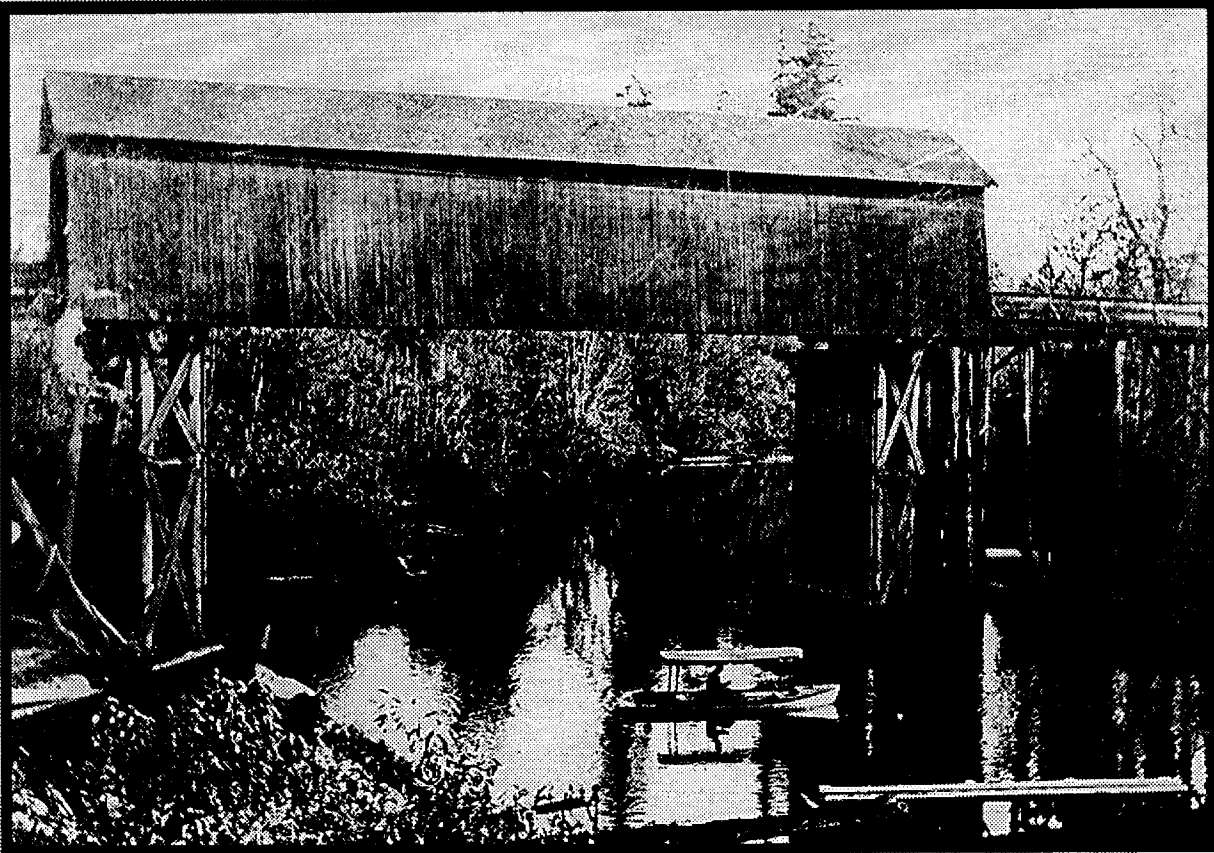


Tualatin River Flow Management Technical Committee



1997 Annual Report

prepared by



Unified Sewerage Agency

Table D
1997 Scoggins Reservoir - Hagg Lake Deliveries

Storage Water Contractors	Volumes Used (Acre-ft)
Tualatin Valley Irrigation Dist.	16,463
Unified Sewerage Agency	6,716
Lake Oswego Corp.	500
City of Hillsboro	2,268
City of Forest Grove	253
City of Beaverton	1,807
Other Contracts	687
Total	28,694

TABLE E
Water Year Precipitation (October - September)

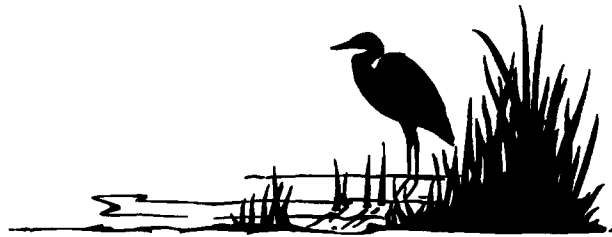
Precipitation Amounts (inches) for 1997 Water Year at Scoggins Dam			
October 1996	5.44	May	2.68
November	8.73	June	3.34
December	20.4	July	0.29
January 1997	10.71	August	1.28
February	2.98	September 1997	4.52
March	9.22		
April	3.38	Total	72.97

TABLE F
1997 Scoggins Dam Annual Precipitation Data (January - December)

1997 Precipitation at Scoggins Dam					
Month	Precip - Inches	Percentage of Normal	Month	Precip. - Inches	Percentage of Normal
January	10.71	141%	July	0.29	52%
February	2.98	53%	August	1.28	166%
March	9.22	170%	September	4.52	253%
April	3.38	91%	October	8.57	249%
May	2.68	130%	November	9.32	121%
June	3.34	215%	December	4.41	48%
			Total	57.72	117%

TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE

1997 ANNUAL REPORT



**Prepared By:
Unified Sewerage Agency
Planning Division
In Cooperation with the Oregon Water Resources Department
Watermaster District 18**

Cover Photograph: Tualatin River near Scholls

TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE

1997 ANNUAL REPORT

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TUALATIN RIVER FLOW MANAGEMENT TECHNICAL COMMITTEE



Committee Members (from left to right): Jerry Rodgers, OWRD Watermaster; Chuck Kingston, Joint Water Commission; Chuck Schaefer, Lake Oswego Corporation; Karl Borg, Joint Water Commission; Tom VanderPlaat, Unified Sewerage Agency; Wally Otto, Tualatin Valley Irrigation District; Jan Miller, (Chair) and Carlo Spani, Unified Sewerage Agency.

EXECUTIVE SUMMARY

This is the 10-year anniversary for the Tualatin River Flow Management Committee, which was established to coordinate water use and reservoir releases in the Tualatin River Basin. The members include Unified Sewerage Agency (USA), Tualatin Valley Irrigation District (TVID), Joint Water Commission (JWC), Lake Oswego Corporation (LOC), and the Oregon Water Resources Department (OWRD). This report is to give a review of committee activities and present technical data collected during 1997.

The committee provides a mechanism for the coordination and management of the Tualatin River. Members are technical staff with detailed knowledge of the specific characteristics of the flow and water quality in the Tualatin River Basin. An expanding on-going flow monitoring system has provided valuable information for management of stored water and natural flow availability. Since the issue of water quality has come to the forefront, the monitoring system has been an excellent example of inter-agency coordination. This coordination has eliminated data collection duplication for the agencies involved and provided valuable flow and water quality information for other agencies and organizations.

The committee meets monthly from February through December to review the flow and reservoir supply conditions. Issues that affect water supply, river channel delivery system, or water quality are discussed. The hydrographs in Appendix A show the streamflow and reservoir differences between 1996 and 1997.

1997 was somewhat wetter than an average year. Precipitation during the winter, spring and early summer was greater than normal providing more supply and reduced demand. At Scoggins Dam, there was 2.68 inches (130% of normal) recorded in May and 3.34 inches (215% of normal) recorded in June. During August 1.28 inches of rain (166%) and in September 4.52 inches (253%) of normal were recorded. The contract holders of stored water from Scoggins Reservoir started releases later and ended earlier than in 1996.

The floods of 1996 are still remembered by residents of the basin. Committee members continued the role of providing flow information during flooding and high water events. Requests for this river level information demonstrated the need to continue information sharing and coordination.

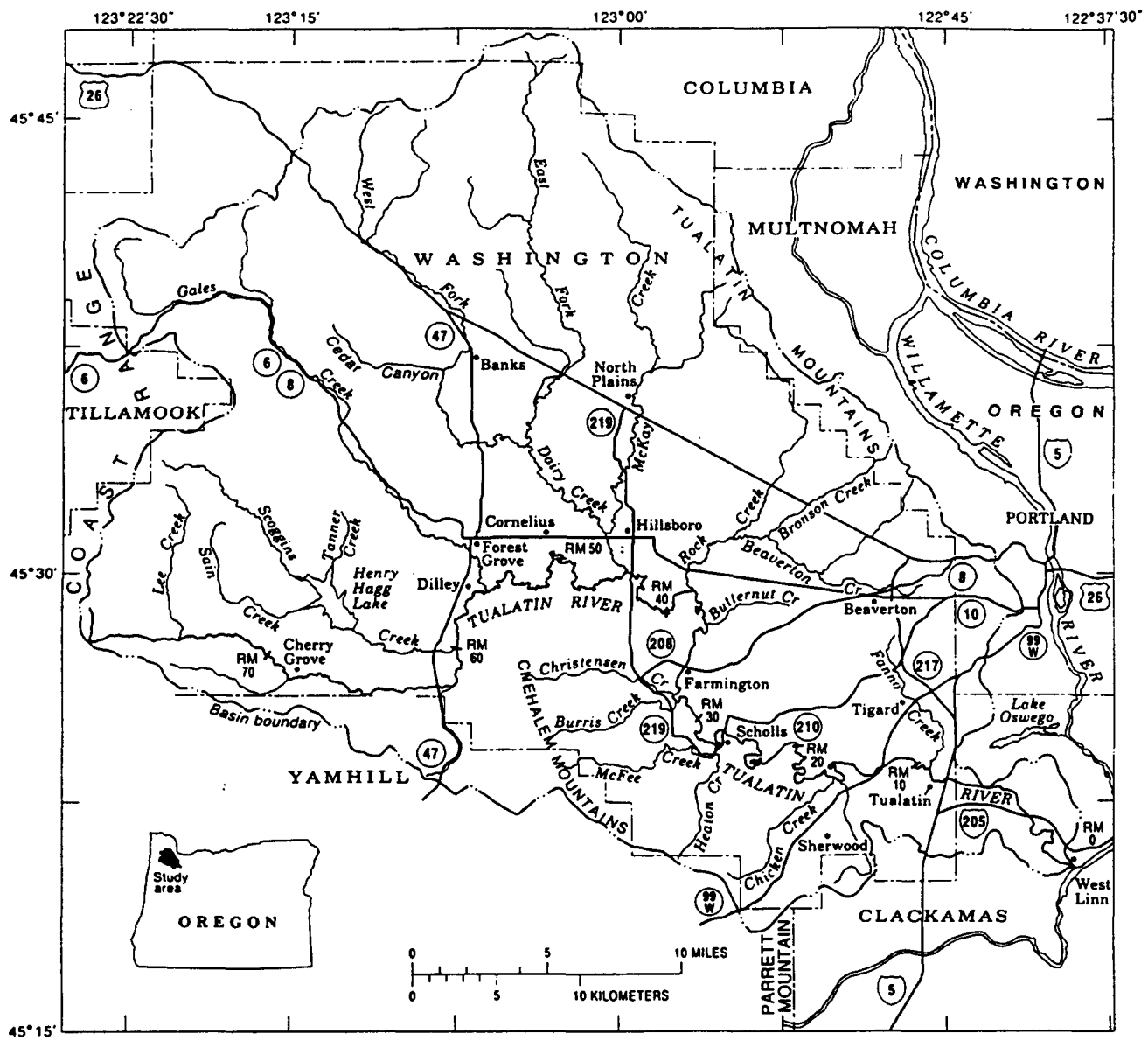


Figure 1. Tualatin River Basin.

BACKGROUND

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 Tualatin Mountains form the basin divide to the north and the Chehelem Mountains on the south. The Portland Hills form the northwest divide. The basin lies almost entirely in Washington County. The Tualatin River is approximately 80 miles long and has a very flat gradient for most of its length after entering the valley floor from the Coast Range.

The river is classified into four ecoreaches that are based on unique physical features for each reach.

The mountain reach (River Mile 80 -58) is a steep forested mountain stream with an average gradient of 80 feet per mile. At RM 78 water released from Barney Reservoir (which is on the Middle Fork of the North Fork of the Trask River) enters the Tualatin River via an aqueduct over a low Coast Range divide. Barney Reservoir (capacity 4,040 acre-feet) stores water for the Joint Water Commission members and the Unified Sewerage Agency. Construction on reservoir enlargement to 20,000 acre feet, by raising the dam 50 feet, is nearing completion in early 1998. It is anticipated that the reservoir will fill in early 1999 and that additional water will be available during the following summer. Water is generally released into the Tualatin during the summer low-flow season to supplement shortages in natural flow. The highest river diversion is located at RM 73.2 where water is diverted by the City of Hillsboro at the Cherry Grove intake for municipal purposes.

River Mile (RM) 60.0 is the confluence of the Tualatin and Scoggins Creek. In the early 1970's the Bureau of Reclamation built an earthen dam on Scoggins Creek at Stream Mile 5.1. Scoggins Reservoir (Henry Hagg Lake) is a multipurpose facility with contracted water for irrigation, municipal and industrial, and water quality uses. Active storage capacity is 53,640 acre-feet. Recreation is a major activity during the summer months on the reservoir. During the winter it serves as a flood control structure.

Near Stream Mile 1.7 on Scoggins Creek, the Tualatin Valley Irrigation District (TVID) operates the Patton Valley Pump Station. This pump station can divert water via a low-pressure pipeline into the upper Tualatin River above the city of Gaston. The water is released at two outlets, one at RM 63.2 and the other at RM 64. This water is used to serve irrigators in the Wapato Improvement District (Onion Lake) and TVID users upstream of the Scoggins Creek confluence.

The meander reach (RM 58 -33) is a winding stretch of river with an average gradient of 2.8 feet per mile. Much of the remaining farmland in the basin is within this reach. Winter flooding is common in the floodplain and wetlands that border the river in this area. The Springhill Pumping Plant (SHPP) is the largest diversion facility on the river and is located at RM 56.3. The Tualatin Valley Irrigation District (TVID) and the Joint Water Commission (JWC) jointly operate this pump plant. Both the TVID and JWC have natural flow water rights that are used until demand exceeds supply, generally by May or June. Release of contracted stored water from Scoggins Reservoir and Barney Reservoir is made to augment available natural flow. The Tualatin River is used to deliver water supply to the SHPP.

The Tualatin Valley Irrigation District (TVID) is the agricultural water service agency, which serves approximately 20,000 acres of irrigated cropland. They have a pumping capacity of approximately 140 cubic feet per second (CFS) or 90 million gallons per day (MGD) at the SHPP. The TVID pumps into a pressure pipeline irrigation system that serves about 10,000 acres of irrigated cropland. The remaining 10,000 acres are served directly from the Tualatin River through individual irrigators private delivery systems.

The JWC serves as the municipal water purveyor for Hillsboro, parts of Beaverton, Forest Grove, and the Tualatin Valley Water District. Their SHPP capacity has recently been increased to 70 MGD.

The Unified Sewerage Agency (USA) provides sanitary and stormwater services to the urban areas of Washington County. The USA has two major wastewater treatment plants that have permits to discharge water during the summer into the Tualatin River. During the months of May to October, the Rock Creek facility discharges at RM 38.1 and the second facility at Durham discharges at RM 9.4. The USA also releases storage water from Scoggins Reservoir for flow augmentation during the seasonal low flow periods.

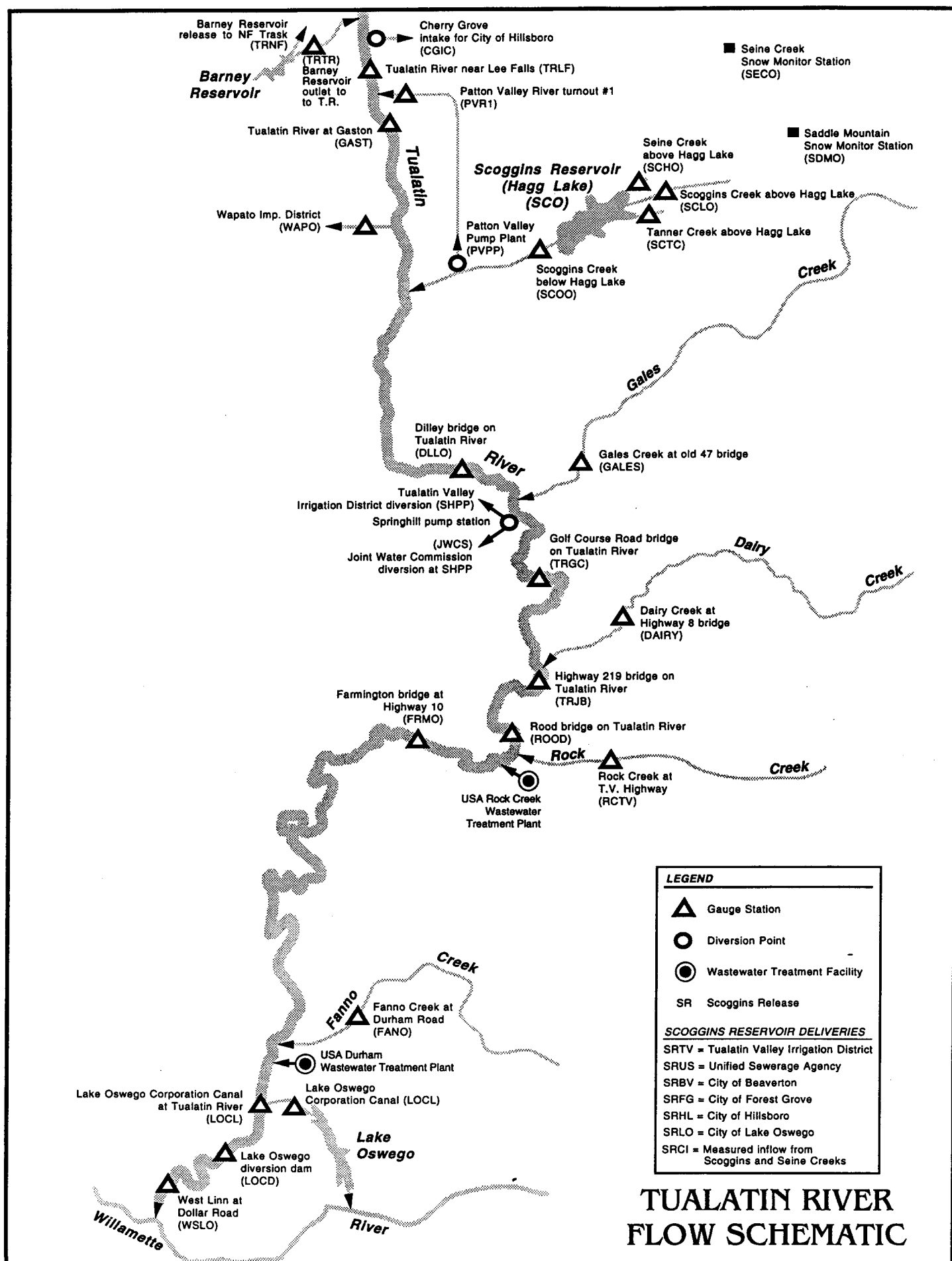
The reservoir reach (RM 33-3.4) is a flat lake-like section with an approximate gradient of 0.05 feet per mile. The control point is the Lake Oswego diversion dam at RM 3.4. During most of year, the river elevation is adequate to allow diversion of the LOC water right; however in the summer flaps are raised to increase the river water level 2-3 feet. Due to the low gradient in this reach, the river flow is affected for about 25 river miles when the flaps are raised.

At RM 6.7, the Lake Oswego Corporation (LOC) diverts a portion of the Tualatin flow through the Oswego Canal. A headwork structure regulates the flow into this mile long canal that feeds into Lake Oswego. The water is used to generate power below the dam at the east end of Lake Oswego. The Lake Oswego Corporation has a natural flow water right with a priority date of 1906 for 57.5 cfs, and an additional 500 acre-feet of contracted stored water from Scoggins Reservoir.

The reservoir reach has a number of access points through parks and boat launches. It is the most used section of river for recreational purposes.

The riffle reach (RM 3.4 -0) has an average gradient of 10 feet per mile. The Tualatin flows through a short reservoir section and drops into a narrow gorge in the City of West Linn to the Willamette River. The mouth of the Tualatin is just upstream from the Willamette River Falls at Oregon City.

Rainfall in the Tualatin Basin ranges from 110 inches on the eastern slopes of the Coast Range to 37 inches in the southeastern area of the drainage basin. The amount of stream flow from snow is minimal. The 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.



INFORMATION AND DATA COLLECTION SYSTEM

The Tualatin River Flow Management Technical Committee meets monthly from February through November. The meetings focus mainly on the review of the hydrographs and current status of the reservoirs. A variety of other water issues and problems are discussed. Each member updates the committee on any changes that could impact the flow management of the Tualatin. Minutes are recorded and reviewed at the next meeting.

A coordinated information system was developed to provide flow information to all members of the committee. 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 data is collected by field staffs of the cooperating entities. A system of gaging stations, precipitation and other flow monitoring equipment has been developed during the past several years to monitor the flows on the Tualatin and the major tributaries. Significant releases and diversions are also monitored. The data collected is relayed to the local Watermaster office on a weekly basis and downloaded to USA's mainframe computer. Hydrographs (Appendix A) which show the previous year and current year's data, were developed to identify and address problems related to the flow. Rainfall is shown as total weekly accumulation and three stations are currently being graphed.

A second set of hydrographs (Appendix B) was developed to estimate the available natural flow at various points on the mainstem of the Tualatin. These graphs depict the volume of natural flow by subtracting the storage flow from the measured flow. The storage flow is calculated on the releases from Scoggins (Hagg Lake) and Trask (Barney) Reservoirs. An evaporation loss factor reduces the storage flow and is based on an estimated loss of 0.25 percent of the flow per river mile. The main purpose for calculation of the natural flow is to determine when natural flow is no longer adequate in various river reaches. The key point in the analysis of the graphs is to detect when the available natural flow is below zero. When the natural flow graphs show flows less than zero, the reach does not have adequate water to serve all users and regulation is needed. Regulation is handled by the local Watermaster office and is done on a priority basis as required by Oregon Water Law.

Table A
Tualatin Basin 1997 Streamflow Gages

Stream	Stream Mile	Type
Beaverton Creek @ 216th	1.2	Staff
Beaverton Creek @ 170th	5.0	Staff
Bronson Creek @ Bronson Rd	2.1	Recording
Bronson Creek @ West Union	3.1	Staff
Bronson Creek @ Saltzman Rd	5.1	Recording
Cedar Mill Creek @ Jenkins Rd		Staff
Chicken Creek @ Scholls/Sherwood	2.3	Staff
*Dairy Creek at Hwy 8	2.1	Recording
EF Dairy Creek at Dairy Cr Rd	12.5	Staff

Table A - Continued
Tualatin Basin 1997 Streamflow Gages

Stream	Stream Mile	Type
WF Dairy Creek @ Banks	7.7	Staff
WF Dairy Creek @ Evers Rd	1.9	Staff
Dawson Creek @ Brookwood Rd	0.7	Recording
Dawson Creek @ Shute Rd		Staff
Fanno Creek @ Durham Road	1.2	Recording
Fanno Creek @ Tuckerwood	7.3	Staff
Fanno Creek @ Scholls nr Allen	9.4	Staff
Fanno Creek @ 56th	12.6	Recording- USGS
*Gales Creek @ Hwy 47	2.4	Recording
Gales Creek @ Clapshaw Rd	12.4	Staff
Hall Creek @ 107th	0.7	Staff
Hedges Creek Wetlands (elevation only)		Recording
Johnson Creek @ Davis	1.3	Staff
McKay Creek @ Hornecker Rd	2.2	Staff
McKay Creek @ Northup Rd	15.3	Staff
EF McKay Creek @ Dixie Mtn Rd	0.6	Staff
Oswego Canal (from Tualatin R)	6.7	Recording
Rock Creek @ Hwy 8	1.2	Recording
Rock Creek @ Quatama Rd	4.9	Staff
Sain Creek ab Scoggins Res	1.6	Recording
*Scoggins Creek ab Scoggins Res	8.0	Recording
*Scoggins Creek be Scoggins Res	4.8	Recording- USGS
Summer Creek @ Fowler School	0.2	Staff
Tanner Creek ab Scoggins Res	1.6	Staff
Tualatin River be Lee Falls	70.5	Staff
*Tualatin River @ Gaston	63.9	Recording
*Tualatin River @ Dilley	58.8	Recording- USGS
*Tualatin River @ Golf Course Rd	51.5	Recording
Tualatin River @ Hwy 219	44.4	Staff
*Tualatin River @ Rood Br	38.4	Recording
*Tualatin River @ Farmington	33.3	Recording
Tualatin River @ Elsner	16.2	Staff
*Tualatin River @ Tualatin (elevation only)	8.1	Recording
*Tualatin River @ West Linn	1.8	Recording- USGS
Wapato Canal (from Tualatin R)	61.9	Staff
* Telemetry		

1997 ENTITIES REPORTS

UNIFIED SEWERAGE AGENCY by Carlo Spani

Unified Sewerage Agency (USA) had a successful, albeit short, flow management season for 1997. The cooperation of all of the contracting entities, especially the Tualatin Valley Irrigation District (TVID), ensured that the maximum benefit to the Tualatin River water quality was derived from the USA water allocation.

On April 7, 1997, USA requested permission from the Bureau of Reclamation (BOR) to vary from the stipulated release schedule and instead, release water based on maintaining a target river flow at the Farmington gage. USA also requested that the BOR again consider allowing USA the option to purchase 3,000 to 6,000 acre-ft. of additional storage water. On July 21, 1997, the BOR approved the variance from the proscribed release schedule and said it would evaluate the possibility of a sale of additional water to USA later in the release season.

The 1997 USA release season began on Friday July 4, 1997 at a nominal flow rate of 25 CFS. Due to continuing flows at the Farmington gage in excess of 150 CFS, the USA release was halted on July 22, 1997.

TVID contacted USA in the later part of July to seek cooperation in increasing the Scoggins release. The purpose of the increase was to provide timely access to the spillway gates for a maintenance painting project. Effective August 2, the USA release was set at 55 CFS with the goal of lowering the Hagg Lake elevation to 277 ft. by September 15, 1997. The total release during this time was approximately 230 CFS. The target elevation was reached by September 17, 1997 and USA resumed requesting releases with a goal of maintaining 175 CFS at the Farmington gage.

During the last two weeks of September and first week of October over 3 inches precipitation occurred. This allowed USA to halt its release effective October 3, 1997. The total USA release season lasted 91 days and used 55% of USA's total water allocation.

Table B
Water Released from Scoggins Reservoir
For Water Quality (Acre-ft.)

	<u>Max. Available</u>	<u>1997 Available</u>	<u>Consumption</u>
Storage	12,618	12,618	6,914
Natural Flow Credit	4,282	0	0
Purchased Water	3,000	0	0
			----- 6,914*

* Release Season - July 4, 1997 to October 2, 1997 (91 Days)

Table C
1997 River Flow Data Summary
(Cubic Feet per Second) *

<u>Month</u>	<u>Farmington Daily Min/Max</u>	<u>Farmington 7DMA** Min/Max</u>	<u>Farmington Monthly Average</u>	<u>USA Release Monthly Average</u>
July	156/261	169/236	198	9
August	154/361	166/331	222	54
September	224/800	237/538	333	46
October	387/489	312/350	438	50
Minimum	154	166		
Maximum	800	538		
Average			256	37

* Data limited to release period (July 4 - October 2)

**7DMA = 7 Day Moving Average

TUALATIN VALLEY IRRIGATION DISTRICT by Wally Otto

The Tualatin River Flow Management Technical Committee was formed in 1987 to provide a mechanism for the coordination and management of the Tualatin River. It consists of representatives from each water contractor with water stored behind Scoggins Dam and the Watermaster representing the Oregon Water Resources Department. In 1997, the Committee was integral in monitoring and managing river flows. A wet Spring and painting of the spillway gates at Scoggins Dam during the season made 1997 unique. Appreciation is expressed to all members of the Flow Management Technical Committee for their cooperation in making this a year when sufficient water was provided to all reaches of the river.

The first situation was higher than average precipitation during May (2.68"/130%) and June (3.34"/215%) as recorded at Scoggins Dam. Tualatin river natural flows provided sufficient supplies for all users until near the end of June. Hagg Lake recreationists were among the beneficiaries with a 99% full reservoir on Fourth of July holiday! The 20-year average for the same date is 94.5% or almost 3.5' down from full pool.

Required releases became a factor in early August. Spillway gate painting scheduled for September made it necessary to begin drafting (releasing water from the reservoir to purposefully lower the water surface elevation). This was needed to allow the painting contractors operational room to complete their work on the spillway gates. Each water contractor participated in the management of the released water. When compared to previous years, the drawdown actually resulted in similar amounts of water being supplied to the Tualatin river system. This project required the involvement of all users along with the assistance of the Watermaster. Appreciation for being flexible during this time is extended to all from the Tualatin Valley Irrigation District and the United States Bureau of Reclamation.

Siltation in the reservoir is becoming more of an issue each year since the February 1996 Flood. The Bureau of Reclamation made \$30,000 available to landowners above the lake to use on a 60/40 cost share basis to help with projects that would decrease sedimentation. The Bureau of Reclamation would pay 40% and the landowner would pay 60%. Unfortunately, only one landowner took advantage of the offer. Reclamation has extended the offer into 1998 to help protect the water source & hopefully other landowners will participate in protecting the watershed.

The Tualatin Valley Irrigation District had a below average usage year due to the wet Spring and the early fall rains. The District delivered 211.68 acre-feet of water to The Reserve Golf Club. The entire delivery was made from TVID stored allocated water in Henry Hagg Lake. The service was provided through an interim municipal and industrial agreement with the United States Bureau of Reclamation. A similar agreement already exists between Pumpkin Ridge Golf Club and Reclamation

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Precipitation Amounts (inches) for 1997 Water Year at Scoggins Dam			
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			Total	57.72	117%

HILLSBORO-FOREST GROVE-BEAVERTON-TUALATIN VALLEY WATER DISTRICT -JOINT WATER COMMISSION by Karl Borg

This year was an extremely busy year for our staff. We continued the Water Plant and Barney Reservoir expansion projects. Both projects had completed construction activities by late December. We have also had several in-house projects that at times seemed to demand all of our collective attention and time. However, as always we appreciate the help and support we receive from the Flow Management group and the organizations that each represents. The Flow Management group is a reliable and consistent resource for both information and help regarding all aspects of the Tualatin River and its tributaries.

The Barney Reservoir project impacted operations dramatically. We started the release season at an elevation of 1579.9, which is 2,306 acre-feet. We normally would be at elevation 1,590 feet and 4,000 acre-feet. Once again the releases from Barney were dictated by the needs of the project. The project Manager, Eldon Mills, controlled the timing and amounts of the releases. We made use of as much of this water as we could and compensated with releases from Scoggins Reservoir. We certainly appreciate Wally Otto and all the Irrigation District's staff's patience and help regarding the demands of this unusual year.

The release season had a false start July 3rd and by July 9th we were allowed to return to natural flows until July 14th. This was a short release season as well, the season ended September 22, which was the earliest date of stopping storage flow in the last ten years.

We continued with the additional water quality testing in the upper Tualatin River and both Scoggins and Barney Reservoirs. Jon Honea a graduate student from the Portland State Limnology program (the study of fresh water lakes) provided an initial effort at gathering data on Barney and Scoggins Reservoirs. We are already working towards continuing his efforts with another student for the summer of 1998.

Again, thank you to all for the support and effort extended on our behalf. We are all looking forward with anticipation to the challenges of next year and towards accomplishing the goals we have set.

Table G
1997 Scoggins Dam releases for the Joint Water Commission
(Acre-Feet)

<u>Month</u>	<u>Beaverton</u>	<u>Hillsboro</u>	<u>Forest Grove</u>	<u>Total</u>
June	0	0	0	0
July	613	674	71	1,358
August	692	1174	61	1,927
September	502	438	121	516
October	0	0	0	0
Total	1,807	2,286	253	3,801

Table H
1997 Barney Reservoir releases for the Joint Barney Commission
(Acre-Feet)

<u>Month</u>	<u>Beaverton</u>	<u>Hillsboro</u>	<u>Forest Grove</u>	<u>TVWD</u>	<u>USA</u>	<u>Total</u>
June	0	0	0	0	0	0
July	253	95	30	366	226	970
August	423	48	6	1032	0	1509
September	186	251	20	316	81	854
October	192	277	22	313	89	893
Total	1054	671	78	2027	396	4226

LAKE OSWEGO CORPORATION by Chuck Schaefer

Water quality is on the top of Lake Oswego Corporation (LOC) issues. We now have the tools in place and the knowledge to improve our water quality. The key for better water is to reduce the phosphorus that enters the lake. We have two key sources that bring phosphorus into the lake. The Tualatin River via Kelok Canal and city surface runoff during the rainy periods. We are educating our shareholders that phosphorus is not needed to keep lawns green. If we all work together we can help improve water quality.

The following information about Oswego Lake was taken from a report produced by our 1997 summer graduate intern, Nathan T. Moore, EIT about facts, characteristics, monitoring of data and his observations.

INTRODUCTION

Lake and Watershed Characteristics

Oswego Lake is a private lake located in the suburbs of Portland, within the City of Lake Oswego. The Lake Oswego Corporation (LOC), a nonprofit corporation representing Lake Residents and easement holders, owns and manage the lake. The lake features three major basins and two man-made canals. Two separate watersheds feed the lake; the natural watershed surrounding the lake and the Tualatin watershed that was added through the digging of the main canal. The area of the natural lake watershed is 19.44 km² (7.5 square miles) and is primarily urban. The Tualatin River watershed is 1841 km², (700 square miles) (SRI 1987) and is composed of primarily agricultural and forests land with an increasing urban area. Detailed descriptions of the both watersheds can be found in SRI 1987, Otak 1992, H. G. E. 1996, and in yearly reports on the Tualatin River prepared by Unified Sewerage Agency (USA).

There have been several previous studies performed on Lake Oswego that have led to an improved

Lake Circulation

Water flows into the lake through the Main Canal. The Main Canal consists of two sections; a one mile residential section characteristic of an estuary, and a one mile stream section of fast moving water. The flow rate varies from 57 cubic feet per second (cfs) to no flow. During the summer months the diversion dam on the Tualatin River is raised to form a pool at the head gate to allow the necessary withdrawal. As the canal water nears the main lake the colder Tualatin water dives below the warmer lake water. The point at which this occurs varies from the South Shore Bridge, approximately 100 meters from the canal mouth, to the first bend, approximately 200 meters from the mouth. After the water dives it appears to slowly disperse into the epilimnic waters. However, additional study is necessary to confirm that this is true for all flow rates and seasons.

The main body of the lake is considered well mixed except during summer stratification. Mixing between the two bays and the main basin is minimal but can be evident if a strong and constant wind blows for an extended period, especially in the case of West Bay. This is also true for the mouth of Blue Heron, however further up the canal the water is stagnant.

Water exits the lake through the dam by means of leakage and power generation. Leakage through the dam and from the power plant conduit is minor. The exact rate is hard to estimate but is in the range of one to two cfs. Outflow from the power generator is extremely variable. The generator releases lake water at rates between 78.9 cfs and 99.7 cfs when in operation (SRI 1987). The frequency and duration of power plant operation is controlled by the necessity to maintain the lake level within a tolerable range for lake residents, approximately a three inch range during the summer months. Outflow is primarily drawn from the epilimnion, although during the initial period of stratification in April and May there is possibly some stratification the location of the thermocline is shallower, three or four meters (Beutel 1995, SRI 1987) and less stable.

Previous Studies

There have been several previous studies performed on Lake Oswego that have led to an improved understanding of the lake and its complexities. SRI performed the initial lake assessment during the 1987 water-year (SRI 1987). This study constitutes the most complete period of data collection for Oswego Lake. Starting in 1994, summer studies have been performed on the lake by college interns. The 1997 study is the fourth in this series and relies heavily on the previous works. These include Beutel 1994, Goossen 1995, and Hartman 1996. An additional study was performed by KCM in 1992 and includes a phosphorus model for this lake.

Purpose of Study

There were three purposes for this study: analysis and presentation of data for 1997, analysis of previous data, and recommendations for lake management. The analysis and presentation of all data was completed for use in the making of a recommendation and also to aid in future studies and recommendations. Some of the information included in this study was taken from the previous intern studies. The inclusion is intended to aid in the previous studies performed by LOC interns to aid in the understanding of the ecology of Oswego Lake.

1997 Water-Year, Precipitation

A water year is from Oct. 1st through Sept. 30th. Precipitation during the winter and fall of 1996-97 was significantly greater than previous years and did have an effect on the water-quality of Oswego Lake for the 1997 water year. As of August 11th, Portland had received 54.85 inches for the water year compared to 43.24 for a normal year, a 27% increase. Many locations in Oregon including Hillsboro, a town in the center of the Tualatin basin, and Portland experienced record rainfalls during the 1996 calendar year. Much of this precipitation occurred during the 1997 water year, which had a strong effect on runoff into the Tualatin River and Oswego Lake. The above average precipitation effected runoff during the 1997 calendar year through July. The percent change from the average is based on data collected since 1961 as measured in Portland are presented in the table below. In addition to the total precipitation per month, several high-intensity storms occurred in May and June resulting in large in-basin sediment and nutrient loads to the lake.

TABLE I

Month	Precipitation 96-97, in.	Precipitation Average, in.	% Change from Average
October	5.38	3.58	50%
November	9.73	6.94	40%
December	13.35	7.43	82%
January	7.46	6.9	8%
February	1.62	5.28	-226%
March	7.14	4.47	60%
April	3.73	3.6	4%
May	3.63	2.5	45%
June	2.29	1.78	29%
July	0.52	0.76	-23%

1997 DATA AND ANALYSIS

Temperature and Stratification

Temperature has several effects on the physical and chemical properties of a lake. The most obvious effects are in the thermal stratification of a lake. Thermal stratification is the separation of the water column into two layers separated by a thermocline that inhibits mixing. The upper layer is referred to as the epilimnion and is warmer than the lower layer, the hypolimnion. A temperature gradient exists around the thermocline. The area containing this gradient is referred to as the metalimnion and is approximately 6 meters thick in Oswego Lake. Oswego Lake is a monomictic lake, meaning it experiences one period of complete mixing each year. This mixing occurs in the winter, usually in November or December, when the epilimnion reaches a cool enough temperature to reduce the temperature gradient and decompose the thermocline. In March or April, as the sun begins to warm the surface, the lake will once again stratify.

Stratification is significant because it inhibits mixing between the epilimnion and hypolimnion. This effect causes significant differences in other water quality parameters, spatially, and temporally. The magnitude of mixing between the two layers is relatively constant during the period of full stratification and between years for a given lake.

Stratification only occurs in the Main Basin at lake depths most likely greater than six meters. At shallower depths the water column is too susceptible to mixing to stratify throughout the summer. However, during periods of relative calm weather, short periods of stratification are possible in these shallow areas.

In addition to affecting mixing through stratification, increased temperature also increases the alga growth rate and effects dominance, decreases oxygen saturation concentration, and increases decomposition of organic matter.

Dissolved Oxygen

Dissolved Oxygen (DO) is important to the quality of a lake and as an indicator of the lake's condition. Oxygen sources in Oswego Lake include the atmosphere and photosynthesis from algae and macrophytes. Sinks include the atmosphere, respiration, decomposition of inorganic and organic matter, and nitrification. As a eutrophic lake, Oswego Lake experiences increased photosynthesis near the surface and increased decomposition near the bottom of the lake.

During summer, in the unstratified portions of the lake this results in a vertical oxygen profile that is often supersaturated near the surface and declines closer to the sediments.

Specific Conductance and pH

Specific Conductance and pH are additional parameters obtained through a water quality monitor -YSI sonde. The pH is a measure of acidity and is inversely proportional to the concentration of hydrogen ions in the water. Water pH increases caused by high algae photosynthesis is the greatest factor effecting pH for Oswego Lake. Water pH reached values as high as 10.4 in main lake canal during large algal blooms. This value is high when compared to other temperate northern lakes that have typical pH range of 6 to 8 (Hartman 1996).

Total Suspended Solids

The concentration of organic and inorganic particulate matter in the water column is parameterized as total suspended solids (TSS). The quantity of solids is important to the rate of sedimentation in the lake as well as the water clarity. Suspended solids enter the basin from the Tualatin River through the canal and from the watershed, especially during storm events. Additional TSS enters the water column from the sediment due to mixing caused by natural phenomena and boating. The resuspension of solids from the sediment is important because the solids often carry nutrients that are more easily released once in suspension. Algae also are included in TSS measurements and during large blooms can be a large percentage of the total value.

Chlorophyll-a

Chlorophyll-a, Chl-a is the photosynthetically active constituent of algae. For that reason, Chl-a is used as the quantitative measure for alga population. Variability will effect the correlation between

population and Chl-a include algae speciation and average photosynthetic active radiation (PAR) available to the algae.

Nutrients

There are many nutrients necessary to the growth of algae. Phosphorus and nitrogen are the two most important because they are the most common limiting nutrients in lakes. A limiting nutrient is the nutrient that is lacking in allowing full growth as allowed by other environment aspects. Other environmental factors include temperature, light, and predators.

Phosphorus is consistently the limiting nutrient in all sections of Oswego Lake except Lakewood Bay. Significant phosphorus loads to the water column include the Tualatin River, base flow from Oswego Lake's basin, storm runoff, precipitation, groundwater, waterfowl, sediment resuspension, sediment desorption during anoxia, city sewer overflows, and atmospheric fallout. Phosphorus in the environment comes from several sources and determines the phosphorus available to the lake. The primary sources are rocks and soils, human and animal wastes, detergents, fertilizers and plant debris. Prior to reductions in flow through the main canal, the primary source of phosphorus in Oswego Lake was the Tualatin River.

Plankton

Phytoplankton growth, commonly referred to as algae, was determined to be the most important problem in Oswego Lake in a 1987 survey of Lake Users (SRI 1987). Large phytoplankton blooms during summer pose many problems including hampering of views and contact sports, unpleasant odors, and oxygen depletion from bacterial decomposition in the hypolimnion. Phytoplankton is microscopic or macroscopic plants capable of photosynthesis.

Zooplankton, including protozoa, are the small animals that consume bacteria, phytoplankton, and other zooplankton. Zooplankton is the primary consumers of algae and bacteria in the upper region of the water column. As the algae die and settle towards the sediments, bacteria along with benthic zooplankton consume the algae there.

Plankton has several effects on the physical and chemical composition of Oswego Lake. Phytoplankton produces oxygen and therefore increases the dissolved oxygen concentrations within the upper 3 or 4 feet of the water column. In the hypolimnion of the lake during stratification, the consumption of dead plankton by bacteria has the opposite effect and results in anoxic conditions. The pH values in the upper portion of the lake increase due to the chemical process of photosynthesis and result in the high pH readings found in Oswego Lake. As plants, phytoplankton is primarily producers and the most important producer of biomass within Oswego Lake. Biomass produced by algae is then consumed by zooplankton or bacteria and zooplankton are in turn a primary source of food for small fish. Plankton is very important in the cycle of nutrients within the lake.

In 1997, the alga succession was different than many previous years. Blue green alga became dominant in the main lake in mid July as opposed to early August as is usually the case. The green and diatom dominated bloom, which usually occurs in June, was non-existent or extremely reduced. The exact reason for this is unclear but most likely due to slight variations in the conditions of the lake from year to year.

Bacteria

Fecal coliform enters Oswego Lake from storm drains carrying sewage overflow and surface runoff or from human contact. Enterococcus is a bacterium present in animal wastes and primarily introduced into the lake from waterfowl, with a small portion derived from storm runoff of dog, horse, and other animal wastes.

Bacteria pollution in Oswego Lake has historically not been a large problem. Large congregations of waterfowl and occasional sewage spills into storm drains were below government regulations in 1997.

Tualatin Water-Quality

Even with reduced canal flows, water-quality in the Tualatin River has a strong effect on the water quality of Oswego Lake. The Tualatin River has shown an improvement in its water quality over the past ten years thanks to careful management by the Unified Sewerage Agency, which is responsible for sewage and surface runoff in the Tualatin Basin. Due to the large amount of rainfall during the wet season the water quality of the Tualatin is much worse during the winter than the summer. The Tualatin experienced poor water quality during the summer of 1997 in terms of phosphorus and total suspended solids, both of which are good indicators of river quality. The data in this figure was taken at the Stafford Bridge, a few miles downstream from the head gate, and is approximately equivalent to values at the head gate. This is most likely due to the high amount of precipitation and soil saturation.

REPORT CONCLUSIONS AND ACKNOWLEDGMENTS - Nat T. Moore

Inflow Management and Future Inflow Studies

The proper management of flow through the main canal from the Tualatin is essential for the future water quality of Oswego Lake. Phosphorus concentration in the Tualatin River average 0.1 mg/l during the dry season and reach levels above 0.3 mg/l during the wet season.

Due to high phosphorus concentrations in the Tualatin during the wet season, no flow should be brought in through the canal from when heavy precipitation begins in October until precipitation reduces in May.

The factors controlling when to begin and end flow through the canal are the management of the lake elevation, for power generation, navigation in the canal, and water quality in the main canal.

Landscaping Practices

Landscaping practices of residential and business properties within the basin can have a large effect on the phosphorus budget into Oswego Lake. Proper or limited application of fertilizer within the basin and especially lakeside lawns would reduce the nutrient load into the lake. Most importantly, predictions of the lake's future all look extremely positive.

Summary

The LOC Board of Directors continued commitment and interest in the water quality of Oswego Lake provides for the research and future improved management of the lake.

OREGON WATER RESOURCES DEPARTMENT

by Jerry Rodgers, Tualatin Basin Watermaster

Flow management activities within the Watermaster's office included operation of the stream gaging network and regulation of water withdrawals within the basin. The gaging network provides information on water availability and is the framework for regulatory decisions on water use. This information is vital to making decisions and coordinating releases from Scoggins and Barney Reservoirs. Staffing to operate the system of gages is a cooperative funding effort by the agencies that have contracted water stored in Scoggins Reservoir. Table A lists the stations monitored in 1997.

New recording gaging stations were installed on Dawson Creek at Brookwood Road, Bronson Creek at Bronson Creek Road, Bronson Creek at Saltzman Road, and for elevation only at the Tualatin River at Tualatin. The river gage includes a phone modem for a real time communication link.

The Tualatin Basin WRIP (Water Right Information Program) is used to locate legal water users when regulatory actions on water use are necessary. WRIP development continued with the addition of Dairy Creek drainage (excluding the McKay Creek subbasin). All surface water rights in this basin are now entered in a relational database. Information includes water rights by individual tax lot, and by priority date, and diversion points by river mile. The database allows the generation of a report of water right holders for any reach of the stream by priority date. Water users can be targeted for informational releases or regulatory action related to their area. Work continues on adding tributaries to this database during the off season.

Gaging stations provide supply information and the WRIP database provides demand information.

By knowing both supply and demand, decisions on who is entitled to natural flow are easier to make, thereby protecting senior out-of-stream and instream water rights. Table J summarizes 1997 regulatory activity.

TABLE J

1997 OWRD Tualatin Basin Surface Water Regulation Summary

<u>DATE</u>	<u>STREAM REGULATED</u>	<u>PRIORITY DATE</u>
July 3	Tualatin R ab mile 44.73 (Dairy Creek)	2/1/1963
July 3	Gales Creek subbasin	2/1/1963
July 31	Entire basin not yet regulated	10/8/76
Sept 30	WRIP Database	End of Season Notices

A stream temperature monitoring project was started during the year. The Watermaster and Unified Sewerage Agency installed VEMCO probes at the gaging stations at selected locations throughout the basin. The probes recorded data readings at 15-minute intervals. The Watermaster starting in May and continuing into November collected the data. The Unified Sewerage Agency collected hourly readings at most of their sites.

Graphs and data are included in Appendix E.

WATER QUALITY INFORMATION SUMMARY -UNIFIED SEWERAGE AGENCY (USA)

by Jan Miller

STATUS OF TUALATIN RIVER WATER QUALITY RELATIVE TO THE TOTAL MAXIMUM DAILY LOAD (TMDL) FOR PHOSPHORUS

Point Source Waste Load Allocations (WLA) & Nonpoint Source Load Allocations (LA)

In 1989, total phosphorus TMDL was established for point and nonpoint sources in the Tualatin Basin. Since 1989, the wastewater treatment plants have been upgraded and a surface water management plan adopted. The point sources met their WLA on schedule. The nonpoint sources are not meeting their LA. The compliance schedule for the nonpoint sources has been extended to May 1, 1998. Tables on the following pages describe the conditions in the Tualatin Basin relative to the TMDL. All calculations were done as specified in the TMDL documents or the specific water quality standard using data from the USA monitoring program unless otherwise noted.

The first table on Status of the Tualatin River - Total Phosphorus TMDL shows the monthly median total phosphorus for the sites that have assigned TMDL criteria or are required monitoring sites. Very few of the sites met their TMDL criteria.

The second table shows the three-month stratified mean for chlorophyll *a* at the required monitoring sites. When chlorophyll *a* is above the 15 µg/L guidance level in rivers, studies must be conducted to determine if the guidance level is being exceeded due to anthropogenic factors and if the beneficial uses of the river are being impaired by the high algal concentrations. High levels of algae have a negative impact on the beneficial use of aesthetic quality. High levels of algal production can result in low dissolved oxygen (DO) levels and high pH levels. These both impact the beneficial use of resident fish and aquatic life. Total phosphorus was identified as the anthropogenic cause of the high levels of chlorophyll *a* in the Tualatin River.

The third table shows the results of the continuous (DO) monitor that the US Geological Survey (USGS) maintains at the Lake Oswego diversion dam at river mile 3.4. Dissolved oxygen is a primary indicator of water quality. Traditionally, DO was measured during sample collection. This single value does not give a complete picture of the conditions that the aquatic organisms are exposed to during the day. Dissolved oxygen can change dramatically over the course of a day during an algal bloom. Continuous DO readings provide a better indication of the health of the river. Values drop below the criteria for various reasons. Oxygen levels can drop due to high ammonia levels, due to the decomposition of algae when they die, or due to temperature changes that cause the slow-moving stratified sections of the river to "turn over". When the river "turns over", water from the bottom of the river, where there is high sediment oxygen demand (and therefore very low DO), mixes with the upper layers of water causing significantly lower DO levels. Before July 1996, the criterion for DO was 6.0 mg/L. The current criterion for DO for cool water streams has the following three components: greater than 6.5 mg/L based on a 30-day mean, greater than 5.0 mg/L based on a seven (7)-day minimum, greater than 4.0 mg/L based on a daily minimum.

The third table also shows the results of another primary indicator of water quality, pH. The pH criterion for the Tualatin River is 6.5 to 8.5. During algal blooms, the pH goes up during the day (as a

result of the chemical reactions that take place during photosynthesis), then drops back to neutral during the night. The daylight pH increases can cause the criterion to be exceeded.

The values that do not meet a given criterion or guidance level are shaded on all three tables.

Status of the Tualatin River - Point Source Waste Load Allocations & Non Point Source Load Allocations - Total Phosphorus shows the various phosphorus inputs to the Tualatin River in terms of waste load allocation (WLA) for point sources and load allocation (LA) for nonpoint sources.

The first table shows the point source discharges compared to their WLA. These two point sources are the two USA summer-discharging wastewater treatment plants, Rock Creek treatment plant (river mile 38.1) and Durham treatment plant (river mile 9.6). The allowed total phosphorus load is tied to the river flow at the Farmington gauge (river mile 33.3) and the treatment plant flow. USA has stored water in Hagg Lake that it releases to increase the flow in the Tualatin River. USA's goal is to release this water to maintain between 120 and 150 CFS at the Farmington gauge until late summer. From mid September until November 30 the goal is between 150 and 200 CFS. The treatment plants met their WLA by releasing fewer pounds of total phosphorus than is allowed by their WLA.

The second table shows the tributary loads compared to their nonpoint source LA. With the exception of Scoggins Creek (Hagg Lake Reservoir is the source water), the tributaries rarely meet their LA.

The values, where the WLA or the LA was not met, are shaded on both tables.

STATUS OF THE TUALATIN RIVER - TOTAL PHOSPHORUS TMDL

1997	TOTAL PHOSPHORUS mg/L MONTHLY MEDIAN			(Compliance or Required Monitoring Sites)					
	RIVER MILE	TMDL	SAMPLES/ MONTH	MAY	JUN	JUL	AUG	SEP	OCT
<u>TUALATIN RIVER</u>									
CHERRY GROVE	71.5	0.02	4	0.028	0.013	0.013	0.020	0.013	0.021
DILLEY	61.2	0.04	4	0.036	0.045	0.038	0.022	0.033	0.055
GOLF COURSE	52.8	0.045	4	0.052	0.068	0.047	0.055	0.048	0.061
ROOD ROAD	39.1	0.05	4	0.084	0.082	0.075	0.072	0.085	0.093
FARMINGTON	33.6	0.07	1	0.066	0.154	0.101	0.084	0.079	0.118
SCHOLLS	27.1	0.07	4	0.105	0.113	0.100	0.092	0.091	0.131
ELSNER	16.5	0.07	4	0.181	0.195	0.111	0.100	0.091	0.133
BOONES FERRY	8.7	0.07	4	0.103	0.118	0.100	0.095	0.103	0.104
STAFFORD	5.4	0.07	4	0.097	0.109	0.107	0.093	0.105	0.093
<u>TRIBUTARIES</u>									
SCOGGINS	60	0.06	4	0.021	0.020	0.025	0.037	0.013	0.038
GALES	56.8	0.045	4	0.041	0.041	0.049	0.050	0.062	0.062
DAIRY	44.7	0.045	4	0.087	0.092	0.092	0.119	0.115	0.104
MCKAY	44.7	0.045	4	0.080	0.068	0.119	0.150	0.152	0.074
ROCK	38.1	0.07	4	0.179	0.183	0.218	0.234	0.219	0.172
CHICKEN	15.5	0.07	4	0.187	0.120	0.127	0.188	0.139	0.132
FANNO	9.3	0.07	4	0.135	0.137	0.158	0.171	0.168	0.140

1997	CHLOROPHYLL <i>a</i> ug/L	Three Month Stratified MEAN (Except May & Jun)							(Required Monitoring Sites)
	RIVER MILE	WQ GUIDANCE	MAY	JUN	MAY-JUL	JUN-AUG	JUL-SEP	AUG-OCT	
<u>TUALATIN RIVER</u>									
ROOD ROAD	39.1	15	4.1	4.7	5.2	5.7	6.0	4.8	
FARMINGTON	33.3	15	4.0	5.5	5.5	5.7	4.9	3.9	
SCHOLLS	27.1	15	6.4	7.4	7.3	7.6	6.6	4.8	
ELSNER	16.5	15	9.3	10.3	18.9	25.3	23.8	12.6	
BOONES FERRY	8.7	15	17.5	16.7	30.5	41.4	39.1	21.3	
STAFFORD	5.4	15	22.6	19.7	37.6	52.7	49.5	27.6	
<u>TRIBUTARIES</u>									
DAIRY CREEK	44.7	15	3.8	4.5	4.8	6.2	5.8	4.7	
ROCK CREEK	38.1	15	4.2	3.2	3.1	2.3	2.1	2.3	
CHICKEN CREEK	15.5	15	2.4	2.6	2.9	3.4	3.4	2.6	
FANNO CREEK	9.3	15	8.3	7.3	6.8	5.4	5.0	4.5	

Tributaries are sampled near the mouth. River mile indicates where they intersect the Tualatin River.
 "Less than" values are used in the calculations at half their value (0.5 times the detection limit).

1997 USGS CONTINUOUS MONITOR (River Mile 3.4) HOURLY READINGS

	MAY	JUN	JUL	AUG	SEP	OCT
DISSOLVED OXYGEN mg/L (Number of days criterion not met)						
30-Day floating average of the daily DO mean < 6.5 mg/L	0	0	0	0	12	0
7-Day floating average of the daily minimum DO < 5.0 mg/L	0	0	0	0	0	0
Daily minimum DO < 4.0 mg/L	0	0	0	0	0	0
PH						
Percentage of time greater than 8.5	0	0	0	0.4 %	0	0
Percentage of time less than 6.5	0	0	0	0	0	0

Floating averages are assigned to the last day of the averaging period.

Shading indicates that a criterion or guidance level is not met.

STATUS OF THE TUALATIN RIVER

POINT SOURCE WASTELOAD ALLOCATION & NONPOINT SOURCE LOAD ALLOCATION

TOTAL PHOSPHORUS

1997 TREATMENT PLANT WASTELOAD ALLOCATIONS (WLA)

SITE	INFO	STAT.	UNITS	MAY	JUN	JUL	AUG	SEP	OCT
FARMINGTON	FLOW	MEAN	CFS	550	483	202	223	331	866
FARMINGTON GOAL	FLOW	MEAN	CFS	120	120	120	120	200	200
*USA RELEASE	FLOW	MEAN	CFS	0	0	7.7	53.5	46.2	3.2
	FLOW	TOTAL	AC-FT	0	0	476	3293	2749	198
	FLOW	YTD	AC-FT	0	0	476	3769	6518	6716
DURHAM EFFLUENT	FLOW	MEAN	MGD	19.9	20.2	17.3	17.1	18.22	21.1
	T-PO4-P	MEDIAN	MG/L	0.08	0.04	0.07	0.02	0.04	0.06
	T-PO4-P	WLA	LB	16.0	16.0	13.0	13.0	14.0	16.0
	T-PO4-P	MEDIAN	LB	11.9	6.8	10.2	3.2	6.5	9.4
ROCK CREEK EFFLUENT	FLOW	MEAN	MGD	22.5	24.2	22.0	21.8	22.0	27.8
	T-PO4-P	MEDIAN	MG/L	0.10	0.01	0.05	0.05	0.04	0.03
	T-PO4-P	WLA	LB	40.0	40.0	28.0	28.0	38.0	40.0
	T-PO4-P	MEDIAN	LB	18.8	2.3	9.4	9.0	6.7	5.7

Based on daily values

*USA RELEASE from Hagg Lake for flow augmentation (total available from storage is 12,618 Acre Feet).

