7	12.5	14.4	16.6	19.1	18.6	15.8	14.2	8.2	8.0
21	6.7	8.6	10.1	12.8	15.1	16.9	18.3	17.4	16.1	13.4	7.0	7.9
22	7.0	7.7	10.2	11.5	15.1	16.6	16.8	16.6	14.8	13.0	5.8	7.6
23	7.5	6.8	9.6	10.4	14.5	16.7	16.8	17.1	14.1	12.1	5.1	7.1
24	8.3	6.2	9.2	9.9	14.3	17.3	16.9	17.0	14.5	12.0	5.5	6.6
25	8.6	6.8	9.7	10.4	14.3	17.9	17.3	16.5	15.1	12.1	5.5	6.4
26	7.9	7.7	9.9	10.4	14.4	19.0	16.7	16.7	15.0	12.3	4.4	6.6
27	7.7	8.4	10.6	11.4	14.8	19.8	16.5	17.1	14.0	11.6	3.6	6.1
28	8.1	8.6	10.9	13.0	15.8	19.6	16.8	17.9	13.8	11.8	3.0	5.8
29	8.5	—	10.8	12.4	16.9	19.5	17.8	18.1	13.7	12.1	2.5	5.9
30	7.4	—	10.8	12.1	16.9	19.8	18.8	17.5	13.8	12.5	1.9	5.9
31	6.2	—	10.8	—	17.3	—	19.5	17.4	—	13.2	—	5.2
MEAN	6.9	8.3	9.2	10.4	13.9	17.3	18.5	17.8	15.4	13.5	7.8	7.2
MAX	8.6	9.8	10.9	13.0	17.3	19.8	20.4	19.1	18.1	15.3	13.0	10.5
MIN	4.4	6.2	6.4	8.4	12.3	14.9	16.5	16.5	13.7	11.6	1.9	2.5

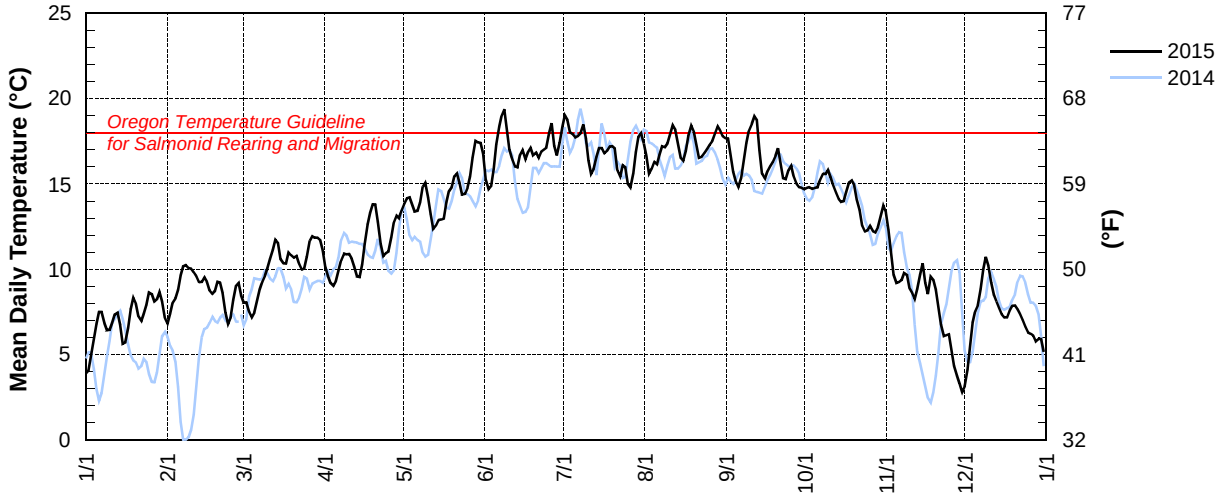


TRJB – 14206241 – TUALATIN RIVER AT HWY 219 BRIDGE [RM 44.4]

Latitude: 45 30 01 Longitude: 122 59 24 Source Agency: Jackson Bottom Wetland Education Center

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY*	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3.9	6.8	8.5	11.1	13.5	16.8	18.3	17.4	17.7	14.7	13.3	3.2
2	4.1	7.4	8.0	10.1	13.9	15.3	19.0	16.6	17.7	14.8	12.3	4.1
3	4.9	8.1	8.1	9.6	14.2	14.7	18.8	15.6	16.7	14.8	11.0	5.5
4	5.9	8.3	7.5	9.2	14.2	14.9	18.1	15.9	15.7	14.7	9.7	6.9
5	6.8	8.8	7.2	9.0	13.8	15.9	17.9	16.3	15.2	14.8	9.2	7.6
6	7.5	9.6	7.5	9.3	13.4	17.3	17.8	16.1	14.8	14.8	9.3	7.9
7	7.5	10.2	8.1	9.9	13.4	18.4	17.8	16.7	15.4	15.3	9.4	8.9
8	6.9	10.3	8.8	10.5	13.9	19.0	18.0	17.2	16.3	15.6	9.8	10.0
9	6.4	10.1	9.3	10.9	14.8	19.4	18.5	17.2	17.4	15.6	9.7	10.7
10	6.5	10.0	9.6	10.9	15.1	18.2	17.7	17.4	18.1	15.8	8.9	10.2
11	6.9	9.8	10.1	10.9	14.2	17.0	16.4	17.9	18.5	15.4	8.6	9.2
12	7.4	9.6	10.6	10.6	13.2	16.4	15.6	18.4	19.0	14.9	8.3	8.5
13	7.5	9.3	11.1	10.2	12.4	16.0	15.9	18.2	18.7	14.5	8.9	8.1
14	6.8	9.3	11.8	9.6	12.6	16.0	16.6	17.4	17.0	14.1	9.7	7.8
15	5.7	9.5	11.6	9.6	12.9	16.7	17.1	16.6	15.6	14.0	10.4	7.4
16	5.7	9.3	10.6	10.3	12.9	17.0	17.1	16.4	15.3	14.0	9.2	7.2
17	6.6	8.8	10.4	11.5	13.0	16.5	16.8	16.9	15.8	14.5	8.6	7.2
18	7.7	8.6	10.3	12.6	13.9	16.9	17.0	17.8	16.0	15.1	9.6	7.6
19	8.3	8.7	11.0	13.3	14.6	17.1	17.2	18.4	16.3	15.2	9.4	7.9
20	8.0	9.3	10.8	13.8	14.8	16.7	17.2	18.1	16.7	14.9	8.8	7.9
21	7.2	9.2	10.7	13.8	15.5	16.8	17.1	17.3	17.1	14.1	7.8	7.7
22	7.0	8.6	10.8	12.8	15.6	16.5	15.8	16.6	16.2	13.5	6.8	7.4
23	7.4	7.5	10.3	11.5	15.1	16.9	15.4	16.6	15.3	12.5	6.1	7.0
24	7.9	6.8	10.0	10.8	14.4	17.0	16.1	16.8	15.3	12.2	6.2	6.7
25	8.6	7.2	10.1	11.0	14.4	17.1	16.0	17.1	15.8	12.3	6.2	6.3
26	8.6	8.2	10.7	11.1	14.8	18.0	15.0	17.3	16.1	12.5	5.3	6.2
27	8.1	9.0	11.7	11.9	15.4	18.6	14.8	17.5	15.4	12.3	4.3	6.1
28	8.3	9.2	11.9	12.8	16.6	17.2	15.6	18.0	15.0	12.2	3.8	5.8
29	8.7	—	11.9	13.1	17.5	16.7	16.9	18.4	14.8	12.5	3.3	5.9
30	8.1	—	11.9	13.0	17.5	17.5	17.8	18.1	14.8	13.1	2.8	5.9
31	7.1	—	11.7	—	17.4	—	18.0	17.8	—	13.7	—	5.2
MEAN	7.0	8.8	10.1	11.2	14.5	16.9	17.0	17.2	16.3	14.1	8.2	7.2
MAX	8.7	10.3	11.9	13.8	17.5	19.4	19.0	18.4	19.0	15.8	13.3	10.7
MIN	3.9	6.8	7.2	9.0	12.4	14.7	14.8	15.6	14.8	12.2	2.8	3.2

TRJB – 14206241 – Tualatin River at Hwy 219 Bridge [RM 44.4]



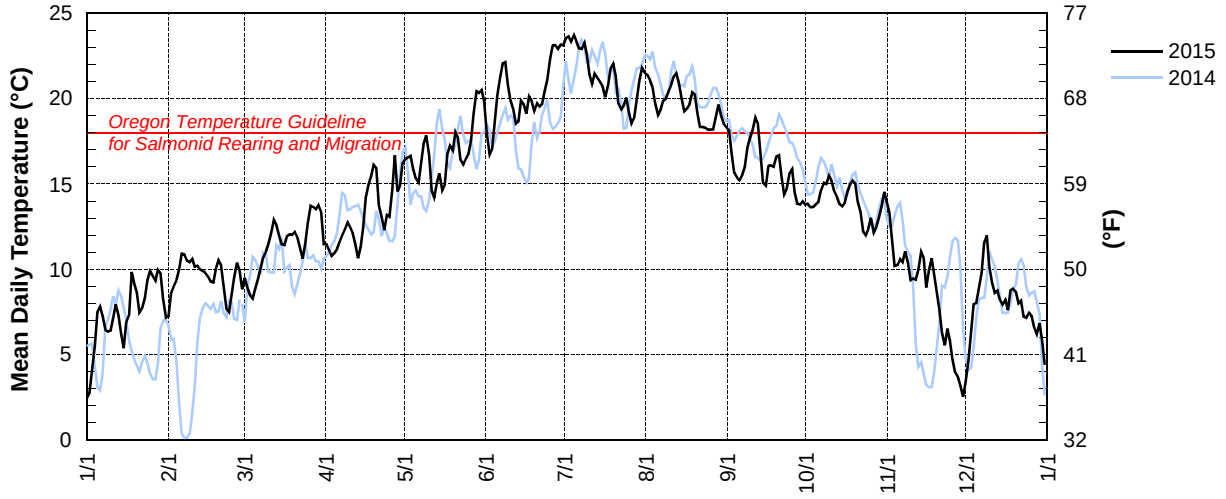
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 453004122510301 BEAVERTON CREEK AT 170TH AVE, BEAVERTON, OR.

LATITUDE: 453004 LONGITUDE: 1225103

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.5	7.3	8.8	11.5	16.2	19.8	23.1	21.5	18.3	13.8	13.9	3.4
2	2.8	8.6	9.5	11.5	16.5	18.0	23.6	21.4	18.2	13.9	13.3	4.7
3	4.1	9.0	8.9	11.1	16.6	16.7	23.7	21.1	16.8	13.6	11.8	6.2
4	5.6	9.4	8.5	10.8	16.7	17.1	23.3	20.7	15.7	13.7	10.2	8.0
5	7.5	10.0	8.3	11.0	15.9	18.8	23.7	19.8	15.4	13.8	10.3	8.0
6	7.8	10.9	8.9	11.2	15.3	20.2	23.4	19.1	15.2	14.0	10.6	8.9
7	7.3	10.9	9.4	11.6	15.1	21.3	23.0	19.4	15.5	14.7	10.4	9.8
8	6.5	10.5	10.1	12.0	16.2	22.1	22.9	19.9	16.0	15.1	11.0	11.6
9	6.4	10.4	10.7	12.4	17.4	22.2	23.3	20.0	17.1	15.0	10.4	12.0
10	6.4	10.6	11.0	12.8	17.9	20.8	22.6	20.5	17.7	15.5	9.4	10.2
11	7.1	10.2	11.5	12.5	16.7	19.9	21.4	20.8	18.2	15.2	9.5	9.2
12	8.0	10.2	12.1	12.1	14.6	19.4	20.9	21.3	18.9	14.6	9.4	8.6
13	7.3	10.0	12.9	11.5	14.2	18.5	21.5	21.5	18.5	14.2	10.0	8.8
14	6.2	9.9	12.6	10.7	15.0	18.7	21.2	21.0	16.7	13.8	11.0	8.2
15	5.4	9.8	12.0	11.3	15.6	19.9	21.0	20.0	15.1	13.7	10.7	7.9
16	6.9	9.6	11.5	12.5	14.6	19.7	20.7	19.3	14.9	13.9	9.0	8.2
17	7.4	9.3	11.4	14.2	15.0	19.1	20.1	19.4	16.1	14.5	9.9	7.6
18	9.8	9.2	12.0	15.0	16.7	20.1	20.8	19.7	16.1	15.0	10.7	8.8
19	9.2	10.0	12.1	15.5	17.2	19.9	21.8	20.4	16.0	15.2	9.8	8.9
20	8.7	10.5	12.0	16.1	17.0	19.3	22.1	20.2	16.6	15.0	8.8	8.7
21	7.5	10.3	12.2	16.0	18.1	19.8	21.3	19.2	16.7	14.0	7.6	8.0
22	7.8	9.0	11.8	13.8	17.7	19.5	19.7	18.3	15.4	13.3	6.3	8.2
23	8.3	7.7	11.2	13.0	16.4	19.7	19.4	18.3	14.4	12.2	5.6	7.2
24	9.4	7.5	10.6	12.3	16.1	20.5	19.6	18.3	14.7	12.0	6.5	7.2
25	9.9	8.6	11.5	13.2	16.5	21.1	20.1	18.2	15.7	12.4	5.8	7.5
26	9.6	9.5	12.7	13.1	16.8	22.3	19.2	18.2	15.9	13.0	4.7	7.3
27	9.3	10.4	13.7	14.7	17.6	23.1	18.6	18.2	14.5	12.2	4.0	6.6
28	10.0	9.9	13.7	16.7	19.1	23.2	18.9	19.0	13.9	12.5	3.7	6.2
29	9.8	—	13.5	14.6	20.5	22.9	20.0	19.7	13.8	13.0	3.2	6.8
30	8.3	—	13.8	14.9	20.4	23.2	21.1	19.0	14.0	13.7	2.5	5.8
31	7.2	—	13.3	—	20.5	—	21.8	18.5	—	14.5	—	4.4
MEAN	7.4	9.6	11.4	13.0	16.8	20.2	21.4	19.7	16.1	13.9	8.7	7.8
MAX	10.0	10.9	13.8	16.7	20.5	23.2	23.7	21.5	18.9	15.5	13.9	12.0
MIN	2.5	7.3	8.3	10.7	14.2	16.7	18.6	18.2	13.8	12.0	2.5	3.4

B170 – Beaverton Creek at 170th Ave, Beaverton, Oregon [RM 4.9]



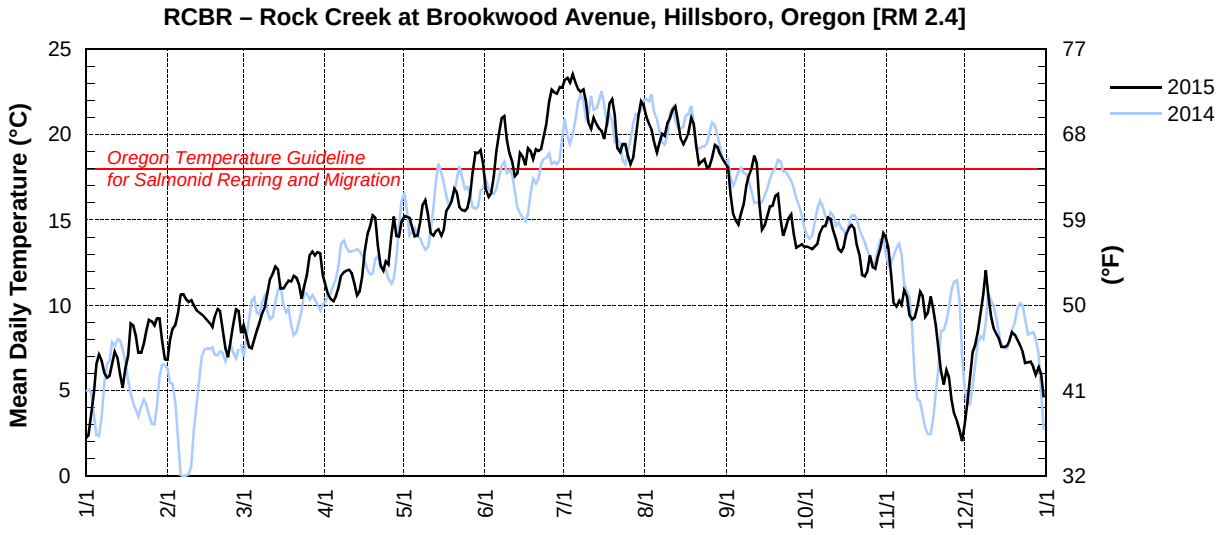
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 453030122560101 ROCK CREEK AT BROOKWOOD AVENUE, HILLSBORO, OR.