1997 TRIBUTARY LOADS RELATIVE TO PROPOSED LOAD ALLOCATIONS (LA)

SITE	INFO	STAT.	UNITS	MAY	JUN	JUL	AUG	SEP	OCT
SCOGGINS C.	FLOW	MEAN	CFS	48.8	48.0	130.0	213.5	181.2	71.5
	T-PO4-P	LA	LB	5.4	5.4	21.6	32.3	32.3	10.8
	T-PO4-P	MEDIAN	LB	5.1	3.9	18.6	42.8	15.4	15.0
GALES CREEK	FLOW	MEAN	CFS	95.6	72.4	25.8	18.0	34.5	150.1
	T-PO4-P	LA	LB	12.1	12.1	6.1	2.4	6.1	12.1
	T-PO4-P	MEDIAN	LB	20.5	13.5	7.2	4.4	8.9	41.8
DAIRY CREEK	FLOW	MEAN	CFS	204.3	215.8	59.2	38.9	56.3	262.9
	T-PO4-P	LA	LB	24.3	24.3	12.1	6.1	12.1	24.3
	T-PO4-P	MEDIAN	LB	84.7	96.5	29.3	20.3	38.2	142.0
ROCK CREEK	FLOW	MEAN	CFS	37.4	59.6	14.7	15.5	27.0	35.2
	T-PO4-P	LA	LB	9.4	9.4	3.8	3.8	9.4	9.4
	T-PO4-P	MEDIAN	LB	31.1	42.1	18.3	15.7	19.8	30.4
FANNO CREEK	FLOW	MEAN	CFS	13.9	53.1	5.3	2.9	5.1	10.0
	T-PO4-P	LA	LB	3.8	9.4	1.9	0.9	1.9	3.8
	T-PO4-P	MEDIAN	LB	8.0	10.5	3.5	2.1	2.3	9.2

Based on weekly samples

Below detection limit values are used in the calculations at half their value (0.5 times the detection limit).

Shading indicates the WLA (NPDES Permit) or proposed LA (TMDL 22M-02-004 Schl A #2) is not met.

STATUS OF TUALATIN RIVER WATER QUALITY RELATIVE TO THE TOTAL MAXIMUM DAILY LOAD (TMDL) for AMMONIA

Point Source Waste Load Allocations (WLA) & Nonpoint Source Load Allocations (LA)

In 1989 the ammonia TMDL was established for point sources in the Tualatin Basin. The wastewater treatment plants were upgraded between 1988 and 1994. The Tualatin Basin currently meets the ammonia TMDL. Tables on the following pages describe the conditions in the Tualatin Basin relative to the ammonia TMDL. All calculations were done as specified in the TMDL document or the specific water quality standard using data from the USA monitoring program unless otherwise specified.

The first table on Status of the Tualatin River - Ammonia TMDL shows the monthly median ammonia for the sites that have assigned TMDL criteria or are required monitoring sites. Most of the sites meet their TMDL criterion most of the time. In May, USA is often granted a variance that allows the two smaller treatment plants, Forest Grove at river mile 56.7, and Hillsboro at river mile 44, to discharge to the Tualatin River until the flow at Farmington, river mile 33.3, drops below 250 CFS. The high flow and cool weather during this time period minimize the risk of low dissolved oxygen levels or toxicity problems.

The second table shows the dissolved oxygen (DO) levels in relation to the new criteria. Dissolved oxygen is a primary indicator of water quality conditions in terms of aquatic life. Before July 1996, the criterion for DO was 6.0 mg/L. The new DO criterion has the following three components:

Cool Water Aquatic Resources

Key	Criteria	Statistic	Description
A	6.5 mg/L	30-Day Mean	The minimum value of the 30-consecutive-day floating mean must not go below 6.5 mg/L. Daily means are calculated and used to determine compliance.
B	5.0 mg/L	7-Day Mean Minimum	The seven-day floating average of the daily minimum concentration must not fall below 5.0 mg/L.
C	4.0 mg/L	Minimum	The minimum recorded concentration must not fall below 4.0 mg/L at any time.

The DO data were compared to the new criteria. If a single data point is available for a particular day, then that value is used as the daily mean. Multiple DO measurements were available for a single day when DO profile readings were taken. Dissolved oxygen measurements were taken every three feet at Scholls, Elsner, Boones Ferry, and Stafford. The mean DO level is calculated for the upper ten feet for each profile. When one set of profile data is collected in a day, the mean from the single profile is used to determine compliance status. If more than one set of profile data is collected in a day, the mean of both profiles combined is used to calculate the 30-consecutive-day floating mean. When two DO profiles are obtained for a single day, the smaller mean is used to determine the 7-day and daily minimum values. All DO values above saturation were set to saturation before any calculations were performed. The month is highlighted if any day exceeded the criteria. Days without data were assumed to have the same value as the closest earlier date, where data was available.

The third table shows the results of the continuous monitor, that USGS maintains at the Lake Oswego diversion dam (river mile 3.4), relative to the three components of the DO criteria. Because this data is collected continuously (recorded on an hourly basis), it is a much better representation of the DO levels in the river.

The fourth table shows the time periods and locations of chronic ammonia toxicity. To determine toxicity, the ammonia level, pH, and temperature must be considered together. To cause a problem, chronic ammonia levels must be exceeded for four (4) consecutive days.

The values that do not meet a given criterion are shaded on all four tables.

The page titled, Status of the Tualatin River - Ammonia Point Source Waste Load Allocations & Non Point Source Load Allocations - Ammonia, shows the various inputs to the Tualatin River in terms of waste load allocation (WLA) and load allocation (LA).

The first table shows the point source discharges compared to their WLA. The two point sources are the two USA summer-discharging wastewater treatment plants. The allowed ammonia load is linked to both the river flow at the Farmington gauge and the treatment plant flow. USA has stored water in Hagg Lake, that it uses to increase the flow in the Tualatin River. The treatment plants met their point source WLA by releasing significantly fewer pounds of ammonia than are allowed by their WLA.

The second table shows the tributary loads compared to their nonpoint source LA. The ammonia tributary load allocations are based on the Tualatin River flow at Rood Road (river mile 38.5). The tributaries consistently meet their TMDL criteria. For the most part, the tributaries meet their LA. When they do not meet the LA, it is generally due to high flows.

The values, where the WLA or the LA is not met, are shaded on both tables.

STATUS OF THE TUALATIN RIVER - AMMONIA TMDL

1997 AMMONIA	mg/L	MONTHLY MEDIAN	(Compliance or Required Monitoring Sites)						
	RIVER		SAMPLES/						
	MILE	TMDL	MONTH	MAY	JUN	JUL	AUG	SEP	OCT
TUALATIN RIVER									
CHERRY GROVE	71.5	0.03	4	0.01	0.01	0.01	0.01	0.01	0.01
DILLEY	61.2	0.03	4	0.01	0.01	0.01	0.01	0.01	0.01
GOLF COURSE	52.8	0.04	4	0.01	0.01	0.01	0.01	0.01	0.01
ROOD ROAD	39.1	0.05	4	0.05	0.01	0.01	0.01	0.01	0.01
FARMINGTON	33.3	1.00	1	0.06	0.05	0.02	0.04	0.02	0.01
SCHOLLS	27.1	0.85	4	0.06	0.02	0.02	0.03	0.02	0.01
ELSNER	16.5	0.85	4	0.05	0.04	0.01	0.01	0.03	0.01
BOONES FERRY	8.7	0.85	4	0.06	0.05	0.01	0.02	0.03	0.06
STAFFORD	5.4	0.85	4	0.06	0.06	0.01	0.01	0.04	0.05
TRIBUTARIES									
SCOGGINS	60.0	0.03	4	0.01	0.01	0.01	0.01	0.01	0.01
GALES	56.8	0.04	4	0.01	0.01	0.01	0.01	0.01	0.01
DAIRY	44.7	0.04	4	0.02	0.01	0.02	0.02	0.03	0.05
MCKAY	44.7	0.04	4	0.03	0.02	0.03	0.03	0.03	0.01
ROCK	38.1	0.10	4	0.04	0.04	0.04	0.04	0.04	0.03
CHICKEN	15.5	0.10	4	0.05	0.04	0.04	0.04	0.04	0.03
FANNO DHM	9.3	0.10	4	0.02	0.03	0.04	0.07	0.06	0.08

1997 Number of days when the Dissolved Oxygen criteria A, B, or C was not achieved (* 10 foot integration)

	RIVER	SAMPLES/	MAY	JUN	JUL	AUG	SEP	OCT
ROOD ROAD	39.1	4	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
FARMINGTON	33.6	1	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
* SCHOLLS	27.1	12	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
* ELSNER	16.5	11	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
* BOONES FERRY	8.7	9	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
* STAFFORD	5.4	15	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
TRIBUTARIES								
DAIRY CREEK	44.7	4	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0	0,0,0
ROCK CREEK	38.1	4	0,0,0	0,0,0	0,0,0	11,0,0	0,0,0	0,0,0
CHICKEN CREEK	15.5	3	0,0,0	0,0,0	0,0,0	5,0,0	22,0,0	0,0,0
FANNO CREEK	9.3	4	0,0,0	0,0,0	0,0,0	11,0,0	30,0,0	5,0,0

Criterion A - 30-Day floating average of the daily dissolved oxygen mean must be greater than 6.5 mg/L

Criterion B - 7-Day floating average of the daily minimum dissolved oxygen must be greater than 5.0 mg/L

Criterion C - Daily minimum dissolved oxygen must be greater than 4.0 mg/L

Tributaries are sampled near the mouth. River mile indicates where they intersect the Tualatin River.

1997 USGS CONTINUOUS MONITOR (River Mile 3.4) HOURLY READINGS

	MAY	JUN	JUL	AUG	SEP	OCT
DISSOLVED OXYGEN mg/L (Number of days criterion not met)						
30-Day floating average of the daily DO mean < 6.5 mg/L	0	0	0	0	12	0
7-Day floating average of the daily minimum DO < 5.0 mg/L	0	0	0	0	0	0
Daily minimum DO < 4.0 mg/L	0	0	0	0	0	0

Floating averages are assigned to the last day of the averaging period.

CHRONIC AMMONIA TOXICITY	MAY	JUN	JUL	AUG	SEP	OCT
Site	None	None	None	None	None	None
Duration (4 Days = Violation)						

Shading indicates that a criterion is not met

STATUS OF THE TUALATIN RIVER POINT SOURCE WASTELOAD ALLOCATION & NONPOINT SOURCE LOAD ALLOCATION AMMONIA

1997 TREATMENT PLANT WASTELOAD ALLOCATIONS (WLA) Relative to Farmington Flow and Treatment Plant Flow

SITE	INFO	STATS	UNITS	MAY	JUN	JUL	AUG	SEP	OCT
FARMINGTON	FLOW	MEAN	CFS	550	483	202	223	331	866
FARMINGTON GOAL	FLOW	MEAN	CFS	120	120	120	120	150	150
*USA RELEASE	FLOW	MEAN	CFS	0	0	7.7	53.5	46.2	3.2
	FLOW	TOTAL	AC-FT	0	0	476	3293	2749	198
	FLOW	YTD	AC-FT	0	0	476	3769	6518	6716
DURHAM EFFLUENT	FLOW	MEAN	MGD	19.9	20.2	17.3	17.1	18.2	21.1
	NH3-N	MEDIAN	MG/L	1.58	0.86	0.03	0.02	0.02	0.06
	NH3-N	WLA	LB	433.0	433.0	412.0	412.0	412.0	433.0
	NH3-N	MEDIAN	LB	256.2	137.5	4.4	2.8	3.1	10.8
ROCK CREEK EFFLUENT	FLOW	MEAN	MGD	22.5	24.2	22.0	21.8	22.0	27.8
	NH3-N	MEDIAN	MG/L	0.06	0.16	0.02	0.05	0.02	0.02
	NH3-N	WLA	LB	1042.0	1042.0	1042.0	1042.0	1042.0	1042.0
	NH3-N	MEDIAN	LB	10.7	32.6	3.9	8.9	3.6	4.8

Based on daily values

*USA RELEASE from Hagg Lake for flow augmentation (total available from storage 12,618 Acre Feet).

1997 TRIBUTARY LOADS RELATIVE TO PROPOSED LOAD ALLOCATIONS (LA) Which are relative to Farmington flow

SITE	INFO	STAT.	UNITS	MAY	JUN	JUL	AUG	SEP	OCT
TUALATIN RIVER AT ROOD ROAD	FLOW	MEAN	CFS	432.8	467.0	133.5	142.0	236.2	854.0
	NH3-N	LA	LB	65.0	65.0	40.0	40.0	65.0	65.0
	NH3-N	MEDIAN	LB	263.1	20.9	6.7	7.3	13.5	42.0
ROCK CREEK	FLOW	MEAN	CFS	37.4	59.6	14.7	15.5	27.0	35.2
	NH3-N	LA	LB	16.0	16.0	11.0	11.0	16.0	16.0
	NH3-N	MEDIAN	LB	9.0	8.0	2.8	2.6	3.7	6.6
CHICKEN CREEK	FLOW	MEAN	CFS		24.3	5.4	3.0	3.5	6.7
	NH3-N	LA	LB	6.0	6.0	4.0	4.0	6.0	6.0
	NH3-N	MEDIAN	LB		6.4	1.0	0.7	0.6	1.1
FANNO CREEK	FLOW	MEAN	CFS	13.9	53.1	5.3	2.9	5.1	10.0
	NH3-N	LA	LB	9.0	9.0	6.0	6.0	9.0	9.0
	NH3-N	MEDIAN	LB	1.2	2.0	0.9	0.7	0.7	2.6

Based on weekly samples

Below detection limit values are used in the calculations at half their value (0.5 times the detection limit).

Shading indicates the WLA (NPDES Permit) or proposed LA (TMDL 22M-01-004 Schl A #2) is not met.

AGENCY ACRONYMS

AF	- Acre Feet
CFS	- Cubic Feet per Second
COE	- Corps of Engineers
DEQ	- Department of Environmental Quality
DMA	- Designated Management Agency
7DMA	- Seven Day Moving Average
DO	- Dissolved Oxygen
EPA	- Environmental Protection Agency
FEMA	- Federal Emergency Management Agency
JWC	- Joint Water Commission
LA	- Load Allocation
LOC	- Lake Oswego Corporation
mg/l	- Milligram per liter
NGVD	- National Geodetic Vertical Datum
NPDES	- National Pollutant Discharge Elimination System
NRCS	- Natural Resources Conservation Service
NTU	- Nephelometric Turbidity Units
NWS	- National Weather Service
ODA	- Oregon Department of Agriculture
ODF	- Oregon Department of Forestry
ODFW	- Oregon Department of Fish and Wildlife
OWRD	- Oregon Water Resources Department
RFC	- River Forecast Center
RM	- River Mile
SHPP	- Springhill Pump Plant
SHTP	- Springhill Treatment Plant
SM	- Stream Mile
TMDL	- Total Maximum Daily Load
TSS	- Total Suspended Solid
TVID	- Tualatin Valley Irrigation District
TVWD	- Tualatin Valley Water District
USA	- Unified Sewage Agency
USBR	- United States Bureau of Reclamation
USDA	- United States Department of Agriculture
USGS	- United States Geological Survey
WLA	- Waste Load Allocation
WQ	- Water Quality

REPORT SUMMARY

The Tualatin River Flow Management Technical Committee is and will continue to be an important part of the water resources management activities in the Tualatin Basin. The information system and monitoring network will need continuing study to improve reservoir release and management efficiencies. Additional stations may need to be established where data gaps are found.

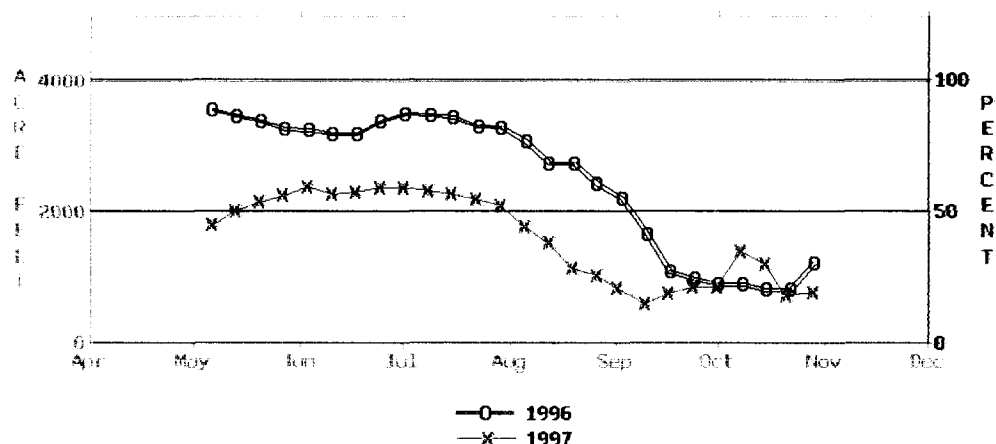
The committee has provided the vehicle for coordination and awareness of impacts caused by each entity's operation. In 1997, the committee worked towards improvement of the monitoring system and sharing of information. Coordination continues to provide a unique opportunity for partnerships in water management and shows the importance of a watershed-based approach. Data collected will provide decision-makers with some of the key information needed to make those difficult choices where there are conflicts on water management issues.

As development in the basin continues, there are legitimate concerns about protecting and enhancing existing watershed resources. An understanding of the impact that reservoir operation and stream flow modification has on the ecosystem is becoming of increased importance. Managing the water resources to protect the environment and provide the water supply necessary for a healthy economy will require cooperation from all residents of the basin.

Hydrographs for Flow Monitoring Sites

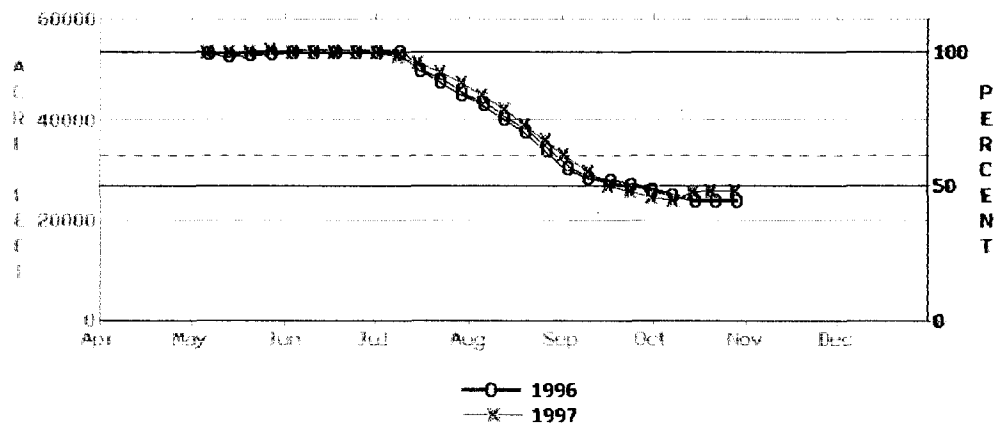
APPENDIX A

TRASK (BARNEY RESERVOIR CONTENT) (TBRC)



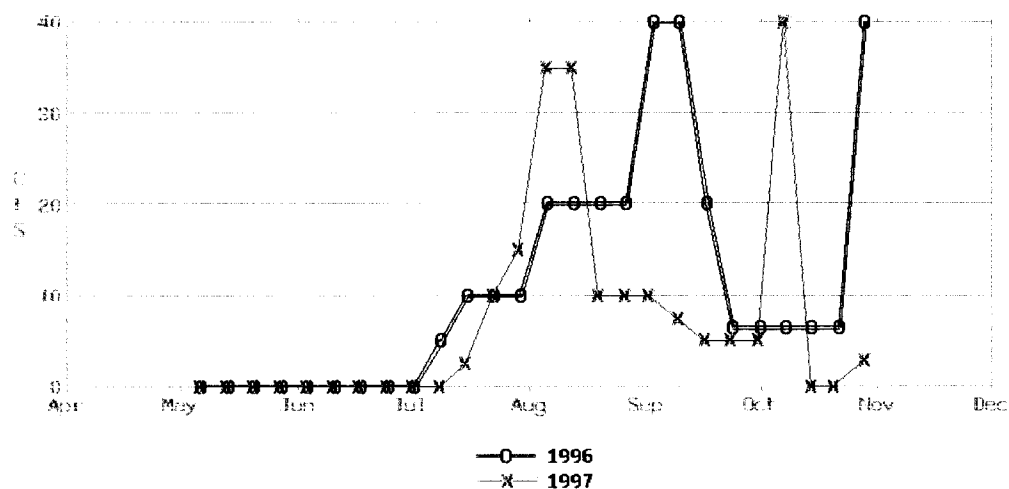
MAXIMUM POOL = 4040.8 AF AT 1590.8 FEET
 MINIMUM POOL = 0.0 AF AT 1530 FEET

SCOGGIN RESERVOIR STORAGE CONTENT (SCO)

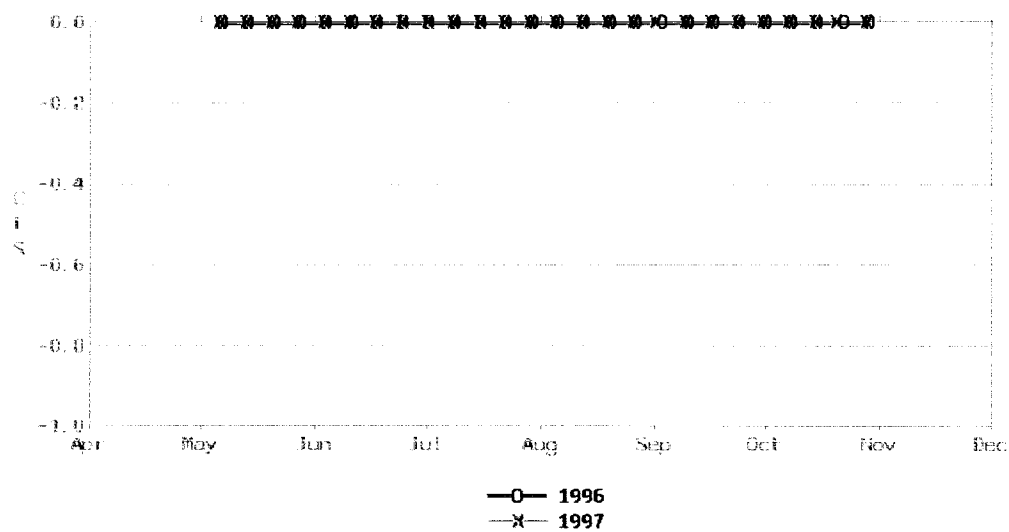


MAXIMUM POOL = 53638 AF AT 303.50 FEET (MAY 1)
 MINIMUM POOL = 33040 AF AT 283.50 FEET (NOV 1)
 ACTIVE CAPACITY = 0 AF AT 235.3 FEET

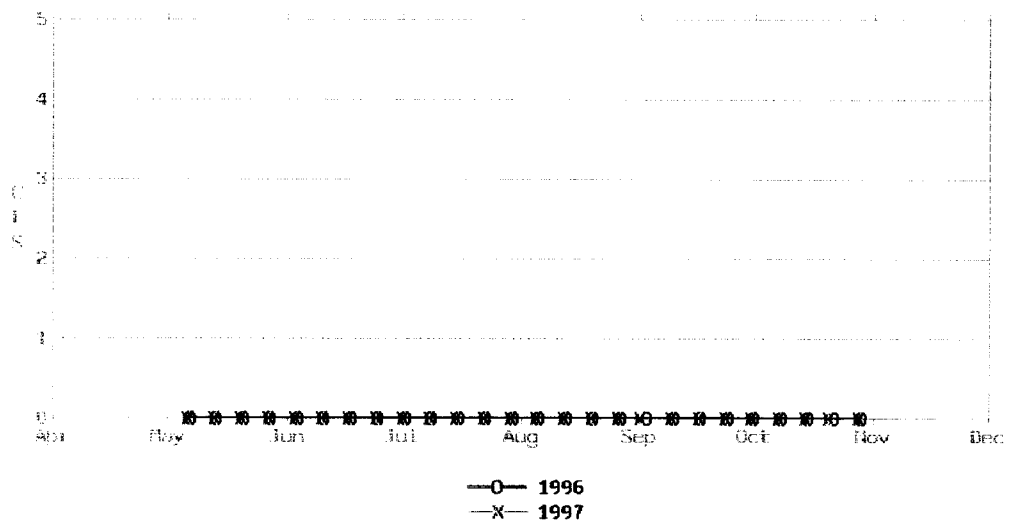
TRASK RELEASE TO TUALATIN RIVER (TRTR) RM 78.00



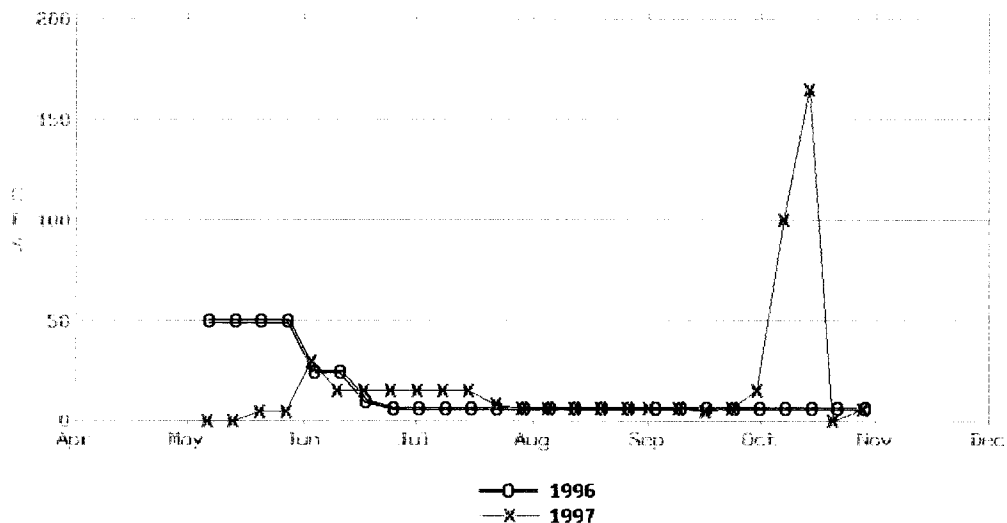
TRASK RELEASE FOR WATER QUALITY (TRWQ)



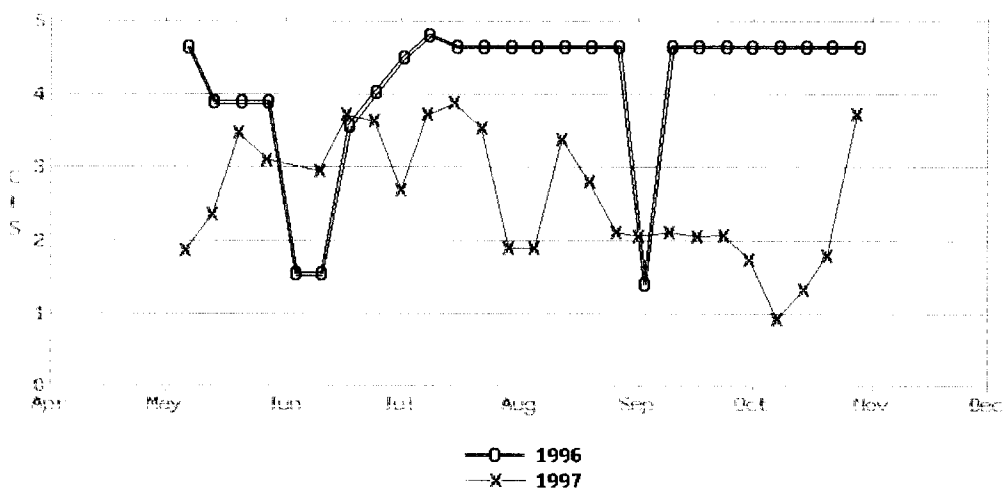
TRASK RELEASE FOR EXCHANGE (TREX)



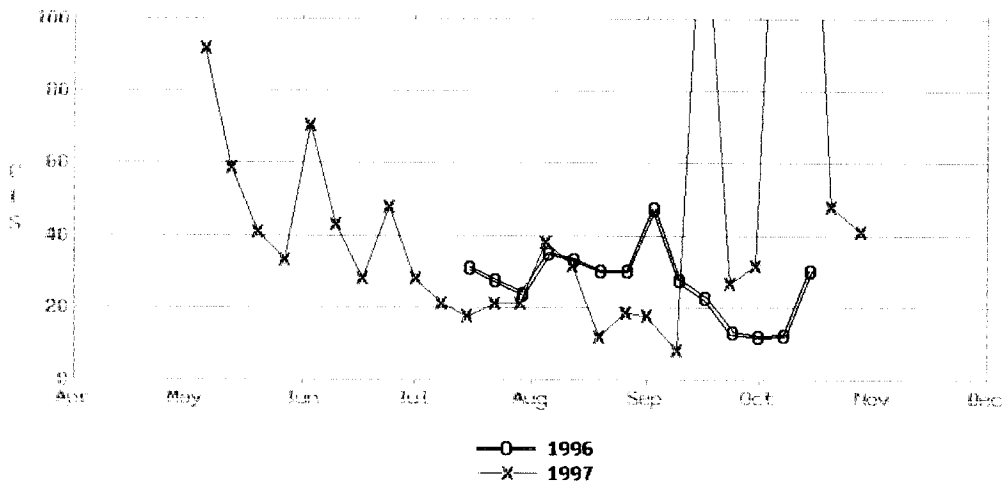
TRASK RELEASE TO NF TRASK RIVER (TRNF)



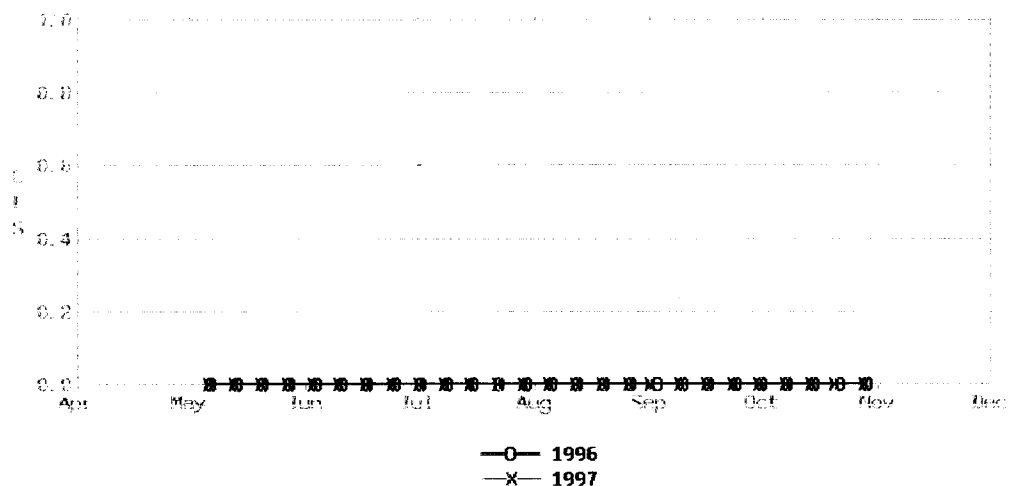
CHERRY GROVE INTAKE - HILLSBORO (CGIC) RM 73.30



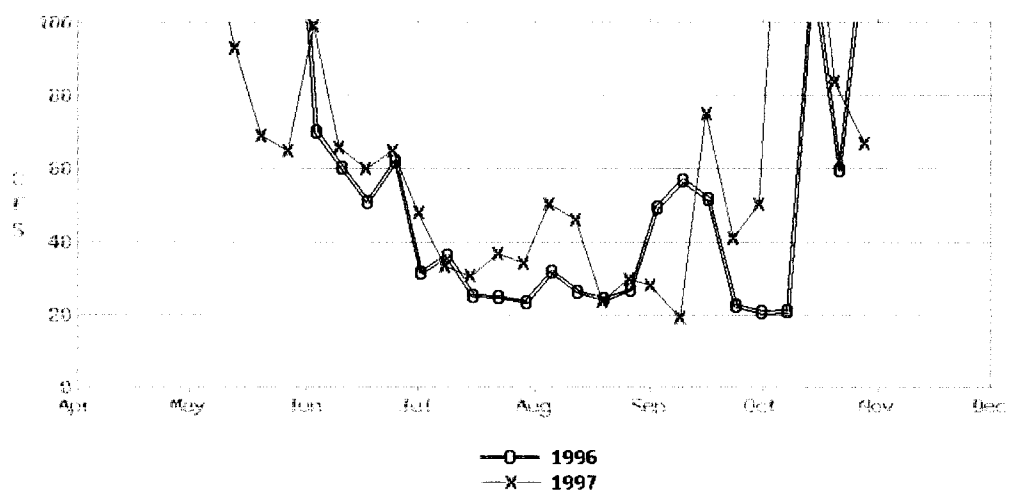
TUALATIN RIVER BELOW LEE FALLS (TRLF) RM 70.70



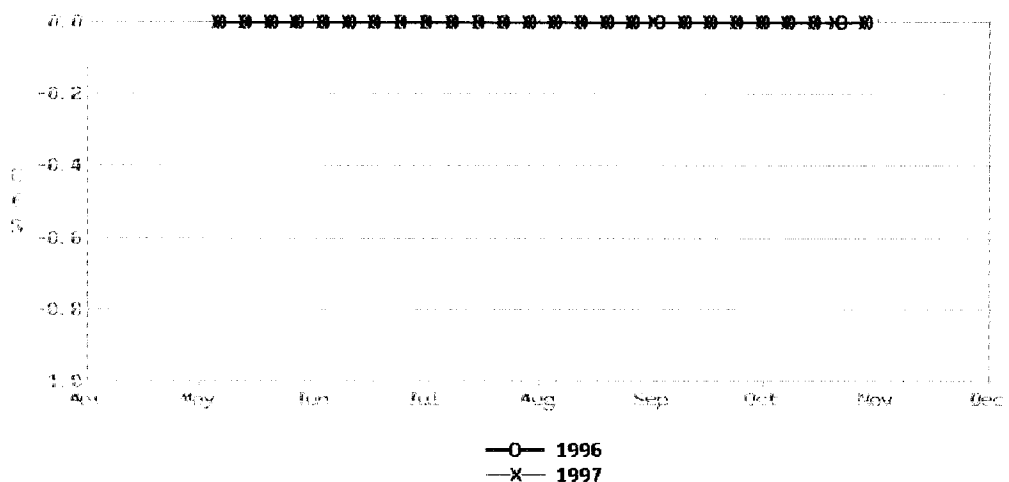
TVID - PATTON VALLEY RIV. TURNOUT #2 (PVR2) **RM 64.26**



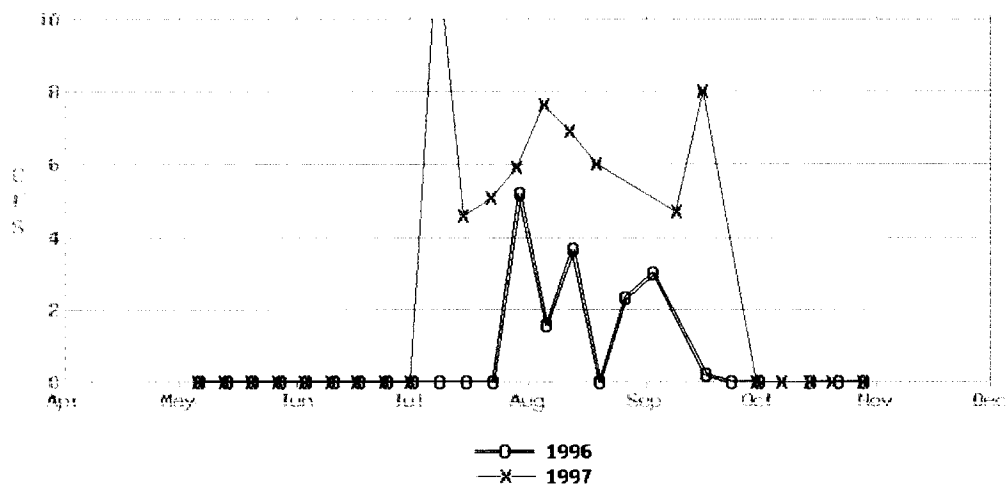
TUALATIN RIVER ABOVE GASTON (GAST) **RM 63.87**



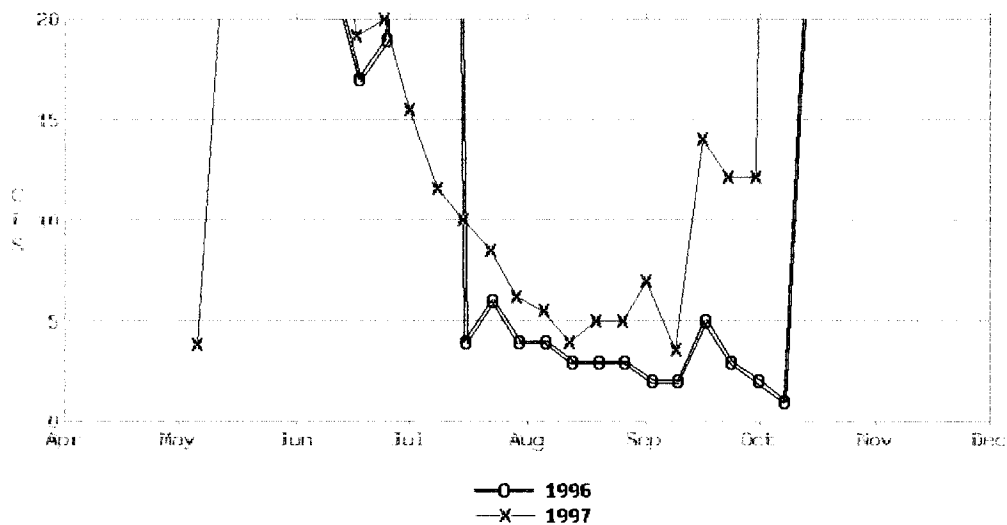
TVID - PATTON VALLEY RIV. TURNOUT #1 (PVR1) **RM 63.13**



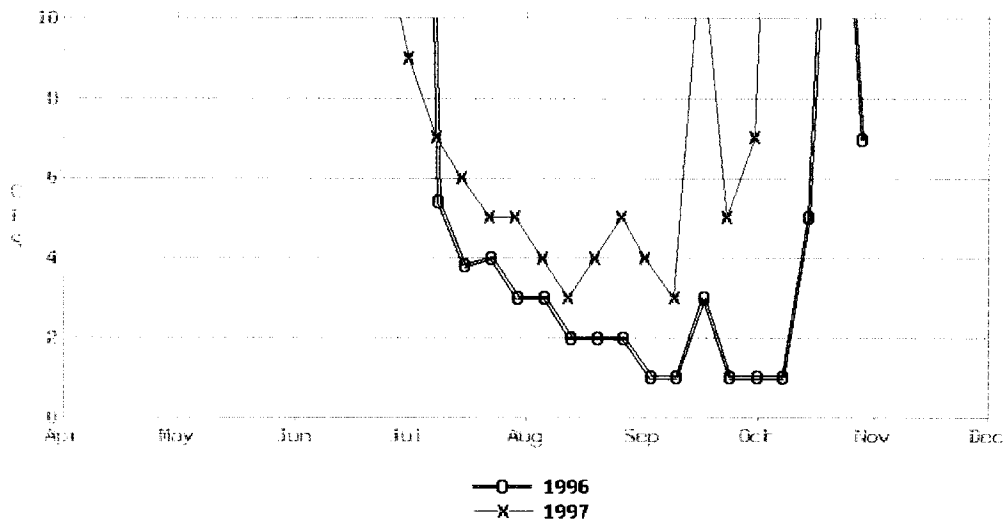
WAPATO CANAL DIVERSION (WAP0) **RM 62.00**



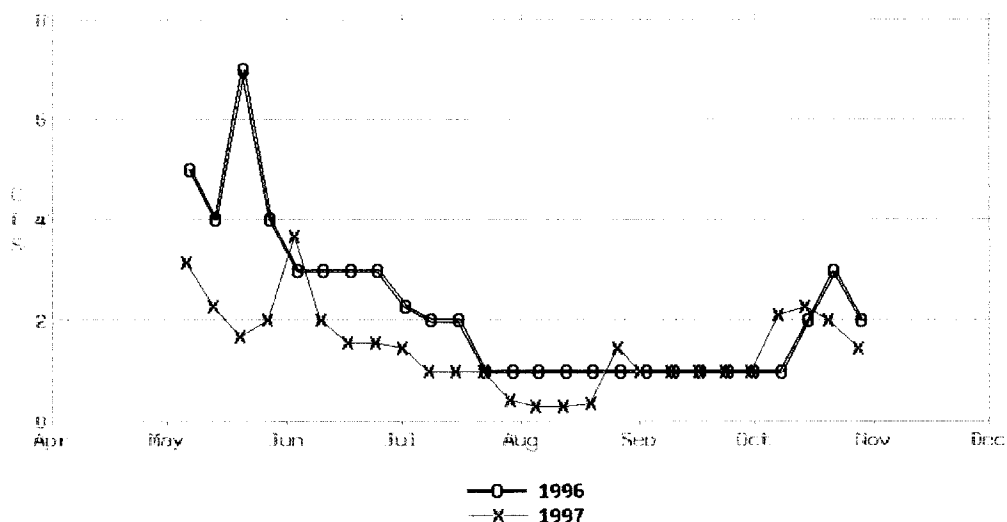
SCOGGIN CREEK ABOVE HAGG LAKE (SCLO)



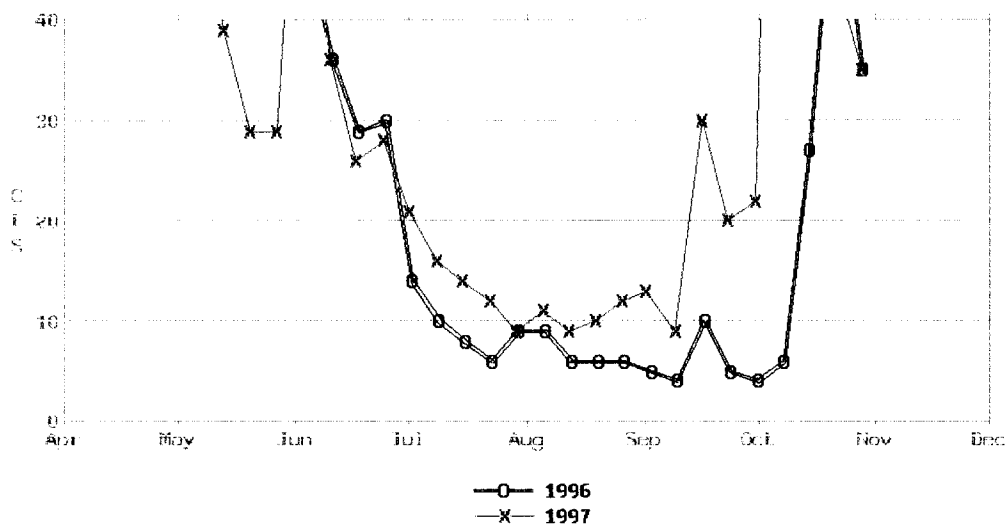
SAIN CREEK ABOVE HAGG LAKE (SCH0)



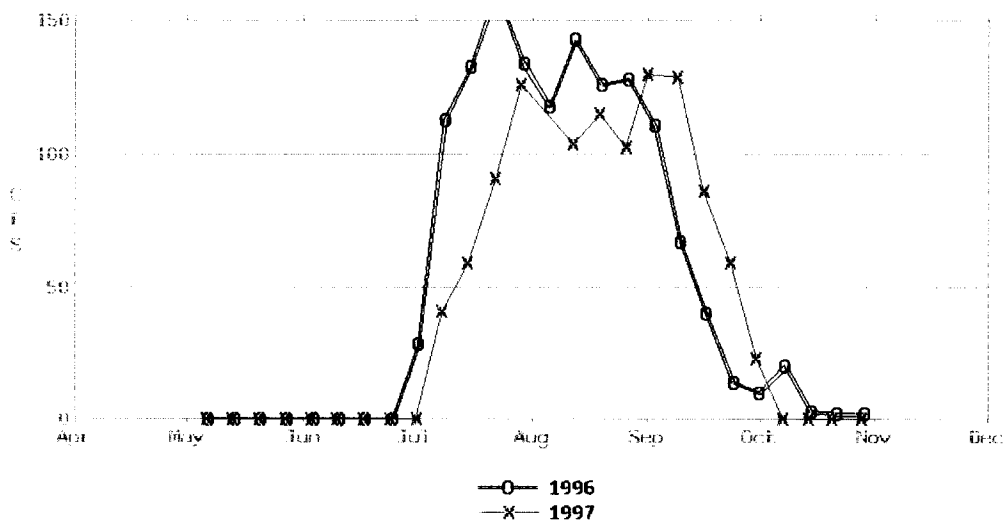
TANNER CREEK ABOVE HAGG LAKE (TANO)



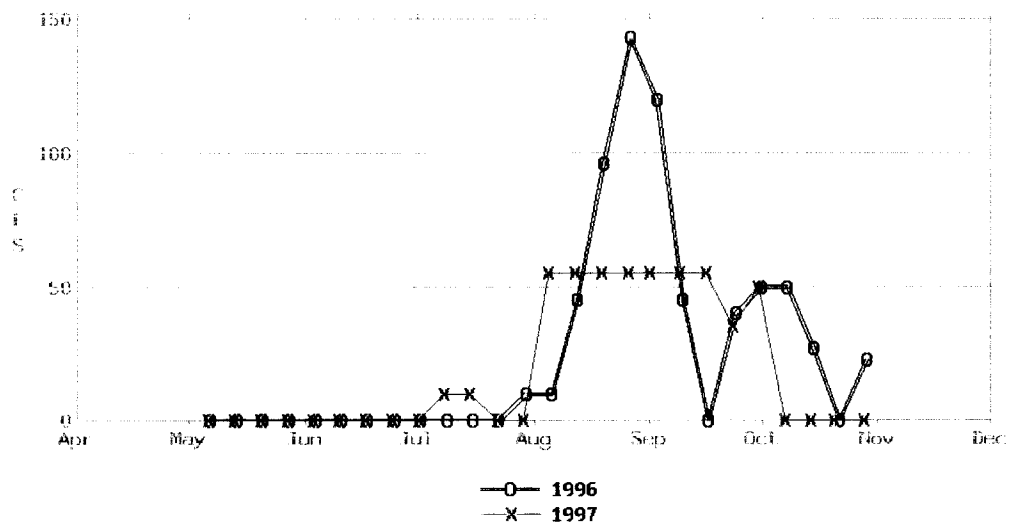
SCOGGINS RESERVOIR COMP. INFLOW (SRCI)



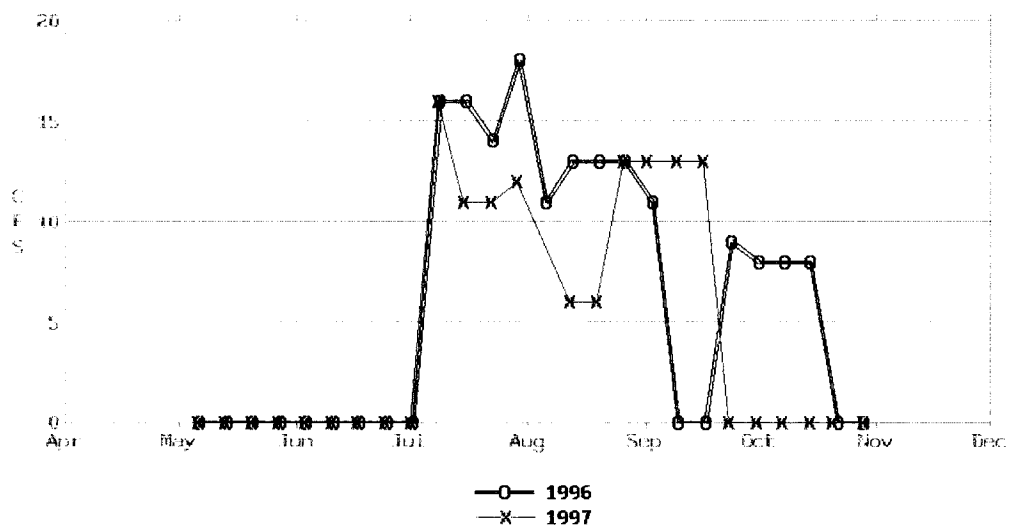
TVID RELEASE FROM SCOGGIN RES. (SRTV)



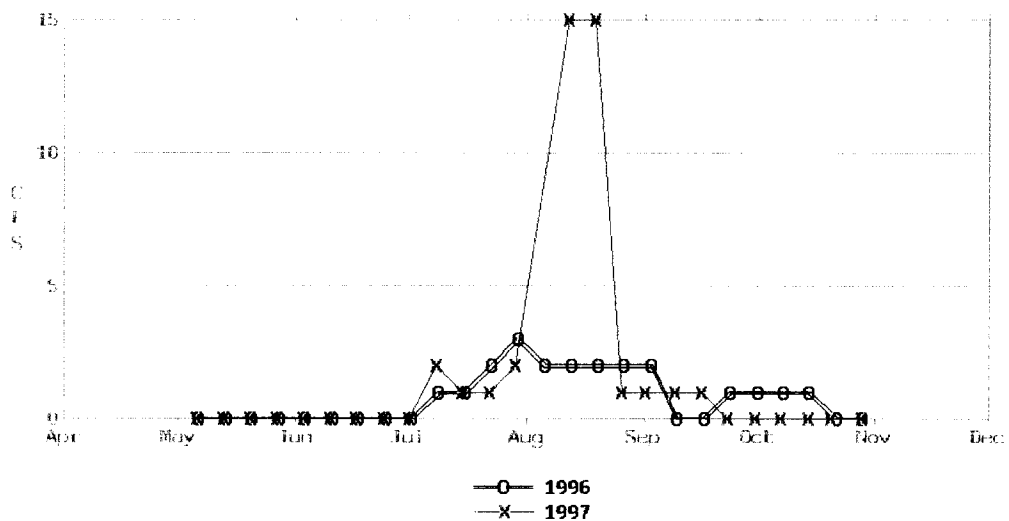
USA RELEASE FROM SCOGGIN RES. (SRUS)



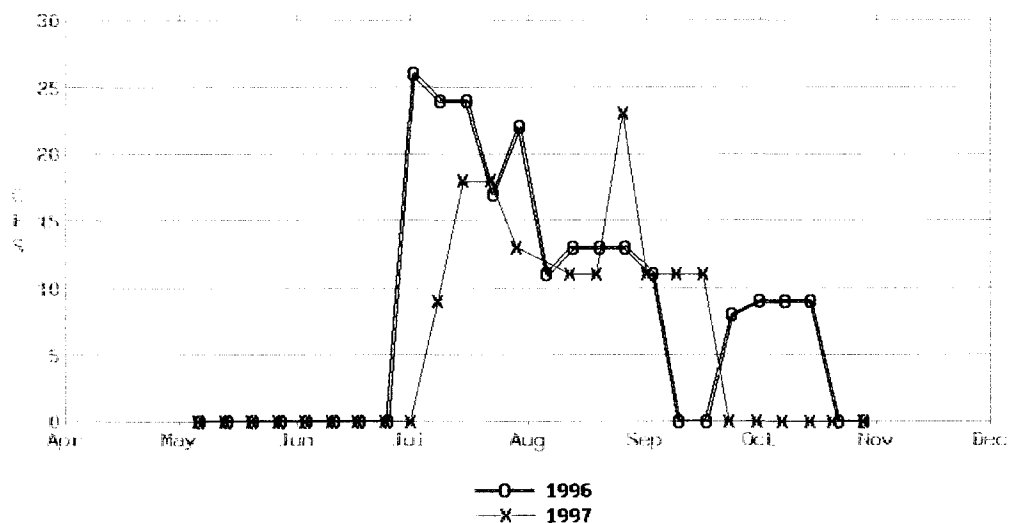
BEAVERTON RELEASE FROM SCOGGIN RES. (SRBV)



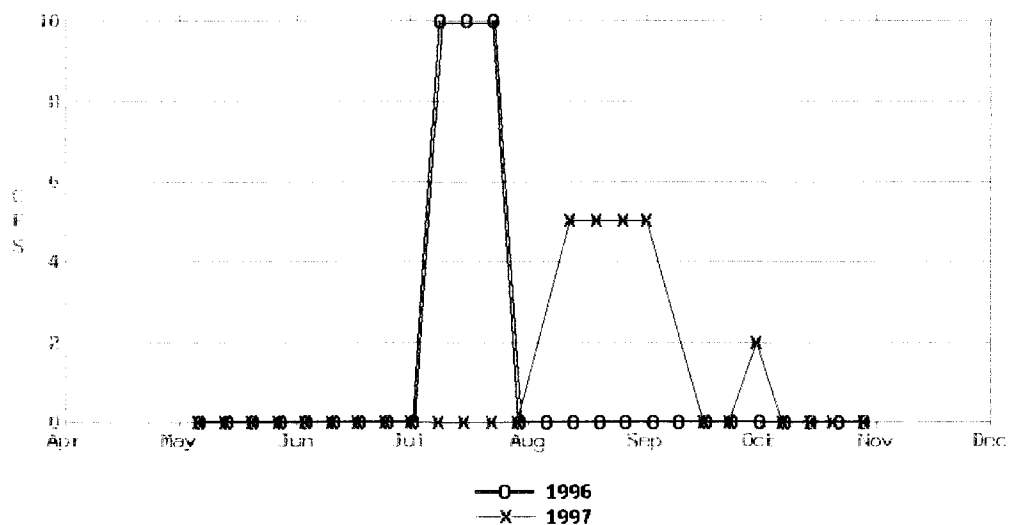
FOREST GROVE RELEASE FROM SCOG. RES. (SRFG)



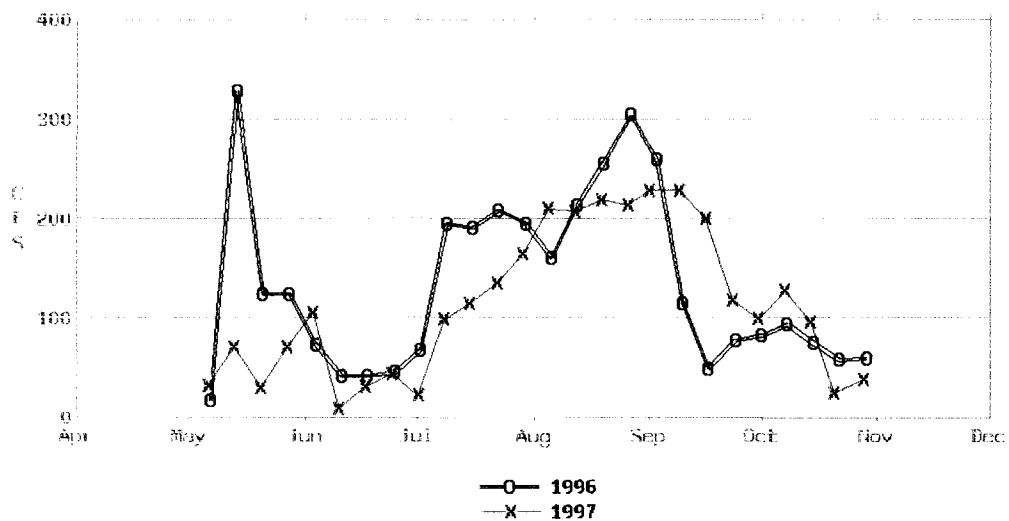
HILLSBORO RELEASE FROM SCOGGIN RES. (SRHL)



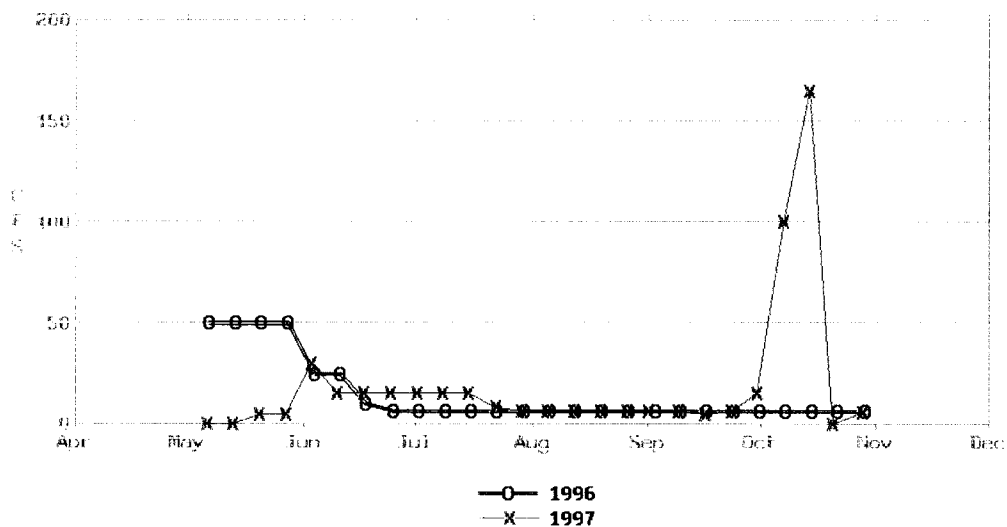
LOC RELEASE FROM SCOGGIN RES. (SRLO)