LATITUDE: 453029.5 LONGITUDE: 1225600.6

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	2.2	6.8	8.4	11.8	14.9	18.3	22.8	21.7	18.3	13.4	14.0	3.0
2	2.4	8.0	8.8	11.2	15.2	16.8	23.2	21.1	18.1	13.4	13.3	4.4
3	3.6	8.7	8.3	10.7	15.2	16.4	23.3	20.6	16.5	13.4	11.9	5.8
4	4.9	8.9	7.6	10.4	15.1	16.6	23.0	20.3	15.4	13.3	10.2	7.3
5	6.6	9.6	7.5	10.3	14.6	17.5	23.5	19.6	15.0	13.4	9.9	7.7
6	7.1	10.6	8.0	10.6	14.0	19.0	23.1	19.0	14.7	13.6	10.3	8.4
7	6.8	10.7	8.5	11.0	14.1	20.1	22.7	19.6	15.4	14.3	10.0	9.6
8	6.0	10.4	9.0	11.7	14.9	21.0	22.5	20.0	16.0	14.6	10.9	10.6
9	5.8	10.2	9.6	12.0	15.9	21.1	22.7	19.9	17.0	14.6	10.5	12.1
10	5.9	10.3	9.9	12.0	16.2	19.7	22.0	20.7	17.6	15.2	9.4	10.6
11	6.6	10.0	10.7	12.1	15.3	18.9	20.7	21.0	18.1	15.1	9.2	9.3
12	7.3	9.7	11.5	11.9	14.2	18.4	20.3	21.5	18.8	14.4	9.3	8.6
13	6.9	9.6	11.9	11.3	14.1	17.6	21.0	21.7	18.3	13.9	9.9	8.3
14	6.0	9.5	12.3	10.6	14.3	17.7	20.6	20.9	15.9	13.3	10.8	8.0
15	5.2	9.3	12.1	10.8	14.5	19.0	20.4	19.8	14.5	13.1	10.5	7.6
16	6.3	9.2	11.0	11.7	14.1	18.7	20.2	19.5	14.7	13.4	9.3	7.6
17	7.1	9.0	11.0	13.2	14.5	18.2	19.7	19.7	15.3	14.2	9.6	7.6
18	8.9	8.7	11.2	14.2	15.5	19.2	20.7	20.1	15.8	14.6	10.5	8.0
19	8.8	9.4	11.4	14.6	15.8	19.1	21.9	21.0	15.8	14.7	9.8	8.4
20	8.2	9.8	11.4	15.3	16.1	18.6	22.1	20.6	16.4	14.5	8.8	8.3
21	7.2	9.7	11.7	15.1	16.8	19.1	21.2	19.3	16.5	13.6	7.5	8.0
22	7.2	8.7	11.6	13.5	16.6	19.1	19.2	18.3	15.1	12.9	6.2	7.7
23	7.8	7.5	11.2	12.3	15.8	19.2	19.0	18.4	14.1	11.8	5.4	7.3
24	8.5	7.0	10.4	12.0	15.6	19.9	19.5	18.6	14.5	11.7	6.2	6.6
25	9.2	7.9	11.1	12.6	15.5	20.6	19.5	18.1	15.1	12.0	5.8	6.7
26	9.1	8.9	11.8	12.4	15.7	21.9	18.8	18.1	15.4	12.9	4.5	6.7
27	8.8	9.8	13.0	14.1	16.4	22.6	18.3	18.6	14.2	12.2	3.7	6.4
28	9.2	9.7	13.2	15.2	17.8	22.5	18.7	19.4	13.4	12.2	3.2	5.9
29	9.2	—	12.9	14.1	19.0	22.4	19.9	19.3	13.5	12.8	2.7	6.4
30	8.0	—	13.1	14.0	18.9	22.8	21.1	18.9	13.6	13.4	2.0	6.0
31	6.8	—	13.1	—	19.1	—	21.9	18.6	—	14.2	—	4.6
MEAN	6.9	9.2	10.7	12.4	15.7	19.4	21.1	19.8	15.8	13.6	8.5	7.5
MAX	9.2	10.7	13.2	15.3	19.1	22.8	23.5	21.7	18.8	15.2	14.0	12.1
MIN	2.2	6.8	7.5	10.3	14.0	16.4	18.3	18.1	13.4	11.7	2.0	3.0

† Provisional data–subject to revision



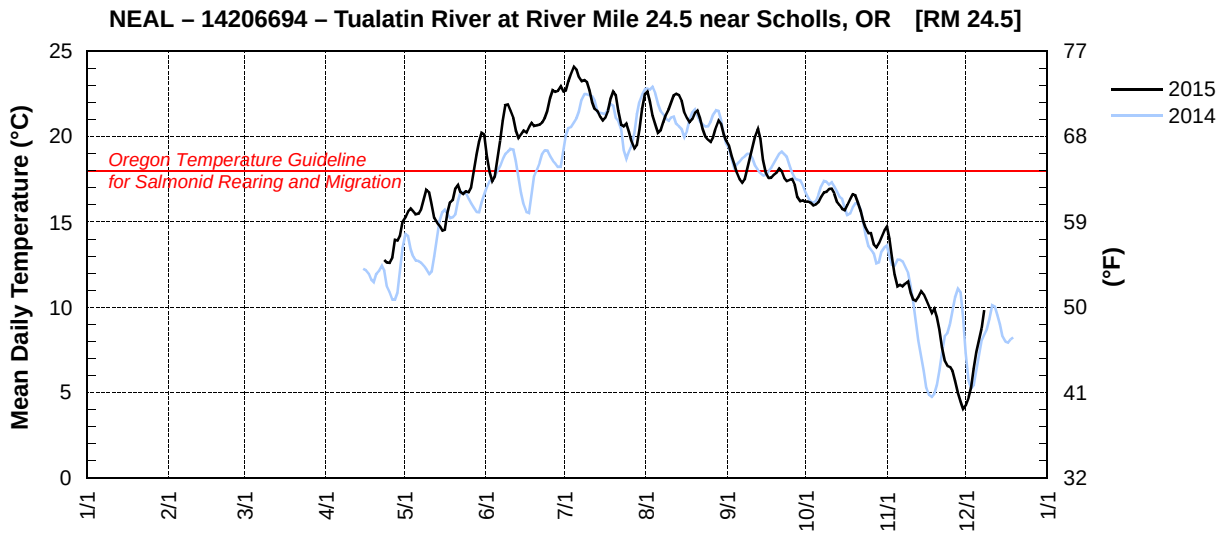
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14206694 TUALATIN RIVER AT RIVER MILE 24.5, NR SCHOLLS, OR

LATITUDE: 452406 LONGITUDE: 1225338

Day	2015 Mean Daily Water Temperature in Degrees Celsius											
	JAN	FEB	MAR	APR*	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC*
1					15.0	20.1	22.7	22.5	19.8	16.2	14.8	4.3
2					15.3	18.9	22.7	22.6	19.5	16.2	14.0	4.7
3					15.6	17.9	23.3	22.0	18.9	16.1	12.9	5.3
4					15.8	17.4	23.7	21.2	18.4	16.0	11.9	6.4
5					15.6	17.7	24.1	20.8	17.9	16.0	11.2	7.4
6					15.5	18.7	24.0	20.2	17.5	16.2	11.3	8.0
7					15.5	19.8	23.5	20.4	17.3	16.5	11.2	8.8
8					15.8	21.0	23.3	20.8	17.5	16.7	11.4	9.9
9					16.3	21.8	23.3	21.3	18.1	16.8	11.5	
10					16.9	21.9	23.2	21.6	18.8	16.9	10.9	
11					16.7	21.5	22.7	22.0	19.4	17.0	10.5	
12					16.0	21.1	22.0	22.4	20.1	16.7	10.4	
13					15.2	20.4	21.6	22.5	20.5	16.2	10.6	
14					15.0	19.9	21.5	22.5	19.9	16.0	11.0	
15					14.8	20.1	21.2	22.1	18.6	15.8	10.8	
16					14.5	20.4	21.0	21.4	17.9	15.7	10.4	
17					14.6	20.3	21.1	21.1	17.6	16.0	10.1	
18					15.5	20.6	21.6	20.9	17.6	16.4	9.7	
19					16.1	20.8	22.2	21.1	17.8	16.6	9.9	
20					16.3	20.6	22.7	21.4	17.9	16.6	9.4	
21					17.0	20.7	22.5	21.5	18.1	16.2	8.7	
22					17.2	20.7	21.5	21.1	18.0	15.7	7.7	
23					16.8	20.8	20.7	20.5	17.6	15.1	6.8	
24				12.8	16.6	21.1	20.6	20.0	17.4	14.6	6.6	
25				12.6	16.8	21.5	20.8	19.8	17.5	14.4	6.5	
26				12.6	16.8	22.3	20.3	19.7	17.5	14.3	6.3	
27				12.9	17.0	22.7	19.7	20.0	17.2	13.7	5.7	
28				14.0	17.9	22.6	19.3	20.6	16.5	13.5	5.0	
29		—		13.9	18.9	22.7	19.5	21.0	16.2	13.8	4.5	
30		—		14.2	19.7	23.0	20.4	20.8	16.3	14.1	4.1	
31		—		—	20.2	—	21.6	20.2	—	14.5	—	
MEAN					16.3	20.6	21.9	21.2	18.1	15.7	9.5	
MAX					20.2	23.0	24.1	22.6	20.5	17.0	14.8	
MIN					14.5	17.4	19.3	19.7	16.2	13.5	4.1	

* Incomplete record (monthly statistics computed when at least 80% of the record was complete for the month)



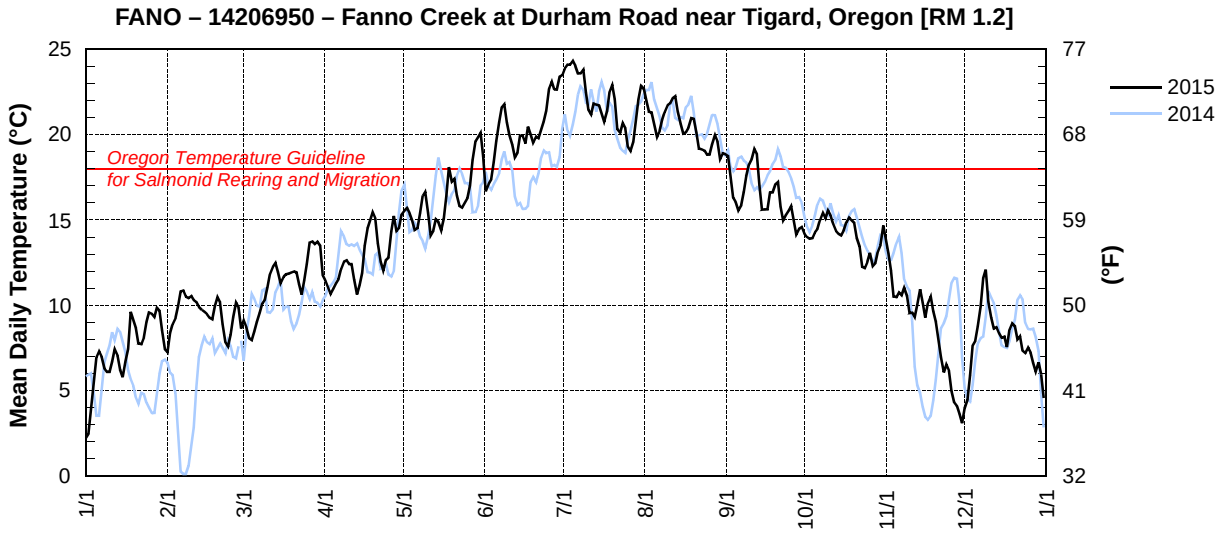
UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

STATION NUMBER 14206950 FANNO CREEK AT DURHAM, OR

LATITUDE: 452413 LONGITUDE: 1224513

Water Temperature, degrees Celsius, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2.2	7.3	8.7	11.7	15.3	18.7	23.5	22.7	18.9	14.2	13.9	4.0
2	2.5	8.4	9.1	11.5	15.5	16.7	23.9	22.0	18.8	14.0	13.1	4.5
3	3.8	8.9	8.7	11.0	15.7	17.1	24.1	21.4	17.6	13.9	12.1	5.9
4	5.4	9.3	8.1	10.7	15.4	17.4	24.1	21.3	16.3	13.9	10.5	7.7
5	7.0	10.0	8.0	11.0	15.0	18.4	24.3	20.7	16.0	14.3	10.5	7.9
6	7.3	10.8	8.5	11.3	14.4	19.6	24.0	19.9	15.6	14.5	10.8	8.8
7	7.0	10.9	9.0	11.5	14.5	20.7	23.6	20.2	15.9	15.0	10.6	9.9
8	6.3	10.5	9.6	12.1	15.4	21.6	23.6	20.9	16.6	15.4	11.0	11.6
9	6.1	10.4	10.1	12.6	16.4	21.8	23.8	21.3	17.6	15.1	10.6	12.1
10	6.1	10.5	10.3	12.6	16.7	20.7	22.5	21.7	18.3	15.6	9.6	10.2
11	6.7	10.3	11.0	12.4	15.4	20.0	21.4	21.9	18.6	15.3	9.6	9.3
12	7.4	10.2	11.9	12.4	14.1	19.4	21.2	22.2	19.1	14.8	9.3	8.6
13	7.1	9.9	12.3	11.5	14.4	18.7	21.8	22.3	18.9	14.4	10.0	8.7
14	6.2	9.7	12.5	10.6	15.0	18.9	21.8	21.3	17.0	14.2	11.0	8.4
15	5.8	9.6	12.0	11.2	14.9	19.9	21.7	20.6	15.6	14.1	10.2	8.1
16	6.7	9.5	11.3	11.9	14.4	19.9	21.2	20.1	15.6	14.4	9.3	8.2
17	7.5	9.3	11.7	13.5	15.1	19.5	20.8	20.1	15.6	14.9	10.1	7.6
18	9.6	9.2	11.8	14.5	16.4	20.5	21.4	20.4	16.6	15.2	10.6	8.6
19	9.2	10.0	11.9	15.0	18.1	20.0	22.5	21.0	16.6	15.0	9.7	9.0
20	8.7	10.5	11.9	15.5	17.3	19.6	22.9	20.9	17.1	14.8	9.0	8.8
21	7.8	10.2	12.0	15.1	17.4	19.9	22.1	20.2	17.2	14.0	8.0	8.0
22	7.7	8.9	11.9	13.6	16.4	19.8	20.3	19.2	15.8	13.4	7.0	8.2
23	8.1	7.8	11.2	12.6	15.8	20.3	20.1	19.1	15.0	12.3	6.1	7.3
24	9.0	7.6	10.6	12.0	15.7	20.8	20.7	19.1	15.3	12.2	6.5	7.2
25	9.6	8.3	11.5	12.7	16.0	21.4	20.4	18.8	15.6	12.5	6.2	7.5
26	9.5	9.3	12.4	12.8	16.3	22.7	19.3	18.8	15.8	13.1	5.0	7.2
27	9.3	10.1	13.7	14.3	17.0	23.1	19.0	19.4	15.0	12.3	4.3	6.6
28	9.9	9.9	13.7	15.2	18.5	22.7	19.6	20.0	14.2	12.5	4.1	6.1
29	9.7	—	13.6	14.4	19.6	22.6	20.9	19.6	14.5	13.2	3.6	6.7
30	8.5	—	13.7	14.5	19.9	23.4	22.1	18.6	14.6	13.5	3.1	6.0
31	7.4	—	13.5	—	20.1	—	22.9	18.9	—	14.7	—	4.6
MEAN	7.3	9.5	11.2	12.7	16.2	20.2	22.0	20.5	16.5	14.1	8.8	7.8
MAX	9.9	10.9	13.7	15.5	20.1	23.4	24.3	22.7	19.1	15.6	13.9	12.1
MIN	2.2	7.3	8.0	10.6	14.1	16.7	19.0	18.6	14.2	12.2	3.1	4.0



UNITED STATES DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY — OREGON WATER SCIENCE CENTER

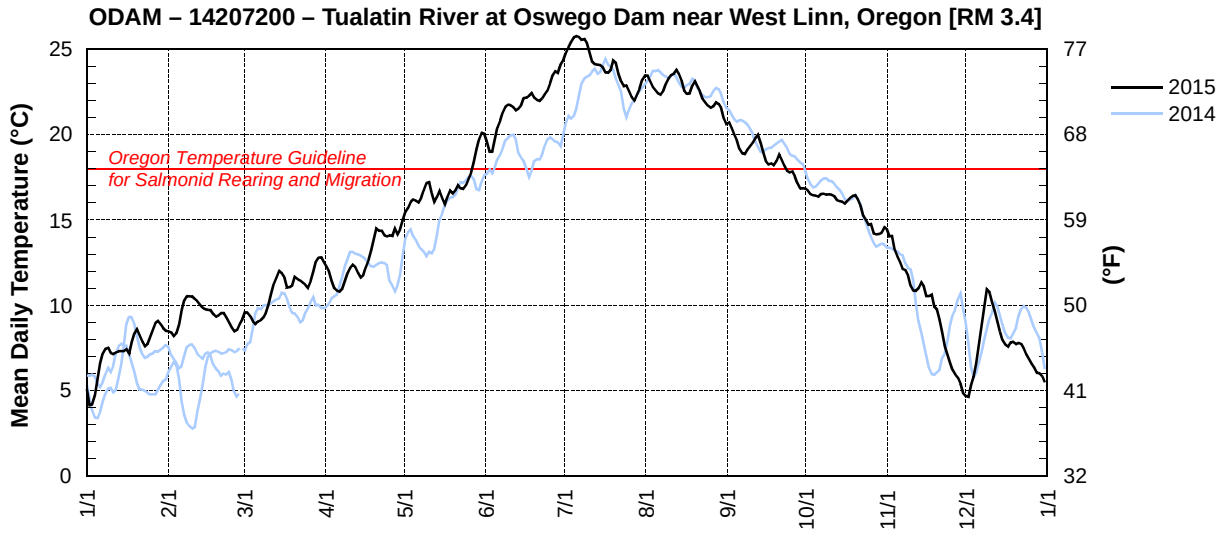
STATION NUMBER 14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR.

LATITUDE: 452124 LONGITUDE: 1224102

Water Temperature, degrees Celsius, Calendar Year January to December 2015 Daily Mean Values

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT†	NOV†	DEC†
1	5.1	8.5	9.2	12.5	15.0	20.1	24.4	23.5	20.6	16.8	14.5	4.7
2	4.1	8.4	9.6	12.3	15.5	19.6	24.8	23.5	20.7	16.7	14.0	4.6
3	4.2	8.2	9.6	12.0	15.7	19.0	25.1	23.1	20.4	16.5	14.1	5.3
4	4.7	8.4	9.4	11.5	16.1	19.0	25.4	22.8	20.0	16.4	13.3	5.8
5	5.7	8.9	9.1	11.0	16.2	19.7	25.7	22.6	19.7	16.4	12.9	6.6
6	6.6	9.7	8.9	10.9	16.1	20.4	25.8	22.4	19.2	16.4	12.5	7.7
7	7.2	10.3	9.1	10.8	16.0	20.8	25.7	22.4	18.9	16.5	12.1	8.9
8	7.5	10.5	9.1	11.0	16.3	21.3	25.6	22.6	18.9	16.5	12.1	9.9
9	7.5	10.5	9.3	11.5	16.8	21.6	25.6	23.0	19.1	16.5	11.7	10.9
10	7.2	10.5	9.6	11.9	17.2	21.7	25.4	23.3	19.3	16.5	11.1	10.8
11	7.2	10.4	10.0	12.2	17.2	21.7	24.8	23.5	19.5	16.5	10.9	10.2
12	7.2	10.2	10.7	12.4	16.6	21.6	24.3	23.6	19.8	16.4	10.8	9.7
13	7.3	10.1	11.3	12.3	16.1	21.4	24.1	23.8	20.0	16.2	11.0	9.1
14	7.3	9.9	11.7	11.9	16.4	21.5	24.1	23.6	19.6	16.1	11.3	8.5
15	7.3	9.8	12.0	11.6	16.7	21.7	24.1	23.1	19.0	16.1	11.1	8.0
16	7.4	9.7	11.9	11.8	16.3	22.1	23.9	22.6	18.4	16.0	10.5	7.7
17	7.2	9.7	11.6	12.2	15.9	22.2	23.7	22.4	18.3	16.1	10.5	7.6
18	7.8	9.5	11.0	12.7	16.4	22.3	23.6	22.4	18.3	16.3	10.6	7.8
19	8.4	9.3	11.1	13.2	16.7	22.4	23.8	22.9	18.2	16.4	9.9	7.9
20	8.6	9.4	11.2	13.9	16.6	22.2	24.3	23.1	18.5	16.5	9.8	7.7
21	8.3	9.5	11.7	14.5	16.7	22.0	24.2	22.8	18.8	16.2	9.2	7.8
22	7.9	9.5	11.5	14.4	17.0	22.0	23.6	22.5	18.5	15.8	8.5	7.7
23	7.6	9.3	11.5	14.4	16.9	22.1	23.1	22.1	18.2	15.3	7.6	7.5
24	7.7	9.0	11.3	14.1	16.8	22.4	22.8	21.9	17.9	15.0	7.1	7.1
25	8.1	8.7	11.2	14.0	17.1	22.6	22.9	21.7	17.8	14.7	6.6	6.8
26	8.6	8.5	11.0	14.1	17.4	23.0	22.6	21.6	17.8	14.8	6.2	6.6
27	9.0	8.6	11.4	14.1	17.8	23.5	22.2	21.7	17.6	14.2	6.0	6.3
28	9.1	8.9	12.0	14.5	18.4	23.7	22.0	21.9	17.2	14.2	5.8	6.0
29	8.9	—	12.6	14.2	19.1	23.6	22.4	21.8	16.8	14.2	5.4	6.0
30	8.7	—	12.8	14.4	19.7	24.1	22.7	21.6	16.9	14.3	4.9	5.9
31	8.5	—	12.8	—	20.1	—	23.2	21.0	—	14.6	—	5.5
MEAN	7.3	9.4	10.8	12.7	16.9	21.7	24.1	22.6	18.8	15.8	10.1	7.5
MAX	9.1	10.5	12.8	14.5	20.1	24.1	25.8	23.8	20.7	16.8	14.5	10.9
MIN	4.1	8.2	8.9	10.8	15.0	19.0	22.0	21.0	16.8	14.2	4.9	4.6

† Provisional data beginning 10/20/2015–subject to revision



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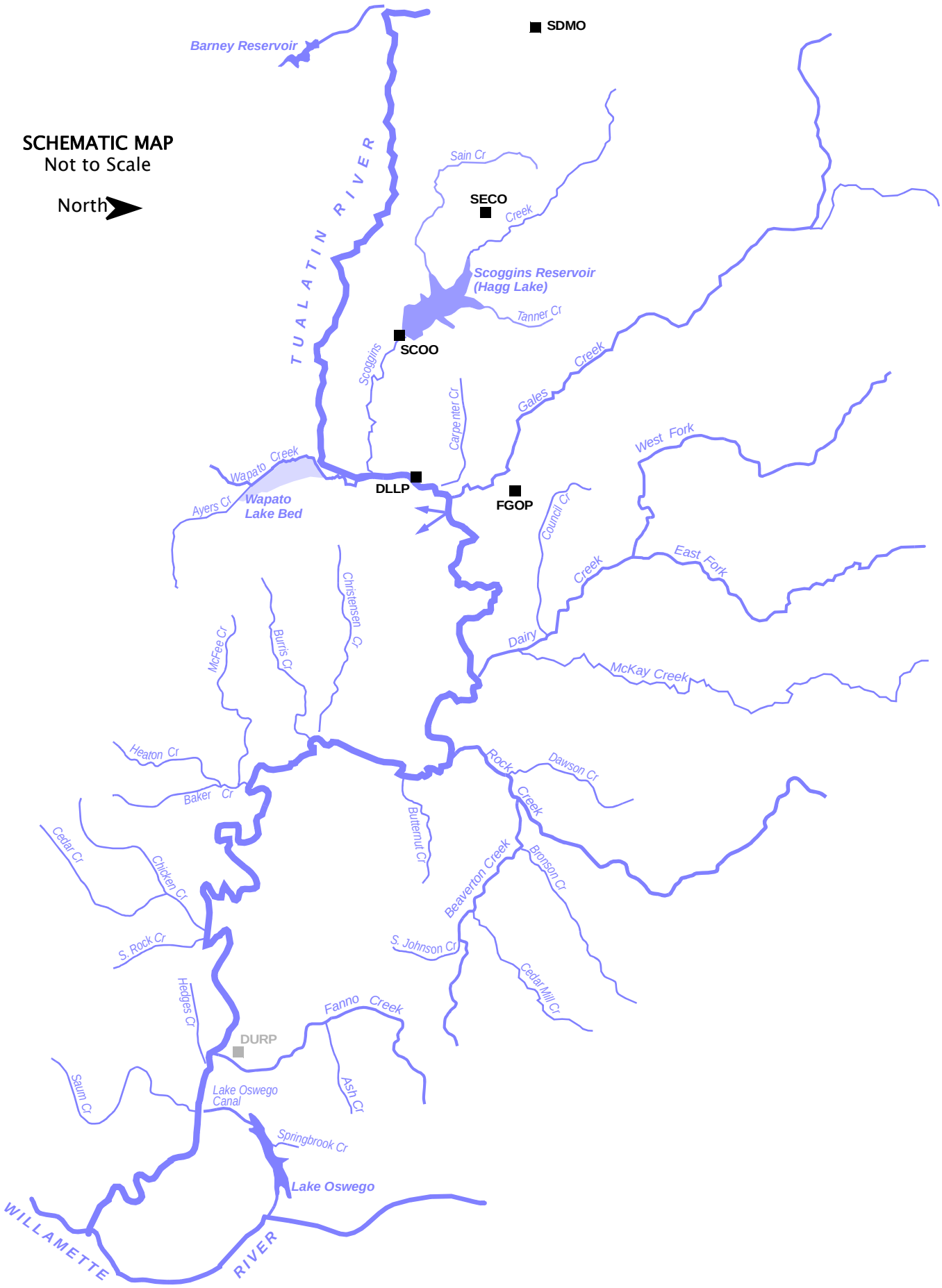
Appendix H

Precipitation Data

PRECIPITATION MONITORING STATIONS — LOCATIONS



PRECIPITATION SITES — ALPHABETICAL LISTING BY SITE CODE

SITE CODE	SITE NAME	Elevation (ft)	PAGE
DLLP	Dilley Precipitation Station	170	H-10
DURP	Durham Wastewater Treatment Plant Precipitation Station*	140	—
FGOP	Forest Grove Precipitation Station (Verboort)	180	H-12
SCOO	Scoggins Creek below Henry Hagg Lake	215	H-8
SDMO	South Saddle Mountain Precipitation Station	3250	H-4
SECO	Sain Creek Precipitation Station	2000	H-6

* Durham Wastewater Treatment Facility Precipitation Station discontinued as of October 2014

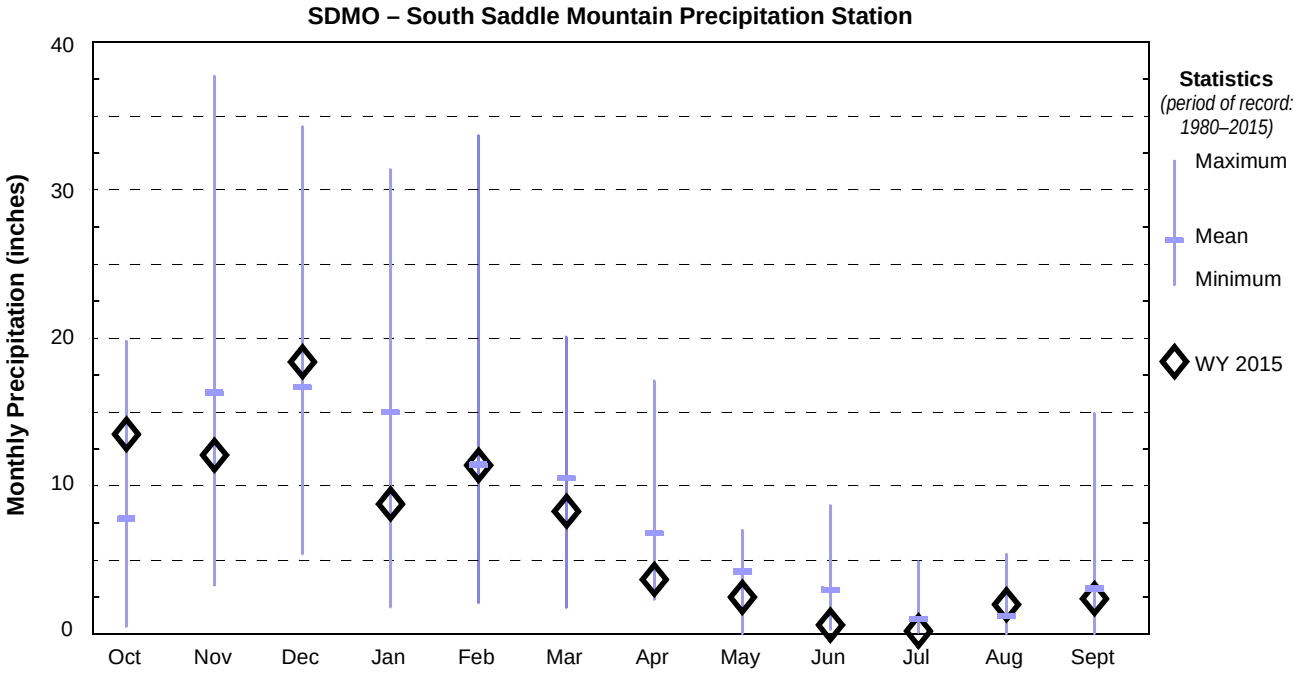
SDMO – SOUTH SADDLE MOUNTAIN PRECIPITATION STATION

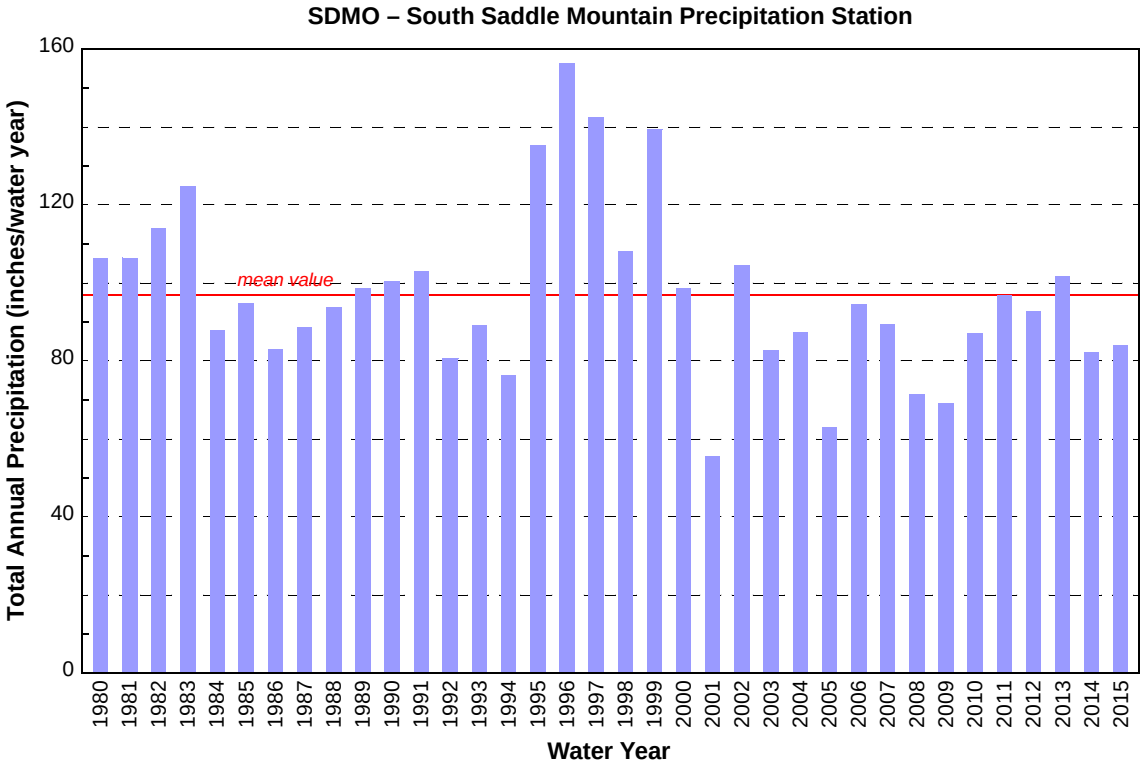
Elevation: 3250 ft
Latitude: 45 31 48 Longitude: 123 22 12