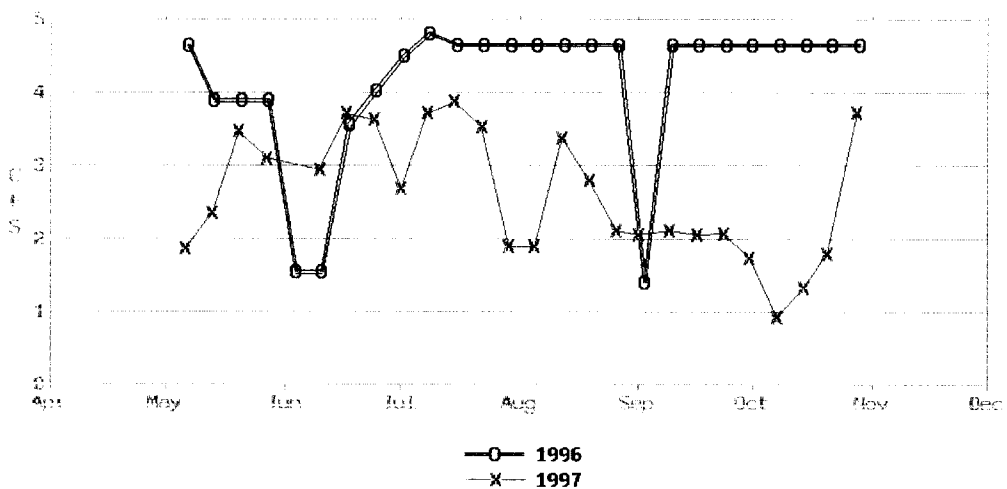
SCOGGIN CR. BELOW HAGG LAKE (RELEASE) (SC00)



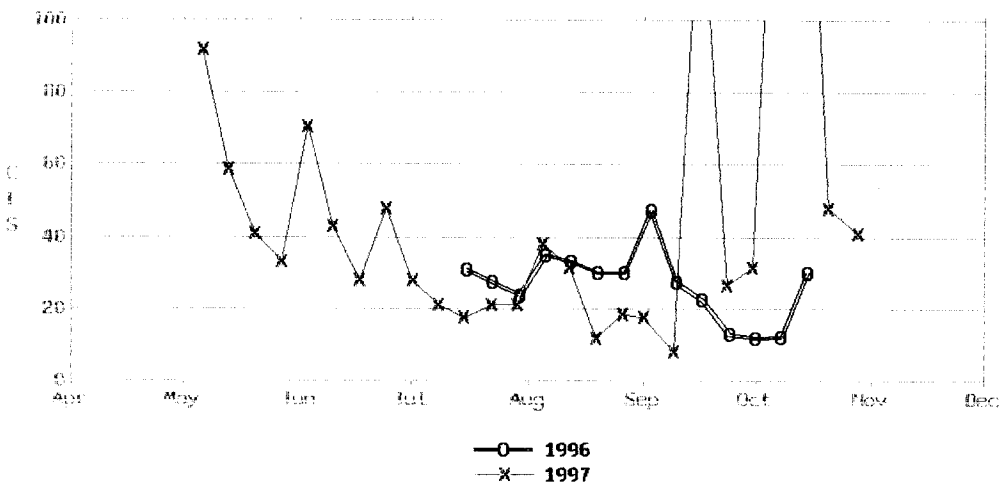
TRASK RELEASE TO NF TRASK RIVER (TRNF)



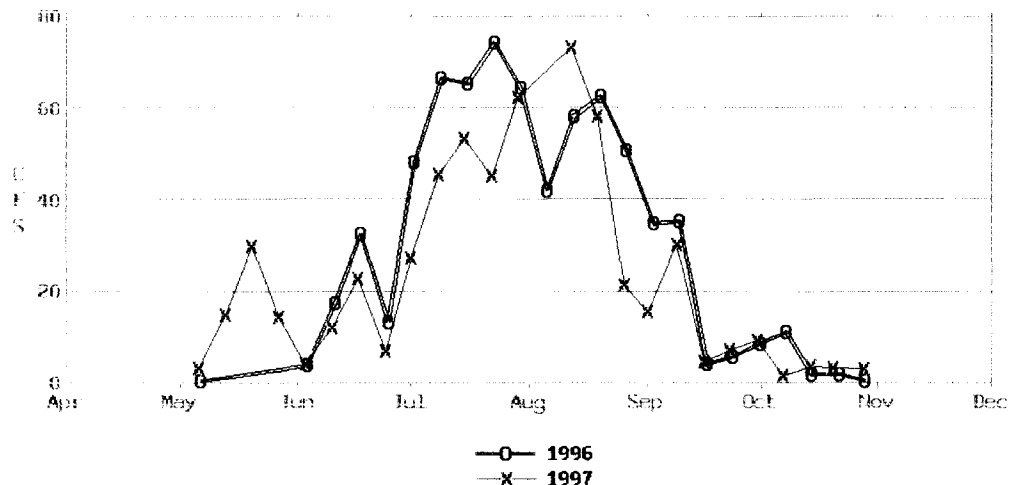
CHERRY GROVE INTAKE - HILLSBORO (CGIC) RM 73.30



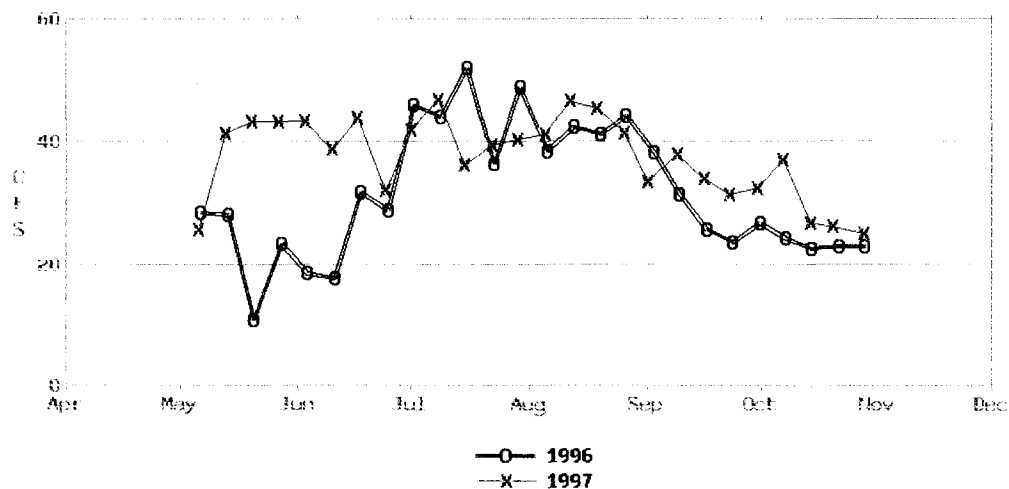
TUALATIN RIVER BELOW LEE FALLS (TRLF) RM 70.70



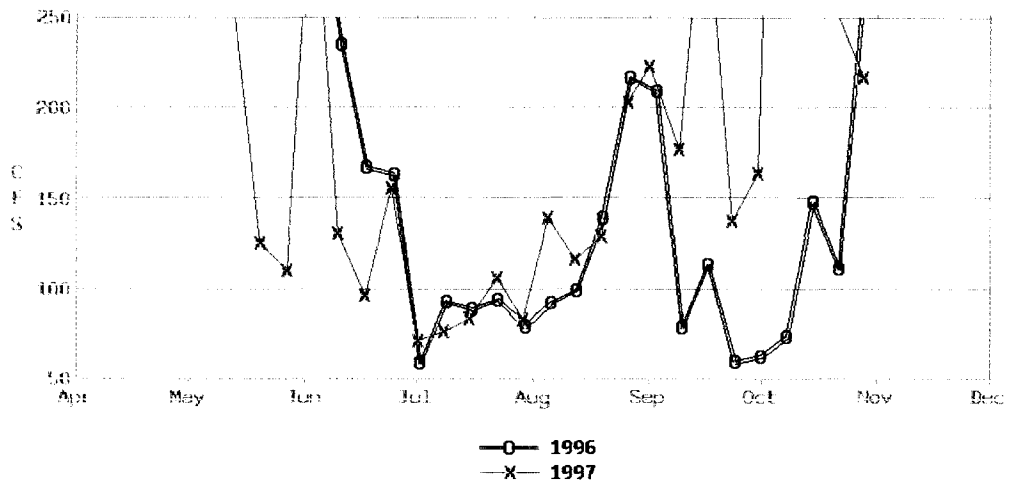
TVID - SPRINGHILL PUMP PLANT DIV. (SHPP) **RM 56.10**



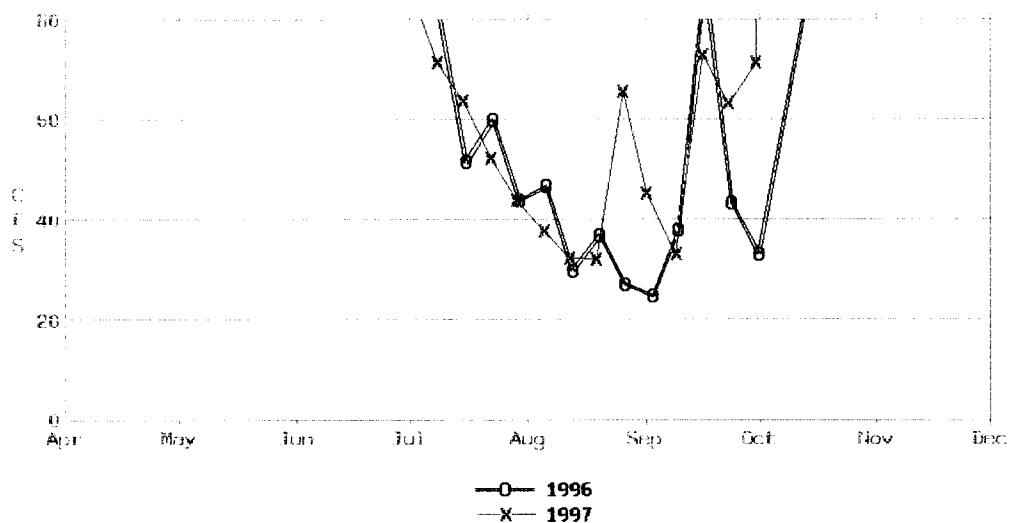
JOINT WATER DIVERSION AT SHPP PLANT (JWCS) **RM 56.10**



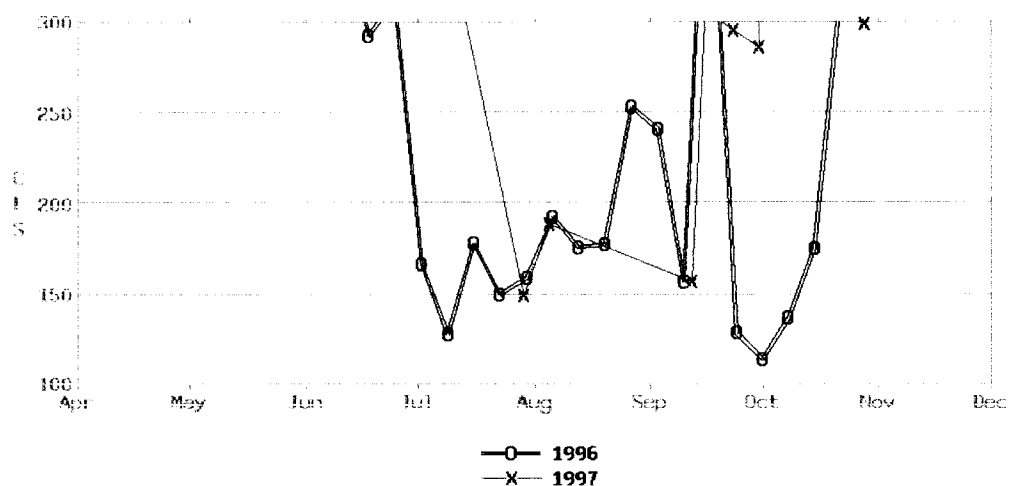
TUALATIN RIV. AT GOLF COURSE RD. (TRGC) **RM 51.54**



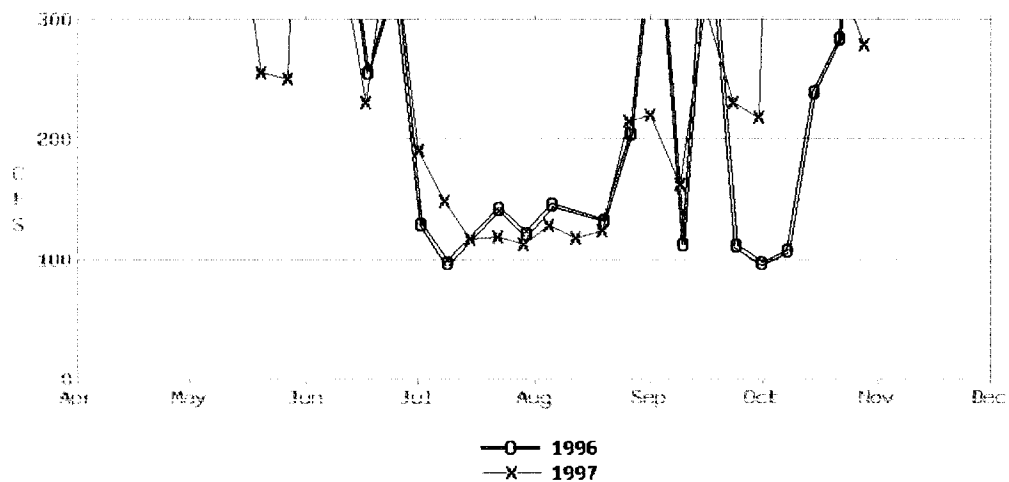
DAIRY CREEK AT HWY 8 BRIDGE (DAIRY)



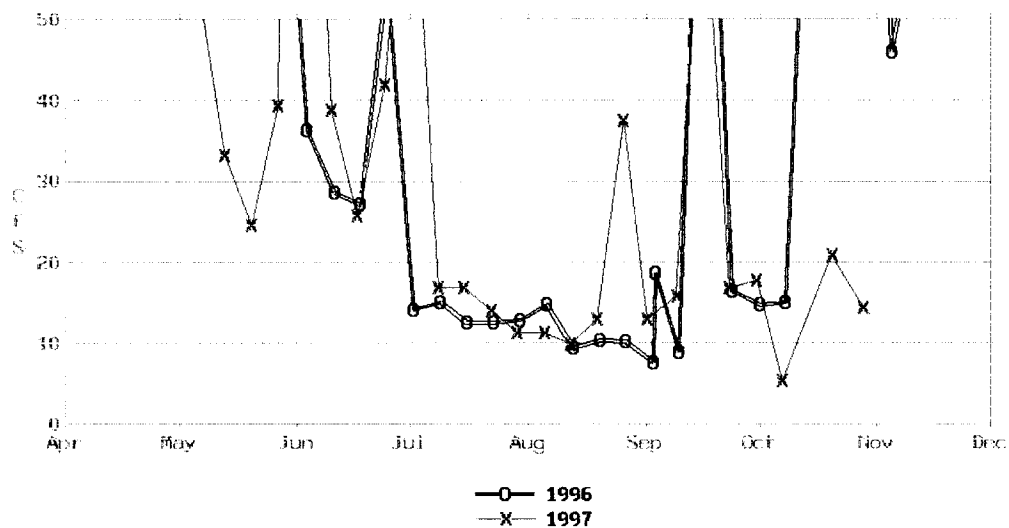
TUALATIN RIV. AT HWY 219 BRIDGE (TRJB) RM 44.40



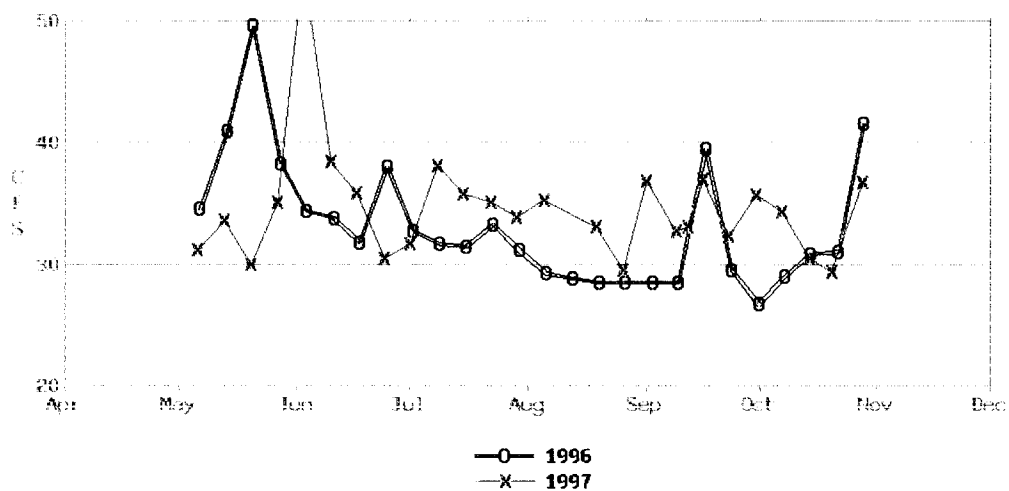
TUALATIN RIV. AT ROOD RD. BRIDGE (ROOD) RM 38.44



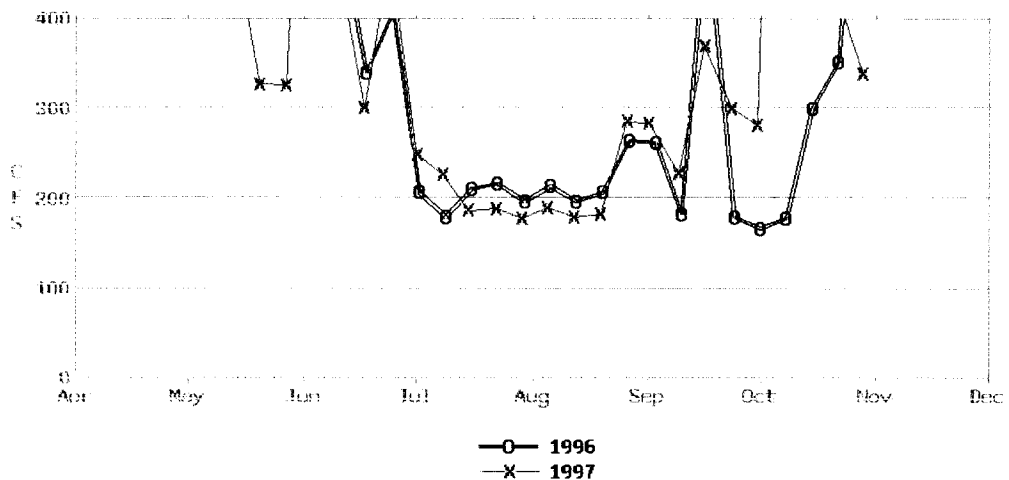
ROCK CREEK AT TV HWY (RCTV)



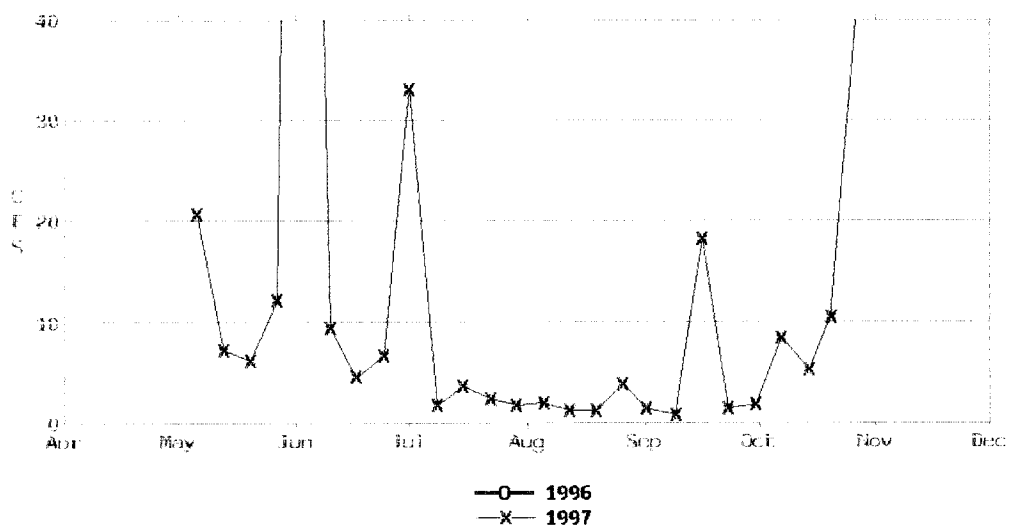
USA ROCK CREEK WWTP DISCHARGE (USARC) RM 38.08



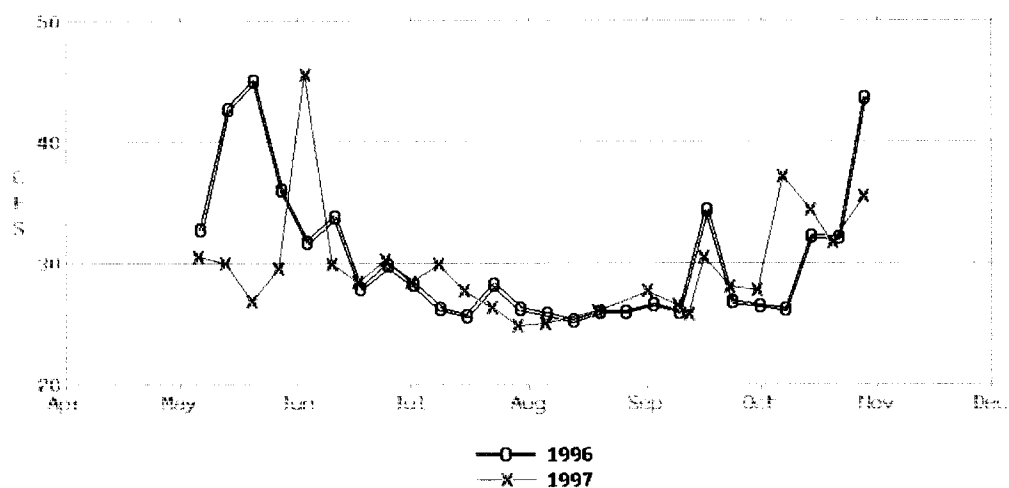
TUALATIN R. AT FARMINGTON RD. BRIDGE (FRMO) RM 33.30



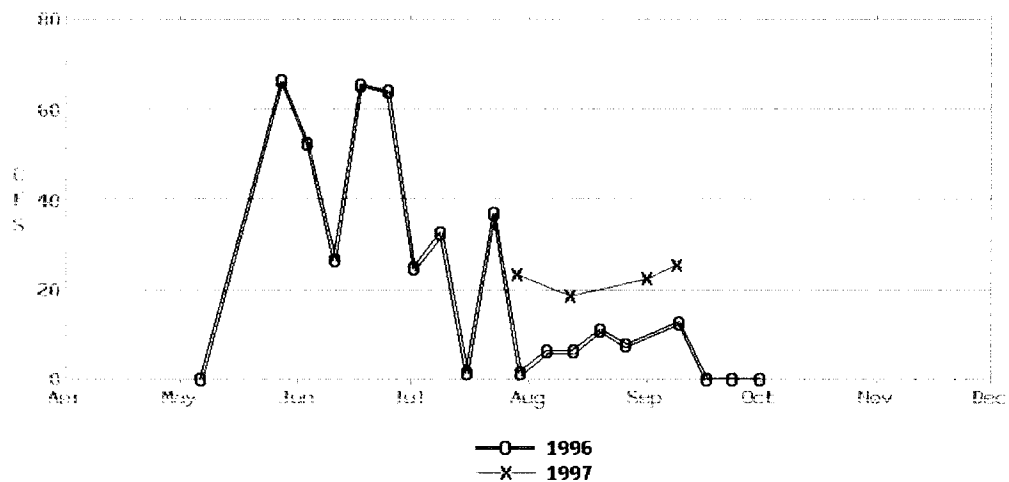
FANNO CREEK AT DURHAM RD. BRIDGE (FANO)



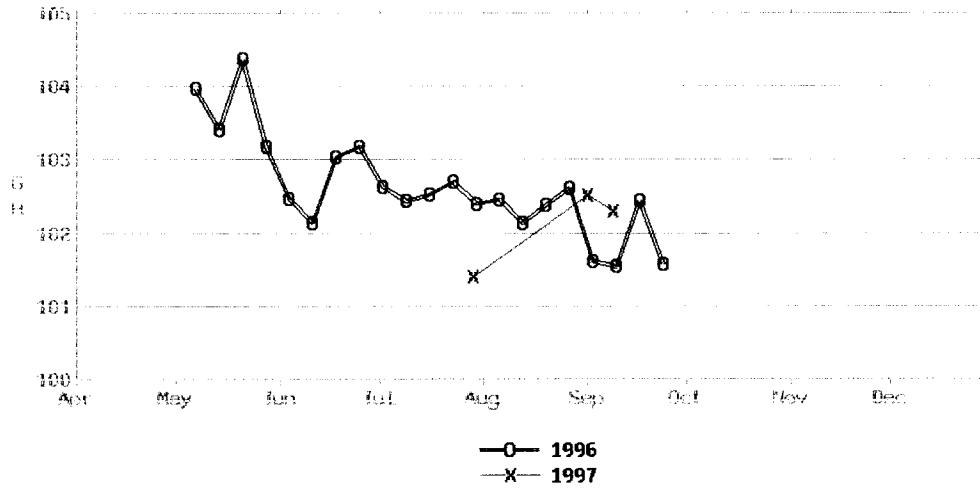
USA DURHAM WWTP DISCHARGE (USADH) RM 9.33



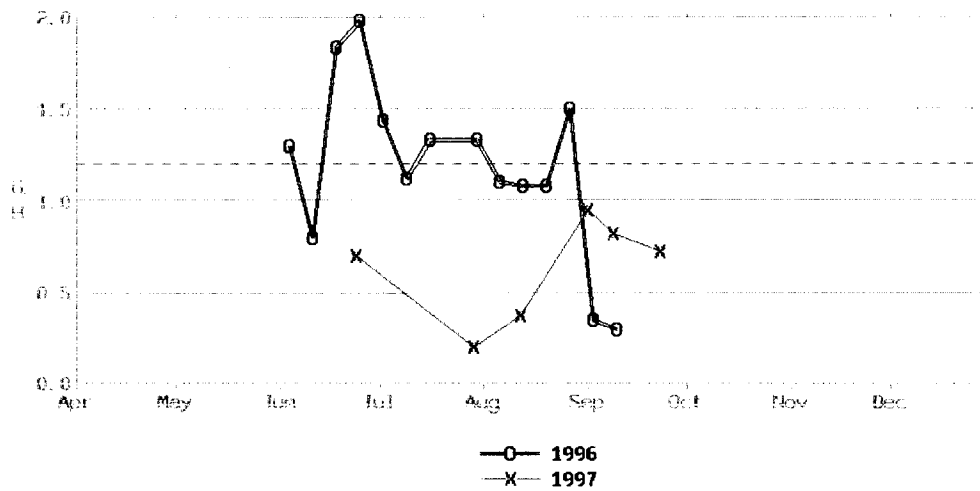
LAKE OSWEGO CORP. CANAL DIVERSION (LOCL) RM 6.70



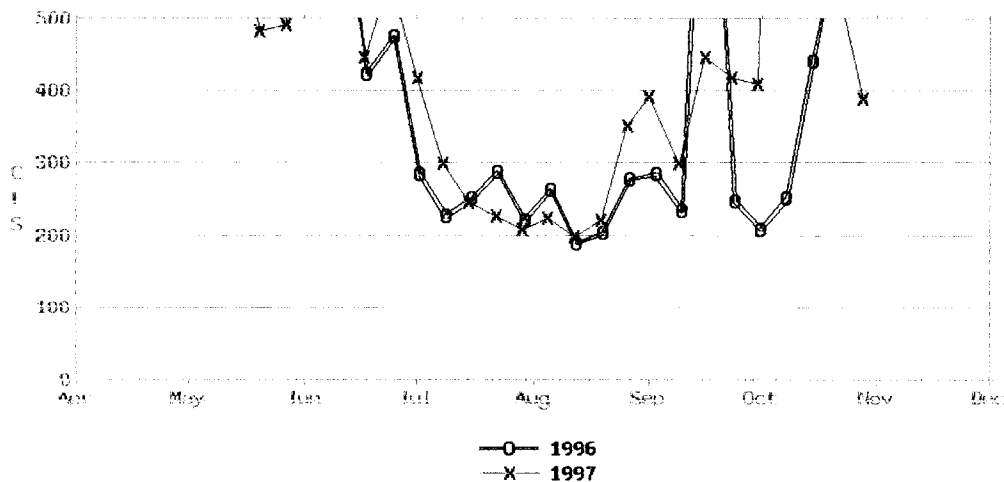
TUALATIN RIV. AT LOC CANAL (LOCS) RM 6.70



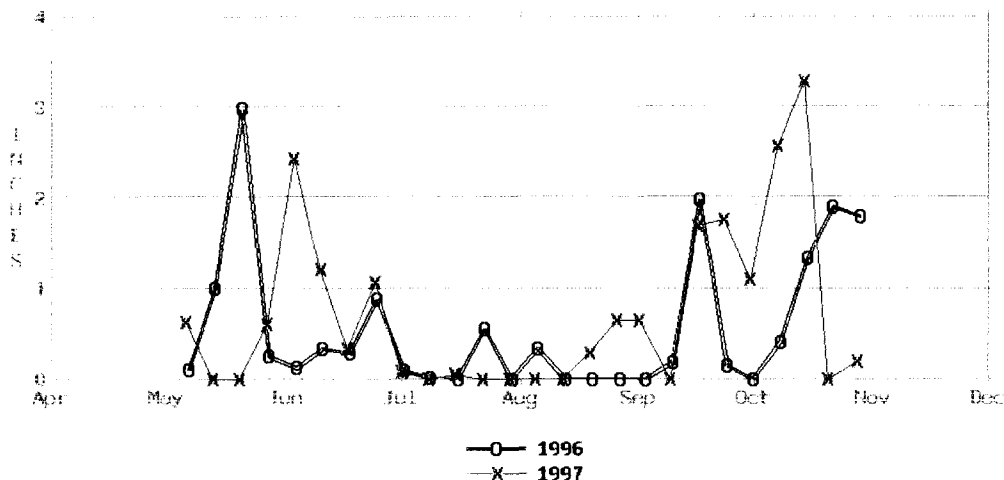
TUALATIN RIV. AT LOC DAM (LOCD) RM 3.45



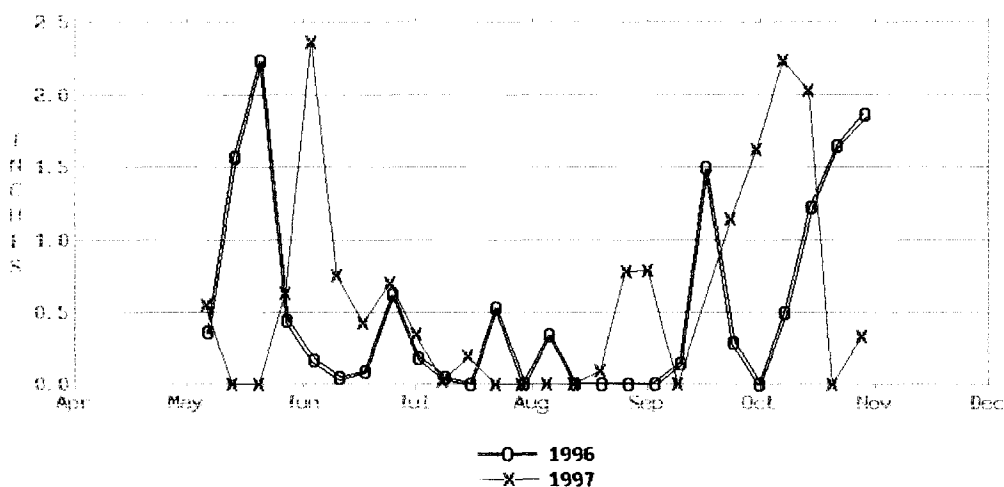
TUALATIN RIV. AT WEST LINN (WSLO) RM 1.75



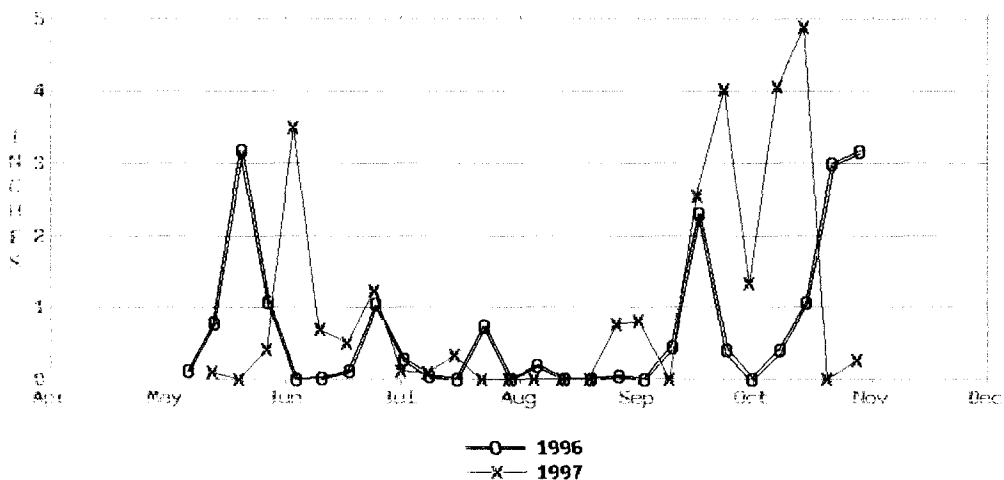
SCOGGIN RESERVOIR STATION (SCOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



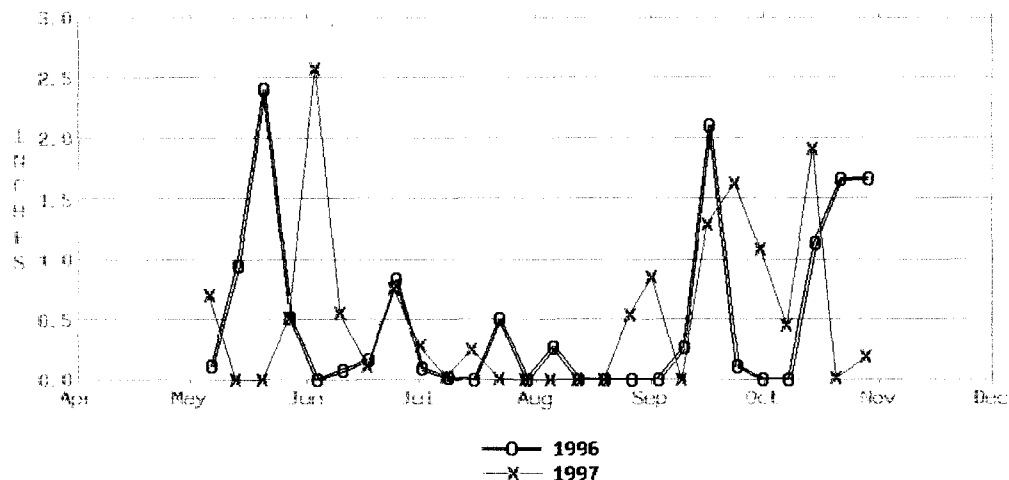
FOREST GROVE STATION (FGOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



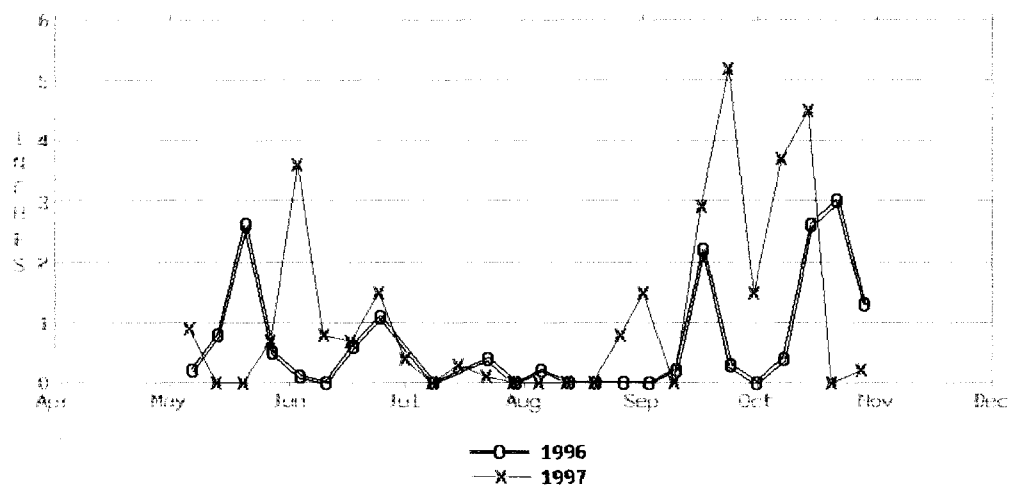
HAINES FALLS STATION (HFOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



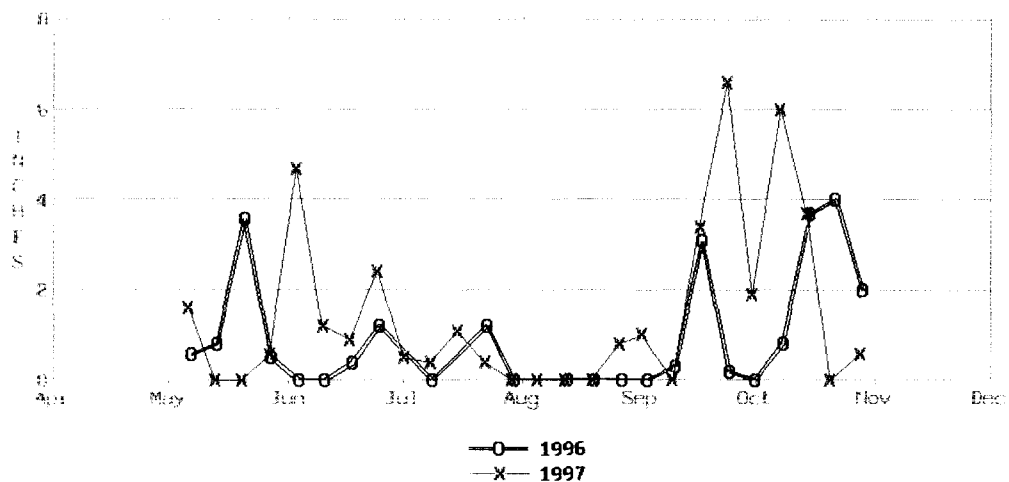
JOINT WATER PLANT STATION (JWOP) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



SAIN CREEK STATION (SECO) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



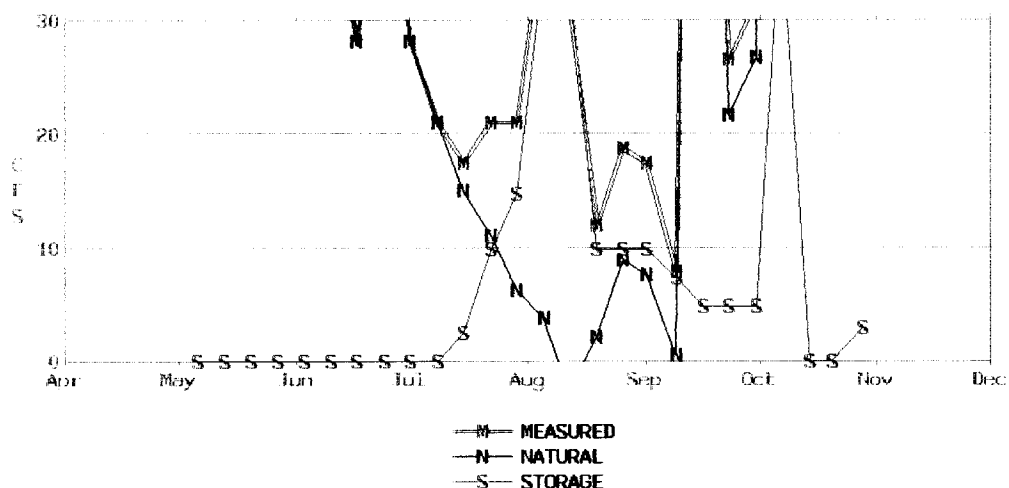
SADDLE MOUNTAIN STATION (SDMO) **PREVIOUS 7 DAYS ACCUMULATED PRECIPITATION**



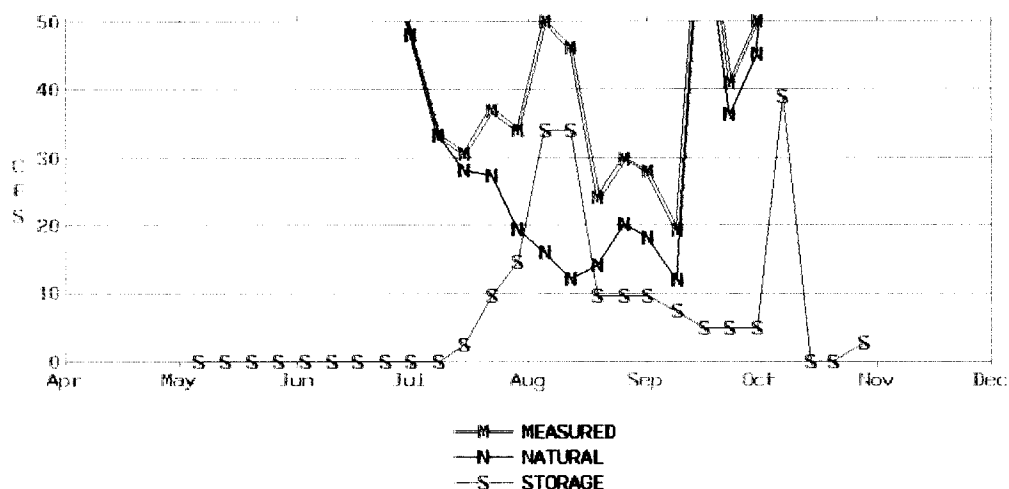
**Hydrographs for Natural Flow
Determination and Data Tables**

APPENDIX B

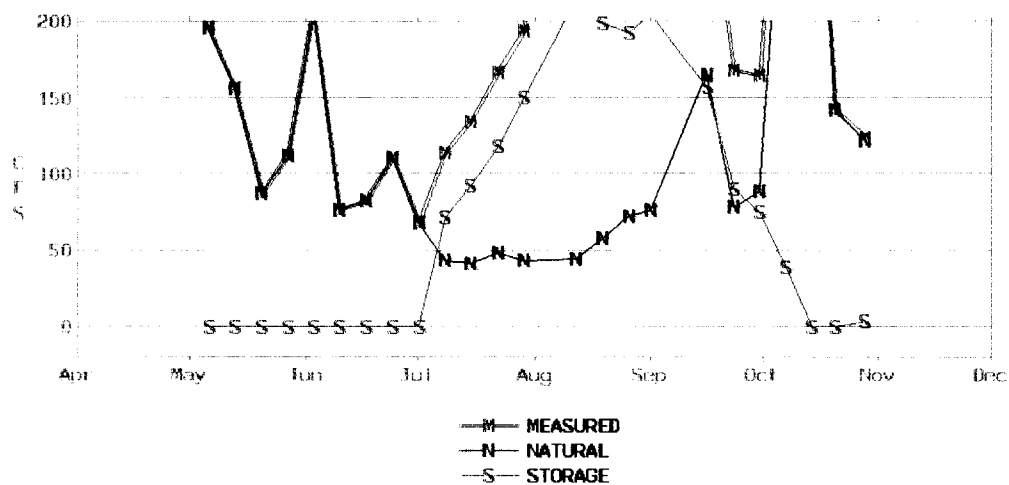
NATURAL FLOW AT LEE FALLS ON TUALATIN RIVER (NFTRLF) RM 70.70



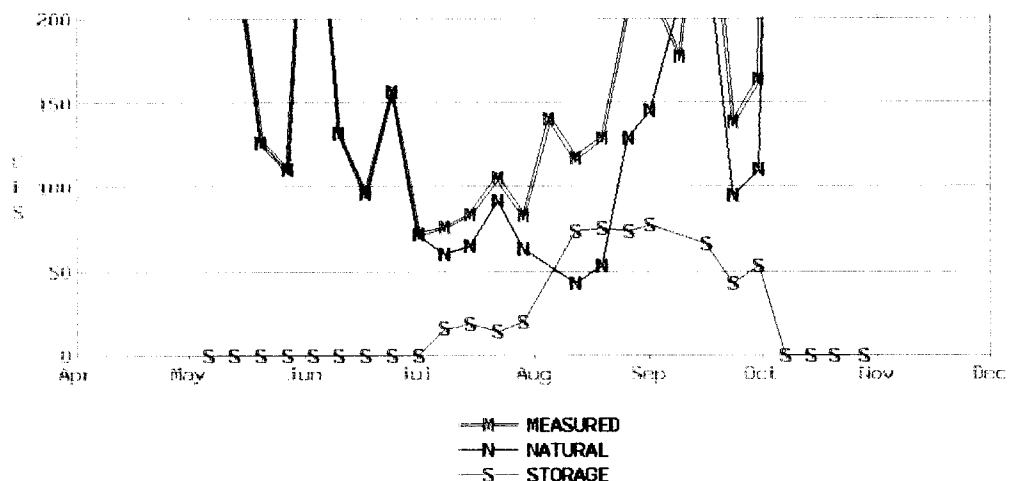
NATURAL FLOW AT GASTON GAUGE ON TUALATIN RIVER (NFGAST) RM 63.87



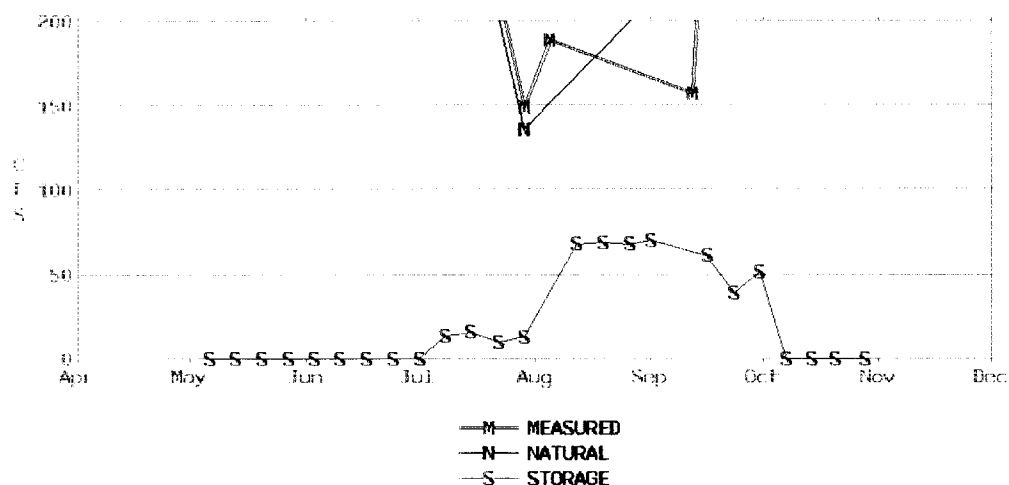
NATURAL FLOW AT DILLEY GAUGE ON TUALATIN RIVER (NFDLLO) RM 58.82



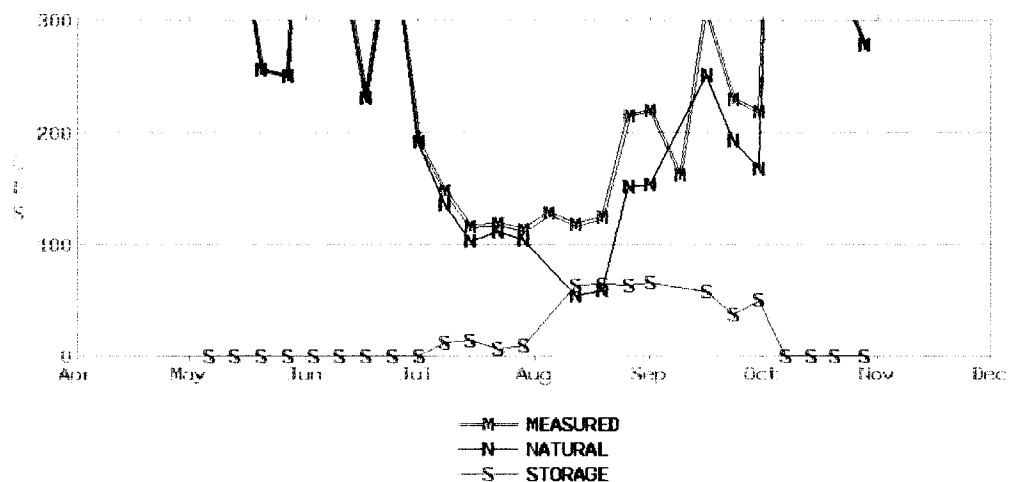
NATURAL FLOW AT GOLF COURSE BRIDGE GAUGE ON TUALATIN RIVER (NFTRGC) RM 51.54



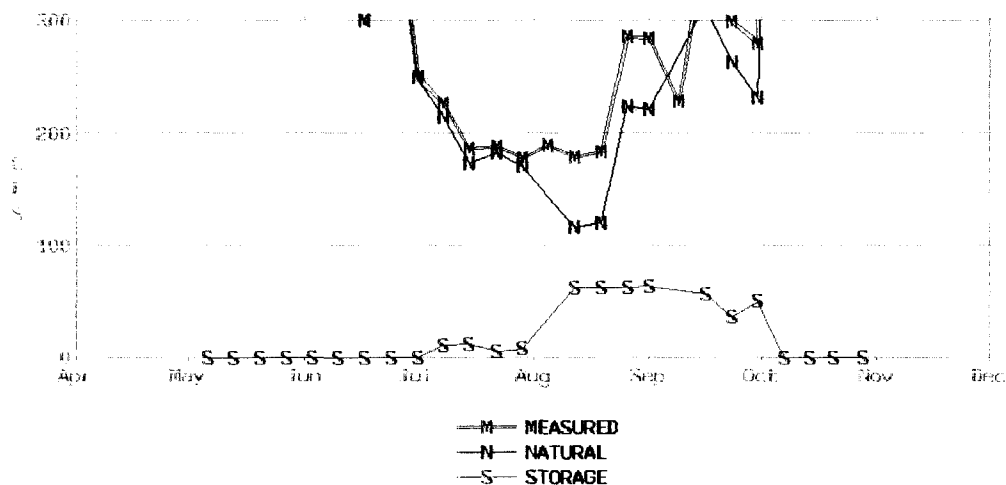
NATURAL FLOW AT HWY 219 BRIDGE GAUGE ON TUALATIN RIVER (NFTRJB) RM 44.40



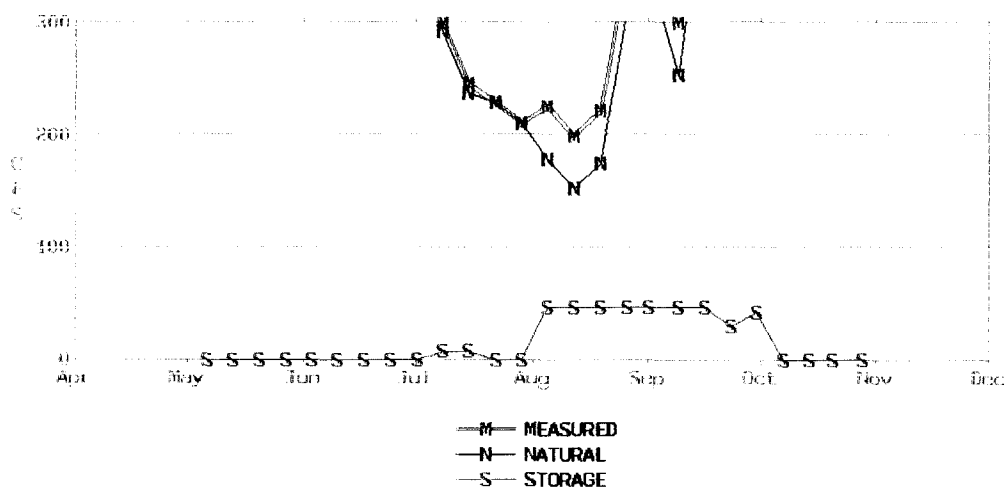
NATURAL FLOW AT ROOD BRIDGE RD. ON TUALATIN RIVER (NFROOD) RM 38.44



NATURAL FLOW AT FARMINGTON RD. BRIDGE ON TUALATIN RIVER (NFFRMO) RM 33.30



NATURAL FLOW AT WEST LINN ON TUALATIN RIVER (NFWSL0) RM 1.75



NATURAL FLOW
AT LEE FALLS ON TUALATIN RIVER

	NFTRLF	TRLF	STORAGE	TRTR	LOSS (2%)
06-MAY-97	92.00	92.00	0.00	0.0	0.00
13-MAY-97	58.70	58.70	0.00	0.0	0.00
20-MAY-97	41.00	41.00	0.00	0.0	0.00
27-MAY-97	33.50	33.50	0.00	0.0	0.00
03-JUN-97	70.40	70.40	0.00	0.0	0.00
10-JUN-97	43.00	43.00	0.00	0.0	0.00
17-JUN-97	28.10	28.10	0.00	0.0	0.00
24-JUN-97	48.00	48.00	0.00	0.0	0.00
01-JUL-97	28.10	28.10	0.00	0.0	0.00
08-JUL-97	20.90	20.90	0.00	0.0	0.00
15-JUL-97	14.95	17.40	2.45	2.5	0.05
22-JUL-97	11.10	20.90	9.80	10.0	0.20
29-JUL-97	6.20	20.90	14.70	15.0	0.30
05-AUG-97	3.80	38.10	34.30	35.0	0.70
12-AUG-97	-2.70	31.60	34.30	35.0	0.70
19-AUG-97	2.20	12.00	9.80	10.0	0.20
26-AUG-97	8.90	18.70	9.80	10.0	0.20
01-SEP-97	7.60	17.40	9.80	10.0	0.20
09-SEP-97	0.59	7.94	7.35	7.5	0.15
12-SEP-97					
16-SEP-97	135.10	140.00	4.90	5.0	0.10
23-SEP-97	21.60	26.50	4.90	5.0	0.10
30-SEP-97	26.70	31.60	4.90	5.0	0.10
07-OCT-97	159.20	198.40	39.20	40.0	0.80
14-OCT-97	198.40	198.40	0.00	0.0	0.00
20-OCT-97	48.00	48.00	0.00	0.0	0.00
28-OCT-97	38.06	41.00	2.94	3.0	0.06

NFTRLF = TRLF - STORAGE
 WHERE STORAGE = TRTR - LOSS
 WHERE LOSS = TRTR * .02

NATURAL FLOW
AT GASTON GAUGE ON TUALATIN RIVER

	NFGAST	GAST	STORAGE	TRTR	LOSS (3%)	PVR2
06-MAY-97	133.000	133.0	0.000	0.0	0.000	0
13-MAY-97	93.000	93.0	0.000	0.0	0.000	0
20-MAY-97	69.000	69.0	0.000	0.0	0.000	0
27-MAY-97	65.000	65.0	0.000	0.0	0.000	0
03-JUN-97	99.000	99.0	0.000	0.0	0.000	0
10-JUN-97	66.000	66.0	0.000	0.0	0.000	0
17-JUN-97	60.000	60.0	0.000	0.0	0.000	0
24-JUN-97	65.000	65.0	0.000	0.0	0.000	0
01-JUL-97	48.000	48.0	0.000	0.0	0.000	0
08-JUL-97	33.200	33.2	0.000	0.0	0.000	0
15-JUL-97	28.075	30.5	2.425	2.5	0.075	0
22-JUL-97	27.300	37.0	9.700	10.0	0.300	0
29-JUL-97	19.450	34.0	14.550	15.0	0.450	0
05-AUG-97	16.050	50.0	33.950	35.0	1.050	0
12-AUG-97	12.050	46.0	33.950	35.0	1.050	0
19-AUG-97	14.200	23.9	9.700	10.0	0.300	0
26-AUG-97	20.200	29.9	9.700	10.0	0.300	0
01-SEP-97	18.200	27.9	9.700	10.0	0.300	0
09-SEP-97	11.925	19.2	7.275	7.5	0.225	0
12-SEP-97						
16-SEP-97	70.150	75.0	4.850	5.0	0.150	0
23-SEP-97	36.150	41.0	4.850	5.0	0.150	0
30-SEP-97	45.150	50.0	4.850	5.0	0.150	0
07-OCT-97	130.200	169.0	38.800	40.0	1.200	0
14-OCT-97	146.000	146.0	0.000	0.0	0.000	0
20-OCT-97	84.000	84.0	0.000	0.0	0.000	0
28-OCT-97	64.090	67.0	2.910	3.0	0.090	0

NFGAST = GAST - STORAGE

WHERE STORAGE = (TRTR - LOSS) + PVR2

WHERE LOSS = TRTR * .03

NATURAL FLOW
AT DILLEY GAUGE ON TUALATIN RIVER

	NFDLLO	DLLO	STORAGE	TRTR	SRUS	SRTV	SRHL	SRFG	SRLO	SRBV
06-MAY-97	196.0000	196	0.0000	0.0	0	0	0	0	0	0
13-MAY-97	156.0000	156	0.0000	0.0	0	0	0	0	0	0
20-MAY-97	87.0000	87	0.0000	0.0	0	0	0	0	0	0
27-MAY-97	112.0000	112	0.0000	0.0	0	0	0	0	0	0
03-JUN-97	208.0000	208	0.0000	0.0	0	0	0	0	0	0
10-JUN-97	76.0000	76	0.0000	0.0	0	0	0	0	0	0
17-JUN-97	82.0000	82	0.0000	0.0	0	0	0	0	0	0
24-JUN-97	110.0000	110	0.0000	0.0	0	0	0	0	0	0
01-JUL-97	68.0000	68	0.0000	0.0	0	0	0	0	0	0
08-JUL-97	42.6865	114	71.3135	0.0	10	41	9	2	0	16
15-JUL-97	41.7460	134	92.2540	2.5	10	59	18	1	0	11
22-JUL-97	48.3665	166	117.6335	10.0	0	91	18	1	0	11
29-JUL-97	43.0390	193	149.9610	15.0	0	126	13	2	0	12
05-AUG-97		261		35.0	55					
12-AUG-97	44.1210	257	212.8790	35.0	55	104	11	15	5	6
19-AUG-97	57.6925	256	198.3075	10.0	55	115	11	15	5	6
26-AUG-97	72.2895	265	192.7105	10.0	55	103	23	1	5	13
01-SEP-97	76.4200	281	204.5800	10.0	55	130	11	1	5	13
09-SEP-97		267		7.5	55	129	11	1		13
12-SEP-97										
16-SEP-97	165.2840	322	156.7160	5.0	55	86	11	1	0	13
23-SEP-97	78.1585	168	89.8415	5.0	35	59	0	0	0	0
30-SEP-97	89.0195	164	74.9805	5.0	50	23	0	0	2	0
07-OCT-97	326.4000	365	38.6000	40.0	0	0	0	0	0	0
14-OCT-97	412.0000	412	0.0000	0.0	0	0	0	0	0	0
20-OCT-97	142.0000	142	0.0000	0.0	0	0	0	0	0	0
28-OCT-97	121.1050	124	2.8950	3.0	0	0	0	0	0	0

NFDLLO = DLLO - STORAGE

WHERE STORAGE = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) - LOSS

WHERE LOSS = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) * .035

NATURAL FLOW
AT DILLEY GAUGE ON TUALATIN RIVER

LOSS (3.5%)