Source Agency: Natural Resources Conservation Service
http://www.wcc.nrcs.usda.gov/cgibin/tab.pl?state=OR

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1980	10.8	7.5	19.2	19.3	11.2	10.1	6.5	6.4	8.7	1.0	0.6	4.9
1981	4.2	19.3	26.8	5.2	18.6	7.5	7.9	4.1	7.2	0.4	0.7	4.4
1982	13.0	14.9	26.6	19.3	17.2	7.5	7.2	0.0	2.0	1.1	1.9	3.3
1983	13.4	16.7	21.5	17.3	15.2	11.5	7.1	4.3	4.7	4.9	3.4	4.7
1984	1.7	23.3	11.8	8.3	12.6	8.1	6.3	6.4	3.8	0.6	1.1	3.8
1985	11.4	28.6	12.9	1.8	10.2	11.8	4.8	1.5	4.3	0.2	1.4	5.9
1986	12.2	11.1	5.4	15.8	13.4	7.2	5.7	3.2	1.1	1.4	0.2	6.2
1987	5.3	20.2	11.1	17.1	7.7	16.0	2.3	4.9	1.1	1.7	0.2	0.9
1988	0.7	10.8	22.2	14.1	9.6	15.0	7.8	6.1	2.4	2.0	0.3	2.7
1989	2.5	28.5	11.4	14.9	10.2	17.4	5.3	2.8	1.7	1.9	2.0	0.0
1990	5.8	9.6	8.6	31.4	20.8	7.0	6.4	3.3	4.9	0.4	0.8	1.5
1991	11.4	18.7	10.0	12.7	12.7	12.1	15.3	4.4	2.7	1.0	1.2	0.6
1992	2.8	14.4	11.8	19.1	8.8	1.8	10.5	2.4	1.2	1.4	1.1	5.3
1993	6.8	13.8	16.2	10.8	3.3	12.4	13.7	6.4	3.2	1.6	0.9	0.0
1994	2.7	3.3	18.8	11.0	15.2	9.3	5.5	3.6	4.2	0.9	0.5	1.2
1995	14.7	20.9	31.0	19.7	13.5	14.8	6.8	1.5	4.3	3.0	1.3	3.7
1996	8.5	34.8	21.7	21.2	32.6	6.0	17.1	6.4	2.0	1.2	1.0	3.7
1997	11.6	16.9	34.3	17.2	7.3	20.1	8.3	5.9	5.3	2.1	2.6	10.7
1998	19.8	15.3	9.3	24.2	14.7	10.4	3.3	6.1	1.6	0.2	0.4	2.7
1999	7.7	25.9	28.7	20.3	33.7	12.9	2.8	5.0	0.9	0.2	1.3	0.0
2000	6.1	23.6	18.6	17.7	10.1	6.3	2.9	4.9	6.0	0.1	0.6	1.6
2001	4.3	5.6	9.2	5.5	4.8	6.2	6.1	5.2	3.3	1.4	3.1	0.7
2002	6.6	23.0	20.3	21.7	7.5	10.7	7.6	2.9	3.6	0.2	0.3	0.1
2003	0.5	5.8	17.2	21.5	5.4	19.5	7.5	2.3	0.3	0.3	0.4	1.9
2004	9.4	12.1	13.5	15.0	8.7	5.4	4.4	4.9	2.7	0.1	5.4	5.7
2005	7.4	5.0	10.9	9.3	2.1	11.0	6.5	5.8	2.2	1.0	0.4	1.4
2006	9.4	12.4	18.2	29.8	6.1	7.3	3.5	3.0	2.0	0.7	0.0	2.1
2007	1.9	37.7	15.1	9.0	10.3	4.9	3.7	0.5	2.0	0.9	1.1	2.1
2008	7.7	9.5	21.9	11.5	4.7	7.6	4.9	1.1	2.3	0.3	2.4	0.0
2009	6.6	11.9	10.7	11.5	4.4	7.1	4.8	7.0	0.8	0.5	1.3	2.4
2010	7.8	15.5	9.2	14.5	8.5	9.7	7.2	4.8	5.0	0.5	0.5	3.8
2011	9.1	14.1	19.1	12.3	8.2	13.8	10.0	5.1	1.7	1.3	0.1	1.8
2012	5.8	14.6	12.2	17.3	9.6	18.0	5.9	5.0	3.7	0.2	0.0	0.3
2013	14.8	19.4	19.4	4.8	5.9	5.6	6.1	6.5	2.0	0.3	1.9	14.9
2014	1.8	9.9	6.6	9.5	15.3	18.5	9.1	5.5	1.8	0.8	0.8	2.5
2015	13.5	12.1	18.4	8.8	11.4	8.3	3.7	2.5	0.6	0.2	2.0	2.4
MIN	0.5	3.3	5.4	1.8	2.1	1.8	2.3	0.0	0.3	0.1	0.0	0.0
MAX	19.8	37.7	34.3	31.4	33.7	20.1	17.1	7.0	8.7	4.9	5.4	14.9
MEAN	7.77	16.30	16.66	15.01	11.43	10.52	6.79	4.21	2.98	1.00	1.20	3.05

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


SDMO – South Saddle Mountain Precipitation Station
Monthly Precipitation (inches)
0
10
20
30
40
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record: 1980–2015)
Maximum
Mean
Minimum
WY 2015


SDMO – South Saddle Mountain Precipitation Station
Total Annual Precipitation (inches/water year)
0
40
80
120
160
mean value
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Water Year

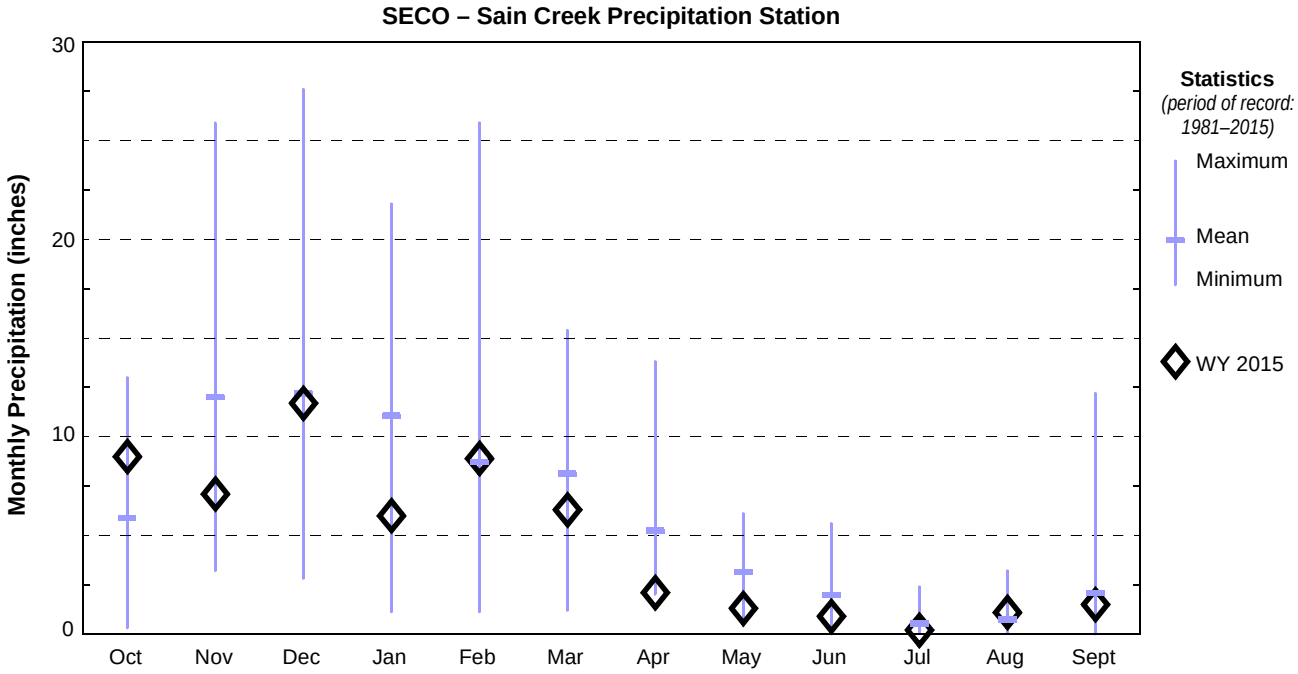
SECO – SAIN CREEK PRECIPITATION STATION

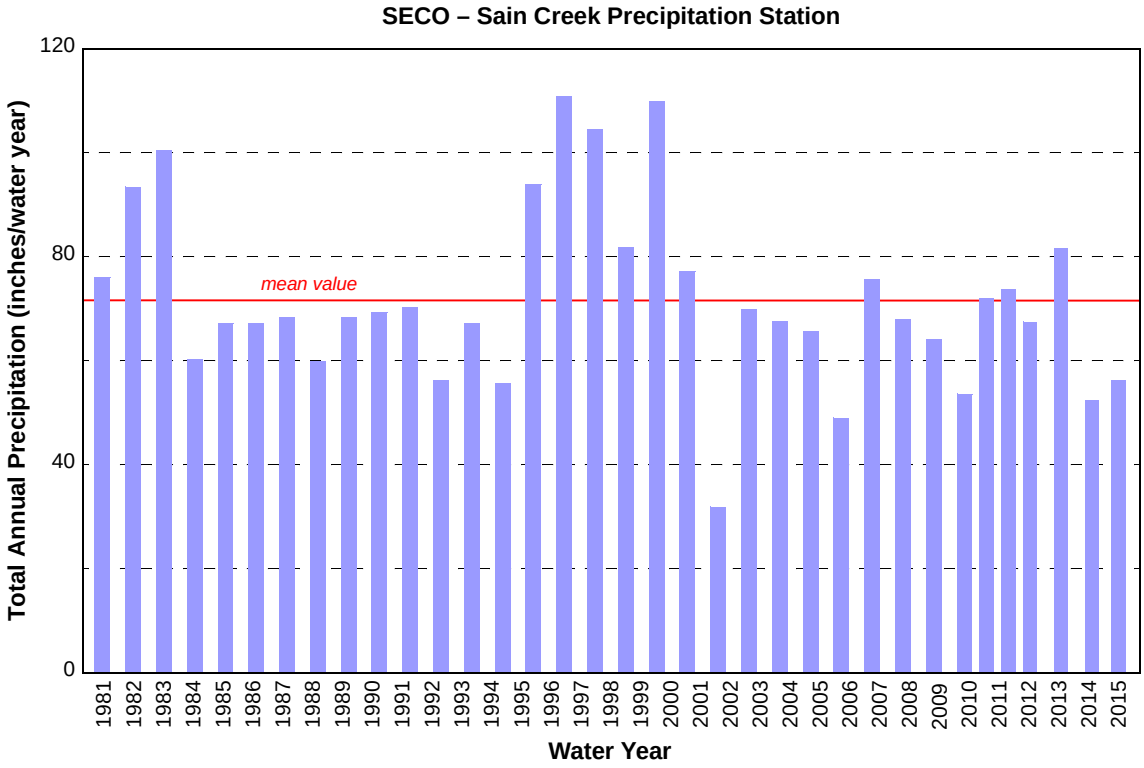
Elevation: 2000 ft
Latitude: 45 31 12 Longitude: 123 16 48

Source Agency: Natural Resources Conservation Service
http://www.wcc.nrcs.usda.gov/cgibin/tab.pl?state=OR

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1981	2.3	13.5	17.8	5.8	12.8	5.3	6.0	3.6	5.6	0.0	0.2	3.0
1982	10.3	11.8	20.8	13.2	14.9	7.9	6.4	0.7	2.0	1.1	1.9	2.4
1983	11.1	11.4	17.0	15.5	17.3	14.5	6.3	2.5	3.1	1.6	0.0	0.1
1984	1.4	16.7	3.5	3.5	12.1	9.1	2.5	5.3	3.3	0.0	0.0	2.8
1985	10.4	22.6	7.0	1.1	4.0	7.9	4.3	1.4	3.5	0.1	1.6	3.2
1986	9.3	4.9	2.8	13.2	15.1	2.9	5.2	6.1	0.2	1.0	0.2	6.3
1987	4.5	15.3	8.4	12.4	6.4	12.3	3.6	3.3	0.4	1.2	0.2	0.3
1988	0.7	6.8	15.8	12.2	2.8	9.1	4.4	4.0	2.0	0.7	0.0	1.4
1989	1.3	21.5	7.4	9.1	7.3	11.6	3.7	1.7	1.9	0.9	1.7	0.1
1990	4.5	6.2	5.8	21.8	14.5	6.4	3.2	2.6	2.5	0.3	0.7	0.8
1991	8.4	10.9	6.1	7.4	9.1	8.3	12.9	2.8	2.1	0.8	0.8	0.5
1992	2.5	9.7	8.4	12.2	6.7	1.2	9.2	1.1	1.1	0.6	0.4	3.1
1993	5.0	9.3	11.9	8.9	2.0	8.8	9.9	5.7	2.7	2.4	0.5	0.0
1994	1.7	4.5	12.7	8.5	10.7	5.9	4.2	3.1	2.4	0.1	0.2	1.6
1995	13.0	13.4	16.6	16.0	9.3	11.2	5.2	1.9	2.9	1.1	0.8	2.5
1996	6.6	24.6	15.7	15.3	21.9	3.4	13.8	4.8	1.4	0.4	0.4	2.6
1997	8.4	12.7	27.6	13.3	4.7	13.7	5.6	4.8	3.4	0.4	1.9	8.1
1998	13.0	12.0	6.4	19.8	12.0	8.5	2.5	5.1	0.8	0.0	0.2	1.5
1999	5.6	20.5	22.3	16.1	25.9	11.1	2.0	4.0	1.0	0.2	1.2	0.0
2000	4.6	18.3	15.4	13.5	8.5	5.3	2.6	3.8	4.0	0.0	0.2	0.9
2001	2.9	3.7	6.4	3.2	3.1	3.7	3.7	2.4	1.1	0.3	1.2	0.2
2002	3.8	16.7	13.3	14.9	5.1	6.6	5.1	2.0	2.0	0.1	0.0	0.3
2003	0.3	7.8	16.5	15.8	4.3	14.1	5.9	1.4	0.0	0.0	0.0	1.5
2004	5.8	7.3	12.0	12.2	7.6	3.9	4.7	2.3	2.0	0.2	3.2	4.4
2005	5.6	3.2	8.3	8.4	1.1	8.5	4.9	5.3	2.5	0.4	0.2	0.6
2006	9.1	10.4	14.7	21.8	3.7	6.9	3.3	3.1	1.5	0.2	0.0	0.9
2007	1.8	25.9	12.0	6.1	9.5	4.0	3.2	0.4	1.1	1.2	0.9	1.9
2008	4.7	7.5	20.0	11.2	5.0	7.5	4.5	0.5	0.6	0.6	1.9	0.0
2009	5.8	7.4	11.3	7.9	3.0	5.9	2.9	5.3	0.8	0.0	1.3	2.0
2010	6.2	12.5	7.7	13.0	7.2	8.2	6.7	3.3	4.1	0.1	0.2	2.7
2011	7.0	10.1	16.1	7.3	6.6	12.3	7.7	2.6	1.4	1.4	0.0	1.3
2012	4.8	10.2	7.7	13.4	6.5	15.4	4.0	2.7	2.0	0.1	0.3	0.3
2013	12.3	16.8	16.6	2.1	4.0	3.5	5.3	5.9	1.2	0.2	1.5	12.2
2014	1.4	6.1	2.9	4.7	11.4	13.0	5.8	3.1	1.4	0.6	0.4	1.6
2015	9.0	7.1	11.7	6.0	8.9	6.3	2.1	1.3	0.9	0.2	1.1	1.5
MIN	0.3	3.2	2.8	1.1	1.1	1.2	2.0	0.4	0.0	0.0	0.0	0.0
MAX	13.0	25.9	27.6	21.8	25.9	15.4	13.8	6.1	5.6	2.4	3.2	12.2
MEAN	5.86	11.98	12.19	11.05	8.71	8.12	5.24	3.14	1.97	0.53	0.72	2.07