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06-MAY-97      0.0000
13-MAY-97      0.0000
20-MAY-97      0.0000
27-MAY-97      0.0000
03-JUN-97      0.0000
10-JUN-97      0.0000
17-JUN-97      0.0000
24-JUN-97      0.0000
01-JUL-97      0.0000
08-JUL-97      2.5865
15-JUL-97      3.3460
22-JUL-97      4.2665
29-JUL-97      5.4390
05-AUG-97
12-AUG-97      7.7210
19-AUG-97      7.1925
26-AUG-97      6.9895
01-SEP-97      7.4200
09-SEP-97
12-SEP-97
16-SEP-97      5.6840
23-SEP-97      3.2585
30-SEP-97      2.7195
07-OCT-97      1.4000
14-OCT-97      0.0000
20-OCT-97      0.0000
28-OCT-97      0.1050

```

NFDLLO = DLLO - STORAGE

WHERE STORAGE = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) - LOSS

WHERE LOSS = (TRTR + SRUS + (SRTV*.90) + SRHL + SRFG + SRLO + SRBV) * .035

NATURAL FLOW
AT GOLF COURSE BRIDGE GAUGE ON T.R.

	NFTRGC	TRGC	STORAGE	SRUS	SRTV	SRLO	LOSS (3.4%)
06-MAY-97	387.00000	387.0	0.00000	0	0	0	0.00000
13-MAY-97	261.00000	261.0	0.00000	0	0	0	0.00000
20-MAY-97	126.00000	126.0	0.00000	0	0	0	0.00000
27-MAY-97	110.00000	110.0	0.00000	0	0	0	0.00000
03-JUN-97	335.00000	335.0	0.00000	0	0	0	0.00000
10-JUN-97	131.00000	131.0	0.00000	0	0	0	0.00000
17-JUN-97	96.00000	96.0	0.00000	0	0	0	0.00000
24-JUN-97	156.00000	156.0	0.00000	0	0	0	0.00000
01-JUL-97	72.00000	72.0	0.00000	0	0	0	0.00000
08-JUL-97	60.50304	76.5	15.99696	10	41	0	0.56304
15-JUL-97	64.62096	83.4	18.77904	10	59	0	0.66096
22-JUL-97	91.93504	106.0	14.06496	0	91	0	0.49504
29-JUL-97	63.52544	83.0	19.47456	0	126	0	0.68544
05-AUG-97		140.0		55			
12-AUG-97	42.96576	117.0	74.03424	55	104	5	2.60576
19-AUG-97	53.26560	129.0	75.73440	55	115	5	2.66560
26-AUG-97	129.12032	203.0	73.87968	55	103	5	2.60032
01-SEP-97	144.94720	223.0	78.05280	55	130	5	2.74720
09-SEP-97		177.0		55	129		
12-SEP-97							
16-SEP-97	259.57784	326.0	66.42216	55	86	0	2.33784
23-SEP-97	95.07096	138.0	42.92904	35	59	0	1.51096
30-SEP-97	110.21312	164.0	53.78688	50	23	2	1.89312
07-OCT-97	646.00000	646.0	0.00000	0	0	0	0.00000
14-OCT-97	775.00000	775.0	0.00000	0	0	0	0.00000
20-OCT-97	259.00000	259.0	0.00000	0	0	0	0.00000
28-OCT-97	217.00000	217.0	0.00000	0	0	0	0.00000

NFTRGC = TRGC - STORAGE

WHERE STORAGE = (SRUS + (SRTV * .16) + SRLO) - LOSS

WHERE LOSS = (SRUS + (SRTV * .16) + SRLO) * .034

NATURAL FLOW
AT HWY 219 BRIDGE GAUGE ON T.R.

	NFTRJB	TRJB	STORAGE	SRUS	SRTV	SRLO	LOSS (5.2%)
06-MAY-97	856.00000	856.0	0.00000	0	0	0	0.00000
13-MAY-97			0.00000	0	0	0	0.00000
20-MAY-97			0.00000	0	0	0	0.00000
27-MAY-97			0.00000	0	0	0	0.00000
03-JUN-97	707.00000	707.0	0.00000	0	0	0	0.00000
10-JUN-97			0.00000	0	0	0	0.00000
17-JUN-97			0.00000	0	0	0	0.00000
24-JUN-97			0.00000	0	0	0	0.00000
01-JUL-97			0.00000	0	0	0	0.00000
08-JUL-97			13.75548	10	41	0	0.75452
15-JUL-97			15.63252	10	59	0	0.85748
22-JUL-97			9.48948	0	91	0	0.52052
29-JUL-97	135.86072	149.0	13.13928	0	126	0	0.72072
05-AUG-97		188.7		55			
12-AUG-97			67.72512	55	104	5	3.71488
19-AUG-97			68.87220	55	115	5	3.77780
26-AUG-97			67.62084	55	103	5	3.70916
01-SEP-97			70.43640	55	130	5	3.86360
09-SEP-97				55	129		
12-SEP-97		156.9					
16-SEP-97	246.19192	307.3	61.10808	55	86	0	3.35192
23-SEP-97	255.66748	295.0	39.33252	35	59	0	2.15748
30-SEP-97	234.60556	286.3	51.69444	50	23	2	2.83556
07-OCT-97	1336.00000	1336.0	0.00000	0	0	0	0.00000
14-OCT-97	1739.00000	1739.0	0.00000	0	0	0	0.00000
20-OCT-97	442.80000	442.8	0.00000	0	0	0	0.00000
28-OCT-97	298.50000	298.5	0.00000	0	0	0	0.00000

NFTRJB = TRJB - STORAGE

WHERE STORAGE = (SRUS + (SRTV * .11) + SRLO) - LOSS

WHERE LOSS = (SRUS + (SRTV * .11) + SRLO) * .052

NATURAL FLOW
AT ROOD BRIDGE RD. ON T.R.

	NFROOD	ROOD	STORAGE	SRUS	SRLO	SRTV	LOSS (6.6%)
06-MAY-97	707.00000	707	0.00000	0	0	0	0.00000
13-MAY-97	413.00000	413	0.00000	0	0	0	0.00000
20-MAY-97	256.00000	256	0.00000	0	0	0	0.00000
27-MAY-97	250.00000	250	0.00000	0	0	0	0.00000
03-JUN-97	640.00000	640	0.00000	0	0	0	0.00000
10-JUN-97	384.00000	384	0.00000	0	0	0	0.00000
17-JUN-97	231.00000	231	0.00000	0	0	0	0.00000
24-JUN-97	379.00000	379	0.00000	0	0	0	0.00000
01-JUL-97	191.00000	191	0.00000	0	0	0	0.00000
08-JUL-97	135.59648	148	12.40352	10	0	41	0.87648
15-JUL-97	103.25152	117	13.74848	10	0	59	0.97152
22-JUL-97	112.20048	119	6.79952	0	0	91	0.48048
29-JUL-97	103.58528	113	9.41472	0	0	126	0.66528
05-AUG-97		128		55			
12-AUG-97	54.18912	118	63.81088	55	5	104	4.50912
19-AUG-97	59.36720	124	64.63280	55	5	115	4.56720
26-AUG-97	151.26384	215	63.73616	55	5	103	4.50384
01-SEP-97	154.24640	220	65.75360	55	5	130	4.64640
09-SEP-97		162		55		129	
12-SEP-97							
16-SEP-97	251.20408	309	57.79592	55	0	86	4.08408
23-SEP-97	192.90152	230	37.09848	35	0	59	2.62152
30-SEP-97	167.71344	218	50.28656	50	2	23	3.55344
07-OCT-97	976.00000	976	0.00000	0	0	0	0.00000
14-OCT-97	1290.00000	1290	0.00000	0	0	0	0.00000
20-OCT-97	358.00000	358	0.00000	0	0	0	0.00000
28-OCT-97	279.00000	279	0.00000	0	0	0	0.00000

NFROOD = ROOD - STORAGE

WHERE STORAGE = SRUS + SRLO + (SRTV * .08) - LOSS

WHERE LOSS = (SRUS + SRLO + (SRTV * .08)) * .066

NATURAL FLOW
AT FARMINGTON RD. BRIDGE ON T.R.

	NFFRMO	FRMO	STORAGE	SRUS	SRLO	SRTV	LOSS (8.0%)
06-MAY-97	873.0000	873	0.0000	0	0	0	0.0000
13-MAY-97	504.0000	504	0.0000	0	0	0	0.0000
20-MAY-97	327.0000	327	0.0000	0	0	0	0.0000
27-MAY-97	326.0000	326	0.0000	0	0	0	0.0000
03-JUN-97	761.0000	761	0.0000	0	0	0	0.0000
10-JUN-97	482.0000	482	0.0000	0	0	0	0.0000
17-JUN-97	300.0000	300	0.0000	0	0	0	0.0000
24-JUN-97	467.0000	467	0.0000	0	0	0	0.0000
01-JUL-97	249.0000	249	0.0000	0	0	0	0.0000
08-JUL-97	214.1596	226	11.8404	10	0	41	1.0296
15-JUL-97	173.0004	186	12.9996	10	0	59	1.1304
22-JUL-97	182.1396	188	5.8604	0	0	91	0.5096
29-JUL-97	169.8856	178	8.1144	0	0	126	0.7056
05-AUG-97		189		55			
12-AUG-97	117.1024	179	61.8976	55	5	104	5.3824
19-AUG-97	120.3940	183	62.6060	55	5	115	5.4440
26-AUG-97	223.1668	285	61.8332	55	5	103	5.3768
01-SEP-97	220.4280	284	63.5720	55	5	130	5.5280
09-SEP-97		228		55		129	
12-SEP-97							
16-SEP-97	312.8616	369	56.1384	55	0	86	4.8816
23-SEP-97	263.0004	299	35.9996	35	0	59	3.1304
30-SEP-97	230.6788	280	49.3212	50	2	23	4.2888
07-OCT-97	1194.0000	1194	0.0000	0	0	0	0.0000
14-OCT-97	1542.0000	1542	0.0000	0	0	0	0.0000
20-OCT-97	440.0000	440	0.0000	0	0	0	0.0000
28-OCT-97	338.0000	338	0.0000	0	0	0	0.0000

NFFRMO = FRMO - STORAGE

WHERE STORAGE = SRUS + SRLO + (SRTV * .07) - LOSS

WHERE LOSS = (SRUS + SRLO + (SRTV * .07)) * .080

NATURAL FLOW
AT WEST LINN ON TUALATIN RIVER

NFWSLO WSLO STORAGE SRUS LOSS (16%)

	NFWSLO	WSLO	STORAGE	SRUS	LOSS (16%)
06-MAY-97	1170.0	1170	0.0	0	0.0
13-MAY-97	731.0	731	0.0	0	0.0
20-MAY-97	482.0	482	0.0	0	0.0
27-MAY-97	492.0	492	0.0	0	0.0
03-JUN-97	1163.0	1163	0.0	0	0.0
10-JUN-97	721.0	721	0.0	0	0.0
17-JUN-97	445.0	445	0.0	0	0.0
24-JUN-97	552.0	552	0.0	0	0.0
01-JUL-97	418.0	418	0.0	0	0.0
08-JUL-97	290.6	299	8.4	10	1.6
15-JUL-97	236.6	245	8.4	10	1.6
22-JUL-97	227.0	227	0.0	0	0.0
29-JUL-97	209.0	209	0.0	0	0.0
05-AUG-97	177.8	224	46.2	55	8.8
12-AUG-97	151.8	198	46.2	55	8.8
19-AUG-97	174.8	221	46.2	55	8.8
26-AUG-97	304.8	351	46.2	55	8.8
01-SEP-97	345.8	392	46.2	55	8.8
09-SEP-97	252.8	299	46.2	55	8.8
12-SEP-97					
16-SEP-97	398.8	445	46.2	55	8.8
23-SEP-97	388.6	418	29.4	35	5.6
30-SEP-97	367.0	409	42.0	50	8.0
07-OCT-97	1411.0	1411	0.0	0	0.0
14-OCT-97	1777.0	1777	0.0	0	0.0
20-OCT-97	573.0	573	0.0	0	0.0
28-OCT-97	388.0	388	0.0	0	0.0

NFWSLO = WSLO - STORAGE

WHERE STORAGE = SRUS - LOSS

WHERE LOSS = SRUS * .16

**Scoggins Dam
Reservoir Operations**

APPENDIX C

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of January 1997

File: 197

DAY	INFLOW -----				HENRY HAGG LAKE -----						TUALATIN RIVER -----						WEATHER -----		WATER DELIVERIES -----							
	SCHO		TANO		TOTAL INFLW	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFLW CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	
	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)	(25)		
1	1034	55	1089	302.97	50113	2984	1504	687	2191	1474	2868	3537	15640	16720	19153	1.83	58	46								
2	385	892	51	1328	303.47	53604	507	256	1648	1250	2732	3337	15470	17040	20245	0.80	54	48								
3	268	652	33	953	302.32	52309	-1295	-653	989	1078	2688	3171	13590	14520	20993	0.60	54	36								
4	196	465	27	688	300.63	50434	-1875	-945	679	938	2218	3101	11590	13600	18507	0.10	48	38								
5	147	352	21	520	298.61	48231	-2203	-1111	1593	796	2034	2968	10030	11590	16276	0.00	38	32								
6	121	281	15	417	296.48	45950	-2281	-1150	1518	625	1918	2786	8308	9513	13057	0.00	43	37								
7	102	249	14	365	293.91	43271	-2679	-1351	1583	579	1876	2675	7133	7957	10927	0.16	42	35								
8	88	216	13	317	291.70	41015	-2256	-1137	1430	494	1730	2617	6346	7028	9493	0.01	49	37								
9	76	191	12	279	289.85	39162	-1853	-934	1282	432	1570	2533	6008	6511	8391	0.00	47	38								
10	70	119	11	200	288.25	37585	-1577	-795	1164	416	1415	2432	5636	6154	7547	0.18	45	37								
11	63	101	10	174	286.73	35810	-1775	-895	1162	267	1330	2314	5277	5745	6916	0.00	52	41								
12	55	88	9	152	285.35	34654	-1156	-583	853	328	1111	2220	4806	5298	6280	0.00	50	31								
13	50	78	8	136	284.37	33856	-798	-402	566	302	975	2013	4284	4819	5600	0.00	40	25								
14	46	70	8	124	283.79	33309	-547	-276	449	283	837	1790	3283	3934	5065	0.00	39	21								
15	42	63	8	113	283.30	32849	-460	-232	406	174	267	1606	2948	3517	4511	0.00	44	20								
16	40	60	8	108	282.80	32382	-467	-235	395	160	256	770	1452	3098	3938	0.00	43	23								
17	62	129	10	201	282.50	32103	-279	-141	396	255	354	766	1425	2371	2798	3684	1.02	45	33							
18	140	369	19	528	283.13	32690	587	296	179	475	831	911	1834	2932	3483	5430	1.55	43	35							
19	96	237	17	350	284.19	33686	996	502	20	522	623	976	2184	3223	3539	5168	0.05	49	42							
20	84	199	15	298	285.00	34454	768	387	20	407	507	834	2177	3227	3789	5086	0.03	47	45							
21	85	178	14	277	285.74	35159	705	355	20	375	483	824	2071	3451	3975	5169	0.44	50	41							
22	82	165	13	260	285.71	35130	-29	-15	375	360	474	1054	3548	4094	5130	0.32	44	33								
23	77	149	13	239	285.51	34940	-190	-96	403	307	490	1030	2097	3541	4105	5052	0.17	44	31							
24	75	129	12	216	285.31	34749	-191	-96	401	305	401	975	2071	3486	4056	4962	0.10	46	31							
25	65	116	11	192	285.03	34483	-266	-134	399	265	362	893	1987	3407	3960	4781	0.00	44	33							
26	57	101	11	169	284.69	34161	-322	-162	398	236	328	853	1886	3285	3829	4618	0.00	41	26							
27	50	88	10	148	284.28	33771	-390	-197	396	199	300	844	1776	3114	3645	4446	0.00	43	29							
28	59	108	11	178	284.39	33875	104	52	246	298	354	778	1731	3044	3554	4458	0.70	37	31							
29	55	101	11	167	284.85	34312	437	220	30	250	326	658	1646	2936	3444	4193	0.02	43	31							
30	82	135	12	229	285.28	34721	409	206	30	236	327	622	1502	2784	3276	4015	0.44	48	37							
31	363	663	45	1071	286.79	36167	1446	729	30	759	1115	1117	1864	3201	3732	5299	2.19	52	44							
TOT																10.71										
CFS	3181	7778	527	11486			-7031	21089	14058	17154	40007	68834	170498	192313	248370	MAX	58	48	0	0	0	0	0	0	0	
AF	6310	15428	1045	22782			-13946	-13946	41830	27884	34025	79354	136532	338183	381453	492642	MIN	37	20	0	0	0	0	0	0	

RESERVOIR STORAGE

STATUS: Jan. 31, 1997
Time: 0800 hrs

Water surface elev. to fill curve:
Acre Feet storage to fill curve:
Percentage of full reservoir:

-29'
-285
67.4

NOTE: Minimum required stream
flow (discharges) allowed to
Scoggins Ck. below the Dam:

Dec.-Sept. is 10 cfs
Oct.-Nov. is 20 cfs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

Note: Jan. discharge of 41830 af.
was 77.9% of total resv.
storage capacity.

USED REMAINING

TVID
USA
LO
HLSBO
FG
BVTN

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of February 1997

File: 297

DAY	INFLOW				HENRY HAGG LAKE								TUALATIN RIVER								WEATHER			WATER DELIVERIES				
	SCHO		TANO		TOTAL	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFO CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	F	CFS	(20)	(21)	(22)	(23)	(24)	(25)	
	CFS	(1)	CFS	(2)																								CFS
1	175	465	25	665	36167	288.61	37938	1771	893	30	923	930	1559	2547	3761	4300	5743	0.44	49	41								
2	128	308	20	456		289.83	39142	1204	607	30	637	748	1195	2660	4227	4577	5599	0.00	46	30								
3	104	225	16	345		290.74	40050	908	458	30	488	627	980	2479	4855	4956	5772	0.00	48	31								
4	86	171	14	271		291.12	40431	381	192	223	415	501	933	2271	4620	5002	5977	0.00	49	33								
5	72	138	13	223		291.12	40431	-241	-122	412	280	422	975	2091	4294	4827	6007	0.00	50	28								
6	65	108	12	185		290.60	39910	-280	-141	409	268	373	915	1973	3956	4548	5772	0.00	50	27								
7	59	101	11	171		290.28	39590	-320	-161	407	246	353	863	1859	3541	4222	5432	0.21	45	28								
8	52	86	10	148		290.22	39530	-60	-30	249	219	314	733	1729	3301	3912	4921	0.00	43	28								
9	47	76	9	132		290.15	39461	-69	-35	248	213	294	696	1549	3028	3591	4470	0.00	44	27								
10	42	70	9	121		290.04	39351	-110	-55	247	192	278	681	1371	2713	3231	4062	0.00	38	29								
11	40	63	8	111		290.39	39700	349	176	10	186	263	484	1140	2410	2870	3570	0.00	49	29								
12	48	84	9	141		290.75	40060	360	182	10	192	315	500	1058	2121	2502	3224	0.59	50	37								
13	42	76	8	126		290.90	40210	150	76	152	228	300	580	1082	1878	2246	2803	0.04	48	38								
14	47	76	8	131		291.04	40351	141	71	152	223	316	574	1046	1705	2036	2503	0.14	43	37								
15	51	74	8	133		291.11	40421	70	35	151	186	330	578	1034	1578	1871	2255	0.00	53	40								
16	49	70	8	127		291.22	40532	111	56	151	207	307	568	1019	1495	1767	2104	0.00	52	34								
17	45	68	7	120		291.32	40633	101	51	151	202	298	547	996	1438	1700	2006	0.15	51	37								
18	38	63	7	108		291.39	40703	70	35	151	186	295	543	960	1381	1629	1928	0.03	51	38								
19	76	152	9	237		291.75	41066	363	183	48	231	517	546	1014	1409	1643	2086	0.76	49	40								
20	85	175	10	270		292.37	41694	628	317	14	331	672	698	1257	1705	1961	2246	0.41	49	34								
21	72	146	9	227		292.93	42265	571	288	14	302	531	727	1365	1802	2098	2428	0.06	51	34								
22	63	119	8	190		293.37	42715	450	227	14	241	412	659	1360	1821	2128	2447	0.00	49	30								
23	54	99	8	161		293.76	43106	391	197	14	211	351	605	1263	1791	2094	2428	0.00	52	28								
24	46	86	8	140		294.11	43477	371	187	14	201	315	547	1120	1673	1967	2373	0.00	57	28								
25	42	74	8	124		294.38	43756	279	141	14	155	294	493	991	1501	1793	2202	0.00	60	31								
26	40	68	8	116		294.66	44046	290	146	14	160	282	460	899	1364	1627	2033	0.12	50	34								
27	37	61	7	105		294.89	44285	239	120	14	134	265	414	832	1281	1523	1902	0.00	46	34								
28	32	54	7	93		295.12	44525	240	121	14	135	250	393	762	1237	1468	1835	0.03	50	28								
29				NA							NA																	
30				NA							NA																	
31				NA							NA																	
TOT																			2.98									
CFS	1737	3356	284	5377				8358	4214	3387	7601	11153	19446	39727	67886	78089	96128		MAX	60	41	0	0	0	0	0	0	
AF	3445	6657	563	10665					8358	8358	6718	15076	22122	38571	78799	134652	154890	190670		MIN	38	27	0	0	0	0	0	

RESERVOIR STORAGE
STATUS: Feb. 28, 1997
Time: 0800 hrs

Water surface elev. + or - to fill curve:
Storage in acre feet + or - to fill curve:
Percentage of full reservoir:

-3.12'
-3301
83%

NOTE: Minimum required stream
flow (discharges) allowed to
Scoggins Ck. below the Dam:

Dec.-Sept. is 10 cfs
Oct.-Nov. is 20 cfs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

Note: Jan. discharge of 41830 af.
was 77.9% of total resv.
storage capacity.

USED
REMAINING

TVID
USA
LO
HLSBO
FG
BVTN

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of March 1997

File: 397

DAY	INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER		WATER DELIVERIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	SCHO		TANO		TOTAL INFL	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFL CFS	GASO CFS	DLLO CFS	GOLF CFS	ROAD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID	USA	LO	HLS	FG	BVR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	CFS	(1)	CFS	(2)																						CFS	(3)	CFS	(4)	CFS	(5)	CFS	(6)	CFS	(7)	CFS	(8)	CFS	(9)	CFS	(10)	CFS	(11)	CFS	(12)	CFS	(13)	CFS	(14)	CFS	(15)	CFS	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	55	82	10	147	295.36	44525	250	126	15	141	256	299	618	1133	1360	1752	0.66	46	30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

USED REMAINING

TVID
USA
LO
HLSBO
FG
BVTN

RESERVOIR DELIVERY
STATUS (ACRE FEET):

NOTE: Minimum required stream
flow (discharges) allowed to
Scoggins Ck. below the Dam:

Dec.-Sept. is 10 cfs
Oct.-Nov. is 20 cfs

RESERVOIR STORAGE
STATUS: Mar. 31, 1997
Time: 0800 hrs

-1.42'
-1565
93%

Water storage elevation +/- to fill curve:
Water storage in acre feet +/- to fill curve:
Percentage of full reservoir:

SCOGGINS DAM - RESERVOIR OPERATIONS

For the Month of April 1997

File: 497

DAY	----- INFLOW -----				----- HENRY HAGG LAKE -----				----- TUALATIN RIVER -----						----- WEATHER -----			----- WATER DELIVERIES -----													
	SCHO SCLO		TANO	TOTAL	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFO CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVD CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH CFS						
	CFS	CFS	CFS	CFS																						(1)	(2)	(3)	(4)	(5)	(6)
1	33	58	7	98	49960	33	17	102	119	273	388	765	1394	1670	2113	0.07	51	30													
2	31	54	6	91	49993	240	121	11	132	261	272	643	1247	1502	1877	0.01	55	30													
3	29	51	6	86	50233	177	89	11	100	253	242	567	1062	1279	1679	0.00	61	38													
4	27	48	6	81	50410	188	95	11	106	245	220	526	957	1148	1500	0.00	55	29													
5	25	44	6	75	50598	187	94	11	105	235	200	486	899	1059	1361	0.00	56	31													
6	24	41	6	71	50785	122	62	11	73	229	184	445	815	974	1267	0.00	58	32													
7	23	38	6	67	50907	166	84	11	95	222	176	408	762	906	1204	0.02	64	41													
8	23	39	6	68	51073	166	84	11	95	218	170	400	706	856	1176	0.15	55	42													
9	21	34	5	60	51239	166	84	11	87	215	162	387	723	869	1149	0.02	54	34													
10	21	32	5	58	51389	139	70	11	81	203	154	362	663	813	1116	0.05	52	34													
11	21	31	5	57	51639	111	56	11	67	199	143	340	619	754	1037	tr	54	34													
12	19	30	5	54	51762	123	62	11	73	191	136	315	579	702	961	0.00	57	35													
13	19	30	5	54	51884	122	62	11	73	189	134	310	548	666	905	0.00	57	34													
14	25	43	5	73	52085	201	101	11	112	224	165	376	579	684	930	0.48	51	44													
15	24	44	5	73	52287	202	102	11	113	277	225	458	690	789	1012	0.15	57	47													
16	22	41	5	68	52421	134	68	11	79	243	192	413	684	825	1063	0.08	69	49													
17	20	35	5	60	52556	135	68	12	80	226	171	379	627	764	1050	0.00	67	38													
18	20	35	4	59	52702	146	74	12	86	213	152	339	576	706	980	0.02	65	40													
19	20	35	5	60	52758	56	28	51	79	211	192	371	563	676	930	0.12	55	44													
20	45	119	7	171	53005	247	125	51	176	427	326	497	750	888	1289	0.78	58	47													
21	37	88	6	131	53265	260	131	51	182	383	398	696	1041	1215	1411	0.05	60	40													
22	33	74	6	113	52983	-282	-142	247	105	299	505	754	1003	1211	1554	0.05	62	39													
23	36	78	6	120	52836	-147	-74	228	154	273	527	788	1117	1323	1810	0.48	57	40													
24	32	61	5	98	53073	-67	-34	153	119	269	462	755	1147	1428	1793	0.04	59	36													
25	29	58	5	92	52926	157	79	49	128	251	338	660	1058	1307	1727	0.00	59	42													
26	27	53	5	85	53073	147	74	22	96	230	268	548	921	1151	1516	0.00	68	41													
27	25	48	5	78	53231	158	80	22	102	217	232	497	852	1052	1485	0.10	71	39													
28	24	47	5	76	53445	214	108	23	131	208	222	455	818	1016	1419	0.26	56	44													
29	25	47	5	77	53547	102	51	47	98	232	268	497	814	978	1325	0.21	54	41													
30	25	47	5	77	53558	11	6	93	99	215	296	513	860	1042	1347	0.24	58	44													
31				NA					NA																						
TOT																	3.38														
CFS	785	1483	163	2431			1814	1328	3142	7331	7520	14950	25074	30253	39986		MAX	71	49	0	0	0	0	0	0	0	0	0	0	0	0
AF	1557	2942	323	4822		3598	3598	2634	6232	14541	14916	29653	49734	60007	79312		MIN	51	29	0	0	0	0	0	0	0	0	0	0	0	0

RESERVOIR STORAGE
STATUS: April 30, 1997
Time: 0600 hrs

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

-0.03
-37
99.9%

NOTE: Minimum required stream
flow (discharges) allowed to
Scoggins Ck. below the Dam:

Dec.-Sept. is 10 cfs
Oct.-Nov. is 20 cfs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

TVD
USA
LO
HLSBO
FG
BVTN
OTHER

USED
None
.

REMAINING

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of May 1997

File: 597

----- INFLOW -----				HENRY HAGG LAKE -----						TUALATIN RIVER -----						-- WEATHER --		----- WATER DELIVERIES -----													
DAY	SCHO		CFS	TANO	TOTAL	INFLW	W.S.		STOR	CHNG	STOR	CHNG	REL	COMP	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP		TVID	USA	LO	HLS	FG	BVR	OTH	
	FT	ELEV					AF	CONT														AF	STOR								CFS
1	23	47	5	75	53558	136	69	56	125	220	257	487	813	993	1318	0.10	56	36													
2	22	46	5	73	53694	0	0	102	102	213	293	509	771	937	1253	0.08	55	36													
3	21	43	5	69	53649	-45	-23	128	105	205	313	519	773	931	1211	0.03	63	43													
4	21	40	5	66	53615	-34	-17	127	110	200	307	516	787	949	1204	0.15	56	44													
5	19	39	5	63	53468	-147	-74	127	53	189	298	496	765	924	1204	0.03	61	45													
6	18	39	5	62	53558	90	45	33	78	177	196	377	707	875	1170	0.00	68	44													
7	17	35	4	56	53615	57	29	33	62	166	182	362	626	767	1076	0.00	63	37													
8	16	33	4	53	53649	34	17	33	50	159	173	335	578	703	993	0.00	72	46													
9	15	30	4	49	53683	34	17	55	72	143	177	337	553	660	923	0.00	79	46													
10	14	27	4	45	53683	0	0	55	55	132	170	303	515	623	881	0.00	75	46													
11	13	26	4	43	53694	11	6	57	63	124	161	292	474	578	804	0.00	82	60													
12	12	25	4	41	53706	12	6	59	65	114	156	260	398	543	776	0.00	88	55													
13	12	23	4	39	53683	-23	-12	60	48	107	156	251	413	504	731	0.00	81	48													
14	12	22	3	37	53694	11	6	63	69	103	136	216	388	475	694	0.00	85	53													
15	11	20	3	34	53683	-11	-6	64	58	99	132	193	362	439	656	0.00	81	51													
16	10	19	3	32	53672	-11	-6	66	60	92	129	200	340	407	615	0.00	77	49													
17	10	18	3	31	53672	0	0	68	68	86	125	177	324	394	562	0.00	80	49													
18	10	18	3	31	53649	-23	-12	70	58	80	122	162	292	364	536	0.00	76	48													
19	11	17	3	31	53615	-34	-17	73	56	78	119	151	277	346	521	0.00	79	48													
20	10	16	3	29	53607	-8	-4	31	27	73	87	115	264	327	482	0.00	81	42													
21	10	16	3	29	53615	8	4	17	21	67	75	96	219	286	454	0.00	68	42													
22	10	16	3	29	53640	25	13	13	26	67	74	83	203	268	409	0.00	69	45													
23	12	18	3	33	53694	54	27	13	40	72	70	85	203	265	427	0.26	66	49													
24	10	16	3	29	53717	23	12	38	50	67	92	129	240	309	498	0.07	61	46													
25	10	16	3	29	53762	45	23	37	60	68	96	122	275	348	501	0.09	59	41													
26	9	15	3	27	53774	12	6	35	41	65	89	126	273	346	492	0.00	59	41													
27	10	16	3	29	53774	0	0	53	53	64	112	101	250	326	492	0.18	69	54													
28	13	16	3	32	53672	-102	-51	104	53	67	152	198	307	327	477	0.11	72	58													
29	20	25	4	49	53626	-46	-23	184	161	116	304	445	506	550	625	0.66	70	60													
30	20	22	3	45	53344	-282	-142	180	38	86	266	355	599	725	833	0.08	73	61													
31	69	72	7	148	53513	169	85	43	128	135	131	203	499	615	936	0.84	70	60													
TOT																2.68															
CFS	490	831	117	1438						3634	5150	8201	13994	17104	23754		MAX	88	61	0	0	0	0	0	0	0	0	0	0	42	
AF	972	1648	232	2852						7208	10215	16267	27757	33926	47116		MIN	55	36	0	0	0	0	0	0	0	0	0	0	83	

RESERVOIR STORAGE
STATUS: May 31, 1997
Time: 0800 hrs

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

-0.11
-127
99.9%

NOTE: Minimum required stream
flow (discharges) allowed to
Scoggins Ck. below the Dam:

Dec.-Sept. is 10 cfs
Oct.-Nov. is 20 cfs

RESERVOIR DELIVERY
STATUS (ACRE FEET):

USED REMAINING

TVID
USA
LO
HLSBO
FG
BVTN
OTHER

83

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of June 1997

File: 697

INFLOW				HENRY HAGG LAKE						TUALATIN RIVER						WEATHER		WATER DELIVERIES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
DAY	SCHO		SCLO		TANO	TOTAL	INFLW	CFS	W.S.	STOR	CHNG	CHNG	STOR	AF	CFS	REL	CFS	COMP	INFLW	CFS	GASO	DLLO	GOLF	ROOD	FRMO	WSLO	PREC	TEMP	TVID	USA	LO	HLS	FG	BVR	OTH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	CFS	CFS	CFS	CFS																																CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS

RESERVOIR STORAGE
STATUS: June 30, 1997
Time: 0600 hrs

NOTE: Minimum required stream
flow (discharges) allowed to
Scoggins Ck. below the Dam:

-0.05
-59
99.9%

Water storage elevation +/- to fill curve:
Water storage in acre ft +/- to fill curve:
Percentage of full reservoir:

RESERVOIR DELIVERY
STATUS (ACRE FEET):
TVID
USA
LO
HLSBO
FG
BVTN
OTHER

USED
115
REMAINING
97

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of July 1997

File: 797

----- INFLOW -----				----- HENRY HAGG LAKE -----						----- TUALATIN RIVER -----						----- WEATHER -----		----- WATER DELIVERIES -----									
DAY	SCHO CFS	SCLO CFS	TANO CFS	TOTAL INFLO CFS	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFLO CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH 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)	(25)	(26)	
1	9	9	3	21	303.44	53581	-11	-6	23	17	45	68	67	191	249	418	0.08	71	53	0	0	0	0	0	0	2	
2	9	9	2	20	303.44	53570	0	0	23	23	45	68	72	169	248	359	0.00	67	47	0	0	0	0	0	0	2	
3	9	9	2	20	303.39	53514	-56	-28	51	23	41	91	70	137	216	328	0.00	78	51	20	0	0	0	2	7	2	
4	8	8	2	18	303.39	53287	-227	-114	115	1	36	138	103	149	203	271	0.00	85	53	42	25	0	9	2	16	3	
5	8	7	2	17	303.01	53084	-203	-102	112	10	32	136	109	133	226	264	0.00	90	57	40	25	0	9	2	16	3	
6	8	7	2	17	302.81	52859	-225	-113	111	-2	32	135	103	162	232	278	0.00	80	58	39	25	0	9	2	16	3	
7	8	7	2	17	302.63	52657	-202	-102	110	8	32	135	108	169	231	292	0.00	77	49	38	25	0	9	2	16	3	
8	7	7	2	16	302.49	52500	-157	-79	99	20	30	114	71	148	226	299	0.00	78	55	43	10	0	9	2	16	3	
9	8	8	2	18	302.33	52320	-180	-91	109	18	42	141	107	138	207	367	0.15	70	57	51	10	0	9	2	16	3	
10	7	7	2	16	302.19	52164	-156	-79	81	2	35	104	83	195	256	310	0.00	70	52	52	10	0	0	0	0	3	
11	7	7	2	16	302.08	52041	-123	-62	76	14	34	101	65	179	269	392	0.06	72	50	47	10	0	0	0	0	3	
12	7	7	2	16	301.96	51907	-134	-68	92	24	34	117	78	144	213	314	0.00	69	47	48	10	0	9	0	6	3	
13	6	6	2	14	301.79	51717	-190	-96	91	-5	31	114	66	139	207	268	0.00	74	50	49	10	0	9	0	6	3	
14	6	6	2	14	301.61	51517	-200	-101	92	-9	29	114	69	117	193	258	0.00	82	52	50	10	0	9	0	6	3	
15	6	6	2	14	301.44	51328	-189	-95	116	21	26	134	78	105	186	245	0.00	85	55	59	10	0	18	1	11	3	
16	6	6	2	14	301.23	51095	-233	-117	128	11	26	144	81	110	183	227	0.00	78	49	71	10	0	18	1	11	3	
17	5	5	2	12	301.02	50863	-232	-117	118	1	26	133	73	117	189	230	0.00	84	54	63	10	0	18	1	11	3	
18	6	5	2	13	300.76	50576	-287	-145	130	-15	26	140	70	123	196	233	0.00	75	47	74	10	0	18	1	11	3	
19	5	5	2	12	300.52	50311	-265	-134	145	11	30	182	78	112	181	224	0.00	78	50	90	10	0	18	1	11	3	
20	5	5	2	12	300.25	50014	-297	-150	145	-5	32	187	92	120	186	215	0.00	85	58	90	10	0	18	1	11	3	
21	5	4	2	11	300.00	49740	-274	-138	145	7	32	189	92	117	191	221	0.00	89	54	91	10	0	18	1	11	3	
22	5	5	2	12	299.77	49500	-240	-121	136	15	33	166	98	108	188	227	0.00	73	56	91	0	0	18	1	11	3	
23	5	4	2	11	299.55	49249	-251	-127	129	2	32	158	86	134	197	221	0.00	78	52	89	0	0	12	1	12	3	
24	5	4	2	11	299.32	48999	-250	-126	129	3	29	156	65	103	182	227	0.00	83	49	90	0	0	12	1	12	3	
25	5	4	2	11	299.05	48705	-294	-148	166	18	28	194	81	77	159	206	0.00	82	49	125	0	0	13	2	12	3	
26	5	4	2	11	298.76	48391	-314	-158	166	8	32	192	79	94	168	172	0.00	79	48	125	0	0	13	2	12	3	
27	5	3	2	10	298.47	48078	-313	-158	166	8	32	198	86	100	173	192	0.00	80	50	126	0	0	13	2	12	3	
28	5	3	2	10	298.16	47774	-304	-153	165	12	33	199	92	111	180	198	0.00	89	54	125	0	0	13	2	12	3	
29	5	3	1	9	297.88	47444	-330	-166	165	-1	30	193	77	99	178	209	0.00	90	83	126	0	0	13	2	12	3	
30	5	7	1	13	297.61	47155	-289	-146	144	-2	30	173	65	89	167	209	0.00	79	55	106	0	0	13	1	8	3	
31	5	7	1	13	297.36	46988	-267	-135	144	9	53	190	61	76	156	187	0.00	81	52	106	0	0	13	1	8	3	
TOT																	0.29										
CFS	195	184	60	439			-3374	3622	248		1028	4504	2525	3965	6236	8061	MAX	90	83	2166	240	0	340	36	309	90	
AF	387	365	119	871			-6693	-6693	7184	491	2039	8934	5008	7865	12369	15989	MIN	67	47	4296	476	0	674	71	613	179	

RESERVOIR STORAGE STATUS: July 31, 1997 Time: 0800 hrs
 Water storage elevation +/- to fill curve: -6.14
 Water storage in acre ft +/- to fill curve: -6752
 Percentage of full reservoir: 87.4%

NOTE: Minimum required stream flow (discharges) allowed to Scoggins Ck. below the Dam:
 Dec.-Sept. is 10 cfs
 Oct.-Nov. is 20 cfs

RESERVOIR DELIVERY STATUS (ACRE FEET):
 TVID 4411
 USA 476
 LO 0
 HLSBO 674
 FG 4326
 71 4429
 BVTN 613
 OTHER 3387
 276

USED REMAINING
 4411 12142
 476 500
 674 4326
 71 4429
 613 3387
 276

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of August 1997

File: 897

DAY	INFLOW				HENRY HAGG LAKE							TUALATIN RIVER							WEATHER			WATER DELIVERIES										
	SCHO SCLO TANO TOTAL				W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFO CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH CFS							
	(1)	(2)	(3)	(4)																						(5)	(6)	(7)	(8)	(9)	(10)	(11)
					46988																											
1	5	7	1	13	297.10	46611	-277	-140	143	3	52	191	70	79	154	167	0.00	83	52	110	10	5	1	0	1	3						
2	4	6	1	11	296.74	46225	-386	-195	213	18	49	266	124	76	150	162	0.00	89	58	107	55	5	20	1	11	3						
3	4	6	1	11	296.35	45813	-412	-208	213	5	48	267	125	122	184	164	0.00	85	57	107	55	5	20	1	11	3						
4	4	6	1	11	295.95	45393	-420	-212	212	0	50	267	141	144	203	215	0.00	91	62	106	55	5	20	1	11	3						
5	4	6	1	11	295.55	44974	-419	-211	211	-0	46	261	130	127	196	224	0.00	87	56	105	55	5	20	1	11	3						
6	4	6	1	11	295.16	44566	-408	-206	211	5	47	262	123	124	189	227	0.00	93	62	105	55	5	20	1	11	3						
7	4	5	1	10	294.78	44171	-395	-199	210	11	45	261	115	127	193	215	0.00	91	55	105	55	5	20	1	11	3						
8	4	5	1	10	294.36	43735	-436	-220	210	-10	43	259	111	114	182	209	0.00	85	50	105	55	5	20	1	11	3						
9	4	5	1	10	293.94	43302	-433	-218	210	-8	45	259	112	116	177	155	0.00	85	60	105	55	5	20	1	11	3						
10	4	5	1	10	293.53	42890	-422	-213	210	-3	44	257	118	115	177	126	0.00	92	62	105	55	5	20	1	11	3						
11	3	5	1	9	293.13	42469	-411	-207	209	2	42	258	114	117	185	150	0.00	95	60	105	55	5	20	1	11	3						
12	3	5	1	9	292.72	42051	-418	-211	208	-3	43	257	107	107	179	198	0.00	93	57	104	55	5	20	1	11	3						
13	3	5	1	9	292.32	41643	-408	-206	207	1	42	257	104	97	168	274	0.00	96	58	103	55	5	20	1	11	3						
14	3	4	1	8	291.87	41187	-456	-230	222	-8	43	271	116	94	165	204	0.00	93	59	116	55	5	20	1	11	3						
15	3	4	1	8	291.44	40753	-434	-219	221	-2	43	270	112	108	171	169	0.00	95	54	119	55	5	20	1	11	3						
16	3	4	1	8	291.00	40310	-443	-223	221	-2	22	260	122	114	174	182	0.00	93	60	118	55	5	20	1	11	3						
17	3	4	1	8	290.57	39880	-430	-217	221	4	20	255	112	117	178	193	0.00	85	63	117	55	5	20	1	11	3						
18	3	4	1	8	290.12	39431	-449	-226	220	-6	20	255	119	119	180	201	0.00	85	63	117	55	5	20	1	11	3						
19	4	5	1	10	289.72	39033	-398	-201	220	19	21	256	119	118	183	221	0.00	73	54	115	55	5	20	1	11	3						
20	4	5	1	10	289.26	38578	-455	-229	219	-10	19	255	108	129	185	239	0.09	87	57	114	55	5	20	1	11	3						
21	4	6	3	13	288.87	38193	-385	-194	219	25	28	270	176	176	225	264	0.23	69	64	114	55	5	20	1	11	3						
22	4	5	2	11	288.42	37752	-441	-222	218	-4	22	267	167	191	255	271	0.00	82	56	112	55	5	20	1	11	3						
23	4	5	2	11	287.96	37302	-450	-227	217	-10	24	262	155	188	242	271	0.00	87	57	106	55	5	23	1	13	3						
24	4	5	2	11	287.54	36893	-409	-206	217	11	25	268	174	175	235	295	0.00	81	57	106	55	5	23	1	13	3						
25	4	5	2	11	287.14	36505	-388	-196	217	21	29	273	206	221	287	344	0.24	78	59	106	55	5	23	1	13	3						
26	5	5	2	12	286.70	36080	-425	-214	215	1	27	265	191	215	285	351	0.08	75	59	103	55	5	23	1	13	3						
27	7	8	3	18	286.29	35686	-394	-199	215	16	41	288	232	287	346	392	0.34	69	55	97	55	5	23	1	13	3						
28	8	8	3	19	285.90	35312	-374	-189	215	26	31	272	230	279	351	427	0.26	71	56	96	55	5	23	1	13	3						
29	5	9	3	17	285.45	34882	-430	-217	232	15	35	300	265	283	359	492	0.04	69	57	128	55	5	11	1	13	2						
30	5	8	3	16	284.97	34426	-456	-230	231	1	29	292	245	280	348	409	0.00	79	56	128	55	5	11	1	13	2						
31	5	8	3	16	284.50	33979	-447	-225	231	6	27	286	237	250	318	409	0.00	81	55	128	55	5	11	1	13	2						
TOT																	1.28															
CFS	128	174	48	350				-6508	6639	131	1102	8187	4580	4809	6824	7820	MAX	96	64	3413	1660	155	592	30	349	90						
AF	254	345	95	694				-12909	-12909	13168	2186	16239	9084	9539	13535	15511	MIN	69	50	6770	3293	307	1174	60	692	179						

RESERVOIR STORAGE STATUS: August 31, 1997 Time: 0800 hrs
 Water storage elevation +/- to fill curve: -19.00
 Water storage in acre ft +/- to fill curve: -19661
 Percentage of full reservoir: 63.3%
 NOTE: Minimum required stream flow (discharges) allowed to Scoggins Ck. below the Dam:
 Dec.-Sept. is 10 cfs
 Oct.-Nov. is 20 cfs
RESERVOIR DELIVERY STATUS (ACRE FEET):
 TVID USA LO HLSBO FG BVTN OTHER
 USED 11181 3769 307 1848 132 1305 538
 REMAINING 11181 8844 193 3152 4368 2695

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of October 1997

File: 1097

DAY	INFLOW				HENRY HAGG LAKE				TUALATIN RIVER						WEATHER			WATER DELIVERIES							
	SCHO SCLO TANO TOTAL				W.S. ELEV FT	STOR CONT	CHNG STOR	CHNG AF	REL CFS	COMP INFO	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PRECIP INCH	TEMP MAX F	TVID CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH CFS
	(1)	(2)	(3)	(4)																					
1	8	16	3	27	24482	24279	-203	-102	126	24	56	196	177	202	261	384	0.20	63	48	50	0	0	0	0	1
2	27	47	4	78	273.68	24161	-118	-59	150	91	102	282	302	422	457	620	1.09	61	21	50	0	0	0	0	1
3	36	58	5	99	273.54	24034	-127	-64	149	85	172	337	437	499	601	699	0.28	66	0	0	0	0	0	0	1
4	39	84	5	128	273.30	23959	-75	-38	149	111	268	385	530	540	655	851	0.34	68	0	0	0	0	0	0	1
5	53	195	5	253	273.51	24136	-177	89	150	239	458	539	805	851	974	1006	0.54	62	0	0	0	0	0	0	1
6	39	101	4	144	273.55	24169	33	17	149	166	248	515	810	1101	1316	1281	0.12	63	0	0	0	0	0	0	1
7	26	68	4	98	273.45	24085	-84	-42	128	86	205	371	646	976	1194	1411	0.00	61	0	0	0	0	0	0	1
8	27	61	4	92	273.44	24077	-8	-4	98	94	196	303	485	737	911	1204	0.22	59	0	0	0	0	0	0	1
9	87	158	10	255	273.72	24313	236	119	101	220	384	442	632	722	838	1136	1.48	55	0	0	0	0	0	0	0
10	96	353	11	460	274.53	25001	688	347	201	548	607	733	1150	1389	1487	1340	1.25	54	0	0	0	0	0	0	0
11	59	206	8	273	274.88	25300	289	151	201	352	375	778	1209	1863	1898	1902	0.22	57	0	0	0	0	0	0	0
12	45	140	6	191	274.92	25332	32	16	200	216	284	705	1179	1704	1947	2042	0.11	64	0	0	0	0	0	0	0
13	35	101	5	141	275.03	25429	97	49	125	174	239	551	1010	1544	1819	1998	0.01	59	0	0	0	0	0	0	0
14	27	82	4	113	275.05	25446	17	9	97	108	212	412	776	1270	1542	1777	0.00	63	0	0	0	0	0	0	0
15	24	64	4	92	275.18	25558	112	56	60	116	181	305	605	951	1183	1478	0.00	68	0	0	0	0	0	0	0
16	23	54	3	80	275.22	25592	34	17	60	77	154	258	503	737	916	1153	0.00	75	0	0	0	0	0	0	0
17	20	44	3	67	275.27	25635	43	22	46	68	134	212	413	599	751	936	0.00	72	0	0	0	0	0	0	0
18	18	41	3	62	275.28	25644	9	5	37	42	122	188	366	517	620	770	0.00	63	0	0	0	0	0	0	0
19	16	38	2	56	275.31	25669	25	13	34	47	112	171	321	446	540	661	0.00	64	0	0	0	0	0	0	0
20	15	34	2	51	275.34	25695	26	13	34	47	102	157	284	398	490	594	0.00	72	0	0	0	0	0	0	0
21	15	31	2	48	275.38	25730	35	18	25	43	93	142	249	358	440	573	0.00	67	0	0	0	0	0	0	0
22	14	29	1	44	275.43	25773	43	22	25	47	87	134	228	325	399	492	0.00	64	0	0	0	0	0	0	0
23	14	27	1	42	275.46	25799	26	13	26	39	85	134	221	301	369	454	0.00	57	0	0	0	0	0	0	0
24	14	25	1	40	275.47	25807	8	4	26	30	86	138	231	285	344	418	0.00	60	0	0	0	0	0	0	0
25	12	24	1	37	275.47	25807	0	0	38	38	82	130	223	281	342	401	0.00	61	0	0	0	0	0	0	0
26	12	22	1	35	275.48	25816	9	5	38	43	80	127	213	274	332	396	0.00	63	0	0	0	0	0	0	0
27	13	24	2	39	275.49	25824	8	4	39	43	85	132	216	270	330	392	0.19	53	0	0	0	0	0	0	0
28	12	22	1	35	275.50	25833	9	5	38	43	70	124	204	279	338	388	0.00	60	0	0	0	0	0	0	0
29	45	108	8	161	275.65	25962	129	65	39	104	152	156	225	302	351	506	0.94	54	0	0	0	0	0	0	0
30	58	308	5	371	275.94	26213	251	127	39	166	276	322	727	812	844	869	0.61	62	0	0	0	0	0	0	0
31	102	515	9	626	277.79	27833	1620	817	39	856	812	853	1434	1673	1831	1980	0.97	61	0	0	0	0	0	0	0
TOT																	8.57								
CFS	1031	3080	127	4238			1689	2667	4356		6529	10232	16811	22428	26320	30112	MAX	75	69	100	0	0	0	0	8
AF	2045	6109	252	8406			3351	5290	8641		12950	20295	33345	44486	52206	59727	MIN	53	137	198	0	0	0	0	16

RESERVOIR STORAGE STATUS:
October 31, 1997
Time: 0800 hrs

Water storage elevation +/- to fill curve: -25.71
Water storage in acre ft +/- to fill curve: -25807
Percentage of full reservoir: 51.9%

RESERVOIR DELIVERY STATUS (ACRE FEET):
249% average

Monthly SNOTEL precip Summary
Saddle Mt: 19.7" pc (272% average)
Old record: 13" (198)
Seine Cr: 12.9" pc (239% average)
Old record: 11.1" (1982)

USED REMAINING

TVID	16463	5902
USA	6716	0
LO	500	2714
HLSBO	2286	4247
FG	253	2193
BVTN	1807	687
OTHER		

File: 1197

DAY	----- INFLOW -----				----- HENRY HAGG LAKE -----							TUALATIN RIVER -----							-- WEATHER --			----- WATER DELIVERIES -----														
	SCHO SCLO TANO TOTAL INFO				W.S. ELEV FT		STOR CONT AF		CHNG STOR AF		CHNG STOR CFS		REL CFS		COMP INFO CFS		GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH			TEMP MAX F			TVID CFS	USA CFS	LO CFS	HLS CFS	FG CFS	BVR CFS	OTH CFS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	No Deliveries made during Nov							(20)	(21)	(22)	(23)	(24)	(25)	(26)			
1	42	245	7	284	278.52	27833	648	327	39	366	420	812	1981	2119	2472	2475	0.00	67	49																	
2	53	165	6	224	278.99	28481	420	212	39	251	302	658	1619	2162	2543	2724	0.00	65	46																	
3	43	121	5	169	278.92	28901	296	149	39	188	241	507	1225	2110	2490	2714	0.00	65	46																	
4	39	101	3	143	279.39	29197	243	123	39	162	234	409	935	1917	2272	2559	0.09	56	44																	
5	36	109	3	148	279.80	29629	189	95	39	134	205	329	751	1522	1865	2229	0.01	61	49																	
6	34	80	3	117	279.99	29981	172	87	39	126	197	291	643	1146	1427	1777	0.19	65	50																	
7	35	84	4	123	280.19	29862	181	123	91	130	220	320	633	1056	1272	1585	0.41	59	46																	
8	33	72	4	108	280.36	30137	155	78	39	117	181	298	623	1108	1321	1508	0.00	58	43																	
9	32	66	4	102	280.50	30264	127	64	39	103	170	272	560	939	1148	1375	0.00	60	43																	
10	28	61	4	93	280.59	30346	82	41	39	80	161	252	517	796	983	1190	0.00	65	47																	
11	26	56	3	85	280.71	30455	109	55	39	94	146	228	474	723	880	1083	0.00	63	45																	
12	24	50	3	77	280.78	30519	64	32	39	71	130	210	425	652	800	993	0.00	59	48																	
13	23	47	3	73	280.86	30592	73	37	39	76	124	193	403	600	731	911	0.00	57	36																	
14	21	43	3	67	280.93	30656	64	32	39	71	115	180	364	547	667	845	tr	55	38																	
15	19	40	3	62	281.00	30720	64	32	39	71	104	169	344	511	612	753	0.00	63	41																	
16	16	38	3	57	281.04	30757	37	19	39	58	99	160	323	472	584	726	0.00	60	41																	
17	39	94	5	138	281.20	30903	146	74	40	114	211	237	373	499	584	869	0.81	53	45																	
18	35	78	5	118	281.41	31096	193	97	39	136	212	292	648	768	867	917	0.24	52	42																	
19	75	124	13	212	281.67	31335	239	120	41	161	208	283	584	868	1049	1176	1.04	51	39																	
20	294	806	40	1142	284.08	33582	2247	1133	39	1172	2335	2012	1637	1983	2350	2617	2.49	50	44																	
21	147	488	18	653	285.86	35274	1692	853	24	877	957	2225	2979	2639	3169	3581	0.63	62	44																	
22	103	299	13	415	286.80	36176	902	455	24	479	509	1491	3125	2780	3360	3829	0.09	56	49																	
23	79	276	14	369	287.54	36893	717	361	25	386	426	1018	2572	3030	3601	3980	0.48	53	50																	
24	153	492	21	666	288.98	38302	1409	710	25	735	858	1945	2532	3435	4028	4581	1.25	58	49																	
25	130	402	20	552	290.13	39441	1139	574	25	599	701	1945	2843	4112	4354	5011	0.53	51	42																	
26	110	289	15	414	290.98	40290	849	428	25	453	529	1465	2782	4336	4651	5140	0.00	53	40																	
27	88	214	13	315	291.47	40783	493	249	99	348	404	1169	2395	4435	4727	5352	0.02	59	41																	
28	78	192	10	280	291.83	41147	364	184	129	313	369	920	1991	4188	4622	5432	0.15	55	44																	
29	75	210	10	295	291.76	41076	-71	-36	355	319	394	1163	1748	3900	4409	5365	0.53	57	52																	
30	83	214	11	308	291.73	41046	-30	-15	367	352	428	1320	1856	3623	4212	5219	0.36	54	46																	
31				NA						NA																										
TOT																	9.32																			
CFS	1993	5558	269	7820				6662	1881	8543	11590	22773	39785	58976	68030	78516	MAX	67	52								0	0	0	0	0	0	0	0	0	0
AF	3953	11024	534	15511			13213	13213	3731	16944	22989	45170	78514	116979	134938	155736	MIN	50	36								0	0	0	0	0	0	0	0	0	0

RESERVOIR STORAGE
STATUS: November 30, 1997
Time: 0800 hrs

Water storage elevation +/- to fill curve:	Water storage in acre ft +/- to fill curve:	Percentage of full reservoir:
1000	1000	100
950	950	95
900	900	90
850	850	85
800	800	80
750	750	75
700	700	70
650	650	65
600	600	60
550	550	55
500	500	50
450	450	45
400	400	40
350	350	35
300	300	30
250	250	25
200	200	20
150	150	15
100	100	10
50	50	5
0	0	0

Month to date SNOTEL summary

Saddle Mt:	15.3" pc
	0 snow water
Seine Ck:	12.0" pc
	0 snow water

**RESERVOIR DELIVERY
STATUS (ACRE FEET):**

USED	REMAINING
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
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23	23
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71	71
72	72
73	73
74	74
75	75
76	76
77	77
78	78
79	79
80	80
81	81
82	82
83	83
84	84
85	85
86	86
87	87
88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

TVID	HLSBO
USA	FG
LO	BVTN
	OTHER

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

SCOGGINS DAM - RESERVOIR OPERATIONS For the Month of December 1997

File: 1297

INFLOW -----				HENRY HAGG LAKE -----						TUALATIN RIVER -----						WEATHER -----		WATER DELIVERIES -----												
DAY	SCHO SCLO		TANO	TOTAL	W.S. ELEV FT	STOR CONT AF	CHNG STOR AF	CHNG STOR CFS	REL CFS	COMP INFL CFS	GASO CFS	DLLO CFS	GOLF CFS	ROOD CFS	FRMO CFS	WSLO CFS	PREC INCH	TEMP MAX F	TVID	USA	LO	HLS	FG	CFS	CFS	CFS	CFS	CFS	CFS	
	CFS	CFS	CFS	CFS																										(1)
1	74	181	11	266	291.59	41046	-142	-72	364	292	363	1222	1867	3414	4010	4908	0.01	52	45											
2	66	152	9	227	291.36	40672	-232	-117	362	245	321	1085	1735	3267	3806	4631	0.00	52	37											
3	58	129	8	195	290.86	40170	-502	-253	463	210	285	1085	1559	3036	3606	4337	0.00	52	34											
4	51	113	7	171	290.10	39411	-759	-383	543	160	256	1098	1418	2884	3379	4051	0.00	50	30											
5	47	94	6	147	289.12	38440	-971	-490	631	141	238	1189	1359	2673	3145	3750	0.00	52	34											
6	39	86	4	129	288.16	37497	-943	-475	581	106	224	1143	1325	2497	2896	3438	0.00	54	37											
7	40	80	5	125	287.21	36573	-924	-466	531	65	212	1054	1270	2268	2650	3141	0.07	51	37											
8	36	77	5	118	286.37	35762	-811	-409	482	73	213	990	1212	2076	2459	2975	0.25	46	39											
9	35	72	5	112	285.32	34759	-1003	-506	563	57	196	1018	1147	1878	2238	2675	0.12	40	33											
10	39	78	7	124	284.45	33932	-827	-417	509	92	226	933	1131	1758	2082	2475	0.19	43	37											
11	34	72	5	111	283.83	33346	-586	-295	417	122	213	812	1090	1660	1970	2300	0.00	50	32											
12	32	66	4	102	283.24	32793	-553	-279	375	96	200	721	1009	1522	1819	2140	0.00	46	31											
13	31	61	5	97	283.19	32746	-47	-24	141	117	185	476	854	1398	1653	1980	0.06	52	38											
14	30	60	5	95	283.17	32727	-19	-10	100	90	171	394	706	1191	1410	1760	0.00	47	38											
15	29	58	8	95	283.16	32718	-9	-5	100	95	169	365	654	1015	1242	1554	0.10	49	40											
16	156	562	23	741	283.66	33186	468	236	102	338	710	548	865	1173	1362	1801	1.60	50	35											
17	161	572	25	758	285.47	34901	1715	865	16	881	947	1896	1786	2285	2630	3224	0.96	52	37											
18	108	374	18	500	286.60	35984	1083	546	12	558	629	1654	2639	2691	3171	3795	0.16	47	30											
19	89	237	13	339	287.33	36689	705	355	13	368	442	1117	2598	2864	3285	3887	0.02	38	31											
20	76	199	12	287	287.97	37312	623	314	13	327	375	812	2116	3011	3452	4086	0.19	44	37											
21	74	171	10	255	288.50	37830	518	261	13	274	359	723	1687	3112	3566	4205	0.21	49	37											
22	64	146	8	218	288.95	38272	442	223	13	236	317	629	1405	2821	3503	4169	0.00	48	36											
23	56	104	7	175	288.58	37908	-364	-184	378	194	300	850	1290	2866	3350	4051	0.34	37	30											
24	47	121	8	176	288.14	37478	-430	-217	376	159	283	863	1273	2509	3162	3716	0.04	37	34											
25	45	104	6	155	287.72	37068	-410	-207	374	167	256	824	1230	2497	2953	3548	0.00	38	32											
26	41	92	5	138	287.26	36621	-447	-225	372	147	236	781	1157	2331	2738	3288	0.00	37	27											
27	40	86	5	131	286.75	36128	-493	-249	371	122	225	742	1090	2134	2512	3036	0.00	43	35											
28	37	80	4	121	286.23	35628	-500	-252	369	117	210	719	1024	1919	2276	2733	0.00	45	36											
29	35	76	4	115	285.73	35149	-479	-241	368	127	201	702	972	1704	2032	2465	0.00	51	45											
30	28	70	4	102	284.83	34293	-856	-432	484	52	192	781	948	1529	1789	2211	0.08	52	37											
31	22	64	4	90	283.96	33469	-824	-415	382	-33	184	757	963	1437	1702	2033	0.01	45	33											
TOT																	4.41													
CFS	1720	4437	250	6407			-3820	9818	5998		9338	27983	41379	69420	81848	98363	MAX	54	45	0	0	0	0	0	0	0	0	0	0	0
AF	3412	8801	496	12708			-7577	-7577	19474	11897	18522	55504	82075	137695	162346	195103	MIN	37	27	0	0	0	0	0	0	0	0	0	0	0

RESERVOIR STORAGE STATUS: December 31, 1997 Time: 0800 hrs

RESERVOIR DELIVERY STATUS (ACRE FEET):

Month to date SNOTEL summary

Water storage elevation +/- to fill curve: 0.46
Water storage in acre ft +/- to fill curve: 429
Percentage of full reservoir: 62.4%

Minimum required discharges:
Dec - Sept: 10 cfs
Oct-Nov: 20 cfs

Saddle Mt: 11.0" pc
0 Snow water
Seine Ck: 7.5" pc
.2" snow water

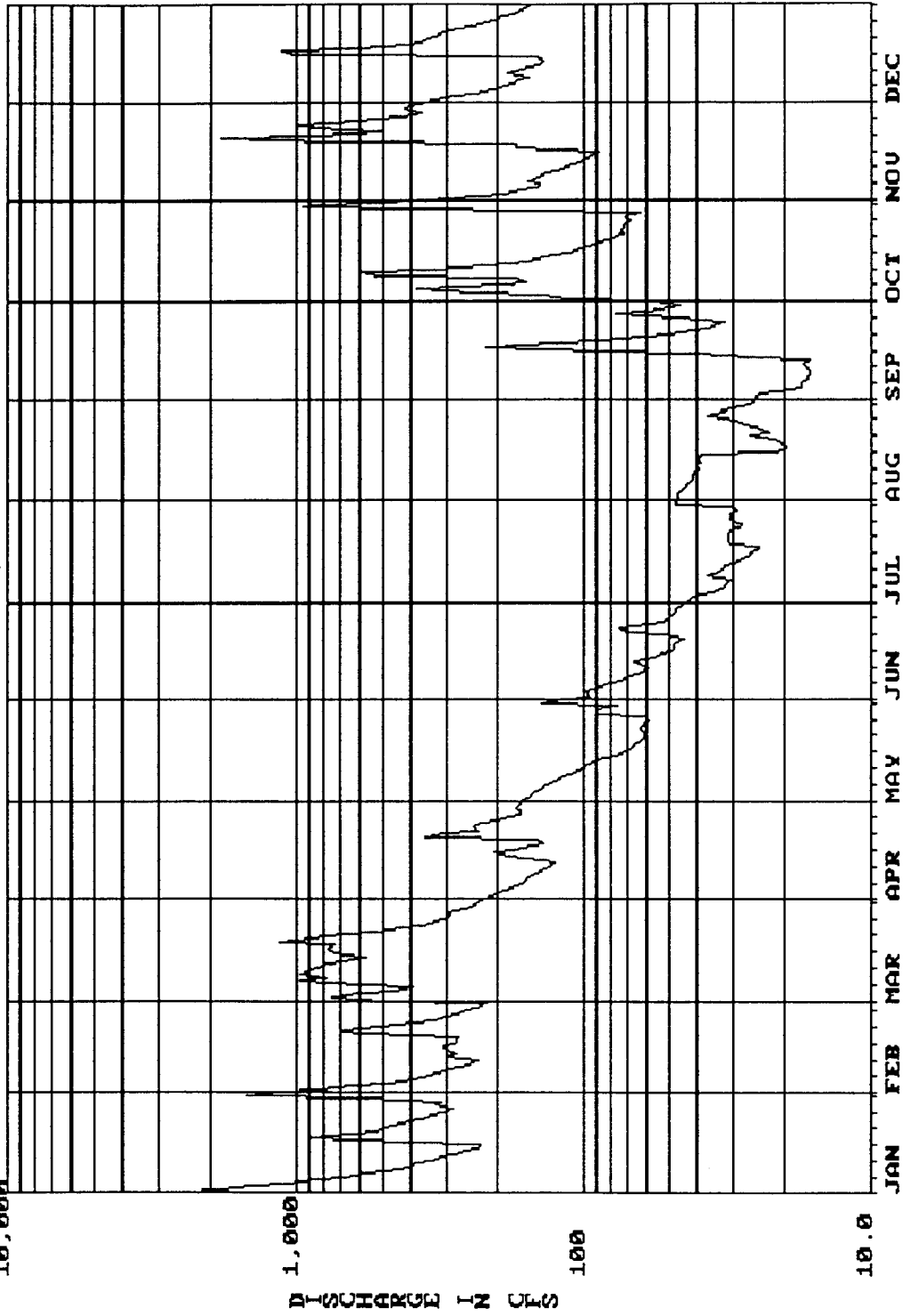
USED REMAINING

TVID USA LO HLSBO FG BVTN OTHER

Stream Gage Records

APPENDIX D

10,000 4202500 Tualatin River Near Gaston, OR 1997



OREGON WATER RESOURCES DEPARTMENT
14202500 Tualatin River Near Gaston, OR

Latitude: 452611 Longitude: 1231007 River Mile: 63.87
Drainage Area: 48.5 Gage Datum:
USGS #: 14202500

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2,520	1,130	495	224	166	119	44	48	25	57	364	356
2	1,850	835	755	210	158	97	43	47	25	113	237	334
3	1,470	642	604	199	151	98	40	47	24	140	190	284
4	1,100	488	457	187	146	100	35	46	19	242	168	239
5	864	392	399	174	139	88	33	45	18	382	148	209
6	673	345	596	165	134	80	32	44	18	192	143	187
7	592	324	977	158	128	75	31	43	17	160	157	177
8	488	296	791	154	121	70	31	42	17	174	143	171
9	411	268	978	146	113	65	37	42	16	521	134	157
10	387	241	934	138	107	61	35	41	17	603	125	187
11	344	236	853	132	102	60	33	40	17	330	115	173
12	315	301	779	127	96	64	32	40	17	225	108	157
13	285	278	692	139	92	67	30	39	16	176	103	143
14	259	305	578	185	86	57	28	40	26	147	97	138
15	236	310	680	204	77	53	27	39	40	128	92	146
16	230	283	767	172	74	50	26	21	88	113	90	1,030
17	419	279	786	151	70	49	25	20	220	103	173	1,140
18	916	273	743	140	67	49	25	20	127	95	173	621
19	638	585	1,150	147	65	46	31	21	87	89	753	418
20	527	700	900	362	63	45	31	22	63	82	1,860	369
21	504	517	699	309	62	51	31	26	50	78	850	354
22	463	388	541	234	61	72	31	23	42	73	503	335
23	415	333	433	244	64	76	31	24	37	74	698	310
24	374	302	368	227	62	60	29	27	34	73	1,010	277
25	341	276	332	201	62	53	28	28	32	71	752	245
26	311	255	306	181	59	50	30	32	47	70	524	221
27	289	238	293	167	61	49	31	37	78	71	384	207
28	329	219	298	167	91	48	31	33	60	64	372	191
29	311	-----	262	174	91	48	29	33	51	156	426	177
30	578	-----	241	168	77	46	31	28	47	956	407	166
31	1,510	-----	236	-----	141	-----	48	26	-----	835	-----	155
TOTAL	19,949	11,039	18,923	5,586	2,986	1,946	999	1,064	1,375	6,593	11,299	9,274
MEAN	394	394	610	186	96.3	64.9	32.2	34.3	45.8	213	377	299
MAX	2,520	1,130	1,150	362	166	119	48	48	220	956	1,860	1,140
MIN	230	219	236	127	59	45	25	20	16	57	90	138
AC-FT	39,570	21,900	37,530	11,080	5,920	3,860	1,980	2,110	2,730	13,080	22,410	18,390
YEAR 1997	TOTAL	91,033	MEAN	249	MAX	2,520	MIN	16	AC-FT	180,600		

* Incomplete Record
Max on 1/1 @ 0015: GH 18.56 = 3540 cfs
Min on 9/13 @ 0845: GH 3.56 = 15.8 cfs
Source Agency: Tualatin Basin Watermaster

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - OREGON DISTRICT INSTALLATION 02/13/98
 STATION NUMBER 14202980 SCOGGINS CREEK BL HENRY HAGG LK NR GASTON, OREG. STREAM SOURCE AGENCY USGS
 LATITUDE 452810 LONGITUDE 1231156 DRAINAGE AREA 38.80 DATUM 187.48 STATE 41 COUNTY 067

PROVISIONAL DATA SUBJECT TO REVISION
 DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 1997
 DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1030	63	17	47	94	59	35	172	222	137	37	364
2	1800	61	17	9.2	127	99	54	206	222	145	37	427
3	1940	135	16	9.2	135	146	104	205	223	145	38	514
4	1850	299	16	9.2	135	139	124	205	224	145	37	602
5	1740	373	16	9.3	84	116	123	204	223	145	38	624
6	1780	371	191	9.3	48	71	122	204	222	133	38	572
7	1640	265	375	9.4	49	50	115	203	222	111	39	524
8	1450	204	394	9.5	63	50	115	203	221	100	39	570
9	1210	203	398	9.8	71	22	105	202	221	157	38	549
10	1170	83	382	9.9	71	7.1	88	201	221	194	38	---
11	933	18	392	10	72	18	95	201	223	193	39	---
12	566	77	477	10	74	33	103	200	224	151	39	---
13	432	109	541	10	75	45	102	209	224	109	39	---
14	374	109	405	10	77	47	115	215	224	81	38	---
15	358	109	296	10	79	47	132	214	206	68	39	---
16	357	109	296	10	80	47	133	214	177	61	39	---
17	323	108	348	10	82	47	134	213	167	52	39	---
18	81	79	386	45	84	36	143	213	155	45	39	---
19	77	7.2	279	67	63	29	152	212	145	45	42	---
20	76	10	15	67	30	29	152	212	144	38	29	---
21	237	18	140	190	13	30	140	211	144	35	24	---
22	366	18	222	228	14	75	129	211	128	36	24	---
23	365	18	221	185	37	88	126	210	119	36	25	---
24	363	18	221	101	54	35	144	210	121	36	25	---
25	361	17	220	45	53	12	160	209	121	36	25	---
26	360	16	220	34	56	7.7	160	209	110	36	62	---
27	266	15	220	35	106	39	160	208	100	36	129	---
28	90	16	184	51	151	60	159	216	100	36	270	---
29	22	---	161	90	187	60	151	225	100	37	368	---
30	27	---	161	83	102	47	140	224	113	38	366	---
31	64	---	132	---	60	---	140	223	---	38	---	---
TOTAL	21708	2928.2	7359	1422.8	2426	1590.8	3855	6464	5266	2655	2079	---
MEAN	700	105	237	47.4	78.3	53.0	124	209	176	85.6	69.3	---
MAX	1940	373	541	228	187	146	160	225	224	194	368	---
MIN	22	7.2	15	9.2	13	7.1	35	172	100	35	24	---
AC-FT	43060	5810	14600	2820	4810	3160	7650	12820	10450	5270	4120	---

STATION NUMBER 14203500 TUALATIN RIVER NEAR DILLEY, OREG. STREAM SOURCE AGENCY USGS
 LATITUDE 452830 LONGITUDE 1230723 DRAINAGE AREA 125.00 DATUM 147.57 STATE 41 COUNTY 067

PROVISIONAL DATA SUBJECT TO REVISION

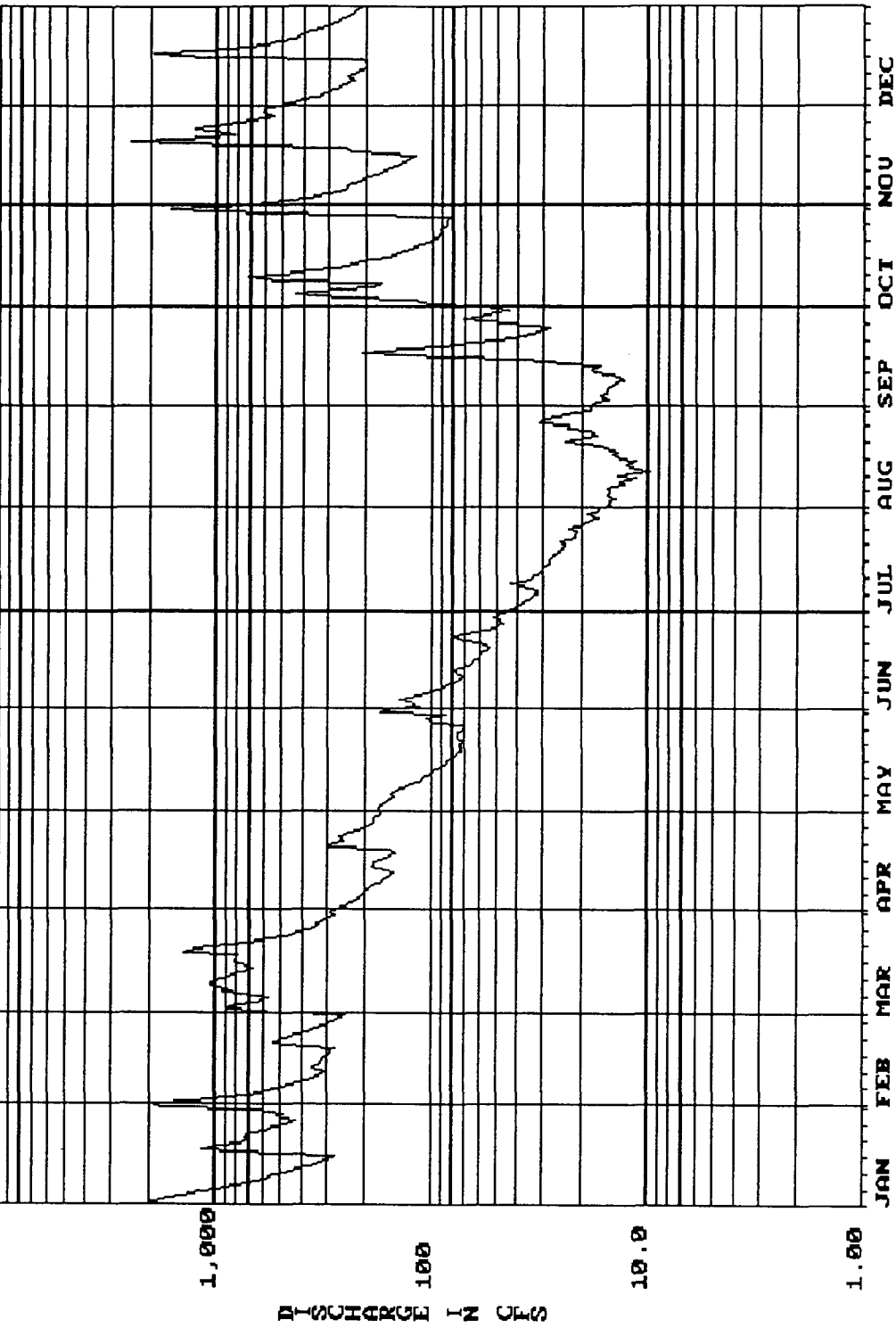
DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 1997

DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	3530	1540	412	411	314	233	89	210	286	216	778	1070
2	3010	1160	735	310	349	212	93	269	284	296	624	959
3	2890	953	781	279	362	277	130	270	282	347	472	961
4	2470	916	716	260	356	311	166	268	281	413	376	976
5	2190	931	647	236	314	259	162	265	279	537	303	1040
6	2000	879	678	221	231	199	161	264	277	484	273	994
7	1930	822	996	208	217	147	153	263	275	354	294	922
8	1740	723	1130	203	211	138	143	262	274	319	273	879
9	1540	671	1150	191	209	122	159	262	269	501	250	884
10	1400	581	1290	181	199	98	126	262	276	741	227	816
11	1330	420	1250	171	192	96	127	260	281	759	206	716
12	1100	460	1200	164	187	112	138	260	284	672	187	613
13	915	515	1210	169	183	125	136	263	284	512	174	413
14	818	517	1100	217	170	116	141	273	296	371	162	350
15	771	529	959	261	159	111	161	274	302	277	151	331
16	747	512	982	228	154	108	169	262	313	226	144	600
17	799	490	1040	201	149	105	159	257	428	188	232	1580
18	976	479	1060	197	146	101	168	257	374	163	266	1340
19	957	504	1260	234	136	87	186	258	301	149	412	931
20	839	657	1100	389	110	84	191	261	248	135	2040	722
21	850	676	918	496	96	88	183	273	222	122	2110	643
22	1020	617	887	559	94	122	168	268	200	115	1400	623
23	993	545	813	564	100	204	160	266	173	116	1120	765
24	948	463	752	493	116	124	170	272	174	116	1880	771
25	898	417	709	374	116	95	198	273	173	112	1670	733
26	855	390	676	308	113	84	199	272	182	111	1230	701
27	803	363	652	279	147	90	202	286	199	113	990	674
28	729	331	634	272	218	110	200	281	186	106	852	649
29	608	---	572	322	339	111	193	301	171	194	1060	648
30	621	---	530	333	246	105	175	293	174	386	1170	705
31	1350	---	494	---	211	---	191	288	---	862	---	666
TOTAL	41627	18061	27333	8731	6144	4174	4997	8293	7748	10013	21326	24675
MEAN	1343	645	882	291	198	139	161	268	258	323	711	796
MAX	3530	1540	1290	564	362	311	202	301	428	862	2110	1580
MIN	608	331	412	164	94	84	89	210	171	106	144	331
AC-FT	82570	35820	54220	17320	12190	8280	9910	16450	15370	19860	42300	48940

CAL YR 1997 TOTAL 183122 MEAN 502 MAX 3530 MIN 84 AC-FT 363200

10,000 4204530 Gales Creek @ Old Highway 47 near Forest Grove, OR 1997



OREGON WATER RESOURCES DEPARTMENT
14204530 Gales Creek @ Old Highway 47 near Forest Grove, OR

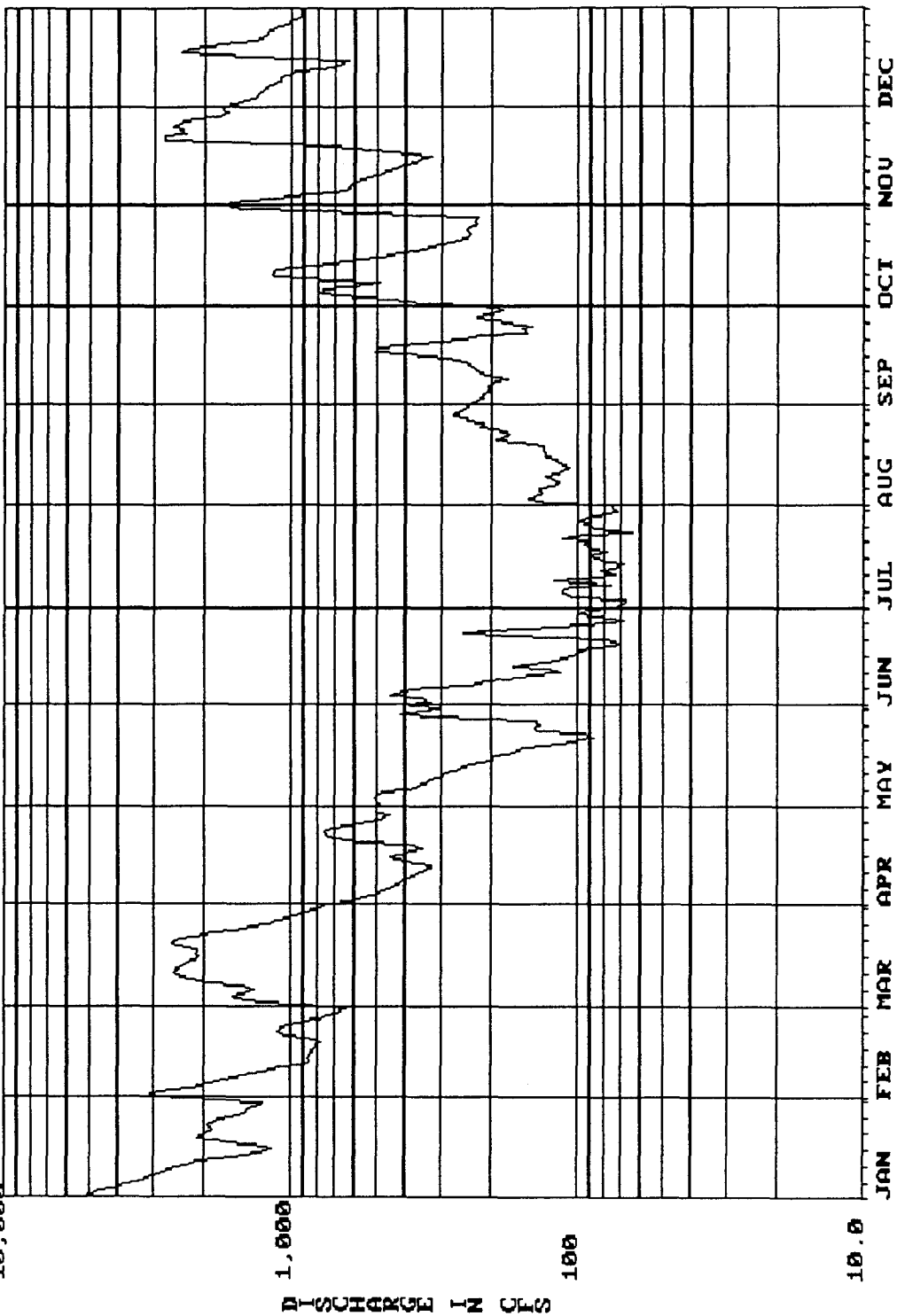
Latitude: 453039 Longitude: 1230652 Stream Mile 2.36
Drainage Area: 14204530
USGS #: 14204530
Gage Datum: 154.73

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	2,160	1,930	505	272	178	152	44	17	19	59	696	528
2	1,880	1,270	890	252	177	115	41	15	17	100	477	461
3	1,670	899	807	237	166	127	39	15	15	122	372	401
4	1,390	698	663	221	163	143	36	14	17	260	312	352
5	1,190	576	573	211	153	117	34	16	16	437	265	314
6	959	495	623	206	154	101	33	15	16	274	249	285
7	812	449	916	199	147	93	33	15	15	188	247	266
8	698	391	887	189	135	86	35	13	14	175	217	249
9	605	351	1,060	175	125	79	43	13	13	529	197	233
10	538	319	1,050	166	117	74	36	11	14	714	184	249
11	477	303	938	158	110	72	34	14	17	508	168	231
12	416	360	821	150	102	76	32	10	18	363	157	216
13	364	333	752	160	98	79	31	11	17	280	146	205
14	328	325	677	189	93	68	31	13	24	226	136	203
15	298	311	725	186	88	64	29	11	39	190	127	211
16	282	298	825	169	86	62	29	14	84	163	122	1,120
17	516	293	827	156	80	60	28	14	213	146	233	1,950
18	1,150	277	780	148	77	58	27	14	132	135	256	1,100
19	937	476	1,430	156	74	55	25	16	91	122	810	729
20	777	534	1,230	305	74	53	25	16	64	110	2,470	608
21	726	486	879	280	74	59	25	25	49	102	1,470	522
22	733	429	694	258	71	71	25	21	38	97	847	444
23	672	380	570	269	75	78	22	17	34	95	895	404
24	601	340	481	236	76	63	22	19	31	93	1,270	365
25	535	311	417	217	75	55	22	24	28	89	1,050	330
26	476	291	370	201	71	49	23	23	44	86	791	302
27	429	270	346	192	71	47	20	32	73	87	612	282
28	520	250	345	186	97	49	18	30	62	82	549	261
29	489	-----	305	186	106	52	17	26	50	269	609	245
30	645	-----	282	175	86	46	19	22	44	1,040	612	232
31	1,820	-----	290	-----	173	-----	18	19	-----	1,630	-----	219
TOTAL	25,093	13,645	21,958	6,105	3,372	2,303	896	535	1,308	8,771	16,546	13,517
MEAN	809	487	708	204	109	76.8	28.9	17.3	43.6	283	552	436
MAX	2,160	1,930	1,430	305	178	152	44	32	213	1,630	2,470	1,950
MIN	282	250	282	148	71	46	17	10	13	59	122	203
AC-FT	49,770	27,060	43,550	12,110	6,690	4,570	1,780	1,060	2,590	17,400	32,820	26,810
YEAR 1997	TOTAL	114,049	MEAN	312	MAX	2,470	MIN	10	AC-FT	226,200		

* Incomplete Record
Max on 11/20 @ 1100: GH 16.64 = 2720 cfs
Min on 08/12 @ 1015: GH 0.70 = 8.4 cfs
Source Agency: Tualatin Basin Watermaster

10,000 4204800 Tualatin River at Golf Course Road nr Cornelius, OR 1997



OREGON WATER RESOURCES DEPARTMENT

14204800 Tualatin River at Golf Course Road nr Cornelius, OR

Longitude: 453008 Longitude: 1230318 River Mile: 51.54

Drainage Area: Gage Datum:

USGS #: 14204800

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	5,390	2,970	732	738	490	423	76	77	241	218	1,740	1,720
2	4,920	3,090	1,260	621	499	332	69	128	228	346	1,460	1,590
3	4,620	2,610	1,530	556	510	360	68	149	216	452	1,130	1,440
4	4,190	2,200	1,590	517	507	455	105	142	214	568	873	1,350
5	3,760	1,930	1,420	480	488	411	114	134	204	802	705	1,300
6	3,430	1,740	1,340	452	387	334	114	137	205	778	624	1,270
7	3,210	1,580	1,500	422	363	241	107	122	206	616	627	1,210
8	3,030	1,400	2,000	414	340	212	77	117	196	495	598	1,160
9	2,790	1,240	2,200	392	332	177	121	121	176	730	542	1,110
10	2,530	1,100	2,430	372	307	146	99	129	208	1,130	503	1,090
11	2,320	912	2,560	352	292	115	74	120	224	1,180	464	1,040
12	2,120	870	2,500	333	262	129	83	110	233	1,130	431	964
13	1,780	888	2,390	331	251	168	74	107	238	958	403	802
14	1,470	864	2,300	395	225	128	70	118	248	733	373	680
15	1,300	855	2,160	454	200	114	78	120	286	580	350	643
16	1,170	842	2,110	415	200	105	87	129	332	487	331	1,000
17	1,210	823	2,150	383	174	98	91	129	516	415	457	1,830
18	1,690	796	2,140	353	163	99	79	132	508	369	612	2,450
19	2,110	877	2,270	387	152	76	88	133	416	332	737	2,330
20	2,070	1,040	2,620	577	116	72	95	141	306	297	1,740	1,900
21	1,910	1,110	2,480	693	98	79	91	193	251	264	2,780	1,560
22	1,890	1,100	2,140	740	87	121	113	183	222	249	2,770	1,330
23	1,950	1,010	1,840	768	97	251	95	173	153	239	2,350	1,240
24	1,890	901	1,570	729	139	158	65	195	157	246	2,390	1,220
25	1,760	808	1,360	630	140	117	86	219	147	237	2,600	1,170
26	1,610	746	1,220	535	136	78	89	218	176	228	2,490	1,110
27	1,460	699	1,110	488	139	69	98	249	228	231	2,160	1,040
28	1,410	646	1,030	459	224	86	94	248	226	222	1,810	985
29	1,320	-----	929	493	419	101	86	272	189	369	1,670	937
30	1,250	-----	834	505	351	92	73	257	183	825	1,740	924
31	1,800	-----	790	-----	302	-----	75	250	-----	1,480	-----	932
TOTAL	73,360	35,647	54,505	14,984	8,390	5,347	2,734	4,952	7,333	17,206	37,460	39,327
MEAN	2,366	1,273	1,758	499	271	178	88.2	160	244	555	1,249	1,269
MAX	5,390	3,090	2,620	768	510	455	121	272	516	1,480	2,780	2,450
MIN	1,170	646	732	331	87	69	65	77	147	218	331	643
AC-FT	145,500	70,710	108,100	29,720	16,640	10,610	5,420	9,820	14,550	34,130	74,300	78,010
YEAR 1997	TOTAL	301,245	MEAN	825	MAX	5,390	MIN	65	AC-FT	597,500		

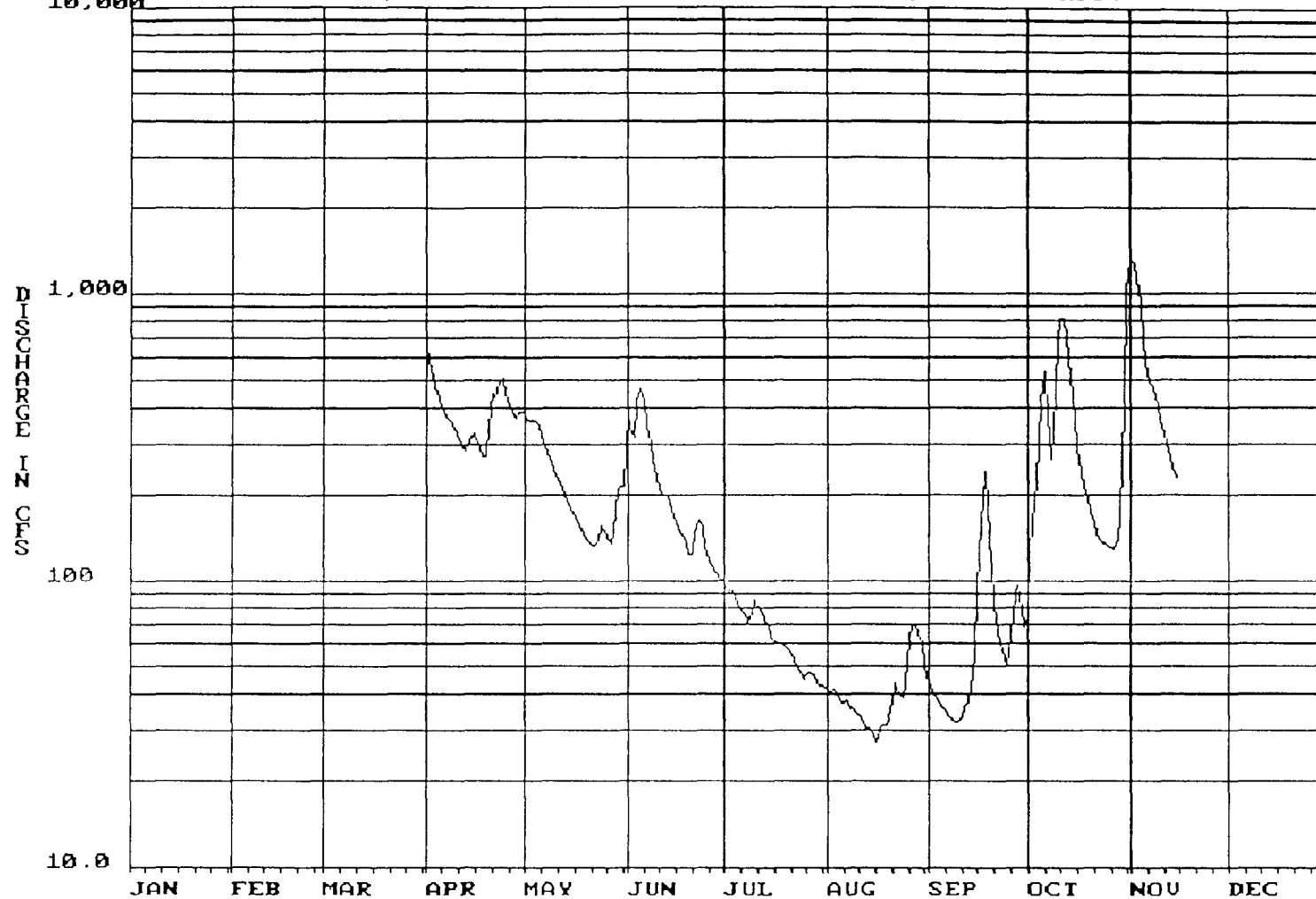
* Incomplete Record

Max on 1/1 @ 1300: GH 25.83 = 5620 cfs

Min on 7/24 @ 2030: GH 5.01 = 46.1 cfs

Source Agency: Tualatin Basin Watermaster

14206200 Dairy Creek at Hwy 8 near Hillsboro, OR 1997



OREGON WATER RESOURCES DEPARTMENT

14206200 Dairy Creek at Hwy 8 near Hillsboro, OR

Latitude: 453112 Longitude: 1230034 Stream Mile: 2.1

Drainage Area: Gage Datum = 117.71

USGS #: 14206200

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				672	375	389	101	42	44	74	1,320	
2				582	362	339	92	41	41	127	1,270	
3				513	364	316	94	42	40	192	1,130	
4				480	364	429	87	41	38	224	925	
5				440	355	473	83	38	36	425	686	
6				405	323	427	80	38	35	536	530	
7				378	300	353	78	38	34	379	494	
8				364	279	301	72	36	33	268	481	
9				356	261	264	77	36	32	332	408	
10				330	242	233	87	34	32	680	363	
11				311	225	209	83	34	34	823	332	
12				293	211	203	78	32	36	828	304	
13				289	200	203	73	31	37	701	274	
14				308	189	189	70	31	42	523	253	
15				330	179	170	64	29	55	377	231	
16				314	171	159	62	27	95	294		
17				295	161	148	61	30	159	242		
18				273	152	146	61	31	244	213		
19				275	146	137	59	31	183	198		
20				351	139	126	57	33	116	176		
21				458	135	126	55	38	82	161		
22				443	134	148	52	44	68	147		
23				491	139	164	50	40	61	139		
24				509	155	153	48	39	55	137		
25				454	150	131	45	44	50	135		
26				409	142	120	47	63	64	133		
27				389	137	113	48	71	92	131		
28				371	149	108	47	71	98	139		
29		-----		388	214	105	44	66	81	171		
30		-----		391	216	103	43	61	69	420		
31		-----		-----	214	-----	43	51	-----	1,040	-----	
TOTAL				11,862	6,783	6,485	2,041	1,283	2,086	10,365	9,001	
MEAN				395	219	216	65.8	41.4	69.5	334	600	
MAX				672	375	473	101	71	244	1,040	1,320	