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


SECO – Sain Creek Precipitation Station
Monthly Precipitation (inches)
30
20
10
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record:
1981–2015)
Maximum
Mean
Minimum
WY 2015


SECO – Sain Creek Precipitation Station
Total Annual Precipitation (inches/water year)
120
80
40
0
mean value
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Water Year

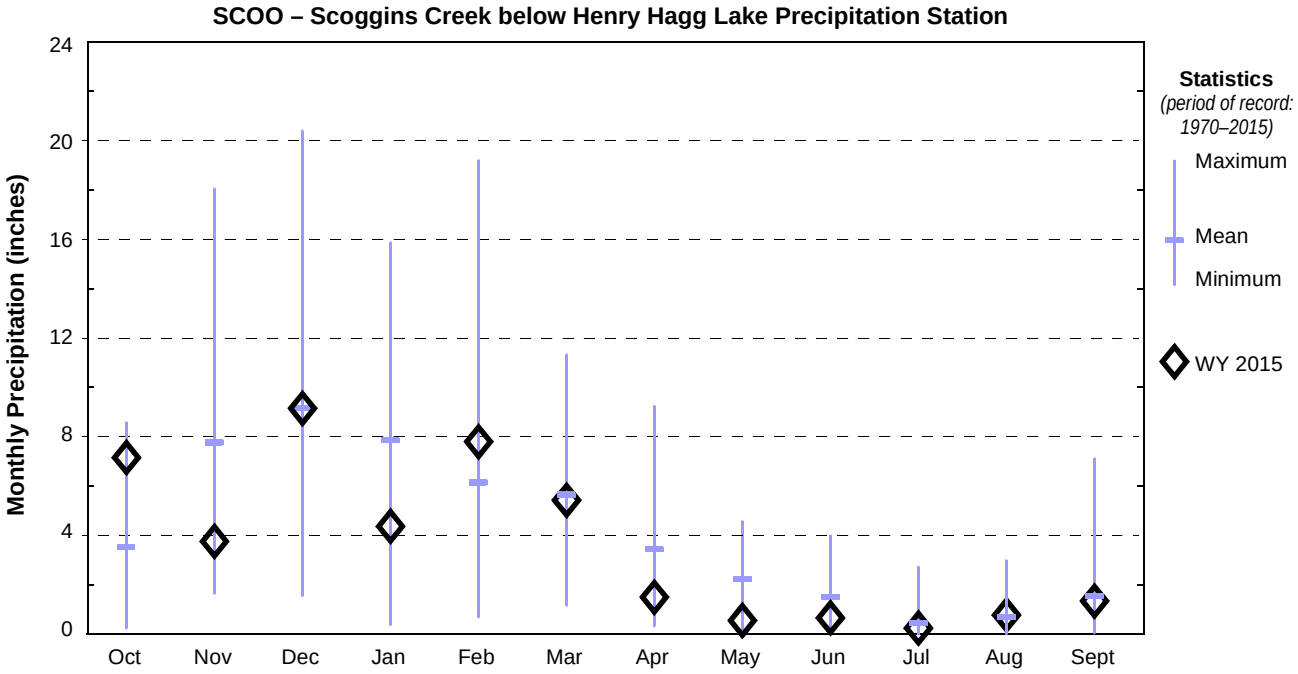
SCOO – SCOGGINS CREEK BELOW HENRY HAGG LAKE PRECIPITATION STATION

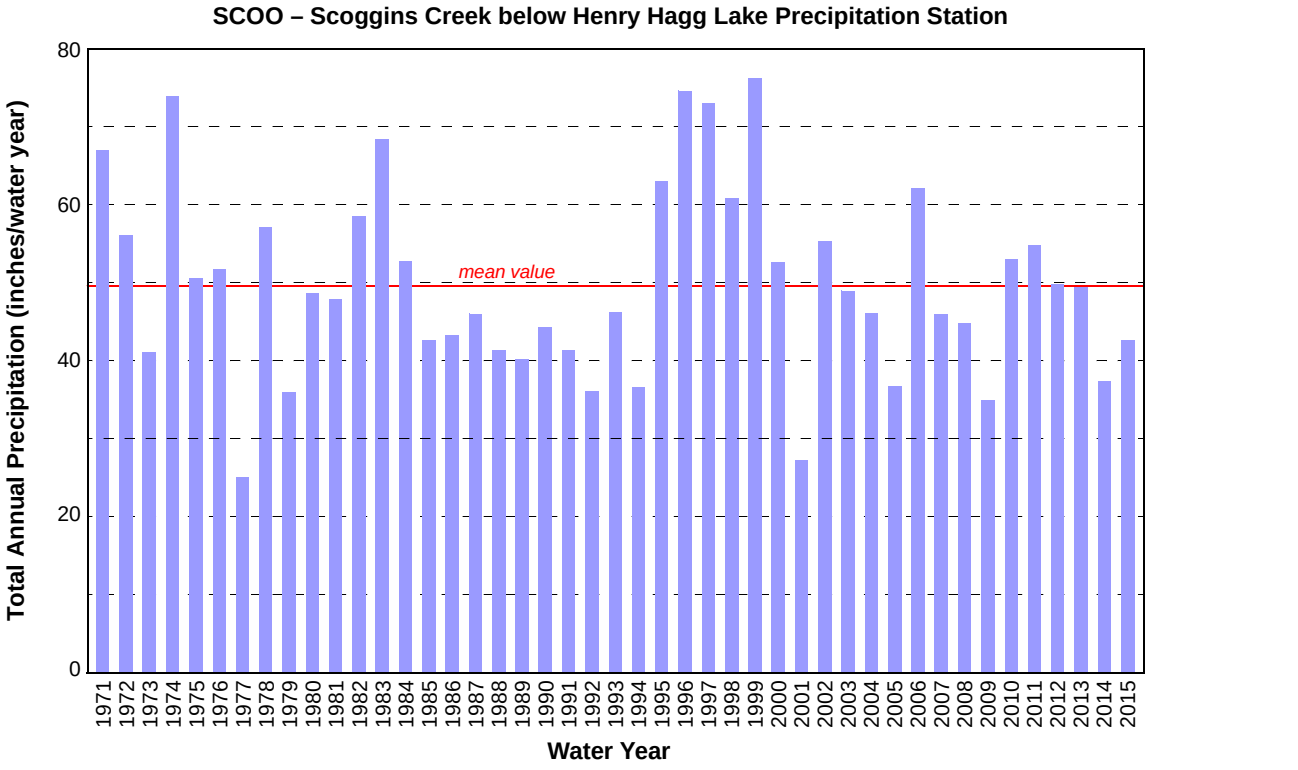
Elevation: 187.5 ft
Latitude: 45 28 10 Longitude: 123 11 56

Source Agency: Tualatin Valley Irrigation District
data not available online

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1970			8.53	15.85	6.30	3.47	3.49	1.27	0.77	0.01	0.00	1.10
1971	4.40	6.86	16.85	10.82	5.60	10.30	3.96	1.54	2.03	0.14	0.52	3.92
1972	4.02	8.68	12.12	10.20	5.05	6.79	3.92	0.92	0.58	0.28	0.25	3.12
1973	0.72	6.31	12.28	6.44	2.36	3.75	2.15	1.19	1.37	0.04	0.86	3.54
1974	3.82	18.05	14.64	12.46	7.92	9.31	3.98	1.31	0.86	1.38	0.02	0.06
1975	1.33	8.02	9.94	10.45	8.11	5.71	2.00	2.12	0.67	0.47	1.72	0.03
1976	6.69	6.38	9.50	7.68	8.25	5.98	1.81	1.63	0.48	0.70	1.80	0.69
1977	1.26	1.65	1.54	1.05	3.37	5.33	0.32	2.50	1.11	0.41	2.99	3.42
1978	2.76	8.11	13.47	7.92	6.66	2.47	5.04	2.95	1.00	0.65	2.11	3.94
1979	0.81	4.29	3.77	3.16	9.75	3.30	2.83	2.99	0.68	0.15	1.71	2.42
1980	6.69	4.25	9.21	8.30	7.13	4.09	4.38	1.10	1.81	0.22	0.05	1.37
1981	1.76	8.71	11.80	3.60	6.07	3.22	2.88	2.67	3.14	0.08	0.06	3.77
1982	5.55	6.77	13.00	7.21	8.43	4.85	6.45	0.51	1.41	0.37	1.46	2.49
1983	5.82	6.90	13.00	8.13	13.46	9.93	2.88	1.54	2.10	2.73	1.19	0.67
1984	1.34	15.16	7.91	3.09	7.92	4.81	4.05	3.95	3.34	0.00	0.00	1.13
1985	5.16	14.86	4.88	0.37	4.03	5.22	1.50	0.73	2.58	0.41	0.68	2.17
1986	4.48	4.55	2.93	9.23	8.42	4.13	2.57	2.65	0.59	1.07	0.00	2.60
1987	3.43	7.85	5.96	8.19	6.67	8.51	1.80	2.10	0.31	0.79	0.11	0.23
1988	0.23	3.09	12.51	9.46	1.67	4.50	3.32	2.78	2.59	0.15	0.09	0.89
1989	0.27	12.19	4.64	4.61	4.59	8.21	1.26	1.63	0.89	0.48	0.83	0.55
1990	2.74	4.39	3.52	13.00	8.87	2.60	2.20	3.01	2.02	0.26	1.18	0.49
1991	4.35	4.49	3.87	4.69	4.72	5.38	9.03	2.29	1.44	0.22	0.54	0.23
1992	1.80	6.31	5.74	7.72	4.66	1.16	5.63	0.09	0.71	0.42	0.35	1.47
1993	2.84	5.94	8.85	6.25	1.21	5.40	6.71	3.95	2.26	2.59	0.17	0.04
1994	1.21	1.92	9.97	6.47	7.71	3.41	2.49	0.96	1.30	0.00	0.13	0.98
1995	4.94	9.30	11.54	12.00	5.36	7.88	4.53	1.47	2.44	0.58	1.01	1.89
1996	3.70	12.24	12.17	11.53	13.61	2.81	9.23	4.49	1.59	0.58	0.34	2.32
1997	5.44	8.73	20.40	10.71	2.98	9.22	3.38	2.68	3.34	0.29	1.28	4.52
1998	8.57	9.32	4.41	14.18	9.08	6.26	2.31	4.56	0.96	0.24	0.00	0.91
1999	4.51	15.20	13.27	11.84	19.20	6.25	1.77	2.15	0.93	0.08	0.96	0.06
2000	3.13	12.68	9.50	9.02	6.51	4.08	1.40	2.94	2.26	0.03	0.19	0.81
2001	3.24	3.08	5.11	2.30	2.36	3.05	2.19	2.20	1.79	0.23	1.12	0.52
2002	3.28	12.10	11.86	11.36	4.11	5.84	2.79	1.58	1.46	0.13	0.19	0.57
2003	0.73	4.37	13.26	9.33	4.20	9.29	5.17	0.86	0.20	0.01	0.62	0.86
2004	3.34	5.26	9.92	8.84	5.96	3.11	3.12	1.63	0.90	0.00	2.01	2.00
2005	4.60	2.75	4.95	4.92	0.70	7.73	3.34	4.52	1.99	0.38	0.39	0.38
2006	5.54	8.57	12.92	15.72	4.10	6.13	3.63	2.96	1.53	0.15	0.00	0.75
2007	0.83	17.64	7.76	4.37	6.42	2.79	2.15	0.90	0.76	0.69	0.58	0.99
2008	3.91	4.68	13.42	8.69	3.30	5.03	2.50	0.92	1.25	0.02	0.98	0.09
2009	2.89	6.29	4.58	6.36	2.20	4.13	1.99	3.95	0.76	0.21	0.66	0.82
2010	3.73	8.95	5.11	10.29	5.16	5.72	5.79	3.20	3.04	0.36	0.05	1.54
2011	4.53	7.24	12.96	4.99	4.78	9.67	5.35	2.96	0.78	1.11	0.00	0.35
2012	2.29	8.12	3.93	9.33	4.53	11.32	2.99	2.94	3.98	0.25	0.02	0.04
2013	6.95	9.95	11.78	1.19	2.35	2.61	1.93	3.79	0.94	0.00	0.79	7.10
2014	1.04	3.33	2.06	3.28	8.96	9.39	4.56	2.01	0.94	0.33	0.10	1.37
2015	7.15	3.75	9.16	4.36	7.79	5.42	1.49	0.54	0.65	0.23	0.77	1.33
MIN	0.23	1.65	1.54	0.37	0.70	1.16	0.32	0.09	0.20	0.00	0.00	0.03
MAX	8.57	18.05	20.40	15.85	19.20	11.32	9.23	4.56	3.98	2.73	2.99	7.10
MEAN	3.51	7.76	9.14	7.85	6.14	5.64	3.44	2.21	1.49	0.43	0.67	1.53

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


SCOO – Scoggins Creek below Henry Hagg Lake Precipitation Station
Monthly Precipitation (inches)
24
20
16
12
8
4
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record: 1970–2015)
Maximum
Mean
Minimum
WY 2015


SCOO – Scoggins Creek below Henry Hagg Lake Precipitation Station
Total Annual Precipitation (inches/water year)
80
60
40
20
0
mean value
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Water Year

DLLP – DILLEY PRECIPITATION STATION (ID# 352325)

Elevation: 170 ft
Latitude: 45 29 Longitude: 123 07

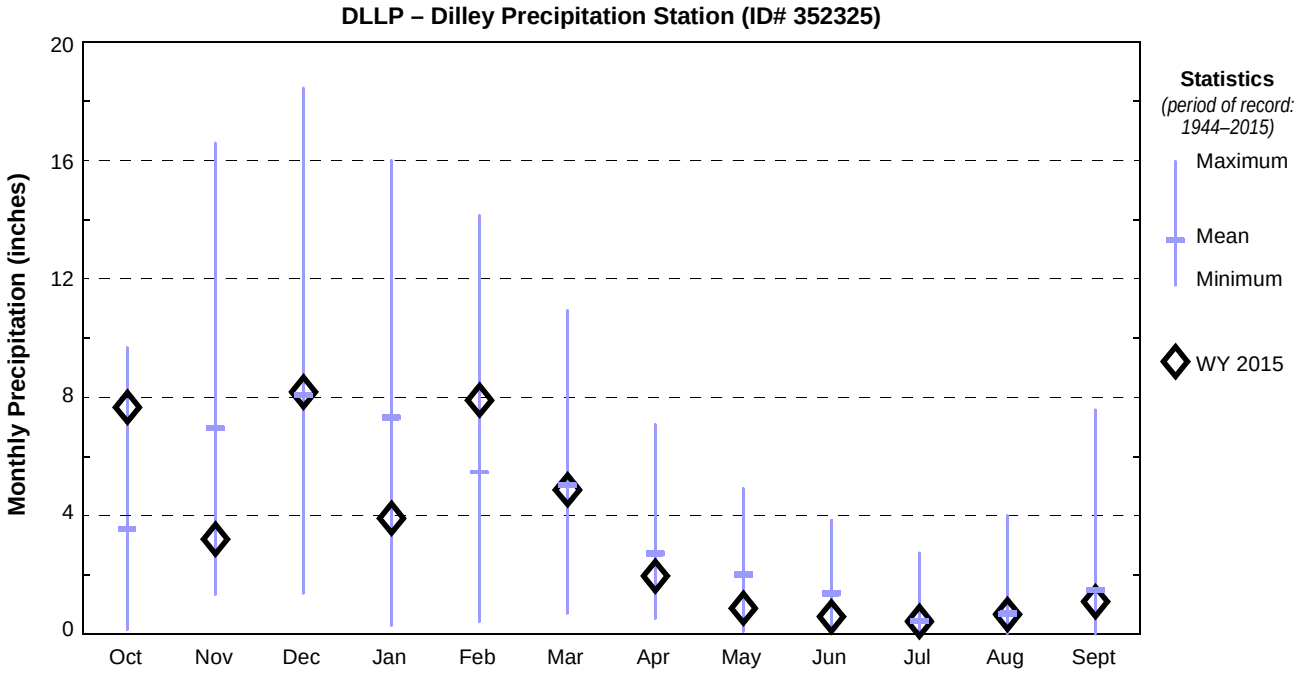
Source Agency: Western Climatic Data Center
www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?or2325

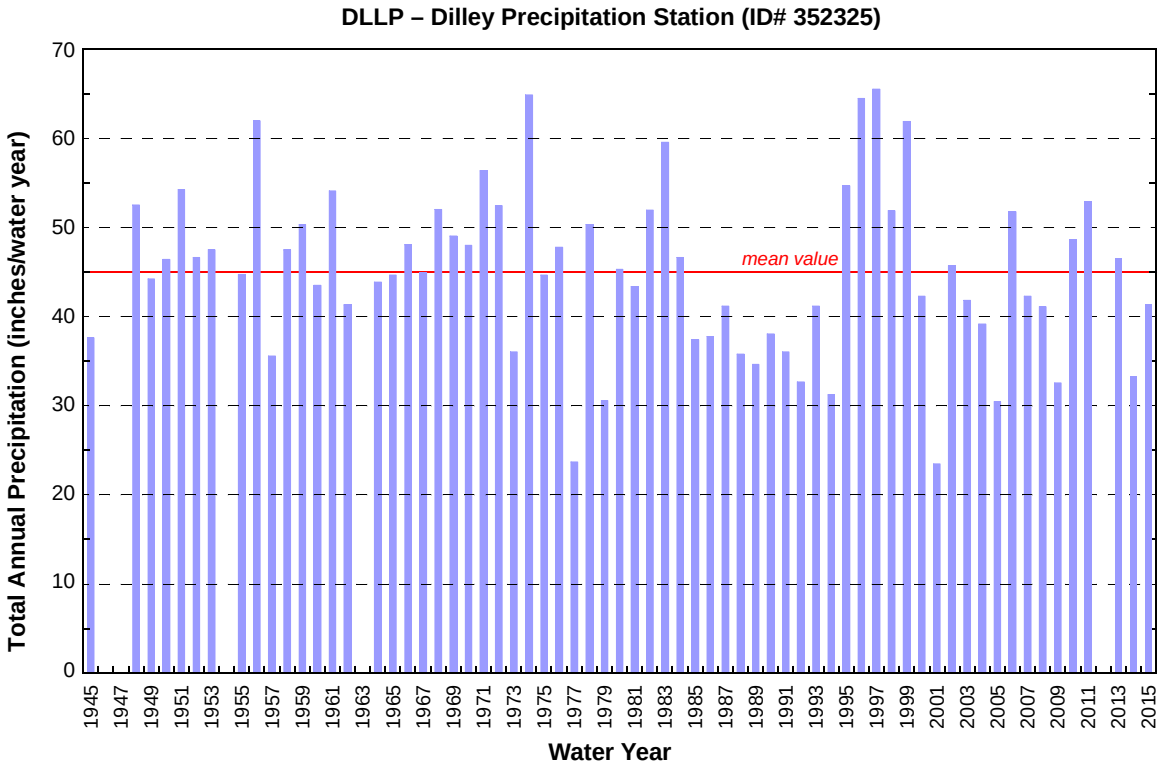
Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1944			4.08	5.12	3.98	3.22	3.93	0.94	0.74	1.06	0.20	2.80
1945	1.56	5.5	2.74	4.13	6.99	7.18	2.09	3.71	0.22	0.20	0.13	3.17
1946	1.45	11.82	7.56	7.21	7.61	6.09	1.41	1.51	1.74			
1947		10.27	5.38	5.47	4.46	4.69	1.30	0.09	3.12	0.86	0.50	1.28
1948	9.68	4.08	4.99	7.28	7.52	4.55	3.97	4.92	0.90	0.59	1.35	2.72
1949	2.52	8.69	10.59	2.06	11.83	2.99	0.55	2.98	0.55	0.82	0.03	0.58
1950	2.48	7.55	5.93	10.43	6.58	6.77	1.46	0.48	2.19	0.54	0.84	1.13
1951	9.62	9.55	8.93	11.03	5.01	4.74	0.88	1.67	0.15	0.11	0.15	2.38
1952	6.96	7.89	9.70	7.08	5.65	4.20	1.35	0.77	2.62	0.00	0.03	0.38
1953	0.61	2.29	9.28	14.98	4.86	5.36	2.74	2.87	1.25	0.10	1.51	1.60
1954	3.55	7.37	7.48	13.80	7.32	2.95	3.26	1.33	2.06	0.56		1.97
1955	3.92	7.61	7.66	4.41	4.36	5.55	4.56	0.77	1.78	1.41	0.00	2.65
1956	6.97	10.49	12.90	13.36	4.43	7.27	0.64	1.42	1.29	0.03	1.32	1.84
1957	4.83	1.98	4.69	3.02	5.77	7.09	2.09	3.03	1.52	0.27	0.47	0.75
1958	3.55	3.77	10.90	9.29	8.50	2.62	4.24	1.05	2.96	0.02	0.00	0.59
1959	2.34	8.74	6.09	12.18	5.10	4.42	1.76	2.55	2.57	0.92	0.08	2.75
1960	2.71	4.44	4.86	6.56	6.94	7.27	4.65	4.37	0.43	0.00	0.74	0.53
1961	4.24	10.95	3.64	7.05	11.15	10.02	2.94	2.36	0.24	0.48	0.52	0.46
1962	5.98	4.95	7.67	1.61	4.14	5.78	4.79	2.43	0.44	0.00	1.43	2.08
1963		11.23	3.48	1.91	5.39	6.65	4.03	2.82	1.94	1.01	1.64	1.42
1964	3.68	7.10	5.24	16.01	1.47	5.23	1.34	0.85	1.53	0.66	0.54	0.23
1965	1.87	9.80	14.38	9.04	2.72	0.69	2.21	1.14	0.91	1.02	0.87	0.00
1966	1.92	8.73	9.87	9.62	2.67	8.47	0.66	1.28	1.84	1.10	0.46	1.39
1967	3.62	6.98	11.57	10.14	1.83	6.07	2.63	0.64	0.76	0.00	0.00	0.65
1968	6.35	3.28	7.17	7.94	9.00	5.53	1.41	3.01	2.10	0.11	4.01	2.08
1969	5.45	7.48	12.91	9.61	4.33	1.21	2.19	1.72	2.01	0.02	0.00	2.14
1970	4.64	3.26	11.18	14.21	5.81	3.12	2.64	1.26	0.57	0.01	0.00	1.26
1971	4.01	5.89	14.28	8.96	4.74	8.29	3.68	1.22	1.61	0.13	0.36	3.19
1972	3.21	8.35	10.45	8.19	4.90	7.32	4.41	1.39	0.56	0.28	0.25	3.12
1973	0.61	4.78	11.33	5.37	2.18	3.40	1.57	1.40	1.27	0.05	0.76	3.30
1974	3.36	16.59	12.01	11.25	6.75	8.51	2.96	1.46	0.65	1.25	0.00	0.07
1975	1.32	7.50	8.64	8.99	7.00	4.86	1.75	1.94	0.62	0.44	1.60	0.00
1976	6.42	5.16	8.59	6.85	7.20	5.54	2.31	1.30	0.39	0.82	2.41	0.79
1977	1.30	1.32	1.60	1.05	2.98	4.46	0.51	2.50	1.12	0.60	3.07	3.18
1978	2.94	7.21	11.39	7.37	5.92	2.27	3.70	2.67	0.99	0.99	1.65	3.23
1979	0.71	3.85	3.77	3.06	8.00	2.49	2.41	2.07	0.58	0.13	0.94	2.54
1980	6.67	3.93	7.50	8.14	6.25	4.02	3.70	1.21	2.24	0.22	0.06	1.36
1981	1.63	8.35	11.43	2.65	5.17	2.98	2.17	1.96	3.00	0.15	0.05	3.83
1982	5.90	5.89	12.15	5.82	7.75	3.89	4.83	0.44	1.31	0.36	1.24	2.40
1983	4.87	5.36	11.31	7.40	12.20	8.23	2.49	1.40	1.65	2.74	1.38	0.54
1984	1.32	13.07	6.87	2.70	5.95	4.29	3.95	3.36	3.88	0.00	0.00	1.21
1985	4.63	12.83	3.87	0.27	3.18	4.56	1.20	0.36	2.94	0.45	1.45	1.63
1986	3.97	3.95	2.77	8.38	7.35	3.81	1.59	1.99	0.37	0.85	0.00	2.74
1987	3.31	6.52	5.47	8.25	5.18	7.47	1.72	1.85	0.19	0.85	0.15	0.20
1988	0.20	3.66	10.41	8.14	1.16	3.67	2.6	2.23	2.27	0.07	0.17	1.16
1989	0.14	10.98	3.81	4.14	3.51	7.05	0.81	1.62	0.78	0.36	0.93	0.51
1990	2.47	4.02	3.47	10.42	7.14	2.08	1.71	2.98	1.82	0.27	0.93	0.72
1991	4.14	4.15	3.36	3.97	4.46	5.07	6.36	2.19	1.39	0.29	0.39	0.24
1992	1.91	6.26	4.91	6.62	3.97	1.19	4.79	0.07	0.80	0.31	0.51	1.28
1993	2.79	5.44	7.42	5.39	0.78	5.00	6.76	3.79	1.95	1.76	0.08	0.00
1994	1.26	1.49	9.12	5.67	6.45	3.14	1.41	0.89	0.95	0.00	0.24	0.58
1995	4.64	8.12	10.29	10.56	5.02	6.53	3.74	1.29	1.76	0.45	0.49	1.74
1996	3.41	9.78	10.09	9.69	12.68	2.46	7.09	4.84	1.12	0.60	0.26	2.43
1997	5.37	8.05	18.46	9.63	2.51	8.29	2.98	2.65	2.38	0.47	1.38	3.33
1998	6.58	8.36	3.54	12.10	7.66	5.20	1.76	4.82	1.05	0.09	0.00	0.73
1999	3.24	13.00	10.81	10.29	14.15	4.85	1.90	1.71	0.76	0.02	1.14	0.04
2000	2.55	10.10	7.10	7.81	5.46	3.25	1.52	2.15	1.21	0.00	0.22	0.89
2001	3.09	2.46	4.20	2.17	1.98	2.25	1.72	1.60	1.84	0.32	1.27	0.54
2002	2.91	10.26	10.66	9.00	3.61	4.04	1.93	1.14	1.32	0.19	0.07	0.57
2003	0.59	3.35	12.22	8.61	3.69	7.41	4.24	0.46	0.07	0.01	0.32	0.79
2004	2.87	4.10	9.01	7.70	5.21	2.32	2.24	1.25	1.21	0.00	1.66	1.56
2005	3.80	2.53	3.89	4.25	0.41	5.97	2.79	4.26	1.84	0.29	0.13	0.24
2006	4.16	7.58	11.79	14.09	3.38	4.21	2.58	2.26	0.92	0.17	0.00	0.63
2007	1.01	15.05	8.03	4.03	4.62	2.48	2.32	1.22	0.83	0.82	0.63	1.21
2008	3.80	4.35	10.41	7.03	2.93	4.66	2.91	2.72	0.97	0.00	0.96	0.32
2009	2.42	6.01	4.85	5.53	2.04	3.43	1.72	3.53	0.23	0.17	1.29	1.32
2010	3.67	8.41	4.48	8.95	4.91	5.26	4.82	3.36	3.03	0.16	0.08	1.50

DLLP – DILLEY PRECIPITATION STATION (ID# 352325) – CONTINUED

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2011	4.00	7.00	13.55	5.63	4.36	8.93	4.62	2.47	0.84	0.98	0.07	0.42
2012	2.56	8.00				10.95	2.54	2.3	2.48	0.41	0.07	0.04
2013	5.85	8.87	11.15	1.49	2.17	2.38	1.66	3.66	1.17	0.00	0.54	7.57
2014	0.85	2.92	1.37	2.87	7.64	8.69	3.98	1.80	1.05	0.37	0.54	1.23
2015	7.66	3.21	8.18	3.91	7.9	4.87	1.96	0.87	0.59	0.43	0.66	1.09
MIN	0.14	1.32	1.37	0.27	0.41	0.69	0.51	0.07	0.07	0.00	0.00	0.00
MAX	9.68	16.59	18.46	16.01	14.15	10.95	7.09	4.92	3.88	2.74	4.01	7.57
MEAN	3.55	6.96	8.05	7.31	5.46	5.02	2.72	2.01	1.37	0.44	0.67	1.48

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.





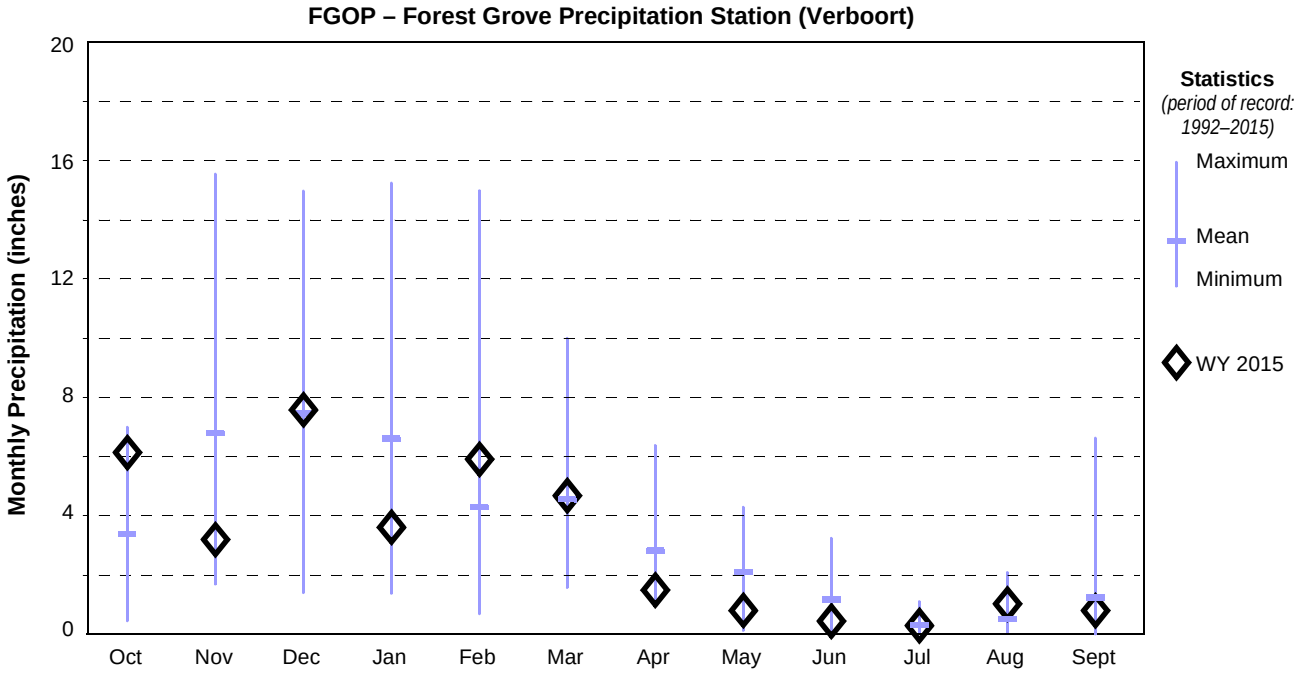
FGOP – FOREST GROVE PRECIPITATION STATION (VERBOORT)