MIN				273	134	103	43	27	32	74	231	
AC-FT				23,530	13,450	12,860	4,050	2,540	4,140	20,560	17,850	
YEAR 1997	TOTAL*	49,906	MEAN	218	MAX	1,320	MIN	27	AC-FT	98,990		

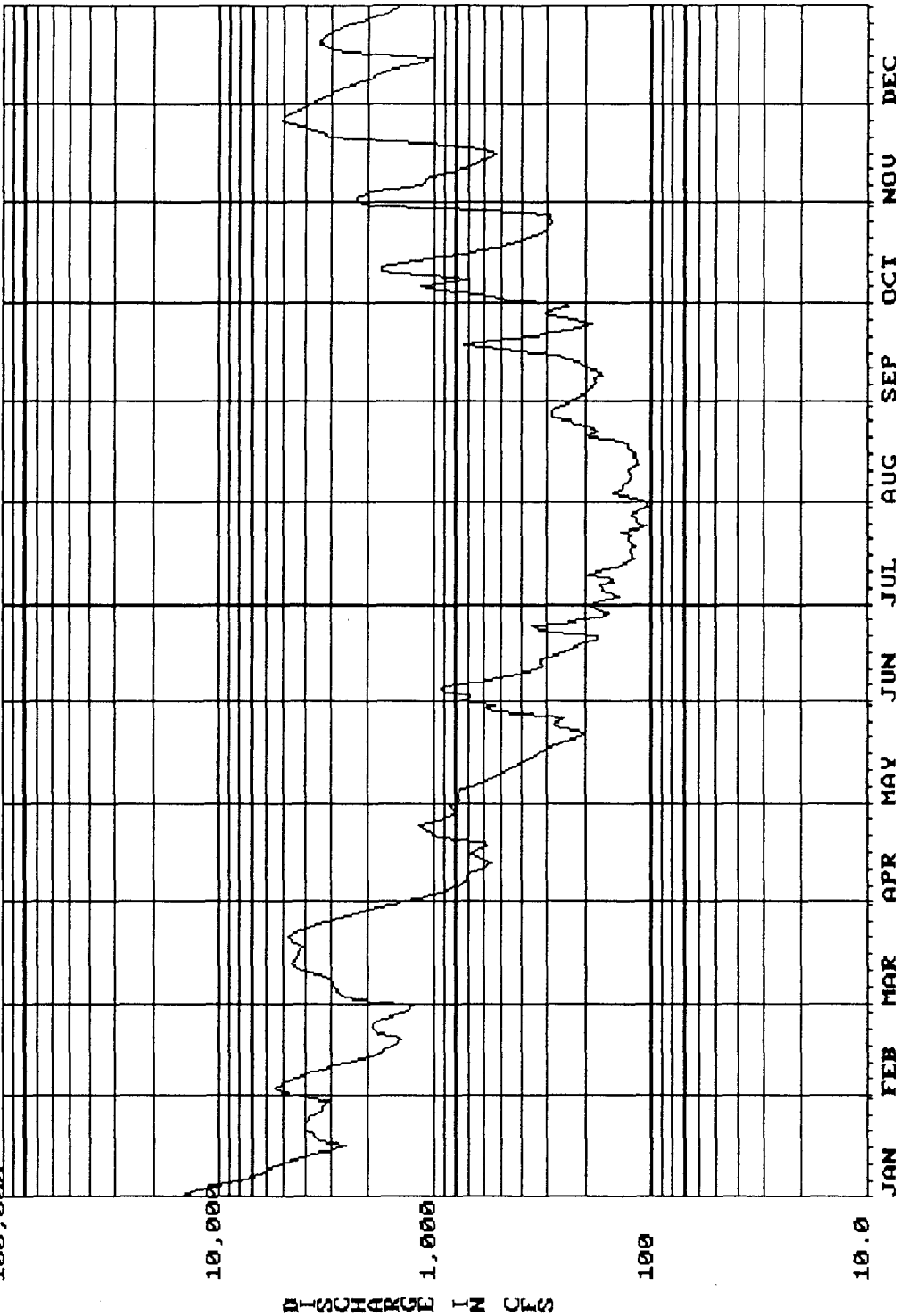
* Incomplete Record Flow computed from 4/1 through 11/15

Period of Record Max: 11/1 @ 1400 16.60 = 1340 cfs

Period of Record Min: 8/16 @ 0400 1.43 = 25.9 cfs

Source Agency: Tualatin Basin Watermaster

100,000 14206440 Tualatin River at Road Bridge Road nr Hillsboro, OR 1997



OREGON WATER RESOURCES DEPARTMENT
14206440 Tualatin River at Rood Bridge Road nr Hillsboro, OR

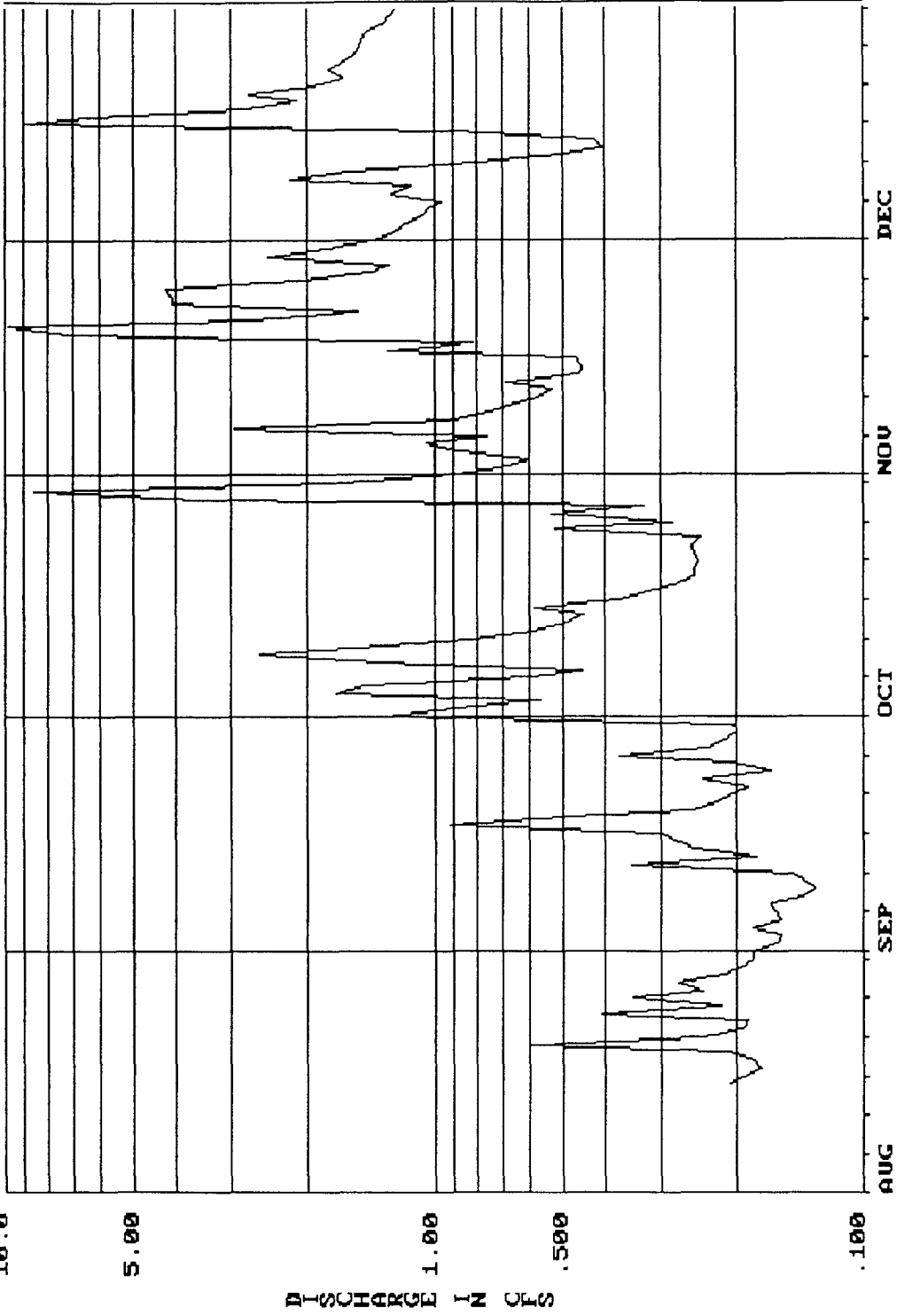
Latitude: 452925 Longitude: 1225701 River Mile: 38.34
Drainage Area: 105.16
USGS #: 14206440

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	14,700	4,390	1,340	1,390	809	767	194	106	238	257	2,320	3,800
2	14,300	5,100	2,340	1,200	775	705	172	111	225	468	2,350	3,600
3	12,700	5,510	2,720	1,020	783	684	143	135	209	552	2,250	3,380
4	11,000	5,290	2,820	934	786	884	148	152	197	635	1,970	3,140
5	9,360	4,890	2,870	863	763	953	170	138	193	970	1,520	2,880
6	8,070	4,430	2,940	794	693	802	171	135	186	1,150	1,150	2,620
7	7,090	3,980	3,000	742	619	634	174	134	183	955	1,100	2,370
8	6,500	3,640	3,050	715	573	513	150	127	186	726	1,100	2,180
9	6,030	3,300	3,230	718	543	445	159	123	171	828	938	1,970
10	5,530	2,930	3,610	662	508	379	204	125	173	1,490	823	1,840
11	5,050	2,550	4,070	617	474	339	178	129	197	1,780	752	1,720
12	4,590	2,230	4,460	578	442	317	147	122	207	1,760	688	1,560
13	4,070	1,980	4,590	556	412	327	137	117	216	1,580	640	1,370
14	3,630	1,790	4,510	600	384	331	128	118	242	1,250	592	1,140
15	3,220	1,650	4,400	686	357	277	122	121	274	934	555	1,020
16	2,790	1,560	4,300	679	334	257	124	122	342	740	520	1,420
17	2,630	1,500	4,240	627	318	233	128	125	495	610	608	2,530
18	3,420	1,430	4,130	577	291	223	128	129	733	514	873	2,970
19	3,620	1,530	4,210	585	279	207	122	130	634	457	1,110	3,190
20	3,700	1,830	4,580	816	251	184	126	137	464	415	2,360	3,390
21	3,930	1,920	4,750	1,030	217	178	129	190	342	374	3,060	3,450
22	4,040	1,940	4,610	1,010	203	231	123	198	283	342	3,310	3,330
23	4,010	1,880	4,260	1,140	217	337	137	180	242	315	3,670	3,140
24	3,930	1,740	3,860	1,170	260	357	116	195	200	304	4,180	2,930
25	3,820	1,550	3,520	1,040	286	261	106	230	192	302	4,750	2,700
26	3,650	1,410	3,160	897	275	214	116	241	235	295	5,100	2,470
27	3,460	1,320	2,790	859	256	172	118	288	292	296	5,040	2,240
28	3,380	1,260	2,470	814	305	158	124	289	310	300	4,710	2,000
29	3,230	-----	2,170	835	544	172	118	293	278	400	4,310	1,770
30	3,120	-----	1,830	856	586	185	112	279	244	961	4,030	1,580
31	3,730	-----	1,550	-----	526	-----	104	253	-----	1,890	-----	1,490
TOTAL	172,300	74,530	106,380	25,010	14,069	11,726	4,328	5,172	8,383	23,850	66,379	75,190
MEAN	5,558	2,662	3,432	834	454	391	140	167	279	769	2,213	2,425
MAX	14,700	5,510	4,750	1,390	809	953	204	293	733	1,890	5,100	3,800
MIN	2,630	1,260	1,340	556	203	158	104	106	171	257	520	1,020
AC-FT	341,800	147,800	211,000	49,610	27,910	23,260	8,580	10,260	16,630	47,310	131,700	149,100
YEAR 1997	TOTAL	587,317	MEAN	1,609	MAX	14,700	MIN	104	AC-FT	1,165,000		

* Incomplete Record
Max on 1/1 @ 1900: GH 36.84 = 15,100 cfs
Min on 07/25 @ 1030: GH 2.12 = 99.3 cfs
Source Agency: Tualatin Basin Watermaster

10.0 BCLR Bronson Creek @ Saltzman Road near Portland, OR 1997



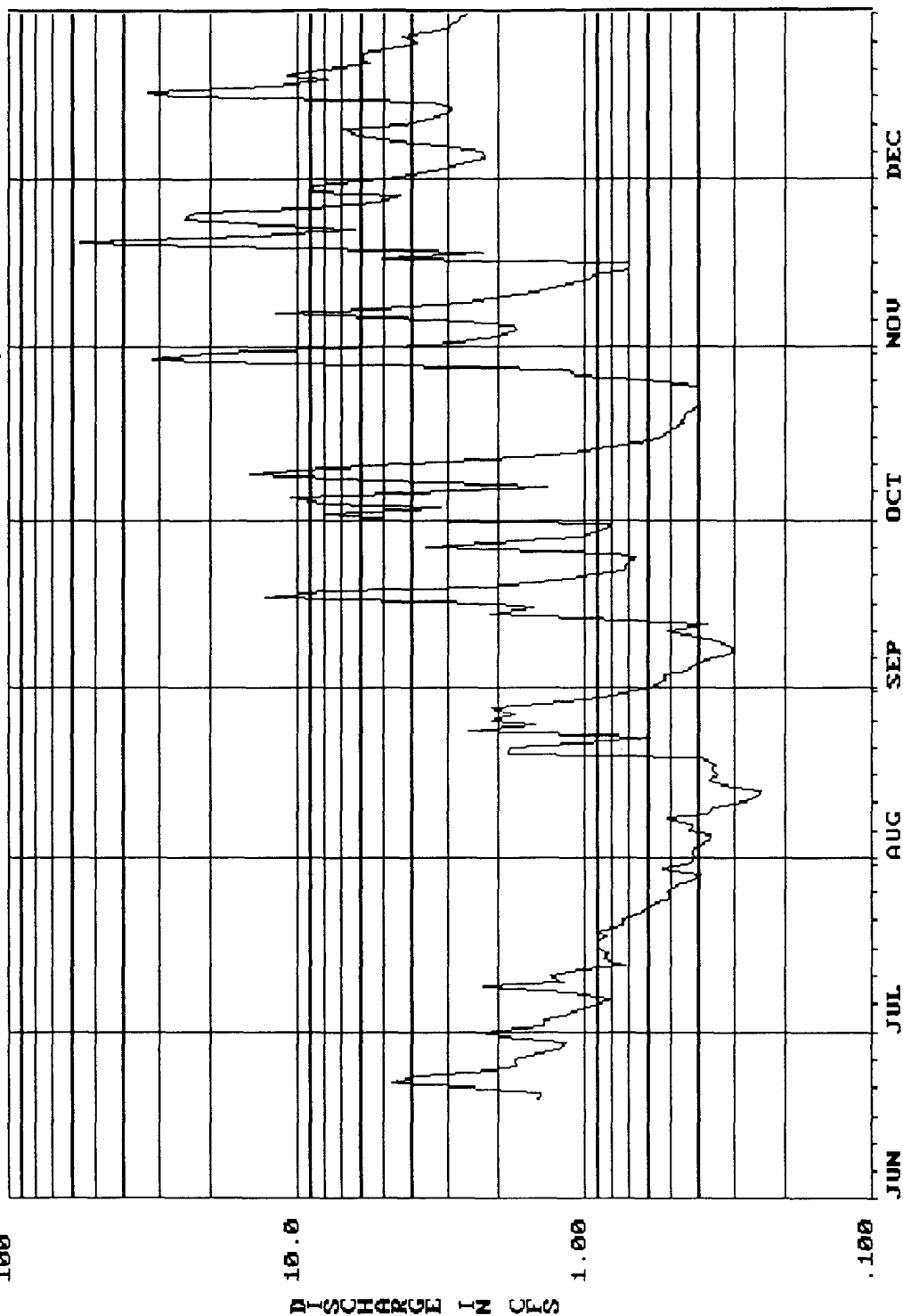
OREGON WATER RESOURCES DEPARTMENT
 BCLR Bronson Creek @ Saltzman Road near Portland, OR
 Latitude: 453318 Longitude: 1224825 Stream Mile: 5.1
 Drainage Area: Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1									.18	1.3	.90	1.4
2									.16	.90	.71	1.3
3									.16	.57	.61	1.2
4									.18	1.7	.87	1.1
5									.16	1.5	1.1	1.0
6									.16	.60	.76	.98
7									.17	.45	2.9	1.3
8									.14	1.4	.91	1.1
9									.13	2.6	.75	2.2
10									.14	1.3	.68	1.6
11									.15	.82	.58	.80
12									.35	.59	.53	.50
13									.18	.50	.69	.41
14									.25	.45	.46	.43
15								.21	.27	.59	.46	.92
16								.19	.30	.37	.47	9.0
17								.17	.93	.32	1.3	6.4
18								.18	.50	.28	.82	2.8
19								.21	.25	.25	7.2	2.1
20								.60	.22	.25	9.8	2.7
21								.24	.21	.25	2.7	1.9
22								.19	.19	.25	1.5	1.7
23								.19	.24	.25	4.1	1.8
24								.41	.17	.24	4.1	1.7
25								.22	.21	.53	4.3	1.6
26								.35	.37	.28	2.1	1.5
27								.24	.23	.54	1.4	1.5
28								.27	.21	.33	1.3	1.5
29								.21	.20	3.4	2.4	1.3
30								.19	.20	8.6	1.8	1.3
31								.18	-----	1.7	-----	1.2
TOTAL								4.25	7.21	33.11	58.20	56.24
MEAN								.25	.24	1.07	1.94	1.81
MAX								.60	.93	8.6	9.8	9.0
MIN								.17	.13	.24	.46	.41
AC-FT								8.4	14	66	115	112
YEAR 1997	TOTAL*	159.01	MEAN	1.14	MAX	9.8	MIN	.13	AC-FT	315		

* Incomplete Record
 Period of Record Max on 10/30 @ 1430: GH 3.30 = 47.8 cfs
 Period of Record Min on 09/09 @ 2100: GH 1.67 = 0.10 cfs
 Source Agency: Tualatin Basin Watermaster

BCBR Bronson Creek @ Bronson Road near Beaverton, OR 1997



OREGON WATER RESOURCES DEPARTMENT
BCBR
Bronson Creek @ Bronson Road near Beaverton, OR

Latitude: 453218 Longitude: 1225115 Stream Mile: 2.1
Drainage Area: Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1							2.3	.42	.59	4.6	4.9	5.0
2							1.4	.42	.53	8.0	2.7	4.0
3							1.4	.42	.53	3.2	2.0	3.1
4							1.2	.37	.44	8.2	1.7	2.5
5							1.0	.37	.41	11	1.8	2.2
6							.89	.43	.36	2.8	3.3	2.3
7							.81	.42	.31	1.4	12	3.2
8							1.1	.52	.30	5.2	5.3	4.6
9							2.3	.38	.34	15	2.6	6.1
10							1.2	.36	.41	10	1.9	7.0
11							1.3	.28	.52	4.2	1.5	4.2
12							1.0	.26	.38	1.7	1.2	3.5
13							.73	.24	.72	1.1	.98	3.0
14							.87	.30	2.1	.82	.94	2.9
15							.84	.37	1.5	.60	.71	3.4
16							.91	.35	2.0	.54	.70	27
17							.91	.36	13	.50	5.2	33
18							.84	.35	7.9	.46	2.3	12
19						1.5	.92	.40	2.2	.46	20	7.9
20						1.4	.74	1.9	1.3	.45	57	11
21							.75	1.8	.92	.40	14	8.1
22						4.7	.67	.82	.75	.41	6.3	5.6
23						3.9	.60	.59	.71	.41	12	6.0
24						2.1	.56	2.5	.67	.41	25	5.9
25						1.7	.50	1.5	.78	.41	23	4.5
26							.52	2.1	3.6	.63	9.2	3.9
27						1.8	.49	1.8	1.7	1.1	5.3	4.3
28						1.4	.43	2.1	1.0	1.1	4.4	3.3
29						1.2	.40	1.4	.88	12	8.9	3.0
30						2.0	.54	.88	.81	32	9.0	2.8
31							.44	.68	-----	20	-----	2.6
TOTAL						25.6	28.56	25.09	47.66	149.10	245.83	197.9
MEAN						2.13	.92	.81	1.59	4.81	8.19	6.38
MAX						4.7	2.3	2.5	13	32	57	33
MIN						1.2	.40	.24	.30	.40	.70	2.2
AC-FT						51	57	50	95	296	488	393
YEAR 1997	TOTAL*		719.74		*	57	MIN	.24	AC-FT	1,430		

* Incomplete Record Gage Operation Initiated on 06/18/97
Period of Record Max on 11/20 @ 0800: GH 3.72 = 89.7 cfs
Period of Record Min on 8/12 @ 2100: GH 1.70 = 0.20 cfs
Source Agency: Tualatin Basin Watermaster

dcbr Dawson Creek @ Brookwood Road 1997

100

10.0

DISCHARGE IN CFS

1.00

.100

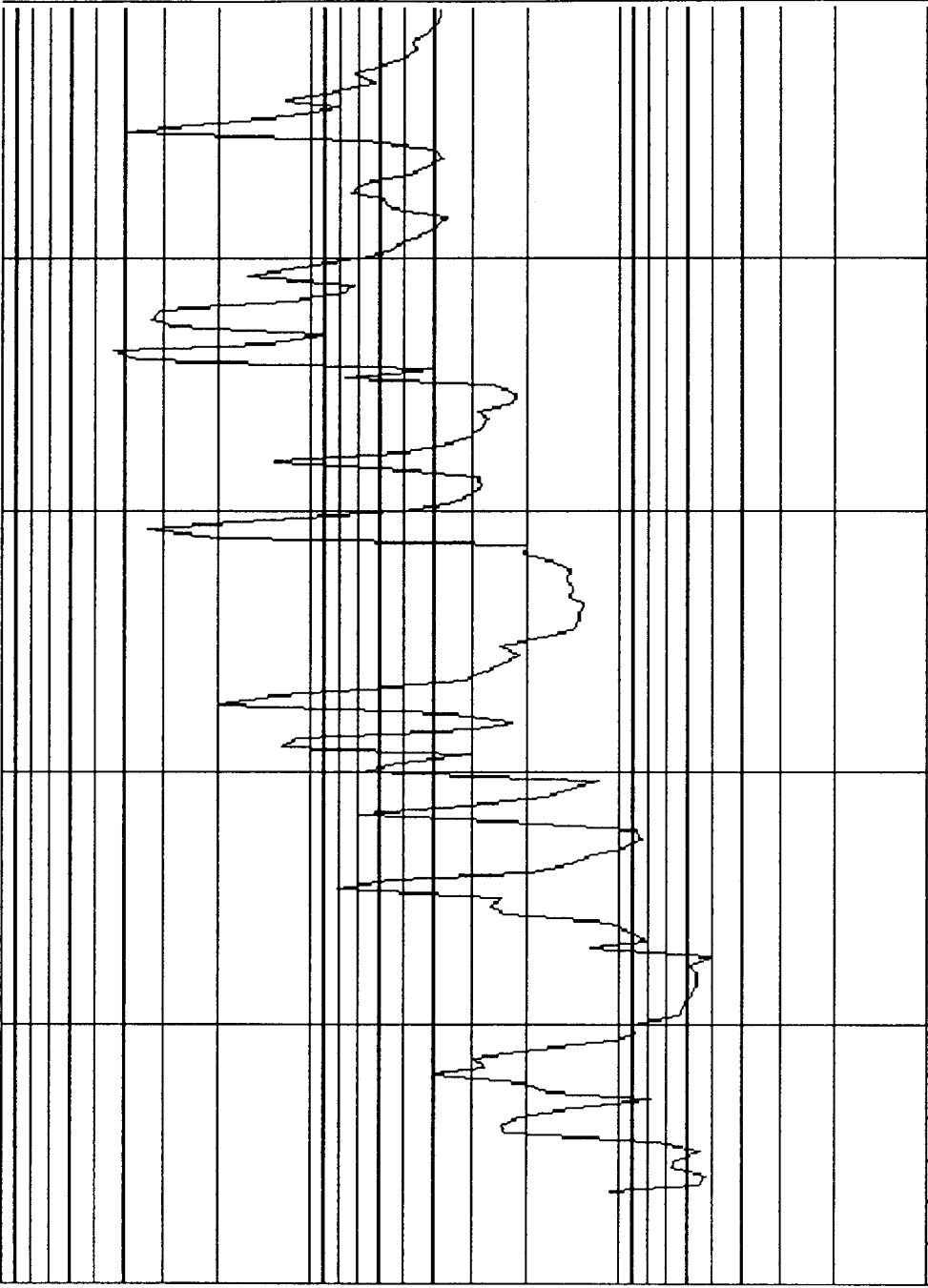
AUG

SEP

OCT

NOV

DEC



OREGON WATER RESOURCES DEPARTMENT
DCBR Dawson Creek @ Brookwood Road

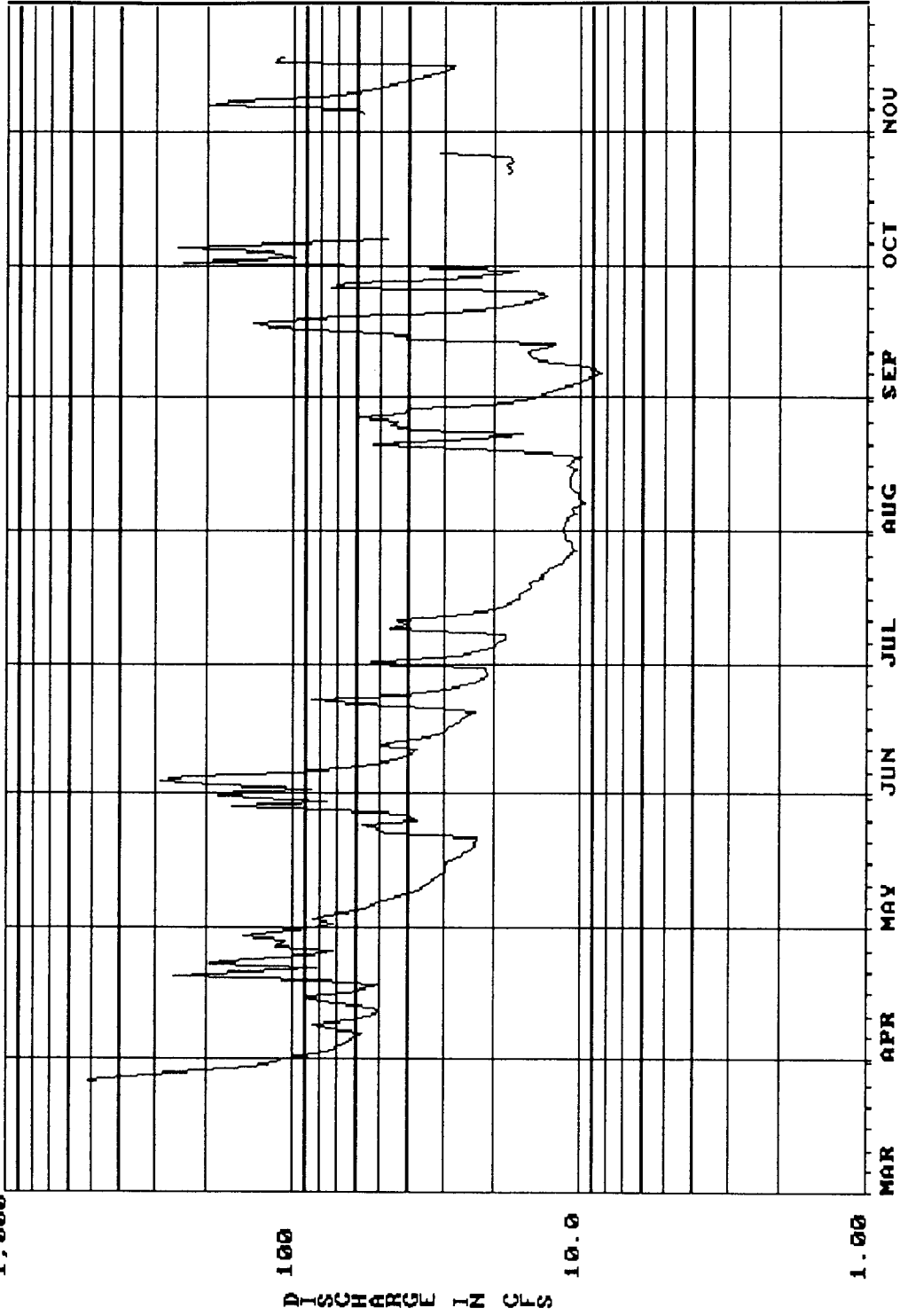
Latitude: 453129 Longitude: 1225600 Stream Mile: 0.7
Drainage Area: Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1									.91	6.8	5.2	7.0
2									.64	5.2	3.6	5.7
3									.63	3.0	3.1	5.2
4									.60	13	2.8	4.3
5									.58	11	2.9	3.9
6									.56	3.0	4.9	3.6
7									.57	2.2	13	5.6
8									.59	3.5	5.0	5.9
9									.50	20	3.6	7.4
10									1.3	13	3.1	6.9
11									.81	6.7	2.9	4.8
12								1.1	.95	3.2	2.7	4.1
13								.56	1.1	2.7	2.9	3.8
14								.53	2.4	2.4	2.2	4.0
15								.68	2.6	2.1	2.2	6.8
16								.66	2.4	2.5	2.6	4.0
17								.54	8.2	1.8	7.8	25
18								.77	5.4	1.4	4.1	12
19								2.4	2.0	1.4	37	8.2
20								2.4	1.5	1.4	44	12
21								2.2	1.2	1.3	14	8.3
22								1.4	.98	1.5	9.1	6.3
23								.80	.85	1.4	28	7.3
24								1.7	.88	1.5	33	6.1
25								2.1	2.4	1.5	31	5.1
26								4.0	6.9	1.6	11	4.6
27								2.7	3.1	2.1	7.9	4.7
28								3.0	1.7	2.0	7.4	4.3
29								1.9	1.4	20	16	4.0
30								1.1	1.2	34	11	3.9
31								.89	-----	14	-----	3.8
TOTAL								31.43	54.85	187.2	324.0	234.6
MEAN								1.57	1.83	6.04	10.8	7.57
MAX								4.0	8.2	34	44	40
MIN								.53	.50	1.3	2.2	3.6
AC-FT								62	109	371	643	465
YEAR 1997	TOTAL*	832.08	MEAN	5.86	MAX	44	MIN	.50	AC-FT	1,650		

* Incomplete Record
Gage Operation Initiated on 8/11/97
Period of Record Max on 11/23 @ 1945: GH 4.04 = 76.4 cfs
Period of Record Min on 9/9 @ 0445: GH 0.78 = 0.43 cfs
Source Agency: Tualatin Basin Watermaster

1,000 14206450 Rock Creek @ Highway 8 near Hillsboro, OR 1997



OREGON WATER RESOURCES DEPARTMENT
14206450 Rock Creek @ Highway 8 near Hillsboro, OR

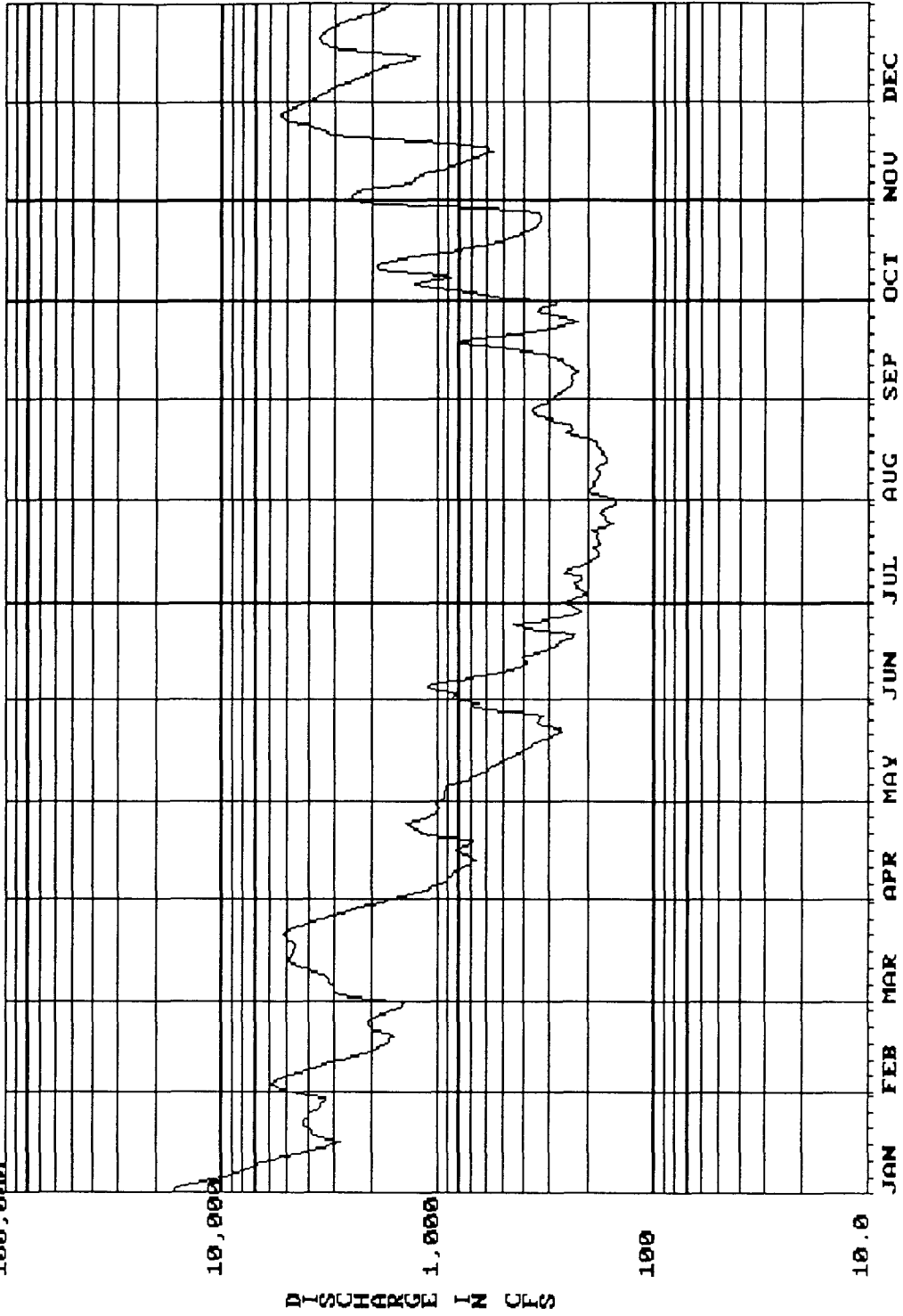
Latitude: 453009 Longitude: 1225648 Stream Mile 1.3
Drainage Area: 74.0 square miles Gage Datum:

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1				109	86	202	61	12	14	44		
2				82	73	87	40	11	13	243		
3				73	85	185	27	11	12	100		
4				69	77	290	23	11	10	125		
5				65	61	233	20	10	9.3	250	58	
6				60	55	102	19	11	8.5	106	60	
7				58	52	67	18	9.8	8.9	48	197	
8				75	46	53	18	10	11		162	
9				85	42	45	46	10	14		82	
10				64	37	39	41	11	15		62	
11				55	35	38	44	11	15		53	
12				50	33	50	29	11	13		45	
13				53	31	43	22	11	12		40	
14				80	30	34	19	11	41		35	
15				91	30	30	18	10	41		30	
16				64	30	29	17	11	65		28	
17				58	28	28	16	11	119		117	
18				51	26	27	16	9.9	139		111	
19				83	24	25	15	14	68			
20				262	24	24	15	25	29			
21				146	24	32	14	53	20	18		
22				83	23	60	14	23	16	18		
23				194	48	86	13	16	14	18		
24				144	50	42	12	39	13	18		
25				89	58	29	11	46	15	17		
26				73	38	25	11	44	75	18		
27			519	115	40	23	10	60	66	31		
28			384	107	73	21	11	42	30			
29			255	150	166	21	11	39	20			
30			140	118	77	22	11	21	17			
31			113	-----	138	-----	11	16	-----			
TOTAL			1,411	2,806	1,640	1,992	653	630.7	943.7	1,036	1,080	
MEAN			282	93.5	52.9	66.4	21.1	20.3	31.5	79.7	77.1	
MAX			519	262	166	290	61	60	139	250	197	
MIN			113	50	23	21	10	9.8	8.5	17	28	
AC-FT			2,800	5,570	3,250	3,950	1,300	1,250	1,870	2,050	2,140	*
YEAR 1997	TOTAL*	12,192.4	MEAN	56.7	MAX	519	MIN	8.5	AC-FT	24,180		

* Incomplete Record . Period of Record: 3/27 through 11/19
Period of Record Max on 3/27 @ 0000: GH 7.07 = 616 cfs
Period of Record Min on 09/6 @ 0030: GH 0.29 = 8.3 cfs
Source Agency: Tualatin Basin Watermaster

100,000,000 Tualatin River at Fannington, Oregon 1997



OREGON WATER RESOURCES DEPARTMENT
14206500 Tualatin River at Farmington, Oregon

Latitude: 452650 Longitude: 1225658 River Mile: 33.3
Drainage Area: 568 square miles Gage Datum = 100.42
USGS #: 14206500

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	16,700	4,650	1,550	1,650	985	870	253	152	302	283	2,480	4,040
2	16,700	5,250	2,550	1,460	940	871	241	154	289	494	2,540	3,780
3	15,200	5,830	2,990	1,260	939	812	210	186	272	613	2,460	3,570
4	13,300	5,850	3,060	1,140	947	1,020	205	204	258	698	2,210	3,340
5	11,400	5,500	3,090	1,050	921	1,130	226	196	250	1,050	1,790	3,100
6	9,620	4,970	3,150	964	854	991	229	191	243	1,310	1,390	2,860
7	8,560	4,380	3,220	900	760	793	231	191	240	1,150	1,300	2,620
8	7,850	3,880	3,250	861	700	638	217	183	242	887	1,300	2,430
9	7,240	3,530	3,400	864	659	550	216	177	232	933	1,120	2,210
10	6,610	3,180	3,730	807	618	471	258	178	227	1,570	969	2,070
11	5,920	2,820	4,210	750	576	420	252	184	248	1,910	871	1,950
12	5,240	2,490	4,670	702	540	391	211	177	260	1,930	790	1,790
13	4,540	2,220	4,930	669	503	393	203	167	267	1,780	723	1,620
14	3,900	2,010	4,930	704	469	406	192	165	292	1,480	660	1,390
15	3,460	1,860	4,840	802	437	352	181	173	326	1,140	609	1,240
16	3,040	1,760	4,740	817	409	320	181	176	390	893	561	1,580
17	2,870	1,690	4,680	759	393	296	185	179	526	733	634	2,720
18	3,560	1,620	4,560	701	363	281	188	184	807	610	916	3,160
19	3,790	1,700	4,660	695	347	271	177	187	754	536	1,210	3,320
20	3,840	1,990	5,030	940	320	245	183	193	566	485	2,500	3,480
21	4,070	2,110	5,260	1,210	284	236	188	239	416	437	3,200	3,560
22	4,230	2,130	5,170	1,220	266	279	181	257	338	398	3,390	3,480
23	4,230	2,080	4,820	1,350	274	393	195	241	293	367	3,670	3,320
24	4,140	1,950	4,310	1,410	317	445	175	248	244	347	4,190	3,130
25	3,980	1,760	3,840	1,280	351	347	155	290	230	343	4,780	2,920
26	3,810	1,610	3,480	1,110	344	285	167	300	262	335	5,240	2,700
27	3,620	1,520	3,120	1,050	324	237	171	353	324	334	5,380	2,480
28	3,540	1,450	2,800	1,000	359	218	179	360	347	339	5,150	2,240
29	3,420	-----	2,490	999	600	228	173	363	322	422	4,730	2,000
30	3,320	-----	2,140	1,030	705	242	162	349	284	1,000	4,370	1,800
31	3,930	-----	1,830	-----	641	-----	152	321	-----	1,960	-----	1,690
TOTAL	195,630	81,790	116,500	30,154	17,145	14,431	6,137	6,918	10,051	26,767	71,133	81,590
MEAN	6,311	2,921	3,758	1,005	553	481	198	223	335	863	2,371	2,632
MAX	16,700	5,850	5,260	1,650	985	1,130	258	363	807	1,960	5,380	4,040
MIN	2,870	1,450	1,550	669	266	218	152	152	227	283	561	1,240
AC-FT	388,000	162,200	231,100	59,810	34,010	28,620	12,170	13,720	19,940	53,090	141,100	161,800
YEAR 1997	TOTAL	658,246	MEAN	1,803	MAX	16,700	MIN	152	AC-FT	1,306,000		

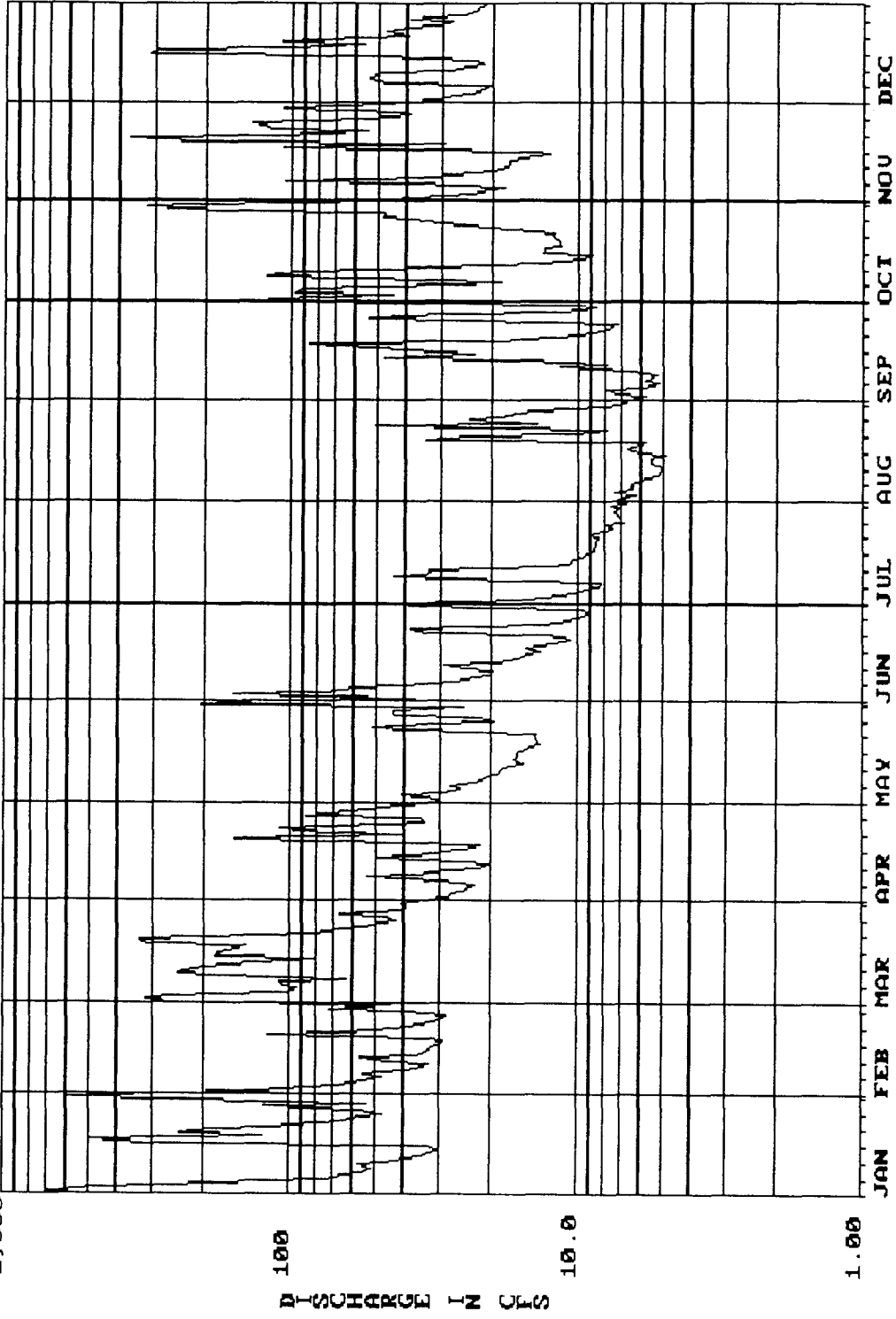
* Incomplete Record

Max on 1/1 @ 2200: GH 34.84 = 17,200 cfs

Min on 8/2 @ 1130: GH 4.24 = 144 cfs

Source Agency: Tualatin Basin Watermaster

1.000 14206950 Fanno Creek at Durhan Road nr Tigard, OR 1997



OREGON WATER RESOURCES DEPARTMENT
14206950 Fanno Creek at Durham Road nr Tigard, OR

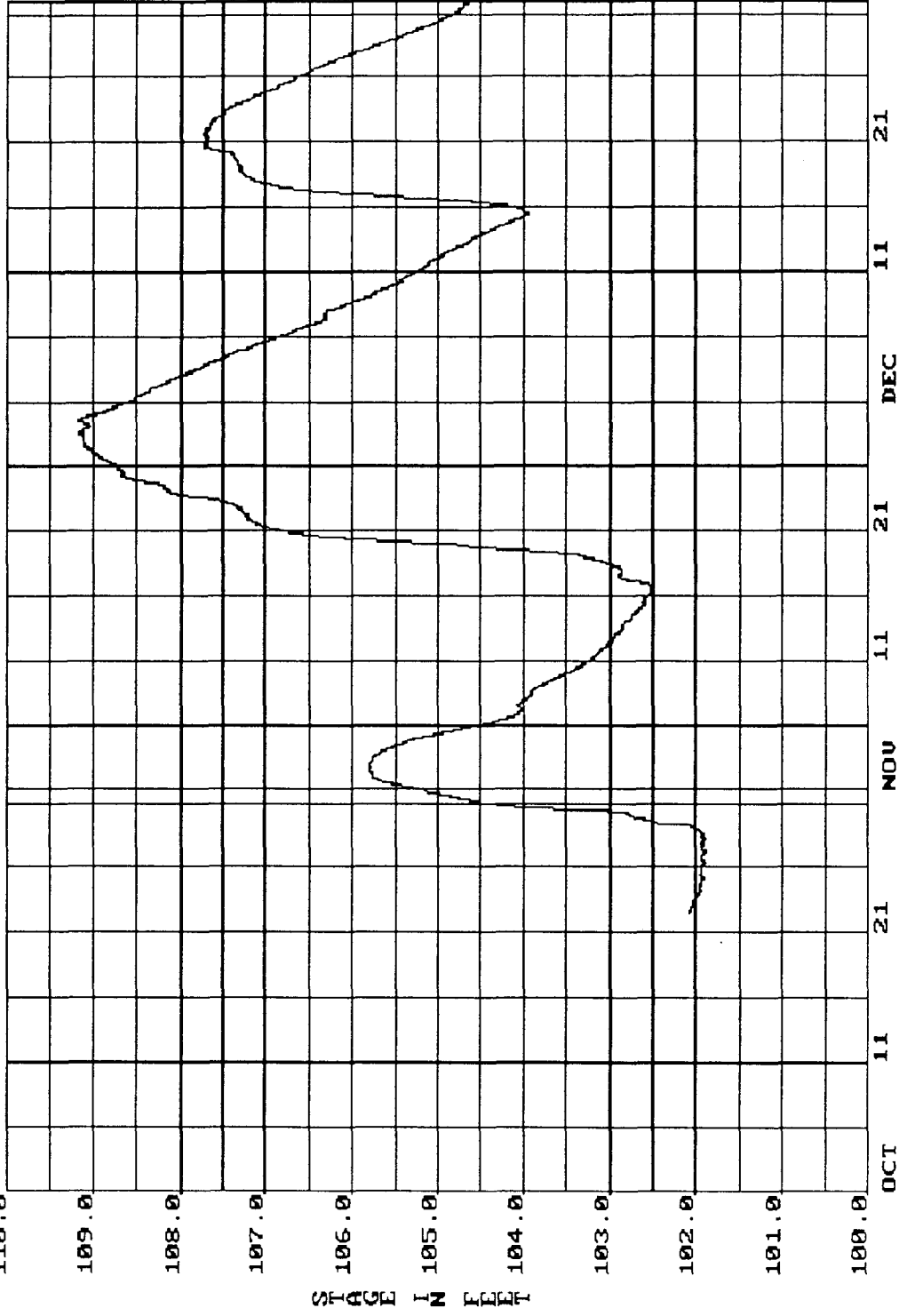
Latitude: 452413 Longitude: 1224513 Stream Mile: 1.2
Drainage Area: 31.5 square miles Gage Datum: 126.86
USGS #: 14206950

DAILY DISCHARGE IN CUBIC FEET PER SECOND FOR 1997

Day	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	809	293	264	34	31	122	41	6.5	6.6	109	47	39
2	625	132	319	29	30	37	15	7.3	5.8	121	30	32
3	488	86	185	27	41	159	12	6.3	7.3	45	24	27
4	273	68	101	26	30	79	11	7.5	7.9	97	21	24
5	124	55	93	24	26	59	9.5	6.4	5.9	92	18	22
6	74	48	106	23	28	33	8.5	6.4	5.2	28	39	20
7	65	56	110	30	23	27	8.3	6.3	5.9	19	106	47
8	56	40	64	54	21	23	16	5.8	5.5	59	33	54
9	52	36	184	37	20	20	44	5.3	5.3	124	23	54
10	58	33	245	28	19	20	33	5.2	6.6	94	20	48
11	47	45	218	22	19	25	33	5.0	12	50	18	29
12	40	56	168	20	18	29	13	5.3	8.0	20	18	24
13	35	36	129	25	16	19	13	5.5	16	13	18	22
14	33	34	81	50	17	16	10	5.5	48	9.7	16	23
15	31	32	182	31	17	15	9.8	4.9	23	8.9	13	51
16	33	30	178	29	17	14	9.4	6.1	31	13	14	311
17	312	29	166	23	16	15	8.9	6.8	52	13	108	295
18	500	33	143	22	15	13	8.9	6.4	86	12	29	101
19	126	120	314	75	14	11	8.7	5.8	20	12	215	57
20	245	64	337	156	14	11	8.7	34	12	12	372	110
21	184	43	129	40	14	13	8.5	24	9.8	12	114	57
22	118	36	83	72	14	34	9.1	10	8.2	12	55	40
23	80	32	67	109	37	38	8.2	8.0	7.8	17	119	47
24	65	29	55	45	52	14	7.6	51	7.4	24	126	39
25	57	29	48	34	33	11	7.9	14	13	31	138	31
26	48	39	43	35	20	10	7.0	24	54	39	55	28
27	58	73	47	88	22	9.5	7.1	19	29	49	39	39
28	123	45	67	62	43	9.2	7.3	16	12	48	40	26
29	54	-----	41	54	44	9.9	7.5	14	8.7	174	108	24
30	248	-----	40	42	25	39	7.2	8.1	10	325	65	23
31	604	-----	41	-----	206	-----	7.7	7.2	-----	216	-----	22
TOTAL	5,665	1,652	4,248	1,346	942	934.6	404.8	343.6	529.9	1,898.6	2,041	1,766
MEAN	183	59.0	137	44.9	30.4	31.2	13.1	11.1	17.7	61.2	68.0	57.0
MAX	809	293	337	156	206	159	44	51	86	325	372	311
MIN	31	29	40	20	14	9.2	7.0	4.9	5.2	8.9	13	20
AC-FT	11,240	3,280	8,430	2,670	1,870	1,850	803	682	1,050	3,770	4,050	3,500
YEAR 1997	TOTAL	21,771.5	MEAN	59.6	MAX	809	MIN	4.9	AC-FT	43,180		

* Incomplete Record
Max on 01/01 @ 0000: GH 10.45 = 1020 cfs
Min on 08/11 @ 2115: GH 1.64 = 4.3 cfs
Source Agency: Tualatin Basin Watermaster

110.0 14206960 Tualatin River @ Tualatin, Oregon 1997



OREGON WATER RESOURCES DEPARTMENT
14206960 TUALATIN RIVER AT TUALATIN, OR

1997

Latitude: 452315		Longitude: 1224540			River Mile: 8.9			Daily Mean Elevation				
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1											105.57	108.51
2											105.81	108.18
3											105.75	107.84
4											105.48	107.49
5											104.93	107.10
6											104.28	106.70
7											104.04	106.36
8											103.91	106.08
9											103.68	105.71
10											103.37	105.41
11											103.16	105.16
12											103.01	104.92
13											102.87	104.64
14											102.74	104.29
15											102.61	104.02
16											102.54	104.78
17											102.82	106.60
18											103.01	107.23
19											103.83	107.34
20											106.00	107.62
21											107.03	107.71
22										*102.09	107.27	107.64
23										102.06	107.62	107.47
24										102.00	108.20	107.18
25										101.97	108.64	106.83
26										101.96	108.86	106.49
27										101.95	109.07	106.16
28										101.96	109.14	105.76
29										102.39	109.12	105.36
30										103.40	108.85	105.01
31										104.81	-----	104.76
MEAN											105.44	106.33
MAX											109.14	108.51
MIN											102.54	104.02

Source Agency: Tualatin Basin Watermaster

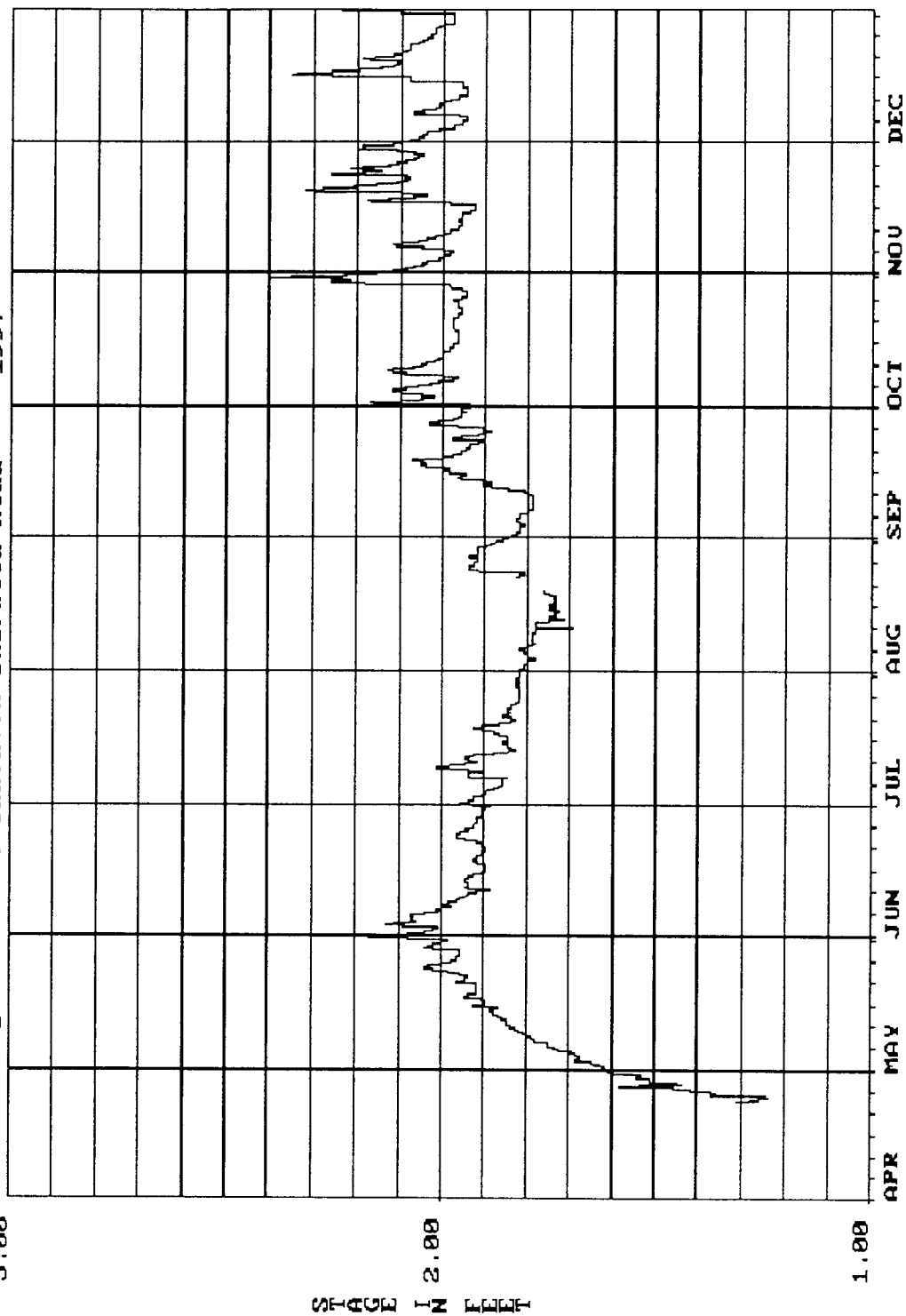
Max instantaneous recorded: 11/29 @ 1700 - 109.19'

Min instantaneous recorded: 10/28 @ 0530 - 101.92'

Elevation only recording station owned by the City of Tualatin

* Partial Day

3.00 HCTS Hedges Creek @ Tualatin-Sherwood Road 1997



OREGON WATER RESOURCES DEPARTMENT

HEDGES CREEK WETLAND NEAR TUALATIN, OR

1997

Latitude: Longitude:

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1					1.62	2.08	1.95	1.82	1.84	1.99	2.12	2.08
2					1.64	2.02	1.93	1.81	1.82	2.10	2.07	2.05
3					1.68	2.08	1.91	1.79	1.82	2.04	2.03	2.03
4					1.69	2.07	1.89	1.80	1.82	2.10	2.01	1.99
5					1.72	2.06	1.87	1.80	1.83	2.09	1.99	1.97
6					1.75	2.02	1.86	1.81	1.81	2.03	2.01	1.95
7					1.78	1.99	1.88	1.79	1.80	1.98	2.10	1.99
8					1.79	1.99	1.92	1.79	1.79	2.01	2.06	2.05
9					1.81	1.96	1.99	1.79	1.79	2.12	2.02	2.01
10					1.83	1.93	1.95	1.75	1.79	2.08	1.99	2.00
11					1.85	1.91	1.94	1.77	1.82	2.04	1.97	1.97
12					1.85	1.94	1.92	1.75	1.89	2.01	1.96	1.96
13					1.87	1.95	1.85	1.74	1.90	2.00	1.97	1.95
14					1.88	1.94	1.85	1.74	1.95	1.99	1.96	1.96
15					1.89	1.91	1.85	1.74	1.96	1.98	1.93	1.99
16					1.91	1.90	1.85	1.75	2.00	1.97	1.93	2.24
17					1.92	1.90	1.87	1.74	2.03	1.97	2.13	2.26
18					1.94	1.93	1.90	1.74	2.05	1.97	2.07	2.16
19					1.92	1.92	1.91	*1.76	2.01	1.98	2.15	2.11
20					1.93	1.91	1.84		1.97	1.98	2.28	2.15
21					1.96	1.91	1.85		1.95	1.98	2.16	2.13
22					1.95	1.92	1.85		1.93	1.97	2.09	2.09
23				*1.28	1.99	1.96	1.85	*1.81	1.92	1.96	2.13	2.08
24				1.26	2.03	1.96	1.83	1.90	1.96	1.97	2.20	2.06
25				1.36	2.00	1.94	1.82	1.93	1.91	1.97	2.18	2.04
26				1.42	1.97	1.92	1.82	1.92	1.97	1.96	2.11	2.03
27				1.50	1.96	1.92	1.82	1.93	2.01	1.95	2.07	2.02
28				1.51	1.97	1.91	1.82	1.92	1.97	1.96	2.06	2.01
29				1.53	2.03	1.91	1.83	1.91	1.96	2.16	2.13	1.98
30		-----		1.60	2.00	1.91	1.82	1.89	1.95	2.30	2.13	1.98
31		-----			2.09	-----	1.82	1.86	-----	2.24	-----	1.99
MEAN					1.88	1.89	1.87		1.85	2.03	2.07	2.04
MAX				1.60	2.03	2.08	1.99	1.93	2.05	2.30	2.28	2.26
MIN				1.26	1.62	1.90	1.82	1.74	1.79	1.95	1.93	1.95

Max instantaneous recorded: 10/30 @ 1645 - 2.40'

Min instantaneous recorded: 04/24 @ 2045 - 1.24'

Elevation only recording station

Source Agency: Tualatin Basin Watermaster

* Partial Day

Stream Temperature Records

APPENDIX E

OREGON WATER RESOURCES DEPARTMENT
14207000 OSWEGO CANAL NR LAKE OSWEGO ORE

LAT 45 23 18 LONG 122 43 11 D DA DATUM 96.50 CO CLAC

Preliminary
DAILY DISCHARGE IN CUBIC FEET PER SECOND WATER YEAR OCT 1996 TO SEP 1997

Day	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.71	5.7	11	292	5.4	5.3	2.5	1.5	41	22	19	16
2	.76	5.7	12	457	4.7	4.3	2.5	1.5	41	24	19	20
3	.72	5.9	11	409	4.2	4.1	2.5	1.6	43	23	19	32
4	1.3	6.6	11	307	3.9	3.8	2.4	1.5	44	24	21	20
5	1.8	6.5	12	240	3.6	3.9	2.3	1.4	46	24	22	21
6	2.0	6.9	12	178	3.5	4.0	2.1	1.4	45	25	21	20
7	1.9	7.4	12	98	3.1	3.8	2.0	1.4	41	25	22	25
8	1.6	7.2	13	29	2.9	3.6	2.1	1.3	36	24	27	21
9	1.6	7.3	11	6.8	2.8	4.3	2.0	6.2	33	23	38	21
10	1.7	7.2	18	3.7	2.6	5.0	2.0	11	32	25	48	20
11	1.9	7.0	18	2.8	2.6	4.9	1.9	11	31	29	44	15
12	2.3	7.2	11	2.6	2.6	4.7	1.8	10	30	26	30	16
13	2.8	7.1	10	2.4	2.4	4.5	1.6	10	13	24	14	23
14	2.6	7.2	9.0	2.3	2.3	4.6	1.7	10	9.7	23	18	29
15	2.7	7.0	8.5	2.2	2.1	4.0	1.8	12	23	23	18	24
16	2.4	7.5	8.7	2.1	2.1	3.7	1.7	15	23	22	16	13
17	2.9	7.6	9.0	5.3	2.1	3.4	1.4	14	23	21	19	1.8
18	4.1	9.1	9.1	5.0	2.0	3.8	1.5	14	23	20	22	3.0
19	3.4	19	8.9	3.5	2.2	5.0	1.8	16	22	20	14	8.8
20	3.5	17	9.7	4.9	2.0	5.1	2.0	21	21	19	3.1	25
21	3.4	16	11	4.3	2.0	4.1	1.8	20	21	19	32	37
22	4.2	16	11	4.0	1.9	3.8	2.0	19	21	20	53	31
23	4.4	15	12	3.5	1.9	3.5	1.9	20	24	19	54	28
24	5.1	17	13	3.1	1.9	3.3	1.9	21	26	19	36	27
25	5.0	13	13	3.2	1.9	3.0	1.9	21	26	18	26	20
26	4.9	11	14	3.5	1.9	2.8	2.1	25	23	17	36	16
27	5.0	11	14	3.6	2.0	2.7	2.1	25	22	18	32	29
28	5.7	12	12	3.8	1.9	2.6	2.0	24	20	15	43	28
29	5.6	11	17	3.4	-----	2.5	1.8	20	20	19	44	16
30	5.5	11	15	5.1	-----	2.5	1.6	34	21	15	42	16
31	5.7	-----	17	7.5	-----	2.4	-----	40	-----	20	18	-----
TOTAL	97.19	295.1	373.9	2,098.6	74.5	119.0	58.7	430.8	844.7	665	870.1	622.6
MEAN	3.14	9.84	12.1	67.7	2.66	3.84	1.96	13.9	28.2	21.5	28.1	20.8
MAX	5.7	19	18	457	5.4	5.3	2.5	40	46	29	54	37
MIN	.71	5.7	8.5	2.1	1.9	2.4	1.4	1.3	9.7	15	3.1	1.8
AC-FT	193	585	742	4,160	148	236	116	854	1,680	1,320	1,730	1,230
CAL YEAR 1996 TOTAL*		766.19	MEAN	8.33	MAX	19	MIN	.71	AC-FT	1,520		
WTR YEAR 1997 TOTAL		6,550.19	MEAN	17.9	MAX	457	MIN	.71	AC-FT	12,990		

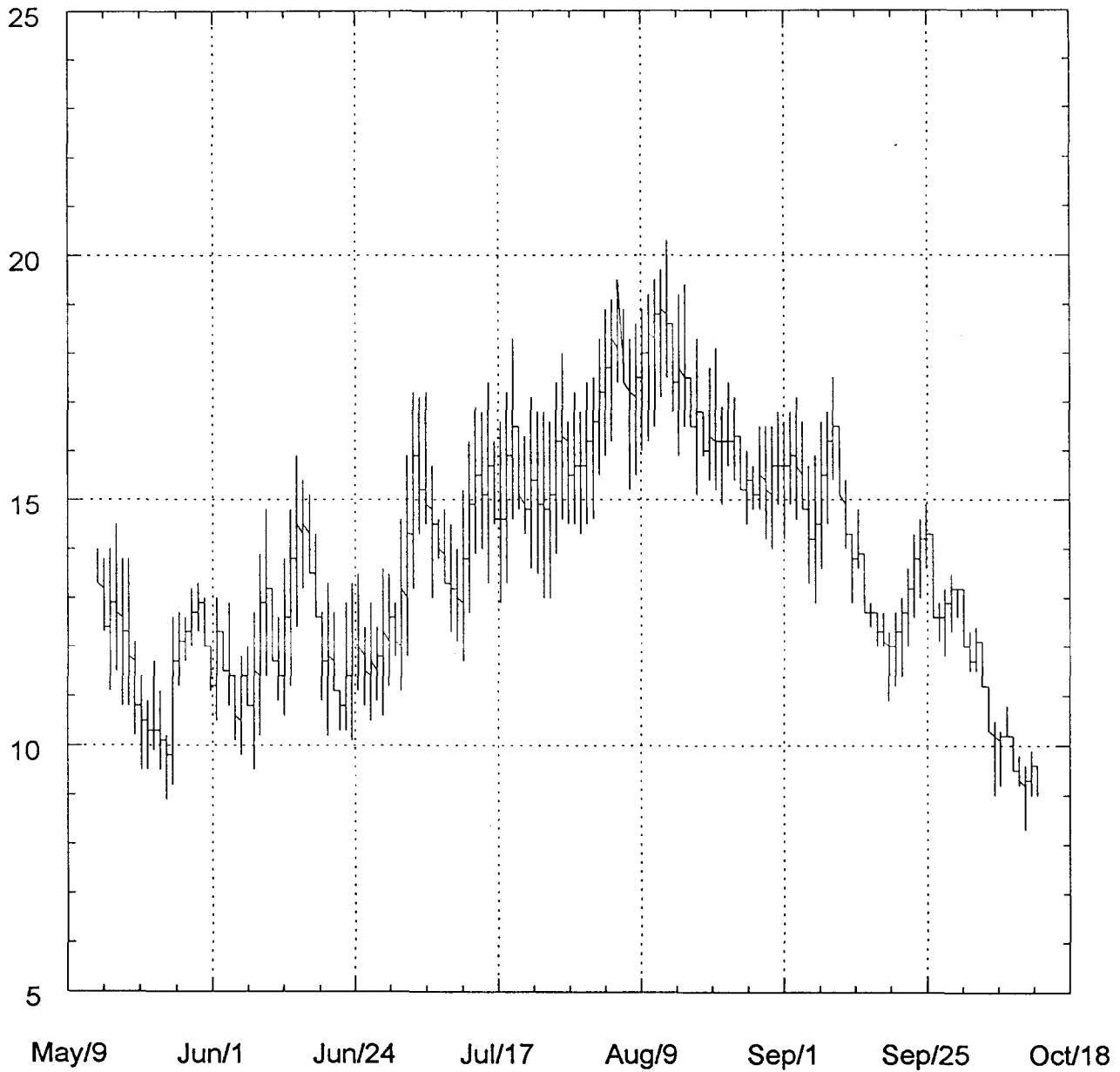
* Incomplete Record /*/*/* ud 1. rc's, rt 18&19, shifts /*/*/*

UNITED STATES DEPARTMENT OF THE INTERIOR - GEOLOGICAL SURVEY - OREGON DISTRICT INSTALLATION 02/13/98

STATION NUMBER 14207500 TUALATIN RIVER AT WEST LINN, OREG. STREAM SOURCE AGENCY USGS
 LATITUDE 452103 LONGITUDE 1224030 DRAINAGE AREA 706.00 DATUM 85.61 STATE 41 COUNTY 005
 PROVISIONAL DATA SUBJECT TO REVISION
 DISCHARGE, CUBIC FEET PER SECOND, CALENDAR YEAR JANUARY TO DECEMBER 1997
 DAILY MEAN VALUES

DAY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	19400	5710	2170	2050	1290	1110	393	167	391	434	2550	4870
2	20400	5610	3390	1850	1230	1130	355	170	372	633	2740	4580
3	19900	5760	3940	1630	1210	1170	317	180	341	708	2700	4310
4	18000	5930	3880	1460	1210	1230	279	218	327	867	2520	4020
5	15400	5910	3820	1350	1180	1360	274	235	311	1040	2160	3710
6	12700	5660	3910	1260	1140	1300	286	226	299	1400	1730	3390
7	10600	5300	3970	1180	1050	1110	291	209	290	1390	1540	3140
8	9230	4860	3930	1160	963	921	302	175	286	1200	1490	2930
9	8170	4410	4190	1130	901	789	342	153	291	1150	1350	2660
10	7370	3950	4680	1090	853	699	320	134	279	1440	1180	2450
11	6690	3490	5050	1010	804	620	380	161	290	1920	1070	2290
12	6070	3120	5270	954	762	588	316	263	307	2040	984	2130
13	5480	2720	5430	910	721	566	274	258	321	1970	906	1950
14	4940	2440	5440	940	682	568	255	184	375	1740	830	1730
15	4380	2240	5590	1000	644	532	241	166	389	1420	758	1560
16	3820	2100	5610	1050	603	476	227	186	445	1130	722	2040
17	3880	2010	5570	1020	567	438	227	193	580	914	869	3320
18	5040	1930	5420	959	540	408	235	197	855	758	963	3820
19	4860	2070	5740	984	509	389	231	217	956	658	1400	3910
20	5020	2240	5990	1300	478	364	221	249	797	597	2830	4140
21	5100	2400	5820	1430	441	341	222	251	612	558	3650	4220
22	5060	2450	5730	1560	405	361	228	264	482	494	3850	4160
23	4990	2420	5550	1760	423	480	224	274	405	457	4120	4020
24	4890	2320	5250	1760	491	556	233	306	349	421	4620	3790
25	4760	2140	4850	1670	507	541	203	334	308	409	5020	3510
26	4590	1980	4390	1500	498	448	181	349	354	405	5210	3250
27	4380	1900	3940	1460	483	379	191	385	387	402	5390	3000
28	4340	1800	3510	1380	492	327	200	462	401	402	5430	2700
29	4110	---	3090	1310	646	305	206	465	420	626	5410	2430
30	4240	---	2700	1330	837	333	200	428	389	1200	5180	2190
31	5400	---	2340	---	1060	---	182	416	---	2050	---	2020
TOTAL	243210	94870	140160	39447	23620	19839	8036	7875	12609	30833	79172	98240
MEAN	7845	3388	4521	1315	762	661	259	254	420	995	2639	3169
MAX	20400	5930	5990	2050	1290	1360	393	465	956	2050	5430	4870
MIN	3820	1800	2170	910	405	305	181	134	279	402	722	1560
AC-FT	482400	188200	278000	78240	46850	39350	15940	15620	25010	61160	157000	194900
CAL YR 1997	TOTAL 797911	MEAN 2186	MAX 20400	MIN 134	AC-FT 1583000							

**Tualatin River below Lee Falls
River Mile 70.7
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/14 through 10/13
 MAX, 20.3 Aug 14 MIN, 8.3 Oct. 11

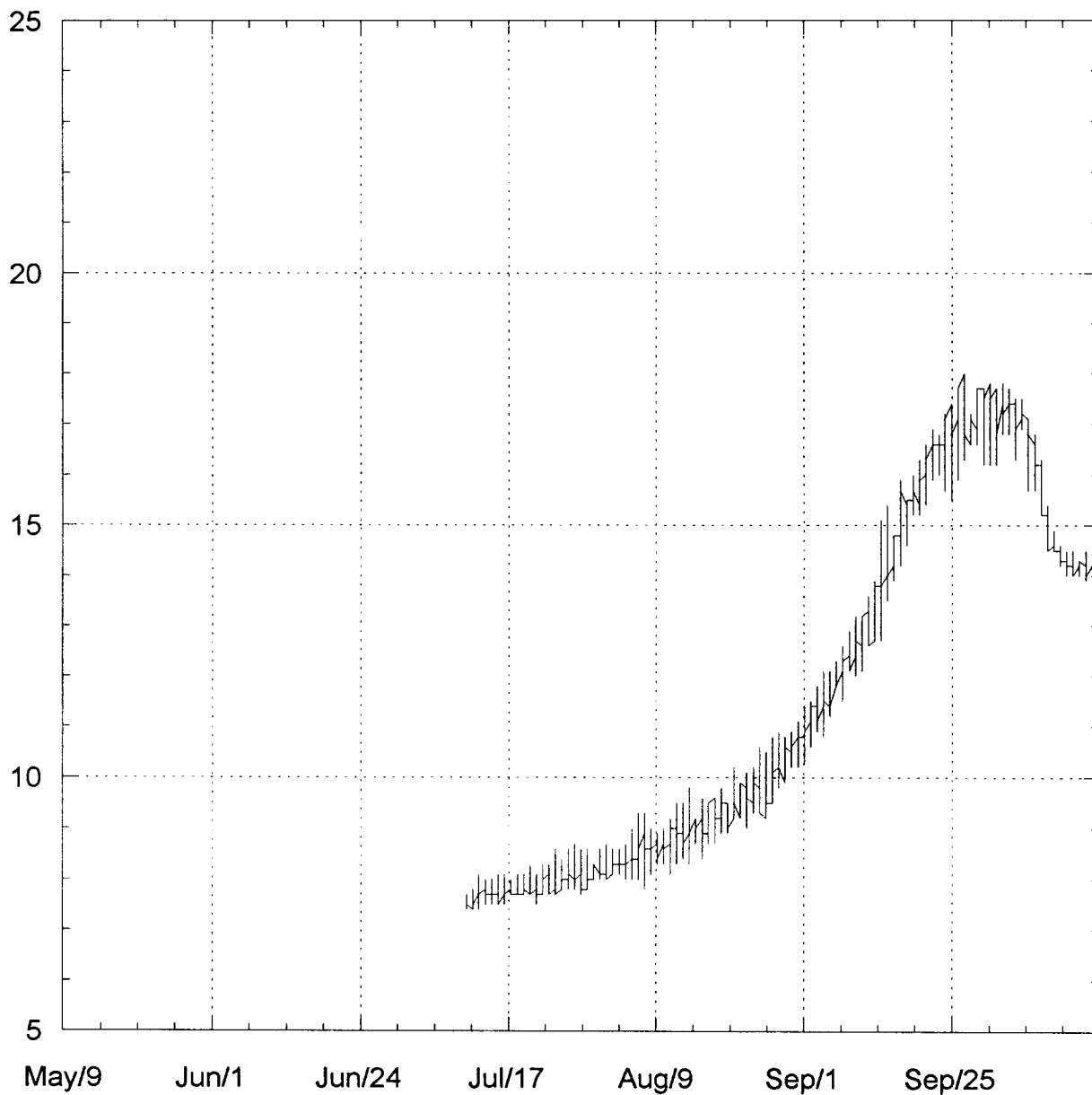
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				12.0	11.1	11.5	12.9	11.8	12.3
2				13.0	10.5	11.8	14.6	11.1	12.8
3				12.3	11.5	11.9	15.9	11.8	13.7
4				12.9	10.8	11.6	17.2	13.2	15.2
5				11.4	10.1	10.7	17.1	14.3	15.6
6				11.8	9.8	10.9	17.2	14.5	15.5
7				12.0	10.8	11.3	15.7	13.0	14.4
8				12.7	9.5	11.1	14.6	13.8	14.2
9				13.9	10.2	12.1	14.8	13.3	14.0
10				14.8	11.4	13.0	14.5	12.3	13.3
11				13.2	11.7	12.4	14.0	12.1	13.0
12				12.6	10.9	11.6	15.2	11.7	13.3
13				13.8	10.6	12.1	16.2	12.7	14.4
14	*14.0	*13.3	*13.7	14.8	11.2	13.0	16.9	13.9	15.3
15	13.8	12.3	12.9	15.9	12.4	14.1	16.8	14.0	15.4
16	14.0	11.1	12.6	15.4	13.2	14.3	17.4	13.3	15.3
17	14.5	11.5	12.9	15.1	13.5	14.1	16.2	14.5	15.2
18	13.8	10.8	12.4	14.3	12.6	13.4	16.6	12.9	14.7
19	13.8	10.8	12.2	12.7	10.9	12.0	17.2	13.3	15.2
20	12.1	10.2	11.1	13.3	10.2	11.8	18.3	14.6	16.4
21	11.4	9.5	10.6	12.7	11.1	11.7	16.5	14.8	15.4
22	10.9	9.5	10.3	11.1	10.3	10.7	16.3	14.3	15.2
23	11.7	9.9	10.6	12.9	10.3	11.4	17.1	13.6	15.3
24	11.1	9.5	10.3	13.3	10.1	11.6	16.8	13.5	15.1
25	10.2	8.9	9.7	13.5	11.1	12.2	16.8	13.0	14.9
26	12.6	9.2	10.8	12.4	10.8	11.6	16.6	13.0	14.8
27	12.7	11.2	11.9	12.9	10.5	11.6	17.4	13.9	15.6
28	12.6	11.7	12.1	12.4	10.9	11.7	18.0	14.6	16.2
29	13.2	12.0	12.5	13.6	10.6	12.0	16.6	14.5	15.6
30	13.3	12.3	12.8	13.5	11.2	12.3	17.2	14.5	15.6
31	13.0	12.0	12.6				16.8	14.3	15.6
Month	*14.5	*8.9	*11.7	15.9	9.5	12.1	18.3	11.1	14.7

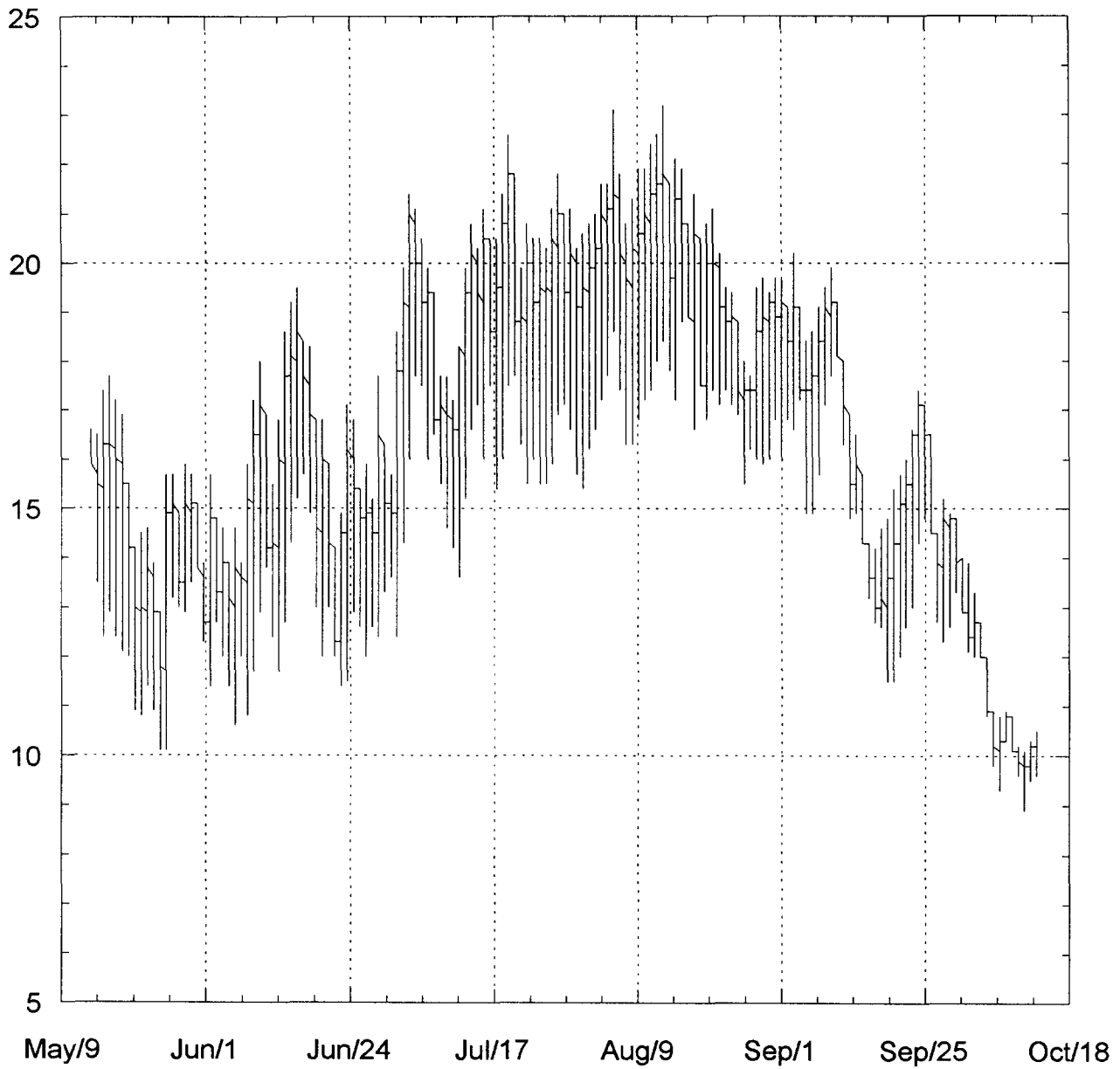
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	17.4	14.5	15.9	16.8	14.9	15.8	13.2	12.0	12.9
2	17.5	14.6	16.2	16.6	14.2	15.5	12.3	11.5	11.9
3	18.3	15.5	16.9	16.8	14.9	15.9	12.4	11.5	11.9
4	18.9	15.9	17.4	17.1	14.6	15.8	12.1	11.2	11.7
5	19.1	16.2	17.7	16.6	14.8	15.5	11.2	10.3	10.7
6	*19.5	*17.4	*17.9	15.7	13.3	14.4	10.5	9.0	9.8
7	*18.9	*17.4	*18.3	15.9	12.9	14.3	10.3	9.2	9.8
8	18.3	15.2	16.9	16.6	13.6	15.0	10.8	10.2	10.4
9	18.6	15.5	17.1	16.8	14.5	15.7	10.2	9.5	9.9
10	18.9	16.0	17.6	17.5	15.4	16.4	9.8	9.2	9.4
11	19.2	16.2	17.9	16.5	15.1	15.9	9.6	8.3	9.0
12	19.5	16.5	18.2	15.4	14.0	14.7	9.9	9.0	9.4
13	19.7	17.1	18.5	14.3	12.9	13.7	*9.6	*9.0	*9.3
14	20.3	17.5	18.9	14.8	13.6	14.1			
15	18.6	16.8	17.8	13.9	12.7	13.3			
16	19.2	15.9	17.5	12.9	12.4	12.6			
17	19.4	16.5	17.8	12.7	12.0	12.4			
18	17.5	16.5	17.1	12.7	12.0	12.3			
19	18.3	15.1	16.6	12.3	10.9	11.7			
20	16.8	15.9	16.2	12.7	11.2	12.0			
21	17.7	15.4	16.4	13.0	11.4	12.2			
22	18.1	15.2	16.5	13.6	12.0	12.8			
23	16.9	14.9	16.0	14.3	12.6	13.4			
24	17.4	15.7	16.3	14.6	13.0	13.9			
25	17.1	15.4	16.3	14.9	13.6	14.3			
26	16.3	15.2	15.8	14.3	12.6	13.4			
27	16.0	14.5	15.3	12.9	12.1	12.5			
28	15.7	14.8	15.2	13.2	11.8	12.5			
29	16.5	14.8	15.5	13.5	12.3	13.0			
30	16.5	14.2	15.3	13.2	12.6	13.0			
31	16.5	14.0	15.3						
Month	*20.3	*14.0	*16.8	17.5	10.9	13.9	*13.2	*8.3	*10.6

Scoggins Creek below Scoggins Dam 1997



Temperature - Degrees Celsius
Source Agency - Unified Sewerage Agency

**Tualatin River Near Gaston, OR
River Mile 63.9
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

14202500

TUALATIN RIVER NEAR GASTON, OREGON

1997

Period of Record: 5/14 through 10/13

Source Agency: Tualatin Basin Watermaster

MAX, 23.2 Aug 14 MIN, 8.9 Oct. 11

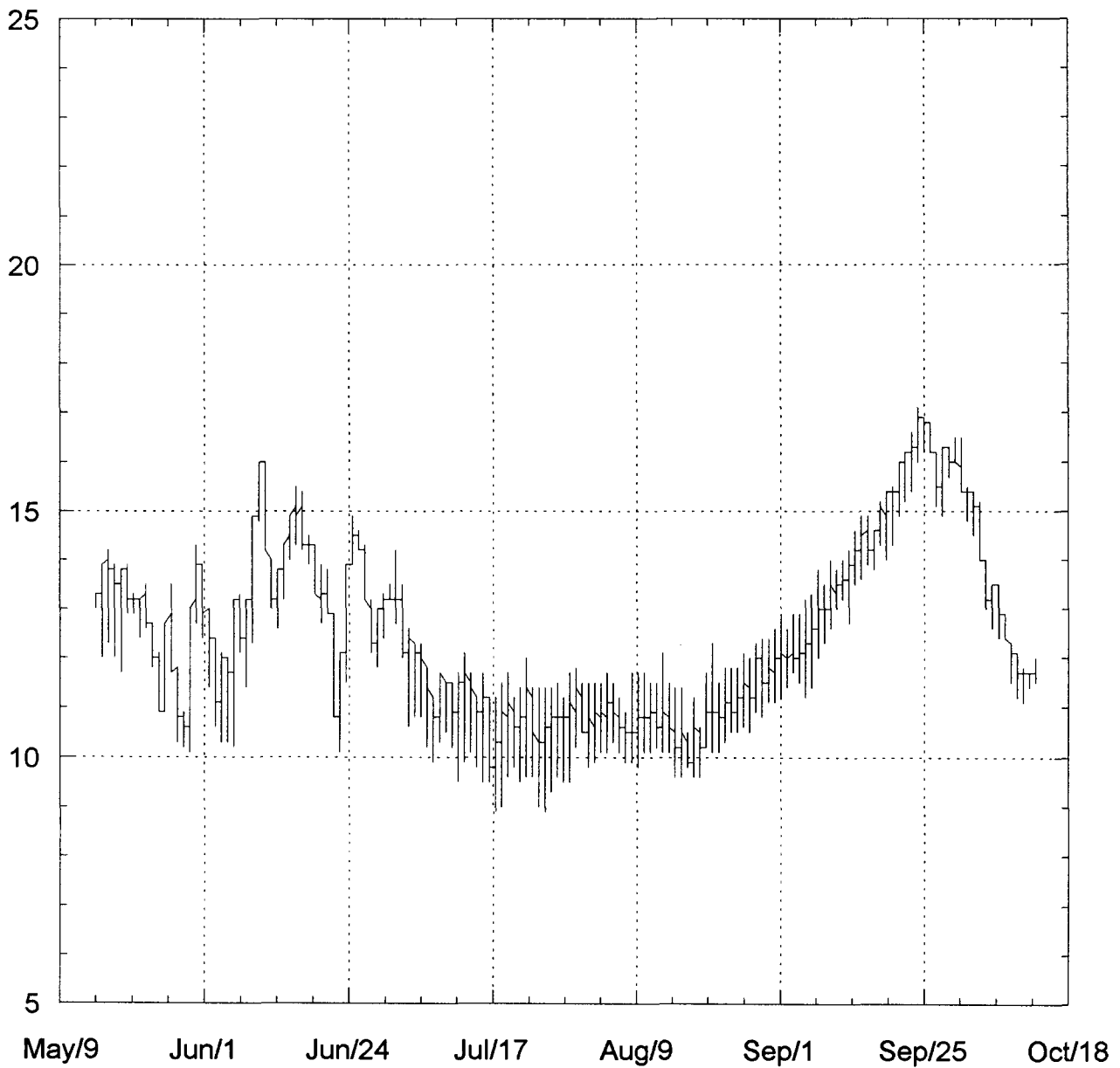
* = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				13.9	12.3	13.0	15.7	13.6	14.6
2				15.7	11.4	13.4	18.6	12.4	15.3
3				14.8	12.7	13.5	19.9	14.3	17.1
4				14.6	12.0	13.3	21.4	16.0	18.7
5				13.9	11.4	12.9	21.1	17.7	19.5
6				14.6	10.6	12.7	20.5	17.5	19.1
7				13.9	12.0	13.0	19.9	16.0	18.2
8				15.9	10.8	13.2	19.4	16.5	17.3
9				17.2	11.7	14.4	17.7	15.5	16.7
10				18.0	12.9	15.6	17.7	14.6	16.1
11				16.9	13.8	14.6	17.2	14.2	15.8
12				15.5	12.4	13.8	18.3	13.6	16.0
13				16.8	11.7	14.1	19.9	15.2	17.6
14	*16.6	*15.9	*16.4	18.6	12.7	15.6	20.8	16.6	18.7
15	16.5	13.5	14.8	19.2	14.3	16.9	20.3	17.1	18.8
16	17.4	12.4	14.9	19.5	15.2	17.4	21.1	16.0	18.7
17	17.7	12.9	15.3	18.4	15.7	17.2	20.5	17.5	18.8
18	17.2	12.4	15.0	18.3	14.9	16.6	20.5	15.4	18.0
19	16.9	12.1	14.7	16.8	13.0	14.8	21.4	16.0	18.9
20	15.5	12.0	13.7	16.8	12.0	14.4	22.6	17.5	20.1
21	14.2	10.9	12.7	15.9	13.0	14.1	21.8	17.7	18.9
22	14.5	10.8	12.6	14.2	12.0	12.7	19.9	16.3	18.1
23	14.6	11.4	12.7	14.9	11.4	12.9	20.8	15.5	18.2
24	13.9	10.9	12.4	17.1	11.5	14.2	20.5	16.0	18.5
25	12.9	10.1	11.3	16.8	12.9	14.8	20.5	15.5	18.1
26	15.7	10.1	12.6	15.4	12.6	14.1	20.3	15.5	18.1
27	15.7	13.2	14.4	15.9	12.0	14.0	21.1	15.9	18.6
28	14.9	13.0	13.8	15.2	12.6	14.1	21.8	16.9	19.4
29	15.9	12.9	14.2	17.7	12.4	14.8	21.0	17.1	19.0
30	15.7	13.5	14.5	16.3	13.3	14.9	21.1	16.6	18.8
31	15.1	13.8	14.1				20.3	15.7	18.2
Month	*17.7	*10.1	*13.8	19.5	10.6	14.4	22.6	12.4	18.0

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	20.6	15.4	18.0	19.7	16.8	18.4	14.0	12.9	13.6
2	20.8	16.2	18.5	19.7	16.0	18.0	13.9	12.1	12.8
3	21.0	16.6	18.9	19.2	16.8	18.2	13.3	12.0	12.5
4	21.6	17.2	19.4	20.2	16.6	18.4	12.7	12.0	12.4
5	21.6	17.7	19.7	19.1	17.2	18.1	12.0	10.8	11.3
6	23.1	18.6	20.7	18.4	14.9	16.7	10.9	9.8	10.4
7	21.8	17.4	19.8	18.6	14.9	16.9	10.8	9.3	10.1
8	20.8	16.3	18.7	19.1	15.7	17.4	10.9	10.3	10.6
9	21.3	16.3	18.9	19.5	17.1	18.3	10.8	10.1	10.3
10	21.9	16.8	19.4	19.9	17.7	18.8	10.2	9.6	9.9
11	21.9	17.2	19.6	19.2	18.1	18.6	10.1	8.9	9.6
12	22.4	17.4	20.0	18.1	16.3	17.2	10.3	9.5	9.8
13	22.6	18.0	20.4	17.1	14.8	15.7	*10.5	*9.6	*10.0
14	23.2	18.4	20.9	16.5	14.9	15.7			
15	21.8	17.8	19.6	15.9	14.5	14.9			
16	22.1	17.2	19.6	14.3	13.2	13.6			
17	21.9	18.8	20.5	14.2	12.7	13.4			
18	20.8	18.9	19.8	14.6	12.6	13.4			
19	21.4	16.6	18.9	14.8	11.5	13.0			
20	20.6	17.5	18.5	15.4	11.5	13.4			