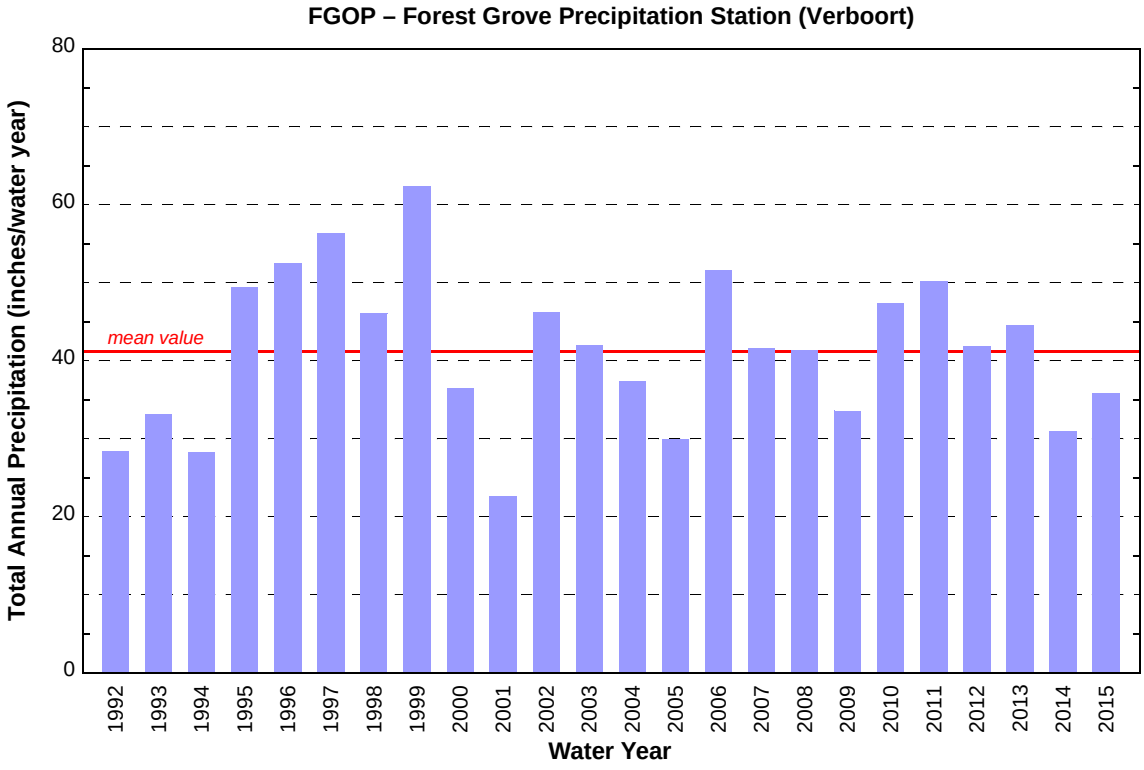
Elevation: 180 ft
Latitude: 45 33 11 Longitude: 123 05 01

Source Agency: US Bureau of Reclamation – Agrimet
http://www.usbr.gov/pn/agrimet/wxdata.html

Water Year*	Total Monthly Precipitation (inches)											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1992	1.50	5.10	3.68	5.93	3.56	1.56	4.35	0.10	0.94	0.26	0.28	1.08
1993	2.41	4.17	6.00	3.20	2.22	4.15	4.88	4.22	0.57	1.09	0.14	0.00
1994	1.08	1.68	7.61	4.95	5.75	2.34	1.49	1.31	1.04	0.02	0.23	0.77
1995	6.26	7.51	7.56	9.72	4.05	5.78	3.09	1.57	1.23	0.53	0.50	1.62
1996	3.08	11.72	8.55	9.06	3.63	2.33	6.37	4.14	0.85	0.48	0.26	1.99
1997	4.53	7.99	14.96	7.64	1.78	7.76	3.27	1.83	1.80	0.18	1.32	3.25
1998	6.99	7.08	3.47	9.12	7.20	4.57	1.44	4.28	1.06	0.07	0.00	0.80
1999	3.44	13.67	9.83	9.65	14.97	5.39	1.69	1.68	0.98	0.35	0.66	0.02
2000	2.78	7.84	5.89	7.72	3.99	2.37	1.05	2.06	1.58	0.09	0.13	0.92
2001	3.08	2.63	4.30	1.66	1.74	2.13	1.68	1.07	2.11	0.44	1.15	0.63
2002	2.79	11.22	9.74	9.30	3.45	4.60	1.61	1.16	1.20	0.20	0.03	0.90
2003	0.43	3.02	12.24	10.06	3.18	6.19	5.13	0.55	0.07	0.00	0.35	0.73
2004	3.49	4.62	7.87	6.09	5.23	1.93	2.55	1.10	0.81	0.00	2.08	1.50
2005	3.80	2.78	4.38	2.47	0.67	6.00	2.60	4.08	1.56	0.21	0.11	1.28
2006	4.32	7.44	11.35	15.24	2.15	4.38	2.19	2.91	0.69	0.20	0.07	0.58
2007	0.95	15.55	8.57	3.88	4.24	2.45	2.12	0.78	0.59	0.57	0.50	1.32
2008	3.14	4.51	13.01	8.81	2.70	4.13	2.46	0.71	0.78	0.01	0.97	0.11
2009	2.66	5.69	4.73	6.06	1.91	3.69	1.77	3.43	1.17	0.13	1.06	1.28
2010	3.78	7.70	5.34	7.44	4.78	5.28	4.24	3.37	3.23	0.51	0.23	1.46
2011	4.39	7.42	11.53	5.08	5.52	7.35	4.38	2.37	0.62	1.05	0.00	0.48
2012	2.75	8.28	2.66	7.25	4.17	10.00	2.16	2.15	2.22	0.08	0.08	0.02
2013	6.25	9.20	9.56	1.36	2.24	2.08	1.67	3.36	1.44	0.00	0.78	6.63
2014	0.68	2.96	1.39	2.98	7.57	7.73	3.70	1.30	0.87	0.29	0.10	1.30
2015	6.13	3.19	7.45	3.61	5.90	4.67	1.48	0.80	0.44	0.28	1.02	0.79
MIN	0.43	1.68	1.39	1.36	0.67	1.56	1.05	0.10	0.07	0.00	0.00	0.00
MAX	6.99	15.55	14.96	15.24	14.97	10.00	6.37	4.28	3.23	1.09	2.08	6.63
MEAN	3.36	6.79	7.57	6.60	4.28	4.54	2.81	2.10	1.16	0.29	0.50	1.23

*Water Year (WY) begins October 1st of the previous calendar year and ends September 30th of current year.


FGOP – Forest Grove Precipitation Station (Verboort)
Monthly Precipitation (inches)
20
16
12
8
4
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Statistics
(period of record:
1992–2015)
Maximum
Mean
Minimum
WY 2015


FGOP – Forest Grove Precipitation Station (Verboort)
Total Annual Precipitation (inches/water year)
80
60
40
20
0
mean value
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Water Year

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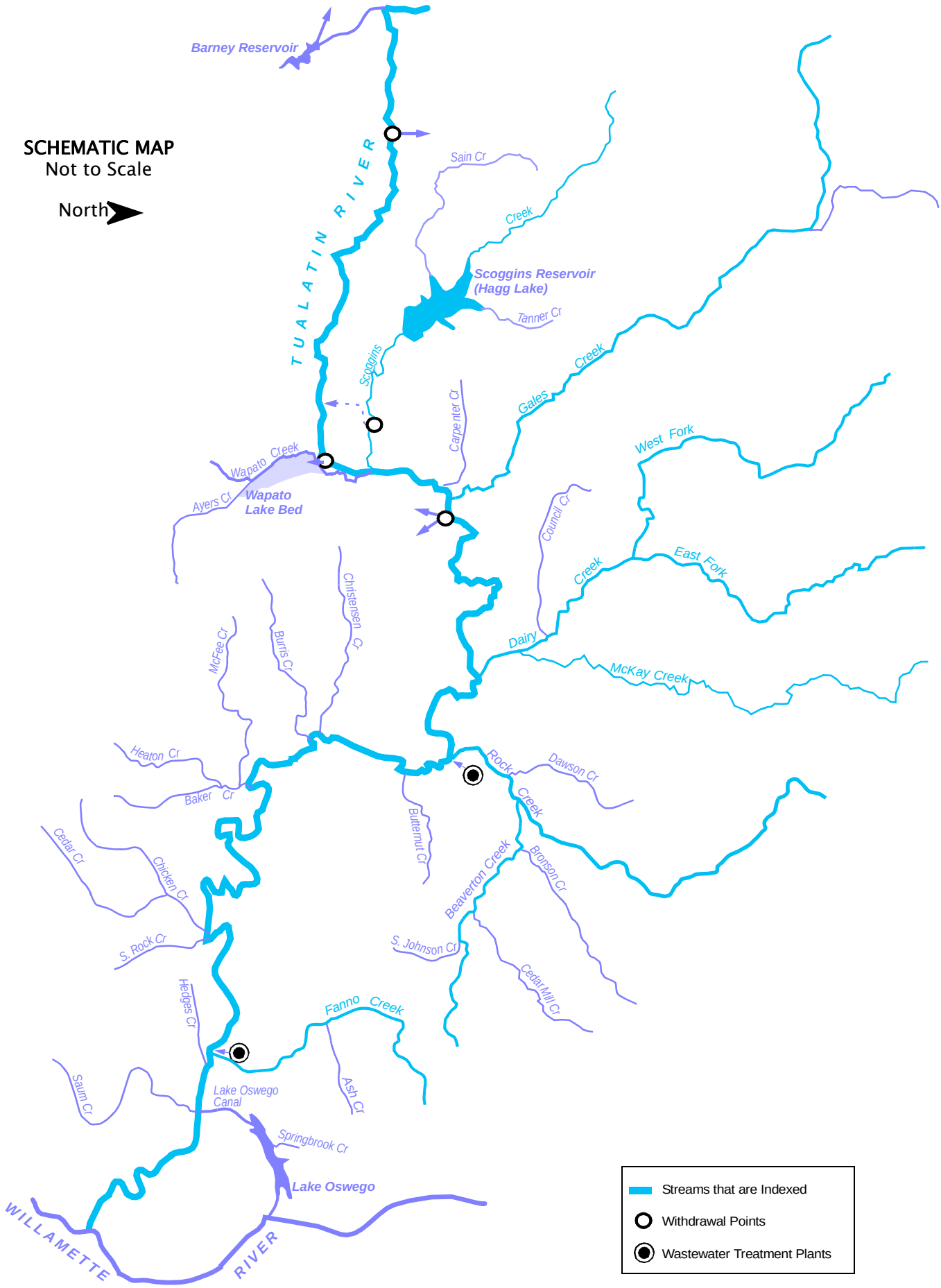
Appendix I

River Mile Indices

STREAMS INDEXED



STREAMS INDEXED

TUALATIN RIVER — RIVER MILE INDEX

HUC: 211400300

[Elevation measured relative to 0.00 gage datum; Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description	Drainage Area (square miles)	Elevation (feet)
0.00		Mouth of Tualatin River at Willamette River (LB of Willamette River @ River Mile 28.5)	712	
0.20		Weiss Bridge – Petes Mtn Rd.		
1.60	RB	Fields Creek (HUC: 02114003000010)		
1.69		State Hwy 212 Bridge (Fields Bridge)		
1.75	LB	West Linn Stream Gage Station – USGS #14207500	706	85.61
2.40	LB	Tate Creek (HUC: 02114003000020)		
3.45		Lake Oswego Corp. Diversion Dam		
4.25		Interstate 205 Bridge		
4.56	LB	Wilson Creek (HUC: 02114003000080)		
5.34	LB	Boat Launch		
5.36	LB	Shipley Creek (HUC: 02114003000100)		
5.38		Shipley Bridge– Stafford Rd. NWS Wire Weight Gage		
5.62	LB	Pecan Creek (HUC: 02114003000120)		
6.02	RB	Athey Creek (HUC: 02114003000123)		
6.70	RB	Saum Creek (HUC: 02114003000130)		
6.70	LB	Oswego Canal Diversion River Elevation Recording Gage #14206990, Headgate, and Canal Recording Gage #14207000		
7.36	LB	Boat Launch – Dogwood Drive		
7.67	RB	Browns Ferry Park Canoe Launch		
7.83		Clackamas County – Washington County Boundary (Underground Cable Crossing Sign)		
8.18		Interstate 5 Bridge		
8.60		Boones Ferry Road Bridge		
8.64	RB	Hedges Creek (HUC: 02114003000150)		
8.90	RB	Tualatin Park Boat Launch		
8.91	RB	Southern Pacific RR Bridge Tualatin River at Tualatin Elevation Recording Station #14206956 (formerly #14206960)		
9.32	LB	Fanno Creek (HUC: 02114003000180) *[Index on page I-13]*	26.8	
9.33	LB	Durham Wastewater Treatment Plant Outfall (9.2 on NPDES permit)		
9.34		Oregon Electric RR Bridge		
9.80	LB	Cook Park Boat Launch		
11.50	LB	US Hwy. 99W Bridge (Pacific Highway) Canoe Launch(access from southeast of bridge)		
12.68		Overhead BPA Transmission Line; Vancouver–Eugene		
12.80	LB	Rivermeade Boat Launch (Private)		
15.20	RB	Rock Creek–South (HUC: 02114003000250)	13.7	
15.50	RB	Chicken Creek (HUC: 02114003000270)		
16.09	RB	Chicken Creek Drainage Ditch		
16.22	RB	Shamberg Bridge (Elsner Road) Rated Staff Gage for Stream Flow		

TUALATIN RIVER — RIVER MILE INDEX

HUC: 211400300

[Elevation measured relative to 0.00 gage datum; Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description	Drainage Area (square miles)	Elevation (feet)
21.12		Overhead BPA Transmission Line; Big Eddy–Keeler		
26.90		State Hwy. 210 bridge (Scholls)		
28.20	RB	McFee Creek (HUC: 02114003000310)		
30.76	LB	Unnamed Stream (HUC: 02114003000320) (Jacktown)		
31.62	RB	Burris Creek (HUC: 02114003000330)		
31.92	RB	Christensen Creek (HUC: 02114003000350)		
33.30		Harris Bridge (State Highway 208)	568	100.42
	LB	Farmington Recording Stream Gage #14206500		
35.68	LB	Butternut Creek (HUC: 02114003000380)		
37.38	LB	Gordon Creek (HUC: 02114003000400)		
38.08	LB	Rock Creek Wastewater Treatment Plant Outfall (37.7 on NPDES permit)		
38.09	LB	Rock Creek (HUC: 02114003000420	74.6	
		Beaverton Creek (HUC:02114003000420060)	36	
38.44	LB	Rood Bridge Small Watercraft Launch		
		Rood Bridge Road Bridge		
	LB	Recording Stream Gage #14206295		105.16
40.44	RB	Davis Creek (HUC: 02114003000430)		
41.64		Minter Bridge Road Bridge		
43.88	LB	Jackson Slough		
		Jackson Bottom Wetlands		
	LB	Hillsboro Wastewater Treatment Plant Effluent Outfall (42.9 and 43.3 on NPDES permit)		
44.40		State Highway 219 Bridge		
	RB	Recording Stream Gage #14206241		
44.73	LB	Dairy Creek (HUC: 02114003000480) *[Index on page I-9]*	226	
		McKay Creek (LB) (HUC: 02114003000480020) *[Index on page I-10]*	63.4	
		East Fork Dairy Creek (HUC: 02114003000480080) *[Index on page I-11]*		
		West Fork Dairy Creek (HUC: 02114003000480090) *[Index on page I-12]*		
51.54		Golf Course Road Bridge		
	RB	Golf Course Recording Stream Gage #14204800		
53.74		LaFollett Road (Bridge removed)		
55.24	LB	Forest Grove Wastewater Treatment Plant Outfall (53.8 on NPDES permit)		
		Fern Hill Wetlands		
55.32		Fernhill Road Bridge		
56.10		Springhill Pump Plant Intake		
56.80	LB	Gales Creek (HUC: 02114003000560) *[Index on page I-8]*	78.6	
57.38	LB	Carpenter Creek (HUC: 02114003000580)		
57.84	LB	Dilley Creek (HUC: 02114003000600)		
58.04	LB	Johnson Creek (HUC: 02114003000602)		
58.82		Springhill Road Bridge	125	147.57
	LB	Tualatin River at Dilley Stream Gage; USGS #14203500		
59.02	LB	O'Neil Creek (HUC: 02114003000620)		
60.00	LB	Scoggins Creek (HUC: 02114003000640) *[Index on page I-7]*		
60.80	RB	Wapato Creek (HUC: –02114003000670)		
		Wapato Creek Improvement District Return Flow		

TUALATIN RIVER — RIVER MILE INDEX

HUC: 211400300

[Elevation measured relative to 0.00 gage datum; Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description	Drainage Area (square miles)	Elevation (feet)
62.00	RB	Wapato Improvement District Headgate)		
62.24		Southern Pacific RR Bridge		
62.25		State Highway 47 Bridge (Gaston) New Tualatin River at Gaston Recording Stream Gage #14202510		
62.30		Bates Road Bridge		
62.80	LB	Black Jack Creek (HUC: 02114003000700)		
62.90		Overhead BPA Transmission Line; Forest Grove–McMinnville		
63.13		TVID Patten Valley Pump Station Outfall #1		
63.87	RB	Discontinued Tualatin River at Gaston Recording Stream Gage	48.5	
64.26		TVID Patten Valley Pump Station Outfall #2		
65.34	RB	Williams Canyon (HUC: 02114003000730)		
65.90		Mt. Richmond Road Bridge		
67.30	LB	Hering Creek (HUC: 02114003000760)		
67.83		South Road Bridge (Cherry Grove)		
68.44	RB	Roaring Creek (HUC: 02114003000790)		
69.42		Little Lee Falls		
70.70	LB	Raines Bridge– Tualatin River below Lee Falls Rated Staff Gage for Stream Flow		
71.07		Lee Falls		
73.28		Haines Falls		
73.30	LB	City of Hillsboro Haines Falls Intake		
74.00	LB	Lee Creek (LB–02114003000860)		
74.05	RB	Patten Creek (HUC: 02114003000870)		
75.70	LB	Sunday Creek (HUC: 02114003000900)		
76.60	LB	Maple Creek (HUC: –02114003000940)		
76.95		Ki–A–Cut Falls		
78.00	RB	Barney Reservoir Aqueduct Outfall		
79.3+		Headwaters of Tualatin River		

FANNO CREEK — STREAM MILE INDEX

HUC: 2114003000180

[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code, ISWR= Instream Water Right]

River Mile	Bank	Description
0.00		Confluence with the Tualatin River (HUC: 02114003000) at River Mile 9.32
0.86		Oregon Electric RR Bridge
1.19		Durham Road Bridge USGS Gage #14206950
2.00	LB	Ball Creek (HUC: 02114003000180020)
2.12		Bonita Street Bridge – Rated Staff Gage
3.28		SW Hall Blvd Bridge
3.95		SW Ash Avenue Bridge
4.28		SW Main St Bridge
4.30		State Hwy 99W Bridge
4.49		SW Grant Ave Bridge
5.07		SW Tiederman Ave. Bridge
5.08	RB	Summer Creek (HUC: 02114003000180070) Rated Staff Gage at Fowler School
5.32		SW Tigard Ave Bridge
5.53		SW North Dakota St Bridge
5.54	LB	Ash Creek (HUC: 02114003000180080) Rated Staff Gage at Greenburg Road
6.38		Scholls Ferry Road Bridge
7.30		Tuckerwood – Rated Staff Gage
7.66		SW Hall Blvd Bridge
8.40		SW Denny Rd Bridge
8.60		Oregon Electric RR Bridge
8.70		State Hwy 217 Bridge
9.42		Scholls Ferry Road Bridge Rated Staff Gage
9.66		SW 92nd Ave Bridge
9.90		SW Bohmann Parkway Bridge
10.16		SW 86th Ave Bridge
10.78		SW Nicol Road Bridge
11.76		Olson Road Bridge
11.96	RB	Sylvan Creek (HUC: 02114003000180190)
11.98		SW Beaverton–Hillsdale Hwy (State Hwy 10)
12.10		Washington County – Multnomah County Line
12.58		SW 56th Ave Bridge USGS Gage #14206900
12.81		SW Shattuck Road Bridge
13.22		SW 45th Ave Bridge
13.23	RB	Ivey Creek (HUC: 02114003000180250)
13.32		SW 43rd Ave Bridge
13.38		SW 42nd Ave Bridge
13.48		SW 39th Ave Bridge
13.98		SW Beaverton–Hillsdale Hwy (State Hwy 10)
14.10		SW 30th Ave Bridge

ROCK CREEK — STREAM MILE INDEX

HUC: 2114003000420
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.8		River Road Bridge
1.2		Southern Pacific RR Bridge
1.2+		State Highway 8 Bridge – Rated Staff Gage for Stream Flow
2.4		SW Brookwood Avenue Bridge
3.1	RB	Dawson Creek
4.4	LB	Beaverton Creek
4.5		Baseline Road Bridge
4.9		NW Quatama Road Bridge – Rated Staff Gage for Stream Flow
5.5		Oregon Electric RR Bridge
5.7		NW 216th Avenue Bridge
6.7		NW Cornell Road Bridge
7.8		US Highway 26 Bridge
9.0		West Union Road Bridge – Rated Staff Gage for Stream Flow
9.3	RB	Holcomb Creek
10.0		NW 185th Avenue Bridge
10.9	LB	Abbey Creek
11.0		Germantown Road Bridge
11.9		Cornelius Pass Road Bridge
13.0		Old Cornelius Pass Road Bridge
14.1		Burlington Northern RR Bridge
15.1		Rated Staff Gage for Stream Flow
16.4		Rock Creek Road Bridge
16.5		Van Raden Reservoir
19.1		Headwaters

BEAVERTON CREEK — STREAM MILE INDEX

HUC: 2114003000420060
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Rock Creek (LB, HUC: 021140030004800802 60) @ River Mile 4.3
0.40		Southwest Baseline Road
1.16		Southwest 216th Avenue Road Bridge– Rated Staff Gage for Stream Flow
2.20	RB	Bronson Creek (HUC: 02114003000420060010)
3.32	RB	Willow Creek (HUC: 02114003000420060050)
4.90		Southwest 170th Avenue Road Bridge– Rated Staff Gage for Stream Flow
5.47	LB	Unnamed Stream (HUC: 02114003000420060096)
6.06	LB	Johnson Creek (HUC: 02114003000420060100)
6.30	LB	Unnamed Stream (HUC: 02114003000420060120)
6.66		Oregon Electric Railroad
7.45		Cedar Hills Boulevard
7.90	RB	Reasoners Creek (HUC: 02114003000420060130)
8.75+		Headwaters

DAIRY CREEK — STREAM MILE INDEX

HUC: 02114003000480
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Tualatin River (HUC: 0211400300) @ River Mile 44.73
1.65		Southern Pacific RR Bridge
2.06		State Highway 8 Bridge Dairy Creek at TV Hwy Recording Stream Gage #14206200
2.20		Oregon Electric RR Bridge
2.26	LB	McKay Creek (HUC: 02114003000480020)
3.53	RB	Council Creek (HUC: 02114003000480040)
6.02		Susbauer Road Bridge (County Road 196)
7.39		BPA Power Line Crossing
8.51		Cornelius–Schefflin Road Bridge (County Road 2161) Rated Staff Gage for Stream Flow
10.55		Confluence of East Fork Dairy Ck (HUC: 02114003000480080) & West Fork Dairy Ck (02114003000480090)

MC KAY CREEK — STREAM MILE INDEX

HUC: 2114003000480020
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Dairy Creek (HUC: 02114003000480) @ River Mile 2.26
1.31		Padgett Road Bridge (County Road 2245)
2.25		Hornecker Road Bridge (County Road 2393) Rated Staff Gage for Stream Flow
2.30		Southern Pacific RR Crossing
4.32		Glencoe Road Bridge (County Road A–146½) Rated Staff Gage for Stream Flow
4.46		BPA Transmission Line Crossing
5.34	LB	Waible Creek (HUC: 02114003000480020040)
6.30		NW Old Scotch Church Road Bridge (County Road A–66)
8.00		US Hwy 26 Bridge – Sunset Highway
9.36		NW West Union Road Bridge (County Road 2496) City of North Plains to West
9.38		Southern Pacific RR Crossing
10.94	LB	Jackson Creek (HUC: 02114003000480020100)
12.80		NW Shadybrook Road Bridge (County Road A–110)
15.56		NW Collins Road Bridge (County Road 1889) Rated Staff Gage for Stream Flow
16.56	RB	Brunswick Canyon (HUC: 02114003000480020179)
16.66	LB	East Fork McKay Creek (HUC: 02114003000480020180)
24.0+		Headwaters

EAST FORK DAIRY CREEK — STREAM MILE INDEX

HUC: 2114003000480080

[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code, ISWR= Instream Water Right]

River Mile	Bank	Description
0.00		Confluence with West Fork Dairy Creek (HUC: 02114003000480090) @ River Mile 10.56 of Dairy Creek (HUC: 02114003000480)
1.24		Roy Road Bridge (County Road A–159) Rated Staff Gage for Stream Flow
2.34		Port of Tillamook Bay RR Bridge
3.04	RB	Bledsoe Creek (HUC: 02114003000480080030)
3.20		Harrington Road Bridge (County Road 1989)
4.80		SP&S RR Bridge
5.56		US Highway 26 Bridges
6.91		Mountaindale Road Bridge (County Road 12)
6.97	LB	Baker Creek (HUC: 02114003000480080080)
8.44		Dairy Creek Road Bridge (County Road 2067) Rated Staff Gage for Stream Flow
8.55		East Fork Dairy Creek at Mountaindale, OR – Former USGS Gage #14205500 (10/40–9/51) Drainage Area = 43.0 square miles
9.62		NW Uebel Road Bridge (County Road 304)
12.50		Murphy Lane Bridge (Private) Rated Staff Gage for Stream Flow
12.82	RB	Big Canyon (HUC: 02114003000480080150)
13.00		***ISWR:*** C–59525 5/25/66
13.95	RB	Murtaugh Creek (HUC: 02114003000480080170)
14.04	LB	Meadow Brook Creek (HUC: 02114003000480080180)
14.17		Meacham Road Bridge (County Road 742)
15.55	LB	Plentywater Creek (HUC: 02114003000480080200) ***ISWR:*** C–59527 5/25/66
16.52	RB	Denny Creek (HUC: 02114003000480080210) ***ISWR:*** C–59526 5/25/66
16.56		Bacona Road Bridge (County Road 422) Snooseville Corner
17.21		Greener Road Bridge (County Road 1990)
17.34	LB	Rock Creek (HUC: 02114003000480080260)
17.50		Little Bend Park
17.60		Fern Flat Road Crossing (County Road 241)
18.15	LB	Panther Creek (HUC: 02114003000480080280)
18.31		Fern Flat Road Crossing (County Road 241)
18.84	RB	Roundy Creek (HUC: 02114003000480080290)
19.10	RB	Campbell Creek (HUC: 02114003000480080310)
21.30		Washington County – Columbia County Boundary
21.48		BPA Power Line Crossing
22.0+		Headwaters

WEST FORK DAIRY CREEK — STREAM MILE INDEX

HUC: 2114003000480090
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with East Fork Dairy Creek (HUC: 02114003000480080) @ River Mile 10.56 of Dairy Creek (HUC: 02114003000480)
1.96		Evers Road Bridge (County Road A–187) Rated Staff Gage for Stream Flow
2.09	RB	Lousignant Canal (HUC: 02114003000480090010)
2.82		State Highway 47 Bridge
5.28		Greenville Road Bridge (County Road A–159)
6.20		State Highway 6 Bridge
6.22	RB	Cedar Canyon Creek (HUC: 02114003000480090110)
7.53		Cedar Canyon Road Bridge (County Road 1938) City of Banks to SE
7.70		State Hwy 47 Bridge – Rated Staff Gage for Stream Flow West Fork Dairy Creek at Banks, OR –Former USGS Gage #14205000 (10/40 – 9/43) Drainage Area = 47.5 square miles
7.72		Port of Tillamook Bay RR Bridge
9.30		US Highway 26 Bridge
10.60		NW Green Mountain Road Bridge (County Road 127)
11.02	LB	Garrigus Creek (HUC: 02114003000480090180)
12.19		NW Turk Road Bridge (County Road 233)
12.36	RB	Kuder Creek (HUC: 02114003000480090190)
12.90		NW Pihl Road Bridge (County Road 1045) Community of Manning
13.33		Port of Tillamook Bay RR Bridge
13.48		Port of Tillamook Bay RR Bridge
13.58	LB	Witcher Creek (HUC: 02114003000480090200)
14.37		Port of Tillamook Bay RR Bridge
14.50		US Highway 26 Bridge
15.00		NW Fisher Road Bridge (County Road 394)
15.11	LB	Mendenhall Creek (HUC: 02114003000480090220)
15.58	RB	Burgholzer Creek (HUC: 02114003000480090230)
15.60		US Highway 26 Bridge
16.00		Community of Buxton – ½ mile east
17.02	LB	Williams Creek (HUC: 02114003000480090240)
17.98	RB	Cummings Creek (HUC: 02114003000480090250)
18.10		State Highway 47 Bridge
18.85		Port of Tillamook Bay RR Bridge
22+		Headwaters

GALES CREEK — STREAM MILE INDEX

HUC: 2114003000560

[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code, ISWR= Instream Water Right]

River Mile	RB	Description
0.00		Confluence with Tualatin River (HUC: 0211400300) @ River Mile 56.80 ***ISWR*: C–59523 5/25/66**
1.63		Southern Pacific RR Bridge
1.75		Forest Grove Bypass Bridge – State Highway 47 to State Highway 8
2.36		State Highway 47 Bridge Gales Creek Recording Stream Gage #14204530
3.66		Ritchey Road Bridge (County Road 461)
6.53	RB	Prickett Creek (HUC: 02114003000560090)
6.98		Stringtown Road Bridge (County Road A–176)
7.70	RB	Roderick Creek (HUC: 02114003000560110)
8.56		Roderick Road Bridge (County Road 395) Gales Creek near Forest Grove Oregon – Former USGS Gage #14204500 (10/40–9/56 & 10/70–9/81)
8.94	RB	Godfrey Creek (HUC: 02114003000560130)
9.22	LB	Kelly Creek (HUC: 02114003000560120)
10.68	RB	Clear Creek (HUC: 02114003000560150)
11.44	RB	Iler Creek (HUC: 02114003000560170)
11.46		NW Gales Creek Road (County Road 1312) Community of Gales Creek
11.47	RB	Fir Creek (HUC: 02114003000560190)
12.00		***ISWR:* C–59509 5/25/66 above this point**
12.36		Clapshaw Hill Road Bridge (County Road 2037) Rated Staff Gage for Stream Flow
12.40	LB	Little Beaver Creek (HUC: 02114003000560200)
		***ISWR:* C–59512 5/25/66**
12.92		Parson Road Bridge
14.44	RB	White Creek (HUC: 02114003000560210)
14.68		NW Wilson River Highway Bridge (State Highway 6)
15.74	RB	Lyda Creek (HUC: 02114003000560230)
16.26	RB	Bateman Creek (HUC: 02114003000560250)
17.50		Gales Creek near Gales Creek, OR – Former USGS Gage #1420400 (10/35–9/45 & 10/639/70)
18.00	LB	Beaver Creek (HUC: 02114003000560280) Community of Glenwood ***ISWR:* C–59524 5/25/66**
18.45		NW Timber Road Bridge (County Road 374)
18.65		Wilson River Highway Bridge (State Highway 6)
19.70		Wilson River Highway Bridge (State Highway 6)
19.88	LB	Coffee Creek (HUC: 02114003000560300)
20.07	LB	Finger Creek (HUC: 02114003000560305)
20.70	RB	South Fork Gales Creek (HUC: 02114003000560310) ***ISWR:* C–59514 5/25/66**
21.60	LB	North Fork Gales Creek (HUC: 02114003000560320) ***ISWR:* C–59513 5/25/66**
22.76	RB	Low Divide Creek (HUC: 02114003000560330)
		Gales Creek Forest Park
23.20		Gales Creek near Glenwood, OR – USGS Gage #14203750 (7/94 – present)

SCOGGINS CREEK — STREAM MILE INDEX

HUC: 2114003000640
[Abbreviations: RB= right bank, LB= left bank, HUC= Hydrologic Unit Code]

River Mile	Bank	Description
0.00		Confluence with Tualatin River (HUC: 0211400300) @ River Mile 60.00
0.94		RR Bridge
1.00		State Highway 47 Bridge
1.70		Old State Highway 47 Bridge
1.71		Scoggins Creek near Gaston, OR – Former USGS Gage #14203000 (10/1940 – 9/1974) Drainage Area = 43.3 square miles
4.80		Scoggins Creek below Henry Hagg Lake, near Gaston, OR – USGS Gage #14202980 (1/1975 –present) Drainage Area = 38.8 square miles
5.10		Scoggins Dam
7.00	RB	Sain Creek (HUC: 02114003000640170)
7.62	LB	Tanner Creek (HUC: 02114003000640200)
8.40	LB	Wall Creek (HUC: 02114003000640220)
9.00		Lake Loop Road Bridge
9.30		Scoggins Creek above Henry Hagg, near Gaston, OR – Gage #14202850 (10/1972 – present) Drainage Area = 15.9 square miles
10.52	LB	Parson Creek (HUC: 02114003000640240)
15.50	LB	Fisher Creek (HUC: 02114003000640300)