21	20.8	16.8	18.5	15.7	12.0	13.8			
22	21.1	17.4	19.4	16.0	12.6	14.4			
23	20.2	17.1	18.8	16.6	13.0	14.9			
24	19.5	17.4	18.5	17.4	14.3	15.8			
25	19.4	17.1	18.3	17.1	14.8	16.0			
26	18.9	16.9	17.6	16.5	14.6	15.3			
27	18.0	15.5	16.8	14.5	12.7	13.6			
28	17.7	16.2	17.0	15.2	12.3	13.7			
29	19.5	16.0	17.6	14.9	12.6	13.8			
30	19.7	15.9	17.8	14.8	13.3	13.9			
31	19.4	16.0	17.9						
Month	23.2	15.4	19.0	20.2	11.5	15.8	*14.0	*8.9	*11.1

**Tualatin River at Dilley, OR
River Mile 58.8
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/15 through 10/13
MAX, 17.1 Sep 24 MIN, 8.9 Jul 18

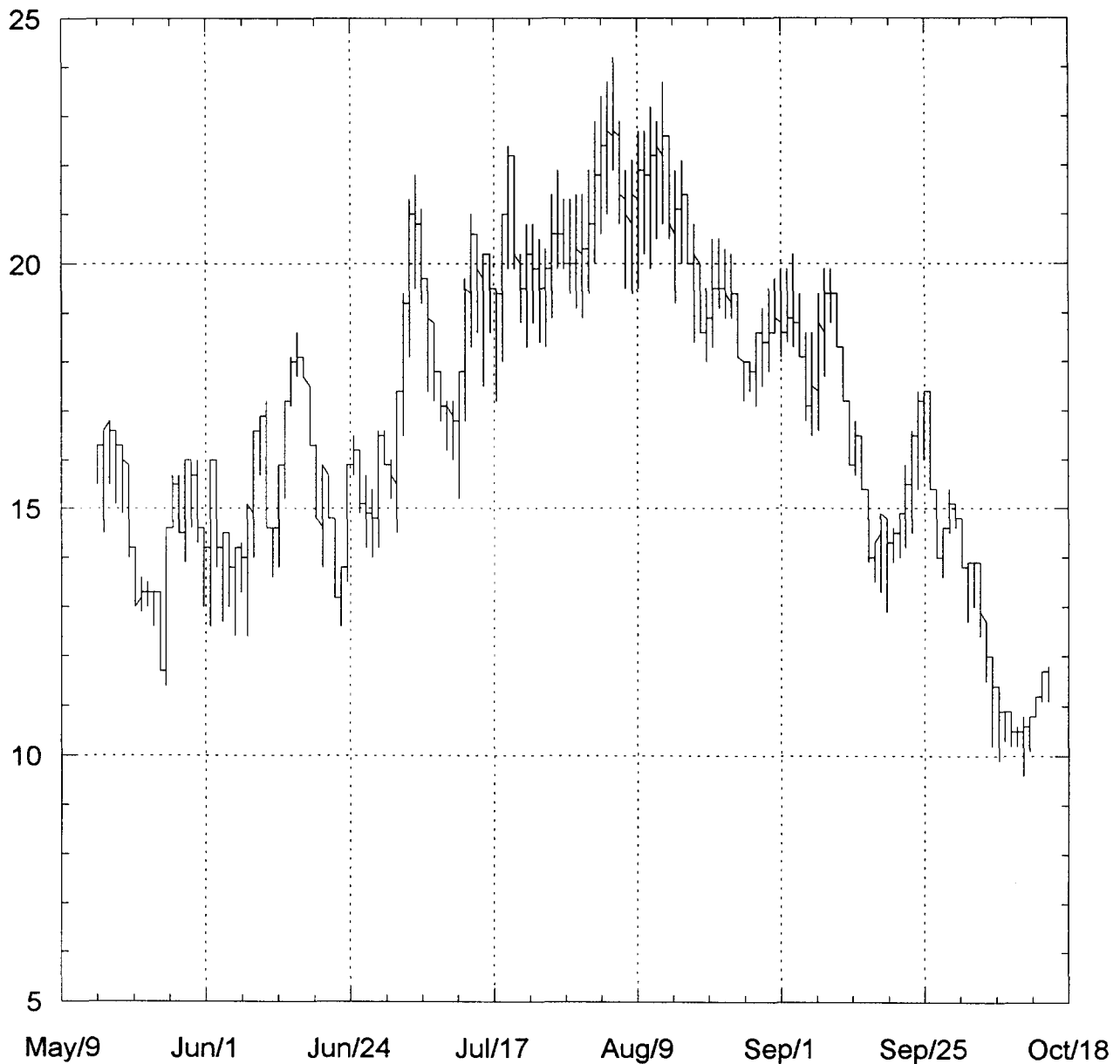
Source Agency: Tualatin Basin Watermaster
* = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				13.9	12.4	12.8	13.5	13.2	13.4
2				13.0	11.4	12.0	14.2	12.7	13.2
3				12.4	10.6	11.3	13.5	12.0	12.7
4				12.1	10.3	11.0	12.6	10.6	11.6
5				12.0	10.3	11.2	12.3	10.8	11.6
6				13.2	10.2	11.3	12.3	10.8	11.5
7				13.3	12.1	12.5	11.8	10.2	11.0
8				13.2	11.4	12.1	11.2	9.9	10.4
9				14.9	12.3	13.4	11.7	10.3	10.8
10				16.0	14.8	15.3	11.5	10.5	11.1
11				16.0	14.2	15.3	11.5	10.2	11.0
12				14.0	13.0	13.4	11.7	9.5	10.6
13				13.8	12.6	13.2	12.1	9.9	11.0
14				14.3	13.2	13.8	11.7	10.1	11.0
15	*13.3	*13.0	*13.1	14.9	14.0	14.6	11.2	9.8	10.5
16	13.9	12.0	12.9	15.5	14.3	14.9	11.7	9.5	10.5
17	14.2	12.3	13.2	15.4	14.2	14.7	11.2	9.5	10.1
18	13.9	12.0	13.0	14.5	13.9	14.2	11.2	8.9	9.9
19	13.8	11.7	12.8	14.3	13.3	13.9	11.5	9.0	10.2
20	13.9	12.9	13.4	13.9	12.7	13.2	11.7	9.6	10.6
21	13.3	12.9	13.1	13.8	12.9	13.5	11.2	9.8	10.4
22	13.2	12.4	12.9	12.9	10.8	12.4	11.4	9.5	10.5
23	13.5	12.6	13.1	12.1	10.1	10.8	12.0	9.6	10.7
24	12.7	11.8	12.3	13.9	11.5	12.5	11.4	9.6	10.6
25	12.1	10.9	11.4	14.9	13.9	14.5	11.4	9.0	10.2
26	12.7	10.9	11.6	14.6	14.2	14.4	11.4	8.9	10.2
27	13.5	11.7	12.5	14.3	13.2	13.9	11.4	9.3	10.3
28	11.8	10.3	11.0	13.2	12.1	12.4	11.5	9.6	10.5
29	10.9	10.2	10.6	13.0	11.8	12.4	11.2	9.5	10.3
30	13.0	10.1	11.2	13.3	12.4	12.9	11.7	9.5	10.6
31	14.3	12.7	13.4				11.8	10.2	11.0
Month	*14.3	*10.1	*12.3	16.0	10.1	13.0	14.2	8.9	10.9

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	11.5	10.5	10.9	12.6	11.1	11.8	16.5	15.4	16.1
2	11.5	9.8	10.6	12.9	11.2	12.0	15.5	14.8	15.2
3	11.5	9.9	10.6	12.6	11.4	12.0	15.4	14.5	14.9
4	11.5	10.1	10.7	12.9	11.7	12.2	15.2	14.0	14.4
5	11.7	10.1	10.8	12.9	11.5	12.2	14.0	13.0	13.3
6	11.5	10.3	10.9	13.2	11.2	12.2	13.5	12.6	13.0
7	11.2	10.1	10.7	13.3	11.4	12.4	13.5	12.4	12.7
8	10.9	9.9	10.5	13.8	12.0	12.7	12.9	12.4	12.6
9	11.7	9.9	10.6	13.5	12.3	12.8	12.3	11.5	11.9
10	11.7	9.8	10.6	14.0	12.6	13.3	12.1	11.2	11.6
11	11.7	10.1	10.7	13.8	13.0	13.4	11.8	11.1	11.4
12	11.5	10.1	10.8	14.0	13.2	13.6	11.7	11.4	11.5
13	11.5	10.2	10.8	14.2	12.7	13.6	*12.0	*11.5	*11.6
14	12.1	10.1	10.8	14.6	13.5	14.0			
15	11.5	10.1	10.7	14.9	13.6	14.1			
16	11.4	9.6	10.4	14.9	13.9	14.2			
17	11.4	9.6	10.3	14.6	13.8	14.1			
18	10.5	9.8	10.1	15.2	14.3	14.7			
19	11.2	9.6	10.4	15.4	14.0	14.7			
20	10.6	9.6	10.1	15.5	14.3	15.1			
21	11.7	10.2	10.8	16.0	14.9	15.4			
22	12.3	10.1	11.0	16.2	15.2	15.8			
23	11.5	10.1	10.8	16.6	15.4	16.0			
24	11.8	10.3	11.1	17.1	16.0	16.5			
25	11.8	10.5	11.1	16.9	16.2	16.6			
26	11.8	10.5	11.1	16.8	16.2	16.5			
27	12.1	10.6	11.3	16.2	15.1	15.6			
28	12.0	10.5	11.2	16.3	14.9	15.6			
29	12.3	10.9	11.5	16.3	15.7	16.1			
30	12.4	10.8	11.6	16.5	16.0	16.2			
31	12.4	11.1	11.7						
Month	12.4	9.6	10.9	17.1	11.1	14.2	*16.5	*11.1	*13.2

**Gales Creek at Hwy 47 near Forest Grove, OR
Stream Mile 2.4
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/15 through 10/15
 MAX, 24.2 Aug 6 MIN, 9.6 Oct. 11

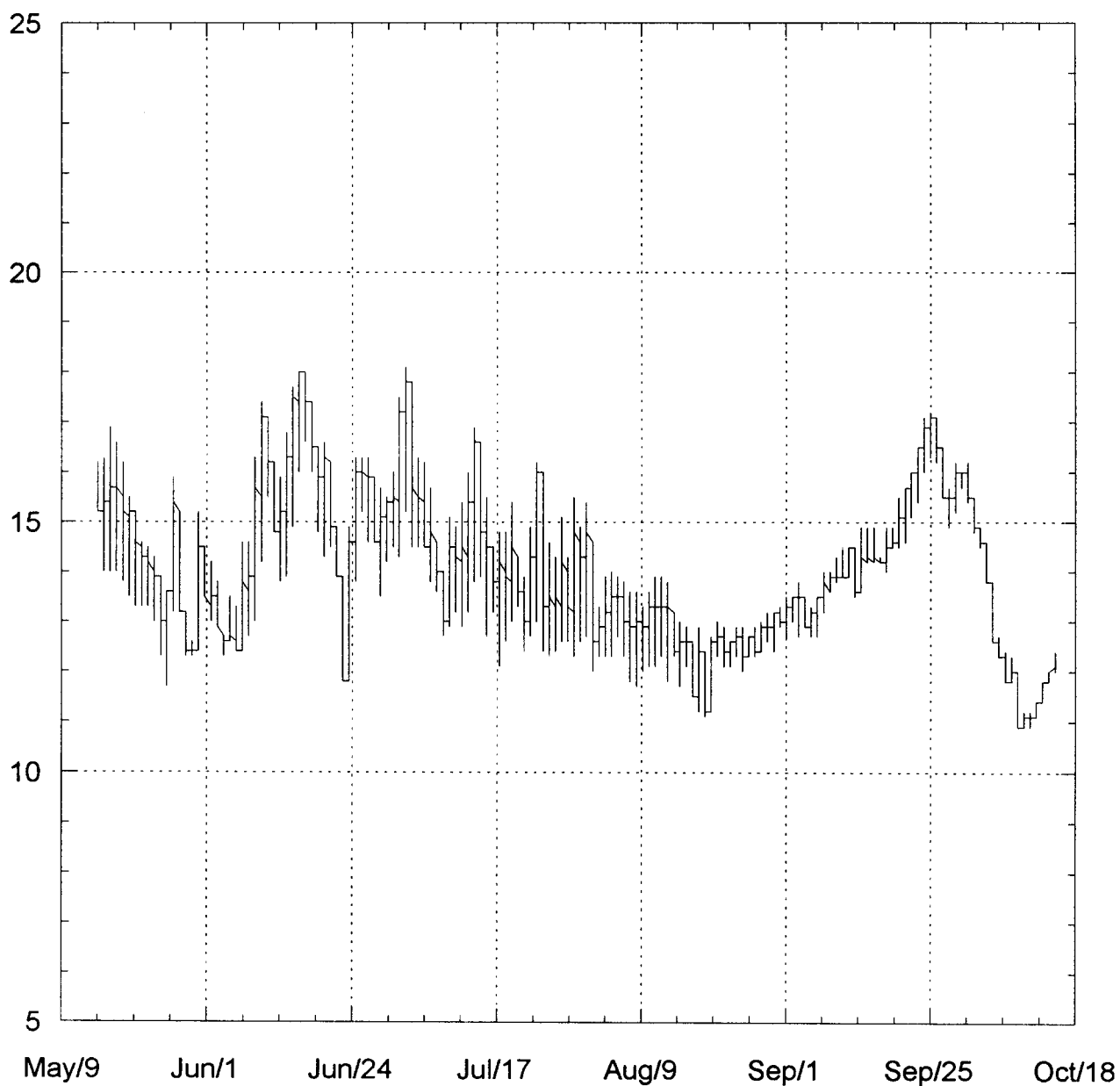
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				14.6	13.0	13.7	16.0	15.2	15.6
2				16.0	12.6	13.8	17.4	14.5	15.8
3				16.0	13.8	14.6	19.4	16.5	17.8
4				14.5	12.7	13.5	21.3	18.1	19.7
5				14.5	13.0	13.7	21.8	19.5	20.6
6				14.2	12.4	13.3	21.1	19.2	20.2
7				14.3	13.3	13.8	19.7	17.4	18.7
8				15.1	12.4	13.6	18.8	17.2	17.9
9				16.6	14.0	15.1	17.8	16.8	17.2
10				16.9	15.7	16.4	17.2	16.2	16.7
11				17.2	14.6	16.0	17.2	16.0	16.7
12				14.6	13.6	14.2	17.8	15.2	16.6
13				15.9	13.8	14.7	19.7	16.8	18.2
14				17.2	15.2	16.0	21.0	18.3	19.6
15	*16.3	*15.5	*16.0	18.1	17.1	17.6	20.6	18.6	19.6
16	16.6	14.5	15.6	18.6	17.7	18.1	20.2	17.5	19.1
17	16.8	15.5	16.3	18.1	17.7	17.9	20.2	18.6	19.4
18	16.6	15.1	15.9	17.5	16.3	16.9	19.5	17.2	18.6
19	16.3	14.9	15.7	16.3	14.8	15.4	21.0	18.0	19.4
20	15.9	14.0	14.8	15.9	13.8	14.8	22.4	19.9	21.1
21	14.2	13.0	13.5	15.7	14.8	15.1	22.2	19.9	20.7
22	13.6	12.9	13.2	14.8	13.2	13.8	20.2	18.8	19.5
23	13.5	13.0	13.3	13.8	12.6	13.1	20.8	18.3	19.5
24	13.3	12.6	13.1	15.9	13.5	14.5	20.8	18.8	19.8
25	13.3	11.7	12.4	16.5	15.7	16.0	20.5	18.4	19.5
26	14.6	11.4	12.5	16.2	14.9	15.3	20.3	18.3	19.3
27	15.7	14.6	15.3	15.7	14.2	15.0	21.4	18.9	20.1
28	15.7	14.5	15.0	15.4	14.0	14.8	21.9	19.9	20.8
29	16.0	13.9	14.6	16.6	14.2	15.2	21.3	19.9	20.5
30	16.0	14.6	15.2	16.6	15.9	16.2	21.3	19.4	20.1
31	16.0	14.3	15.1				21.4	19.1	20.1
Month	*16.8	*11.4	*14.5	18.6	12.4	15.1	22.4	14.5	19.1

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	21.4	18.9	20.1	19.7	18.6	19.1	14.8	13.9	14.5
2	21.9	19.4	20.4	19.9	18.1	18.9	13.9	12.7	13.3
3	22.9	20.0	21.2	19.9	18.4	19.0	13.9	13.0	13.5
4	23.4	20.6	21.8	20.2	18.3	19.1	13.9	12.4	13.0
5	23.7	21.0	22.1	19.4	18.3	18.8	12.9	11.5	12.0
6	24.2	21.9	22.8	18.6	16.8	17.6	12.0	10.2	10.9
7	22.9	20.8	21.8	18.6	16.5	17.4	11.4	9.9	10.5
8	21.9	19.5	20.6	19.4	16.6	17.8	10.9	10.3	10.6
9	22.1	19.4	20.5	19.9	17.7	18.7	10.9	10.2	10.5
10	22.7	19.5	21.0	19.9	18.8	19.3	10.6	10.2	10.4
11	22.7	20.2	21.3	19.4	18.4	19.0	10.8	9.6	10.2
12	23.2	19.9	21.4	18.3	17.4	17.8	10.8	10.1	10.3
13	22.9	20.5	21.6	17.2	15.9	16.5	11.1	10.8	10.9
14	23.7	20.8	22.1	16.8	15.7	16.2	11.7	11.1	11.2
15	22.6	20.5	21.2	16.5	15.4	15.7	*11.8	*11.1	*11.5
16	21.9	19.2	20.4	15.4	13.9	14.2			
17	22.1	20.0	21.0	14.3	13.5	13.9			
18	21.4	20.0	20.6	14.8	13.3	14.0			
19	20.8	18.4	19.6	14.9	12.9	13.8			
20	20.2	18.6	19.2	14.6	13.9	14.2			
21	19.5	18.0	18.7	14.9	14.0	14.5			
22	20.5	18.3	19.3	15.9	14.2	15.0			
23	20.5	19.1	19.6	16.6	14.5	15.6			
24	20.3	18.9	19.4	17.4	15.4	16.4			
25	20.2	18.9	19.4	17.4	16.0	16.9			
26	19.4	18.1	18.9	17.4	15.4	16.2			
27	18.1	17.2	17.8	15.4	14.0	14.4			
28	18.0	17.4	17.7	14.6	13.6	14.0			
29	18.6	17.1	17.9	15.4	14.5	14.9			
30	19.1	17.5	18.3	15.1	14.6	14.9			
31	19.5	17.8	18.6						
Month	24.2	17.1	20.2	20.2	12.9	16.5	*14.8	*9.6	*11.4

**Tualatin River at Golf Course Bridge near Cornelius, OR
River Mile 51.5
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

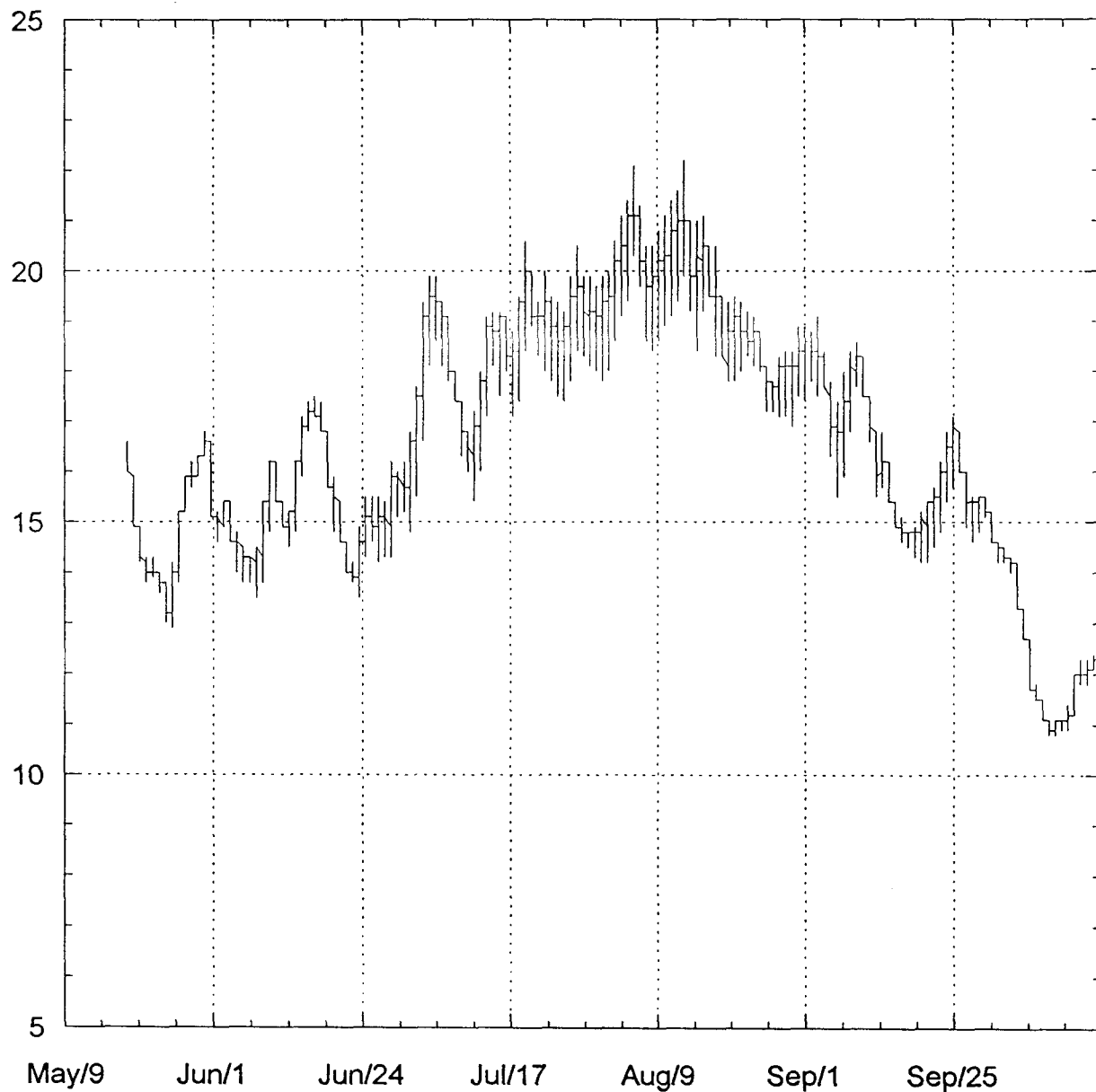
Period of Record: 5/15 through 10/15
MAX, 18.1 Jul 3 MIN, 10.9 Oct 9

Source Agency: Tualatin Basin Watermaster
* = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	May			June			July		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
1				14.5	13.5	14.2	16.0	14.5	15.2
2				14.2	13.0	13.6	17.5	14.3	15.8
3				13.8	12.9	13.4	18.1	15.2	16.7
4				12.7	12.3	12.4	17.8	14.5	15.9
5				13.5	12.6	13.1	16.3	14.5	15.4
6				13.3	12.4	12.7	16.2	14.5	15.1
7				14.6	12.4	13.6	15.7	13.8	14.5
8				14.6	12.7	13.6	14.6	13.6	14.1
9				16.3	13.0	14.5	14.0	12.7	13.4
10				17.4	14.2	15.8	15.1	12.9	13.7
11				17.1	15.5	16.1	14.9	13.2	14.0
12				16.2	14.8	15.3	15.4	12.9	14.0
13				15.9	13.8	14.7	16.0	13.2	14.4
14				16.8	13.9	15.3	16.9	13.8	15.1
15	*16.2	*15.2	*15.9	17.7	14.9	16.2	16.6	13.9	15.0
16	16.3	14.0	15.1	18.0	16.0	17.0	15.5	12.7	14.1
17	16.9	14.0	15.4	18.0	16.6	17.3	14.5	13.2	13.7
18	16.6	14.0	15.3	17.4	16.0	16.6	14.8	12.1	13.4
19	16.2	13.8	15.0	16.5	14.8	15.6	14.8	12.6	13.6
20	15.5	13.5	14.5	16.6	14.3	15.5	15.4	13.0	14.0
21	15.2	13.3	14.4	16.2	14.5	15.1	14.3	13.3	13.6
22	14.6	13.3	14.0	14.9	13.9	14.2	13.9	12.4	13.2
23	14.5	13.3	13.9	13.9	11.8	12.5	14.9	12.7	13.7
24	14.3	13.0	13.6	14.9	11.8	13.2	16.2	13.0	14.5
25	13.9	12.3	12.9	16.3	13.8	15.0	16.0	12.4	13.8
26	13.6	11.7	12.7	16.3	15.2	15.8	14.6	12.3	13.2
27	15.9	13.2	14.3	16.3	14.6	15.6	14.3	12.4	13.3
28	15.2	13.2	13.7	15.9	14.6	15.1	15.1	12.6	13.7
29	13.2	12.3	12.5	15.7	13.5	14.5	14.3	12.6	13.4
30	12.6	12.3	12.5	15.5	14.2	14.9	15.5	12.3	13.7
31	15.2	12.4	14.2				14.9	12.6	13.8
Month	*16.9	*11.7	*14.0	18.0	11.8	14.8	18.1	12.1	14.2
Day	August			September			October		
	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
1	15.4	12.7	14.0	13.3	12.9	13.0	16.2	15.4	15.8
2	14.6	12.0	13.0	13.5	12.7	13.1	15.5	14.8	15.0
3	13.3	12.3	12.7	13.5	13.0	13.2	14.9	14.5	14.7
4	13.9	12.3	12.9	13.8	12.7	13.3	14.6	13.8	14.3
5	14.0	12.3	13.0	13.5	13.0	13.2	13.8	12.6	13.2
6	13.9	12.7	13.3	13.3	12.7	13.0	12.7	12.3	12.5
7	13.8	12.3	13.1	13.5	12.7	13.2	12.4	11.8	12.2
8	13.6	11.8	12.7	14.0	13.2	13.6	12.3	11.8	12.0
9	13.6	11.7	12.6	14.0	13.6	13.9	12.0	10.9	11.5
10	13.3	12.0	12.7	14.3	13.8	14.0	11.2	10.9	11.1
11	13.6	12.1	12.8	14.5	13.9	14.2	11.2	10.9	11.0
12	13.9	12.1	13.0	14.5	13.9	14.0	11.4	11.1	11.3
13	13.9	12.3	13.1	14.5	13.5	13.9	11.8	11.4	11.5
14	13.8	11.8	12.9	14.9	13.6	14.4	12.0	11.8	11.9
15	13.3	12.3	12.6	14.9	14.2	14.4	*12.4	*12.0	*12.2
16	13.0	11.7	12.4	14.9	14.2	14.5			
17	12.9	12.1	12.4	14.3	14.2	14.2			
18	12.6	11.7	12.1	14.9	14.0	14.5			
19	12.9	11.2	11.9	14.9	14.5	14.7			
20	12.4	11.1	11.7	15.5	14.5	14.9			
21	12.7	11.2	12.0	15.7	14.6	15.2			
22	13.0	12.3	12.6	16.0	15.1	15.6			
23	12.9	12.1	12.6	16.5	15.4	16.0			
24	12.6	12.1	12.4	17.1	16.0	16.5			
25	12.9	12.3	12.6	17.2	16.3	16.8			
26	12.9	12.0	12.3	17.1	16.2	16.6			
27	12.7	12.3	12.5	16.5	15.5	15.9			
28	12.9	12.3	12.6	15.7	14.9	15.3			
29	13.0	12.4	12.7	16.2	15.2	15.6			
30	13.2	12.6	12.9	16.0	15.7	15.9			
31	13.2	12.4	12.9						
Month	15.4	11.1	12.8	17.2	12.7	14.6	*16.2	*10.9	*12.6

Dairy Creek at Highway 8 near Hillsboro, OR
Stream Mile 2.1
1997



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/19 through 10/23
 MAX, 22.2 Aug 14 MIN, 9.5 Oct. 22

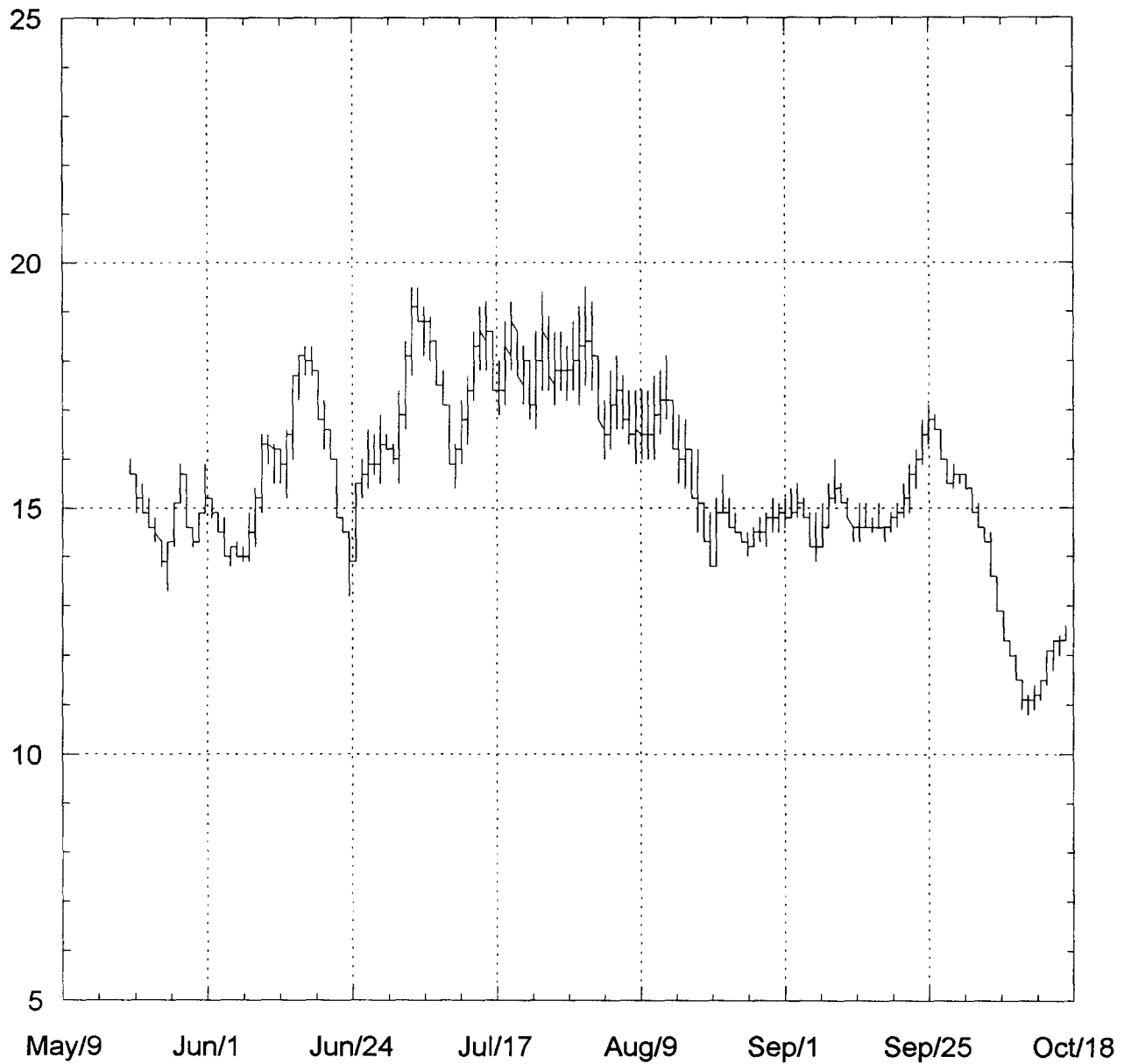
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				16.6	15.1	15.6	16.2	15.2	15.7
2				15.2	14.6	14.9	16.8	14.8	15.8
3				15.4	14.9	15.1	17.7	15.5	16.6
4				15.4	14.6	14.9	19.4	16.6	17.9
5				14.8	14.0	14.5	19.9	18.1	19.0
6				14.5	13.8	14.2	19.9	18.6	19.3
7				14.3	13.8	14.1	19.4	18.1	18.9
8				14.5	13.5	14.1	19.1	17.8	18.2
9				15.4	13.8	14.4	18.0	17.4	17.6
10				16.2	14.8	15.4	17.4	16.3	16.9
11				16.2	15.4	15.7	16.8	16.0	16.4
12				15.4	14.9	15.2	17.2	15.4	16.3
13				15.2	14.5	14.8	18.0	16.0	17.0
14				16.2	14.8	15.4	19.1	17.1	18.1
15				17.1	15.9	16.4	19.2	18.1	18.6
16				17.4	16.8	17.1	19.2	17.5	18.5
17				17.5	17.1	17.4	19.1	18.0	18.5
18				17.4	16.8	17.1	18.8	17.1	18.0
19	*16.6	*16.0	*16.3	16.8	15.7	16.1	19.5	17.4	18.5
20	15.9	14.9	15.3	15.9	14.8	15.4	20.6	18.4	19.5
21	14.9	14.2	14.5	15.4	14.6	15.0	20.0	18.9	19.3
22	14.3	13.8	14.0	14.6	14.0	14.3	19.4	18.3	18.9
23	14.3	13.9	14.0	14.2	13.8	14.0	20.0	18.0	19.0
24	14.0	13.6	13.8	14.9	13.5	14.1	19.5	17.8	18.8
25	13.8	13.0	13.3	15.5	14.3	14.8	19.4	17.5	18.5
26	14.2	12.9	13.5	15.5	14.6	15.0	19.2	17.4	18.4
27	15.2	13.8	14.4	15.5	14.2	14.9	19.9	17.8	18.9
28	15.9	15.2	15.5	15.4	14.3	14.9	20.5	18.4	19.4
29	16.2	15.7	15.9	16.2	14.3	15.2	19.9	18.3	19.1
30	16.3	15.9	16.1	16.0	15.1	15.6	19.9	18.1	19.0
31	16.8	16.3	16.5				19.7	18.0	18.9
Month	*16.8	*12.9	*14.7	17.5	13.5	15.1	20.6	14.8	18.2

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	19.9	17.8	18.9	18.9	17.5	18.2	15.2	14.6	15.1
2	20.0	18.0	19.1	18.9	17.4	18.3	14.6	14.2	14.4
3	20.6	18.6	19.6	18.8	17.8	18.4	14.5	14.2	14.3
4	21.1	19.1	20.1	19.1	17.5	18.3	14.3	14.0	14.2
5	21.4	19.4	20.4	18.4	17.7	18.1	14.2	13.5	13.8
6	22.1	20.3	21.2	17.8	16.3	17.1	13.3	12.7	12.9
7	21.3	19.7	20.5	17.4	15.5	16.6	12.7	11.7	12.1
8	20.5	18.6	19.7	18.0	15.9	16.9	11.8	11.5	11.7
9	20.5	18.4	19.5	18.4	16.8	17.6	11.5	11.1	11.3
10	20.8	18.6	19.7	18.6	17.7	18.2	11.1	10.8	10.9
11	21.1	18.9	20.1	18.3	17.7	18.0	11.1	10.8	10.9
12	21.4	19.1	20.3	17.5	16.6	17.1	11.1	10.9	11.0
13	21.6	19.4	20.6	16.9	15.5	16.1	11.4	10.9	11.2
14	22.2	19.9	21.0	16.8	15.7	16.2	12.0	11.2	11.6
15	21.0	19.2	20.1	16.2	15.4	15.7	12.3	11.8	12.0
16	21.0	18.4	19.8	15.4	14.9	15.0	12.3	11.8	12.1
17	21.1	19.2	20.2	15.1	14.6	14.8	12.4	12.1	12.2
18	20.5	19.5	20.0	14.8	14.5	14.6	12.3	12.0	12.1
19	20.5	18.3	19.4	14.9	14.3	14.7	11.8	11.4	11.6
20	19.5	18.3	18.7	15.2	14.2	14.8	11.4	10.5	10.8
21	19.4	17.8	18.5	15.4	14.2	14.9	10.5	9.8	10.1
22	19.5	17.8	18.7	15.7	14.5	15.1	10.1	9.5	9.8
23	19.4	18.0	18.7	16.2	14.8	15.5	*9.9	*9.5	*9.7
24	19.2	18.3	18.7	16.8	15.4	16.1			
25	19.1	18.1	18.6	17.1	15.7	16.4			
26	18.8	18.0	18.3	16.9	16.0	16.3			
27	18.1	17.2	17.8	16.0	14.9	15.5			
28	17.8	17.2	17.6	15.5	14.6	15.2			
29	18.3	17.1	17.7	15.5	14.8	15.2			
30	18.4	17.1	17.8	15.5	15.1	15.2			
31	18.4	16.9	17.8						
Month	22.2	16.9	19.4	19.1	14.2	16.3	*15.2	*9.5	*12.1

**Tualatin River at Rood Bridge near Hillsboro, OR
River Mile 38.4
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/20 through 10/17
 MAX, 19.5 Jul 4 MIN, 10.8 Oct 11

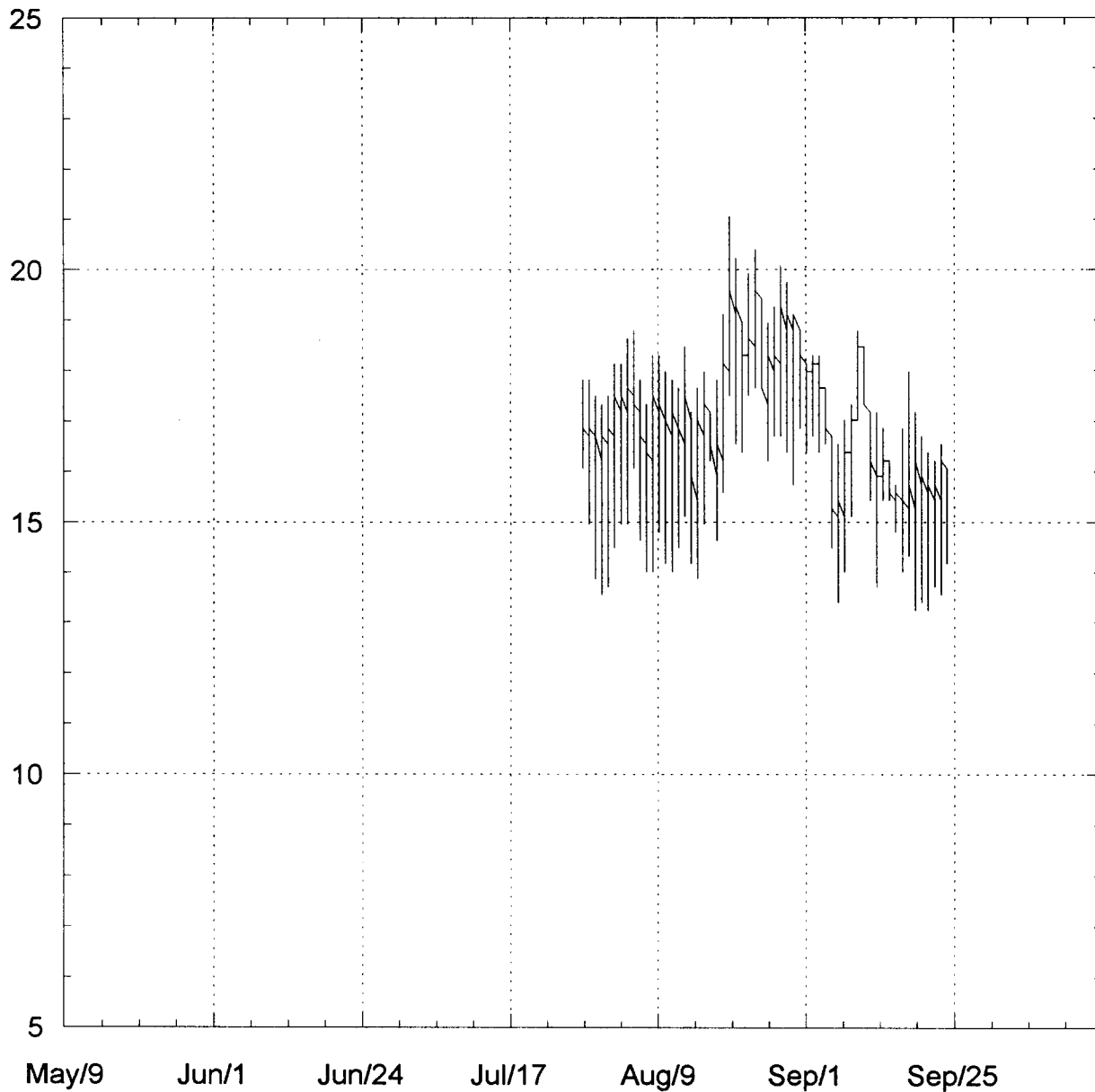
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				15.9	14.9	15.5	16.3	15.9	16.1
2				15.2	14.8	15.0	17.4	15.5	16.4
3				14.9	14.5	14.8	18.4	16.6	17.4
4				14.8	14.0	14.5	19.5	17.7	18.6
5				14.2	13.8	14.0	19.5	18.8	19.1
6				14.3	14.0	14.2	19.1	18.1	18.7
7				14.2	13.9	14.0	18.9	18.0	18.5
8				14.9	13.9	14.4	18.4	17.5	17.7
9				15.4	14.2	14.8	17.8	17.1	17.4
10				16.5	14.9	15.7	17.1	15.9	16.2
11				16.5	15.9	16.2	16.3	15.4	15.9
12				16.3	15.5	16.0	17.2	15.9	16.4
13				16.2	15.5	15.9	17.7	16.3	17.0
14				16.6	15.2	15.9	18.6	17.2	17.8
15				17.7	16.0	16.8	19.1	17.8	18.4
16				18.1	17.2	17.7	19.2	17.8	18.5
17				18.3	17.7	18.0	18.6	17.4	18.1
18				18.3	17.7	18.0	18.0	16.9	17.4
19				17.8	16.8	17.3	18.8	17.1	17.8
20	*16.0	*15.7	*15.8	17.2	16.2	16.6	19.2	17.8	18.4
21	15.7	14.9	15.3	16.6	16.0	16.4	18.6	17.7	18.0
22	15.5	14.9	15.1	16.0	14.8	15.3	18.3	17.1	17.6
23	15.2	14.6	14.9	14.8	14.5	14.6	18.0	16.8	17.3
24	14.8	14.3	14.5	14.5	13.2	13.8	18.6	16.6	17.4
25	14.3	13.8	14.0	15.5	13.9	14.7	19.4	17.4	18.3
26	14.3	13.3	13.9	16.0	15.2	15.6	18.9	17.4	18.1
27	15.1	14.2	14.6	16.6	15.4	15.9	18.6	17.1	17.7
28	15.9	15.1	15.4	16.5	15.7	16.0	18.6	17.4	17.8
29	15.7	14.6	15.1	16.9	15.5	16.1	18.3	17.2	17.7
30	14.6	14.2	14.3	16.5	16.2	16.3	18.8	17.4	17.9
31	14.9	14.3	14.5				19.1	17.1	18.0
Month	*16.0	*13.3	*14.7	18.3	13.2	15.7	19.5	15.4	17.6

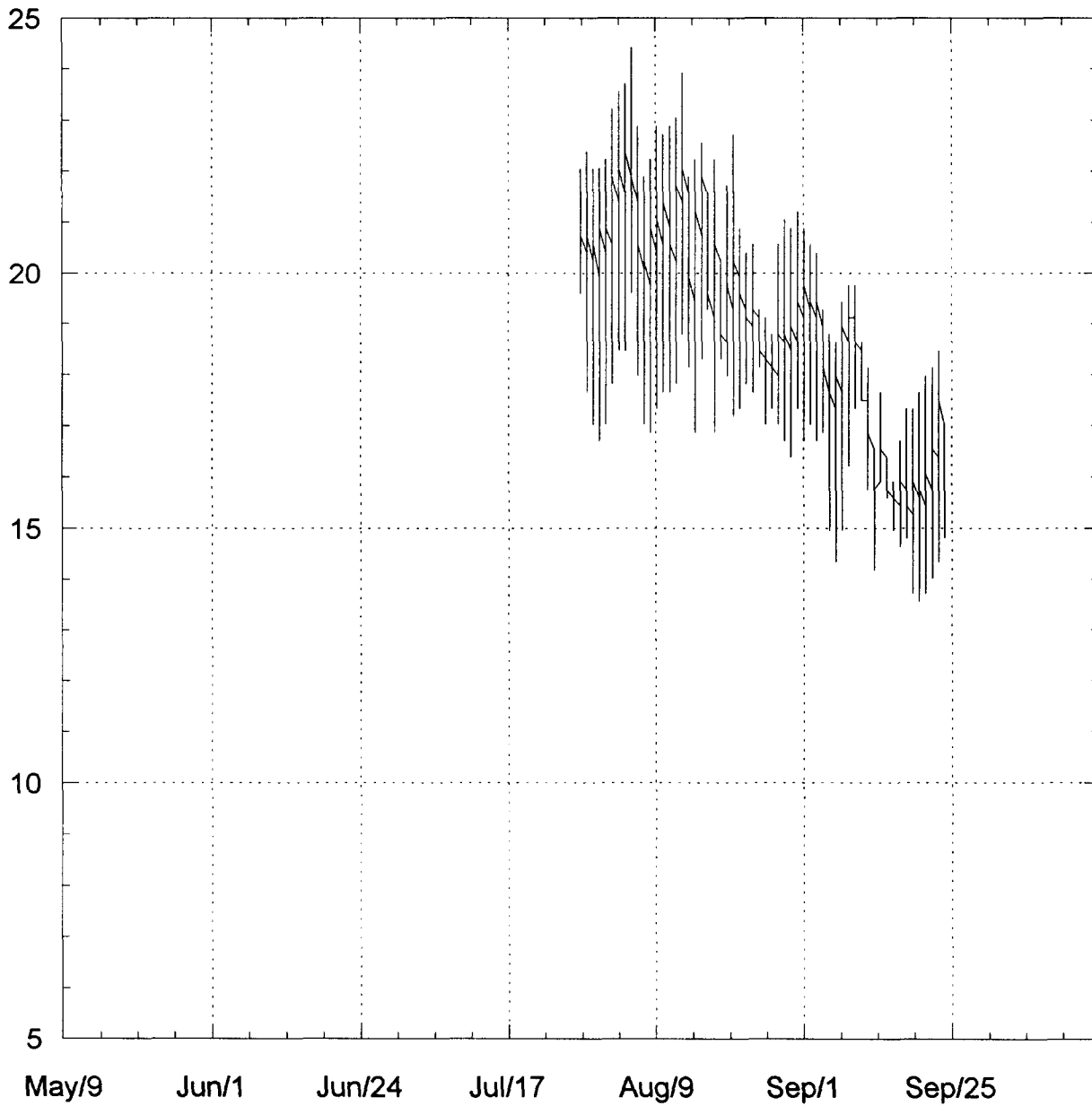
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	19.5	17.5	18.4	15.1	14.5	14.8	15.7	15.4	15.6
2	19.2	17.4	18.3	15.2	14.6	14.8	15.4	14.9	15.1
3	18.1	16.8	17.3	15.4	14.8	15.0	15.1	14.6	14.8
4	17.2	16.0	16.6	15.5	14.8	15.0	14.6	14.3	14.5
5	17.8	16.2	16.8	15.2	14.8	14.9	14.5	13.6	14.1
6	18.1	16.6	17.2	14.9	14.2	14.5	13.6	12.9	13.0
7	17.7	16.6	17.1	14.9	13.9	14.3	12.9	12.3	12.4
8	17.4	16.3	16.8	15.1	14.2	14.5	12.3	12.0	12.1
9	17.4	15.9	16.6	15.5	14.6	15.1	12.0	11.5	11.8
10	17.4	16.0	16.6	16.0	15.1	15.4	11.5	10.9	11.2
11	17.4	16.0	16.6	15.5	15.1	15.3	11.2	10.8	11.0
12	17.7	16.0	16.7	15.2	14.8	15.0	11.4	10.9	11.1
13	17.8	16.5	17.1	14.6	14.3	14.5	11.5	11.1	11.3
14	18.1	16.8	17.3	15.1	14.3	14.6	12.1	11.4	11.6
15	17.2	16.2	16.8	15.1	14.6	14.9	12.3	11.7	12.0
16	16.9	15.5	16.2	14.8	14.5	14.6	12.4	12.0	12.2
17	16.8	15.4	16.0	15.1	14.6	14.8	*12.6	*12.3	*12.4
18	16.2	15.2	15.9	14.6	14.3	14.6			
19	16.2	14.5	15.2	14.9	14.5	14.7			
20	15.1	14.3	14.7	15.1	14.6	14.8			
21	14.9	13.8	14.3	15.5	14.8	15.1			
22	15.2	13.8	14.4	15.9	14.9	15.4			
23	15.7	14.9	15.1	16.2	15.4	15.8			
24	15.2	14.6	15.0	16.8	15.9	16.3			
25	14.9	14.5	14.6	17.1	16.3	16.6			
26	14.5	14.3	14.4	16.9	16.6	16.8			
27	14.5	14.0	14.3	16.6	16.0	16.2			
28	14.6	14.2	14.4	16.0	15.5	15.8			
29	14.8	14.3	14.5	15.9	15.4	15.6			
30	14.9	14.2	14.6	15.7	15.5	15.6			
31	15.2	14.5	14.8						
Month	19.5	13.8	16.0	17.1	13.9	15.2	*15.7	*10.8	*12.8

**Dawson Creek at Shute Road
1997**



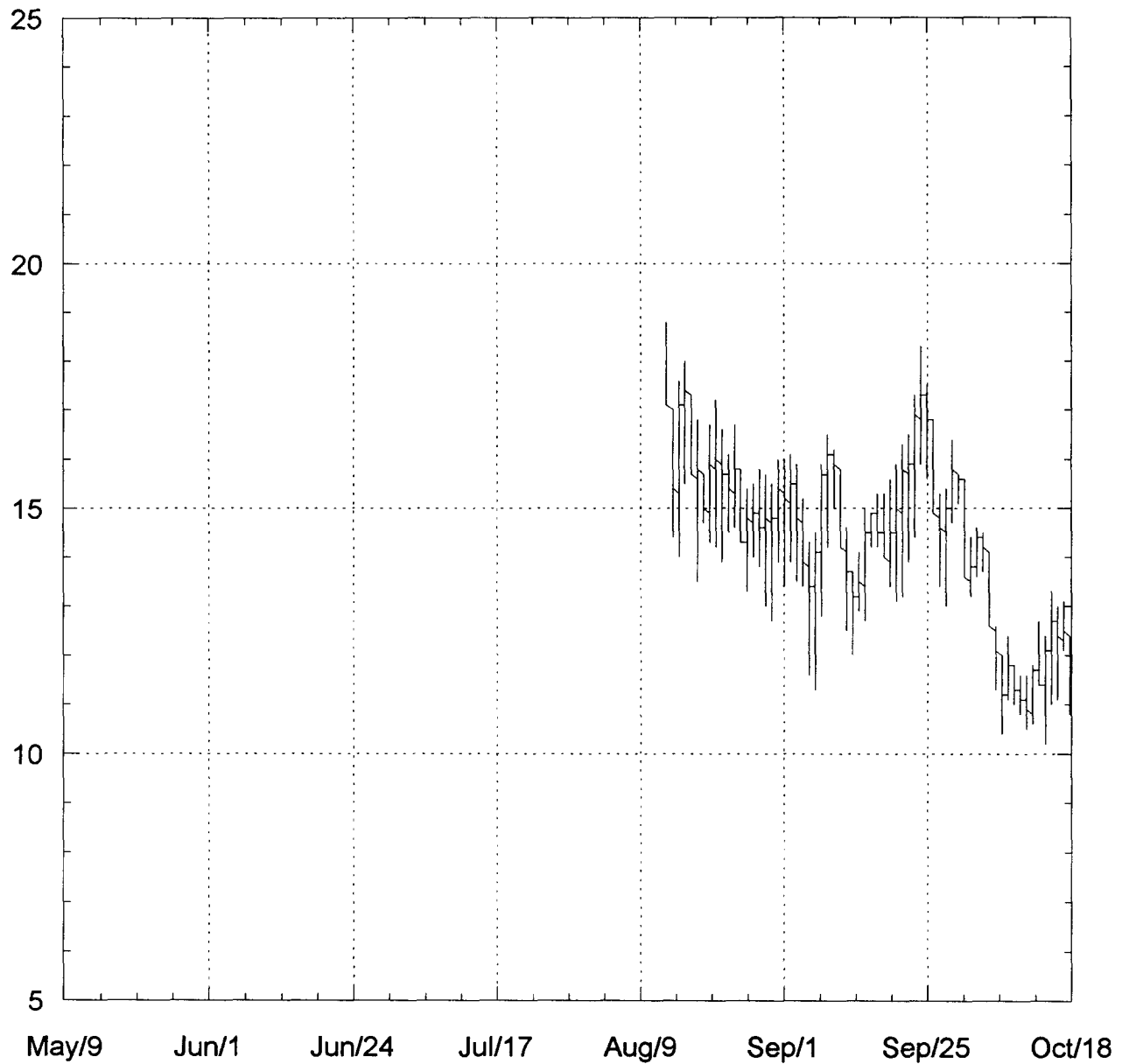
Temperature - Degrees Celsius
Source Agency - Unified Sewerage Agency

**Dawson Creek at Brookwood Ave
1997
Stream Mile**



Temperature - Degrees Celsius
Source Agency - Unified Sewerage Agency

**Bronson Creek at Saltzman Road near Portland, OR
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

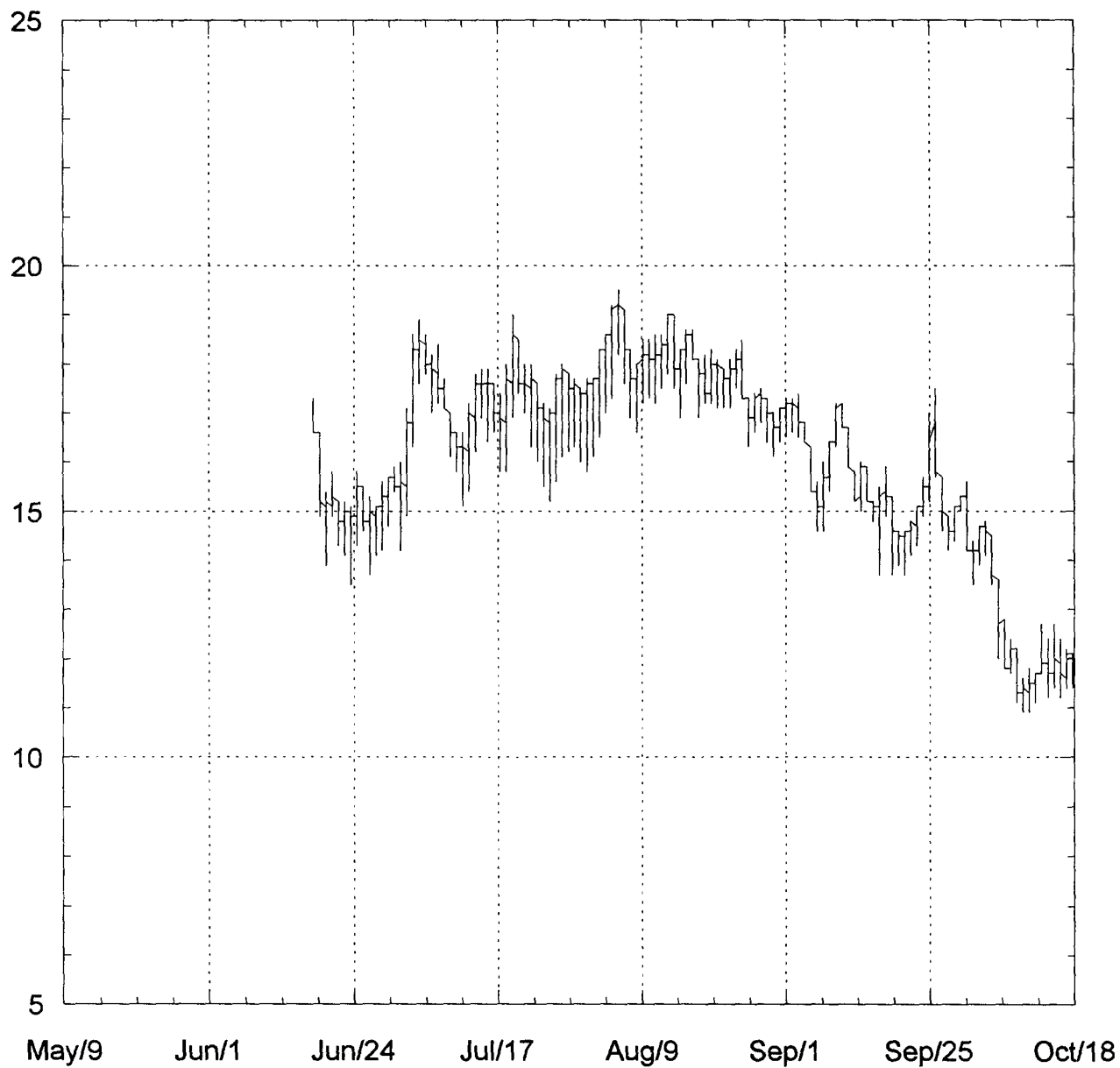
Period of Record: 8/14 through 10/31
 MAX, 18.8 Aug 14 MIN, 7.4 Oct 25

Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
Month									
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1				16.0	13.9	14.9	15.6	13.6	15.0
2				16.0	13.4	15.0	14.4	13.2	13.8
3				16.1	13.9	15.1	14.6	13.6	14.1
4				15.9	13.5	14.9	14.5	13.7	14.1
5				15.2	13.4	14.3	14.1	12.6	13.3
6				14.3	11.6	13.1	12.6	11.3	12.0
7				14.5	11.3	13.1	12.0	10.4	11.3
8				15.9	12.8	14.4	12.4	11.1	11.6
9				16.5	14.2	15.5	11.8	11.0	11.4
10				16.2	15.0	15.8	11.6	10.8	11.2
11				15.8	14.2	15.1	11.6	10.5	11.0
12				14.6	12.5	13.6	11.8	10.6	11.2
13				13.7	12.0	13.0	12.7	11.4	11.9
14	*18.8	*17.1	*18.2	14.1	12.9	13.5	12.4	10.2	11.3
15	17.0	14.4	15.6	15.0	12.7	13.9	13.3	11.0	12.2
16	17.6	14.0	15.8	14.9	14.2	14.5	13.0	11.1	12.1
17	18.0	15.5	16.9	15.3	14.2	14.7	13.1	12.1	12.5
18	17.3	15.7	16.4	15.3	14.0	14.5	12.4	10.8	11.6
19	16.8	13.5	15.3	15.6	13.4	14.3	11.7	10.4	11.0
20	15.7	14.7	15.0	15.9	13.1	14.5	11.2	9.2	10.3
21	16.7	14.3	15.5	16.3	13.2	14.8	10.4	8.4	9.5
22	17.2	14.2	15.7	16.5	13.9	15.3	10.8	9.1	10.0
23	16.6	13.9	15.4	17.3	14.4	15.9	11.0	9.5	10.2
24	16.1	14.5	15.3	18.3	15.9	17.1	9.6	7.8	8.8
25	16.7	14.6	15.6	17.5	15.6	16.7	10.3	7.4	8.7
26	15.8	14.3	15.2	16.8	14.9	15.6	9.8	8.3	9.1
27	15.4	13.3	14.4	15.3	13.4	14.5	10.6	9.2	9.9
28	15.5	14.0	14.7	15.4	13.0	14.2	10.5	9.1	9.8
29	15.8	13.8	14.8	16.4	14.7	15.4	12.0	10.5	11.4
30	15.7	13.0	14.4	15.7	15.1	15.5	13.2	12.0	12.5
31	15.5	12.7	14.3				12.6	11.4	12.0
Month	*18.8	*12.7	*15.2	18.3	11.3	14.7	15.6	7.4	11.4

**Bronson Creek at Bronson Road near Beaverton, OR
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 6/18 through 10/31
 MAX, 19.5 Aug 6 MIN, 7.4 Oct 26

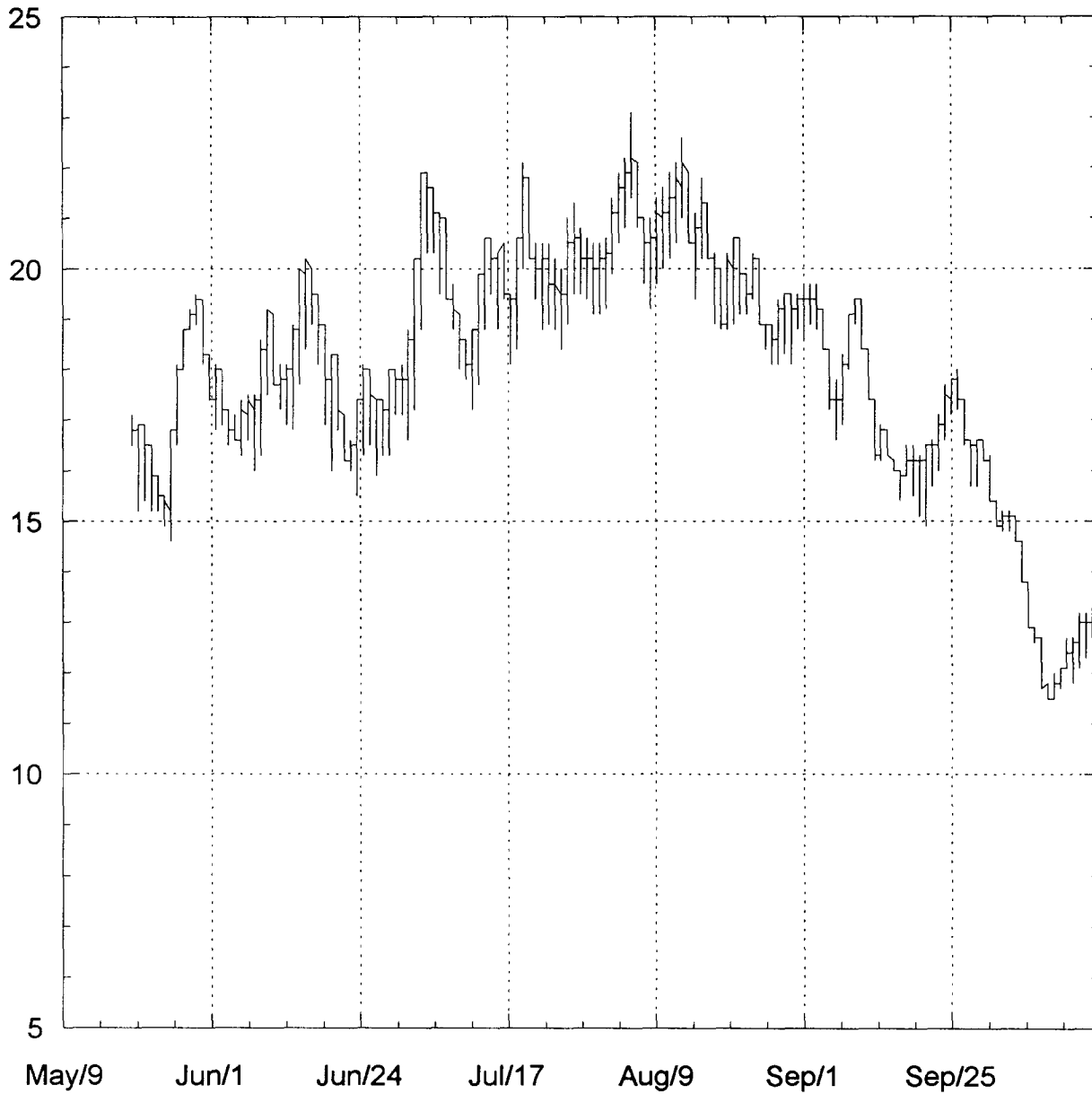
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1							15.9	15.4	15.6
2							16.0	14.2	15.0
3							17.1	14.9	15.8
4							18.6	16.3	17.2
5							18.9	17.6	18.2
6							18.6	17.8	18.1
7							18.2	17.0	17.6
8							18.4	17.2	17.5
9							17.7	17.1	17.4
10							17.0	16.1	16.5
11							16.6	15.8	16.2
12							16.6	15.1	15.8
13							17.2	15.4	16.2
14							17.8	16.2	16.9
15							17.9	16.9	17.4
16							17.9	16.4	17.1
17							17.6	16.6	17.0
18				*17.3	*16.6	*17.1	17.4	15.8	16.5
19				16.6	14.9	15.4	18.0	15.8	16.7
20				15.4	13.9	14.6	19.0	16.9	17.8
21				15.8	14.9	15.2	18.5	17.4	17.6
22				15.2	14.3	14.7	18.0	17.0	17.4
23				15.2	14.1	14.6	18.0	16.3	17.1
24				15.1	13.5	14.4	17.6	16.0	16.8
25				15.8	14.3	15.0	17.2	15.5	16.4
26				15.5	14.6	15.0	17.1	15.2	16.2
27				15.3	13.7	14.5	17.8	15.6	16.6
28				15.1	14.1	14.7	18.0	16.1	17.1
29				15.6	14.2	14.8	17.8	16.2	17.0
30				15.7	14.7	15.2	17.7	16.3	17.0
31							17.5	16.0	16.8
Month				*17.3	*13.5	*14.8	19.0	14.2	16.9

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	17.7	15.8	16.7	17.1	16.4	16.8	15.6	14.2	15.1
2	17.7	16.1	16.9	17.3	16.5	17.0	14.4	13.5	14.0
3	18.3	16.5	17.3	17.3	16.6	17.0	14.7	13.9	14.2
4	18.6	17.0	17.8	17.4	16.5	17.0	14.8	14.1	14.4
5	19.2	17.3	18.2	16.8	16.4	16.6	14.5	13.5	14.0
6	19.5	18.2	18.9	16.3	15.4	15.8	13.6	12.0	12.6
7	19.1	17.6	18.3	15.6	14.6	15.1	12.8	11.8	12.1
8	18.3	16.9	17.5	16.0	14.6	15.3	12.4	11.7	12.0
9	18.0	16.6	17.4	16.4	15.4	15.9	12.2	11.1	11.5
10	18.5	17.2	17.9	*17.2	*16.3	*16.7	11.6	10.9	11.2
11	18.5	17.3	17.9	17.2	16.7	17.0	11.8	10.9	11.3
12	18.6	17.2	17.9	16.7	15.9	16.3	11.7	11.1	11.4
13	18.6	17.5	18.2	15.8	15.2	15.4	12.7	11.7	12.0
14	19.0	17.8	18.4	16.0	15.0	15.6	12.4	11.2	11.7
15	19.0	17.5	18.0	15.9	15.2	15.6	12.7	11.4	12.0
16	18.3	16.9	17.7	15.2	14.8	15.0	12.4	11.2	11.8
17	18.7	17.6	18.2	15.5	13.7	15.0	12.2	11.4	11.8
18	18.7	18.1	18.4	15.9	14.9	15.3	12.1	11.4	11.8
19	18.1	16.9	17.6	15.3	13.7	14.3	11.7	10.8	11.3
20	18.2	17.2	17.5	14.6	13.9	14.3	10.9	9.8	10.3
21	18.3	17.2	17.6	14.6	13.7	14.2	10.1	8.8	9.5
22	18.1	17.1	17.7	14.8	14.1	14.4	9.6	8.9	9.2
23	17.9	17.1	17.5	15.1	14.3	14.7	10.1	9.2	9.6
24	18.1	17.1	17.7	15.7	14.9	15.3	9.6	8.5	9.0
25	18.3	17.5	17.9	17.0	15.2	15.6	8.9	7.7	8.3
26	18.5	17.3	17.8	17.5	15.7	16.0	8.4	7.4	8.0
27	17.3	16.3	16.7	15.7	14.6	15.1	9.8	8.3	8.9
28	17.4	16.6	17.0	14.9	14.2	14.5	9.3	8.3	8.8
29	17.5	16.8	17.2	15.1	14.4	14.7	11.5	9.4	10.5
30	17.3	16.4	16.8	15.3	15.0	15.1	13.1	11.5	12.3
31	17.0	16.1	16.5				12.5	11.6	12.1
Month	19.5	15.8	17.7	*17.5	*13.7	*15.5	15.6	7.4	11.3

**Rock Creek at Highway 8 at Hillsboro, OR
Stream Mile 1.3
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

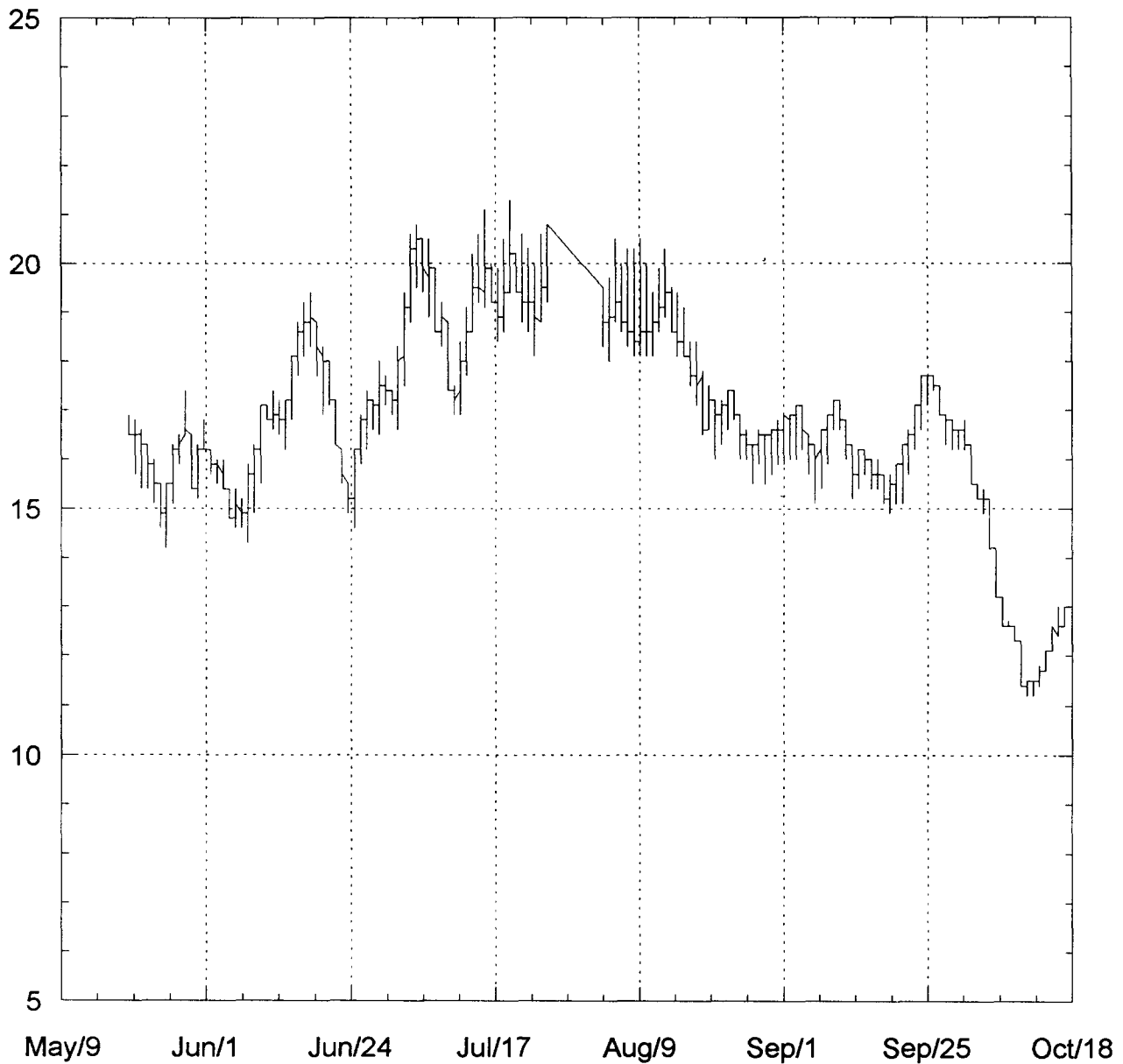
Period of Record: 5/20 through 10/20
MAX, 23.1 Aug 6 MIN, 10.6 Oct 20

Source Agency: Tualatin Basin Watermaster
* = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				18.3	17.4	17.8	18.1	17.1	17.7
2				18.1	16.8	17.4	18.8	16.6	17.6
3				18.0	16.9	17.4	20.2	17.2	18.6
4				17.2	16.5	16.9	21.9	18.8	20.2
5				17.1	16.6	16.8	21.9	20.3	21.2
6				17.4	16.3	16.7	21.6	20.3	21.0
7				17.5	16.6	17.1	21.1	19.5	20.4
8				17.5	16.0	16.8	21.0	19.4	20.0
9				18.6	16.3	17.3	19.7	18.8	19.3
10				19.2	17.5	18.3	19.1	18.0	18.4
11				19.1	17.7	18.3	18.6	17.8	18.2
12				18.1	17.2	17.6	18.8	17.2	18.0
13				18.1	16.9	17.5	19.9	17.7	18.7
14				18.9	16.8	17.8	20.6	18.8	19.7
15				20.0	17.7	18.8	20.6	19.5	20.1
16				20.2	18.4	19.4	20.3	18.8	19.7
17				20.0	18.9	19.5	20.5	19.4	19.9
18				19.5	18.1	18.9	19.5	18.1	19.0
19				18.9	16.9	17.7	20.6	18.4	19.5
20	*17.1	*16.5	*16.8	18.3	16.0	17.2	22.1	20.0	21.0
21	16.9	15.2	16.2	18.3	16.8	17.4	21.8	20.2	20.7
22	16.9	15.4	16.1	17.1	16.2	16.4	20.5	19.4	19.9
23	16.5	15.2	15.8	16.6	16.0	16.3	20.5	18.8	19.8
24	15.9	15.2	15.5	17.4	15.5	16.4	20.5	18.9	19.8
25	15.5	14.9	15.2	18.1	16.3	17.2	20.2	18.8	19.5
26	16.8	14.6	15.5	18.0	16.5	17.2	20.0	18.4	19.3
27	18.1	16.5	17.2	17.4	15.9	16.8	21.0	18.9	19.8
28	18.8	18.0	18.3	17.4	16.3	16.9	21.3	19.5	20.4
29	19.2	18.8	19.0	18.0	16.3	17.1	20.8	19.5	20.2
30	19.5	18.9	19.2	18.0	17.1	17.6	20.6	19.4	20.0
31	19.4	18.1	18.6				20.5	19.1	19.9
Month	*19.5	*14.6	*16.9	20.2	15.5	17.5	22.1	16.6	19.6
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	20.5	19.1	19.8	19.5	18.8	19.2	16.3	15.4	16.0
2	20.6	19.2	20.0	19.7	18.6	19.3	15.4	14.9	15.0
3	21.4	19.9	20.6	19.7	18.9	19.4	15.2	14.8	15.0
4	21.9	20.5	21.2	19.7	18.8	19.3	15.2	14.8	15.0
5	22.2	20.8	21.5	19.2	18.4	18.9	15.1	14.6	14.8
6	23.1	21.4	22.1	18.4	17.2	17.8	14.6	13.8	14.1
7	22.1	20.8	21.4	17.8	16.6	17.2	13.8	12.9	13.2
8	21.0	19.7	20.4	18.3	16.9	17.5	12.9	12.6	12.8
9	21.0	19.2	20.1	19.1	18.0	18.5	12.7	11.8	12.4
10	21.4	19.7	20.5	19.4	18.9	19.2	11.8	11.5	11.6
11	21.6	20.0	20.8	19.4	18.6	19.0	12.0	11.5	11.7
12	21.9	20.2	21.0	18.4	17.4	17.8	12.1	11.7	11.9
13	22.1	20.5	21.4	17.4	16.2	16.6	12.7	12.1	12.3
14	22.6	21.0	21.7	16.9	16.2	16.5	12.7	11.8	12.3
15	22.1	20.5	21.1	16.8	16.3	16.5	13.2	12.1	12.6
16	21.1	19.4	20.2	16.3	16.0	16.0	13.2	12.3	12.8
17	21.8	20.2	20.8	16.0	15.4	15.7	13.3	12.7	13.0
18	21.3	20.3	20.8	16.5	15.9	16.1	13.2	12.4	12.7
19	20.3	18.9	19.8	16.5	15.5	16.0	12.7	11.8	12.2
20	20.0	18.8	19.4	16.3	15.1	15.8	*12.0	*10.6	*11.1
21	20.3	18.8	19.5	16.5	14.9	15.8			
22	20.6	18.9	19.8	16.6	15.7	16.2			
23	20.6	19.1	19.8	17.1	16.0	16.6			
24	19.9	19.1	19.5	17.7	16.6	17.2			
25	20.3	19.4	19.8	17.8	17.1	17.4			
26	20.2	18.9	19.4	18.0	17.2	17.5			
27	18.9	18.4	18.7	17.4	16.5	16.8			
28	18.9	18.1	18.5	16.6	15.7	16.2			
29	19.4	18.1	18.7	16.6	15.7	16.2			
30	19.5	18.3	19.0	16.6	16.2	16.3			
31	19.5	18.1	18.8						
Month	23.1	18.1	20.2	19.7	14.9	17.2	*16.3	*10.6	*13.3

Tualatin River at Farmington, OR
River Mile 33.3
1997



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

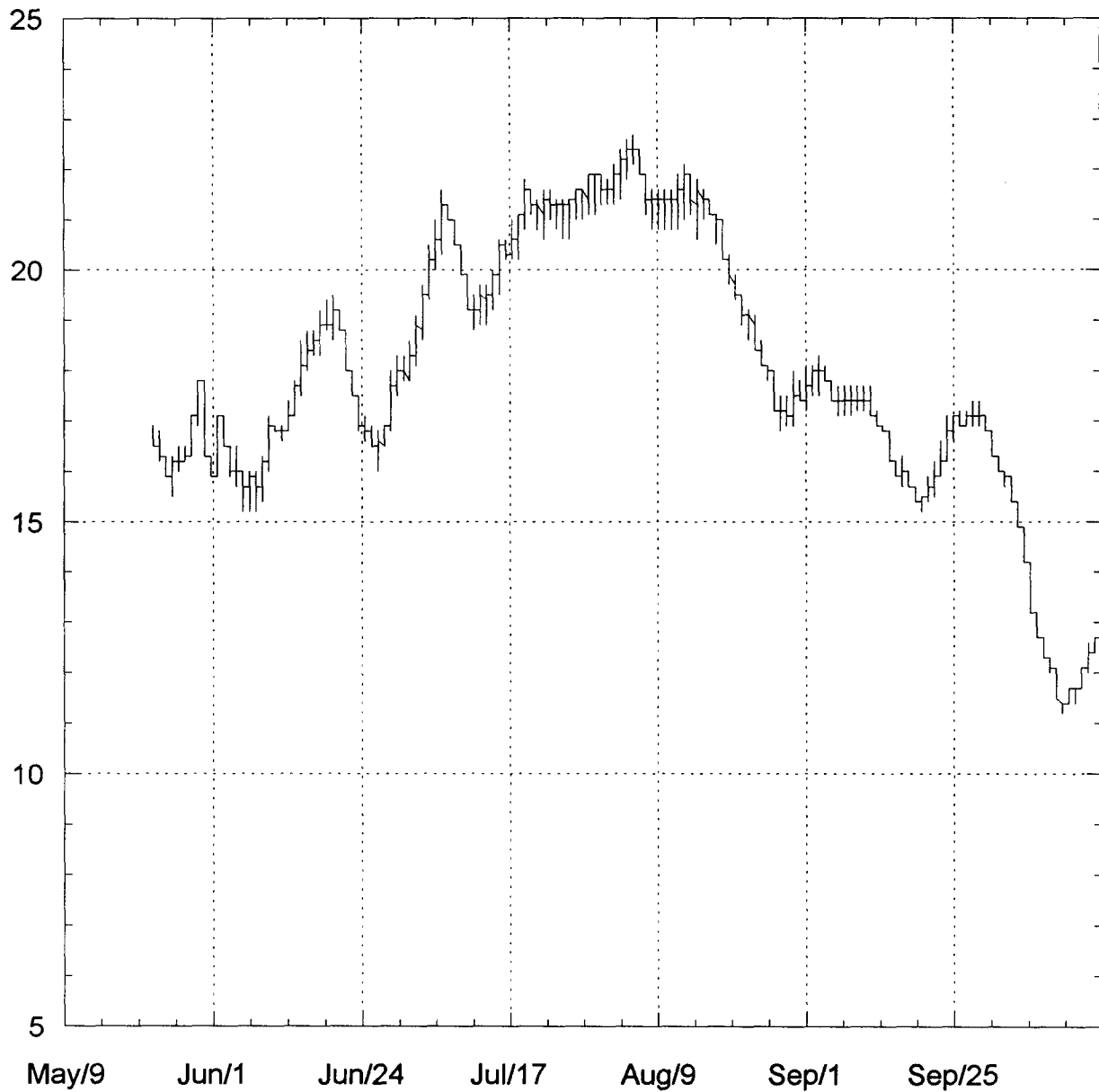
Period of Record: 5/20 through 10/17
 MAX, 21.3 on July 20 MIN, 11.2 on Oct 11

Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				16.8	16.2	16.4	17.4	16.9	17.1
2				16.2	15.7	16.0	18.3	16.6	17.4
3				16.0	15.5	15.7	19.4	17.5	18.4
4				16.0	15.4	15.7	20.6	18.8	19.6
5				15.4	14.8	15.0	20.8	19.5	20.3
6				15.4	14.6	15.0	20.5	19.4	20.0
7				15.2	14.6	14.9	20.5	18.9	19.6
8				15.9	14.3	15.0	19.9	18.6	19.2
9				16.3	14.9	15.6	19.2	18.3	18.7
10				17.1	15.5	16.3	18.8	17.4	18.0
11				17.1	16.8	16.9	17.5	16.9	17.2
12				17.4	16.6	16.9	18.4	16.9	17.6
13				17.2	16.5	16.8	19.1	17.7	18.3
14				17.2	16.2	16.7	20.2	18.6	19.1
15				18.1	16.8	17.4	20.6	19.2	19.6
16				18.8	17.7	18.3	21.1	19.1	19.8
17				19.2	18.1	18.6	20.0	19.2	19.7
18				19.4	18.3	18.7	19.9	18.4	19.0
19				18.8	17.7	18.2	20.5	18.6	19.3
20	*16.9	*16.5	*16.6	18.3	16.9	17.7	21.3	19.4	20.0
21	16.8	15.7	16.3	18.0	17.1	17.4	20.2	19.4	19.8
22	16.6	15.4	16.1	17.2	16.3	16.6	20.6	18.8	19.4
23	16.3	15.4	15.9	16.2	15.5	15.9	20.3	18.6	19.3
24	16.0	15.1	15.5	15.5	14.9	15.2	20.0	18.1	19.0
25	15.5	14.6	14.9	16.2	14.6	15.4	20.6	18.8	19.5
26	15.5	14.2	14.9	16.9	15.9	16.4	*20.8	*19.2	*19.6
27	16.3	15.1	15.7	17.4	16.2	16.7	m	m	m
28	16.5	15.9	16.2	17.2	16.6	17.0	m	m	m
29	17.4	16.5	16.9	18.0	16.5	17.2	m	m	m
30	16.5	15.4	15.7	17.7	17.1	17.4	m	m	m
31	16.3	15.2	15.6				m	m	m
Month	*17.4	*14.2	*15.9	19.4	14.3	16.6	*21.3	*16.6	*19.0
Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	m	m	m	16.8	15.9	16.3	16.8	16.2	16.4
2	m	m	m	16.9	15.9	16.4	16.3	15.7	15.9
3	*21.0	*19.5	*20.0	16.9	16.0	16.5	15.5	15.2	15.3
4	19.5	18.3	19.0	17.1	16.0	16.6	15.4	14.9	15.1
5	19.7	18.0	18.7	17.1	16.2	16.5	15.2	14.2	14.8
6	20.5	18.8	19.3	16.6	15.7	16.1	14.2	13.2	13.6
7	20.0	18.6	19.1	16.3	15.1	15.8	13.2	12.6	12.9
8	20.3	18.3	18.9	16.6	15.4	16.0	12.7	12.6	12.6
9	20.3	18.1	18.8	16.9	15.9	16.3	12.6	12.3	12.4
10	20.5	18.1	18.8	17.2	16.6	17.0	12.3	11.4	11.8
11	20.0	18.1	18.8	17.2	16.6	16.9	11.5	11.2	11.4
12	19.4	18.1	18.7	16.8	16.0	16.3	11.5	11.2	11.4
13	19.9	18.6	19.1	16.3	15.2	15.6	11.8	11.4	11.6
14	20.3	18.9	19.4	16.2	15.4	15.8	12.1	11.7	11.8
15	19.5	18.6	19.1	16.2	15.7	15.9	12.6	12.1	12.4
16	19.4	18.1	18.6	16.0	15.4	15.7	13.0	12.4	12.7
17	19.1	18.1	18.5	16.0	15.4	15.6	*13.0	*12.6	*12.7
18	18.4	17.5	18.1	15.7	15.1	15.3			
19	18.4	17.1	17.6	15.7	14.9	15.2			
20	17.8	16.5	17.2	15.9	15.1	15.4			
21	17.5	16.6	17.1	16.3	15.1	15.6			
22	17.2	16.0	16.6	16.6	15.7	16.1			
23	17.2	16.3	16.8	16.9	16.2	16.6			
24	17.4	16.6	17.0	17.7	16.6	17.1			
25	17.4	16.8	17.0	17.7	17.1	17.4			
26	16.9	16.0	16.4	17.7	17.4	17.6			
27	16.6	16.0	16.3	17.5	16.9	17.2			
28	16.3	15.5	15.9	16.9	16.3	16.6			
29	16.6	15.9	16.2	16.8	16.2	16.5			
30	16.5	15.5	16.0	16.6	16.2	16.4			
31	16.6	15.7	16.2						
Month	*21.0	*15.5	*17.8	17.7	14.9	16.3	*16.8	*11.2	*13.3

**Tualatin River at Elsner Road near Sherwood, OR
River Mile 16.2
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/23 through 10/23
 MAX, 22.7 Aug 6 MIN, 11.2 Oct. 12

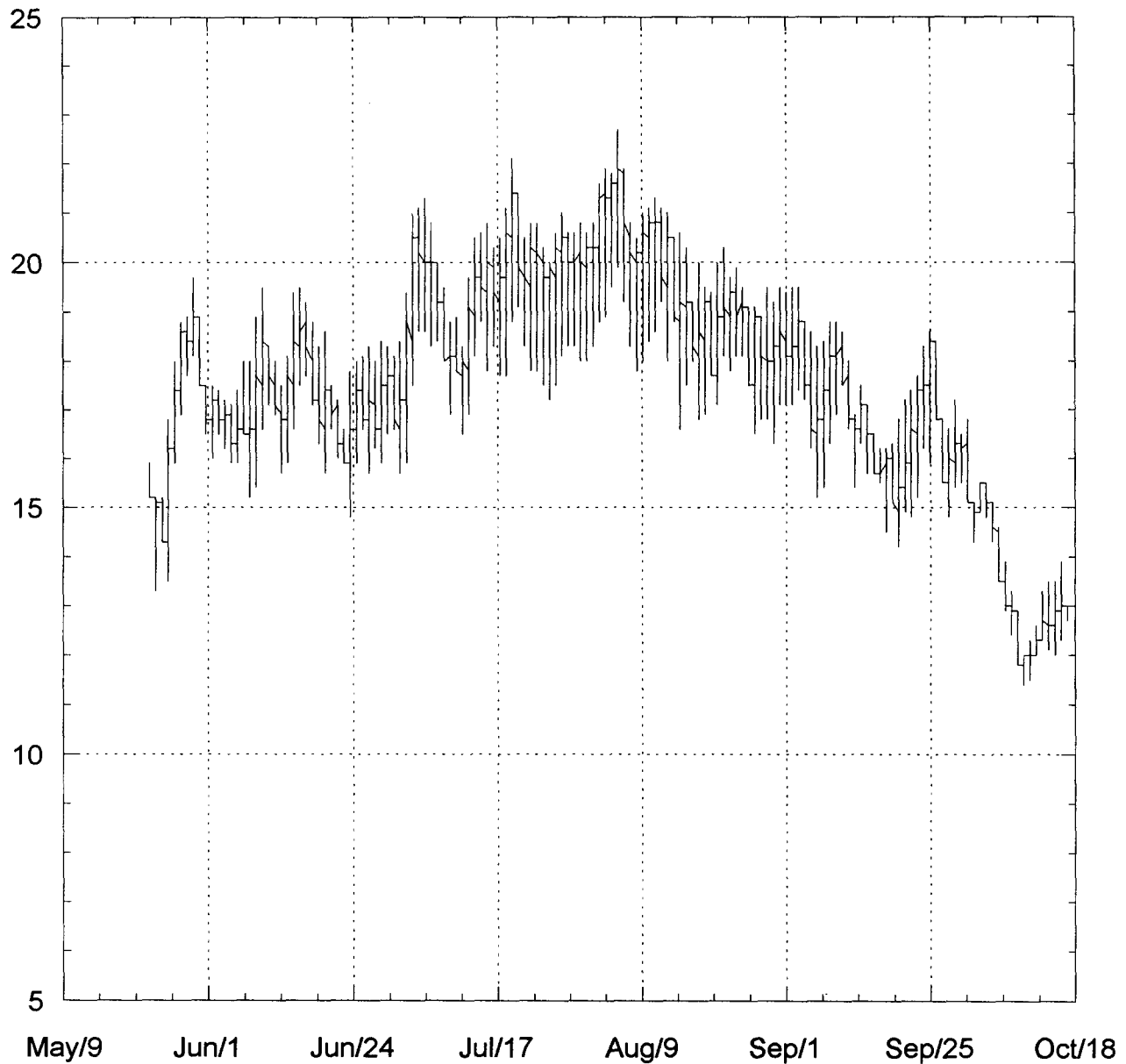
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				16.3	15.9	16.0	18.3	17.8	18.0
2				17.1	15.9	16.5	18.6	17.8	18.1
3				17.1	16.5	16.6	19.1	18.1	18.5
4				16.5	15.9	16.0	19.7	18.6	19.0
5				16.5	15.7	16.0	20.5	19.4	19.8
6				16.0	15.2	15.6	21.0	20.0	20.4
7				16.0	15.2	15.6	21.6	20.3	20.9
8				16.0	15.2	15.6	21.3	21.0	21.2
9				16.3	15.4	15.8	21.0	20.5	20.8
10				17.1	16.0	16.5	20.5	19.9	20.1
11				16.9	16.8	16.8	19.9	19.2	19.6
12				16.9	16.6	16.7	19.5	18.8	19.1
13				17.4	16.8	17.0	19.7	18.9	19.3
14				17.8	17.1	17.4	19.7	18.9	19.3
15				18.6	17.5	18.0	20.0	19.2	19.6
16				18.8	18.0	18.3	20.6	19.5	19.9
17				18.8	18.3	18.5	20.6	20.2	20.4
18				19.2	18.3	18.7	21.0	20.2	20.4
19				19.4	18.8	19.0	21.1	20.2	20.5
20				19.5	18.6	19.1	21.8	20.8	21.1
21				19.2	18.8	19.1	21.6	21.1	21.3
22				18.8	18.0	18.3	21.4	20.8	21.1
23	*16.9	*16.5	*16.8	18.0	17.5	17.8	21.6	20.6	21.0
24	16.8	16.2	16.4	17.5	16.8	17.1	21.6	21.0	21.2
25	16.3	15.9	16.1	17.1	16.6	16.9	21.4	20.8	21.0
26	16.3	15.5	15.9	16.9	16.5	16.8	21.4	20.6	21.0
27	16.5	16.0	16.2	16.8	16.0	16.5	21.4	20.6	21.0
28	16.5	16.2	16.3	16.9	16.5	16.7	21.6	21.0	21.2
29	17.1	16.3	16.6	18.0	16.8	17.3	21.6	21.0	21.2
30	17.8	16.9	17.3	18.3	17.5	17.9	21.9	21.1	21.4
31	17.8	16.3	17.1				21.9	21.1	21.5
Month	*17.8	*15.5	*16.4	19.5	15.2	17.2	21.9	17.8	20.2

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	21.9	21.3	21.5	17.8	17.4	17.6	16.8	16.3	16.6
2	21.8	21.3	21.4	18.1	17.2	17.6	16.3	16.0	16.1
3	22.1	21.3	21.5	18.1	17.5	17.8	16.0	15.7	15.8
4	22.4	21.4	21.8	18.3	17.5	17.8	15.9	15.4	15.6
5	22.6	21.8	22.0	18.1	17.8	17.9	15.4	14.9	15.0
6	22.7	22.1	22.3	17.8	17.4	17.6	14.9	14.2	14.6
7	22.4	21.9	22.1	17.7	17.1	17.4	14.2	13.2	13.6
8	21.9	21.1	21.5	17.7	17.1	17.3	13.2	12.7	12.9
9	21.6	20.8	21.1	17.7	17.1	17.4	12.7	12.3	12.4
10	21.6	20.8	21.1	17.7	17.2	17.4	12.3	12.0	12.1
11	21.6	20.8	21.1	17.7	17.2	17.4	12.1	11.5	11.6
12	21.6	20.8	21.1	17.7	17.1	17.3	11.4	11.2	11.4
13	21.9	20.8	21.3	17.2	16.9	17.1	11.7	11.4	11.5
14	22.1	21.0	21.5	16.9	16.8	16.9	11.7	11.4	11.6
15	21.9	21.1	21.4	16.8	16.2	16.4	12.1	11.7	11.8
16	21.8	20.6	21.1	16.2	15.9	16.0	12.6	12.0	12.2
17	21.6	21.0	21.2	16.3	15.7	16.0	12.7	12.4	12.5
18	21.4	21.1	21.2	16.0	15.7	15.9	12.7	12.6	12.6
19	21.1	20.5	20.8	15.7	15.4	15.6	12.7	12.4	12.6
20	21.0	20.2	20.4	15.5	15.2	15.4	12.4	12.1	12.3
21	20.3	19.7	20.0	15.9	15.4	15.6	12.3	11.7	11.8
22	19.9	19.4	19.6	16.2	15.5	15.8	11.7	11.2	11.5
23	19.5	18.9	19.2	16.6	15.9	16.1	*11.4	*11.2	*11.3
24	19.2	18.6	19.0	17.1	16.2	16.5			
25	19.1	18.4	18.8	17.1	16.6	16.8			
26	18.6	18.1	18.4	17.2	16.9	17.0			
27	18.1	17.8	18.0	17.2	16.9	17.0			
28	18.0	17.2	17.7	17.4	16.9	17.1			
29	17.5	16.8	17.2	17.4	16.9	17.2			
30	17.5	16.9	17.2	17.1	16.8	16.9			
31	18.0	16.9	17.4						
Month	22.7	16.8	20.2	18.3	15.2	16.9	*16.8	*11.2	*13.2

**Fanno Creek at Durham Road near Tigard, OR
Stream Mile 1.2
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/23 through 10/17
 MAX, 22.7 Aug 6 MIN, 11.4 Oct. 10

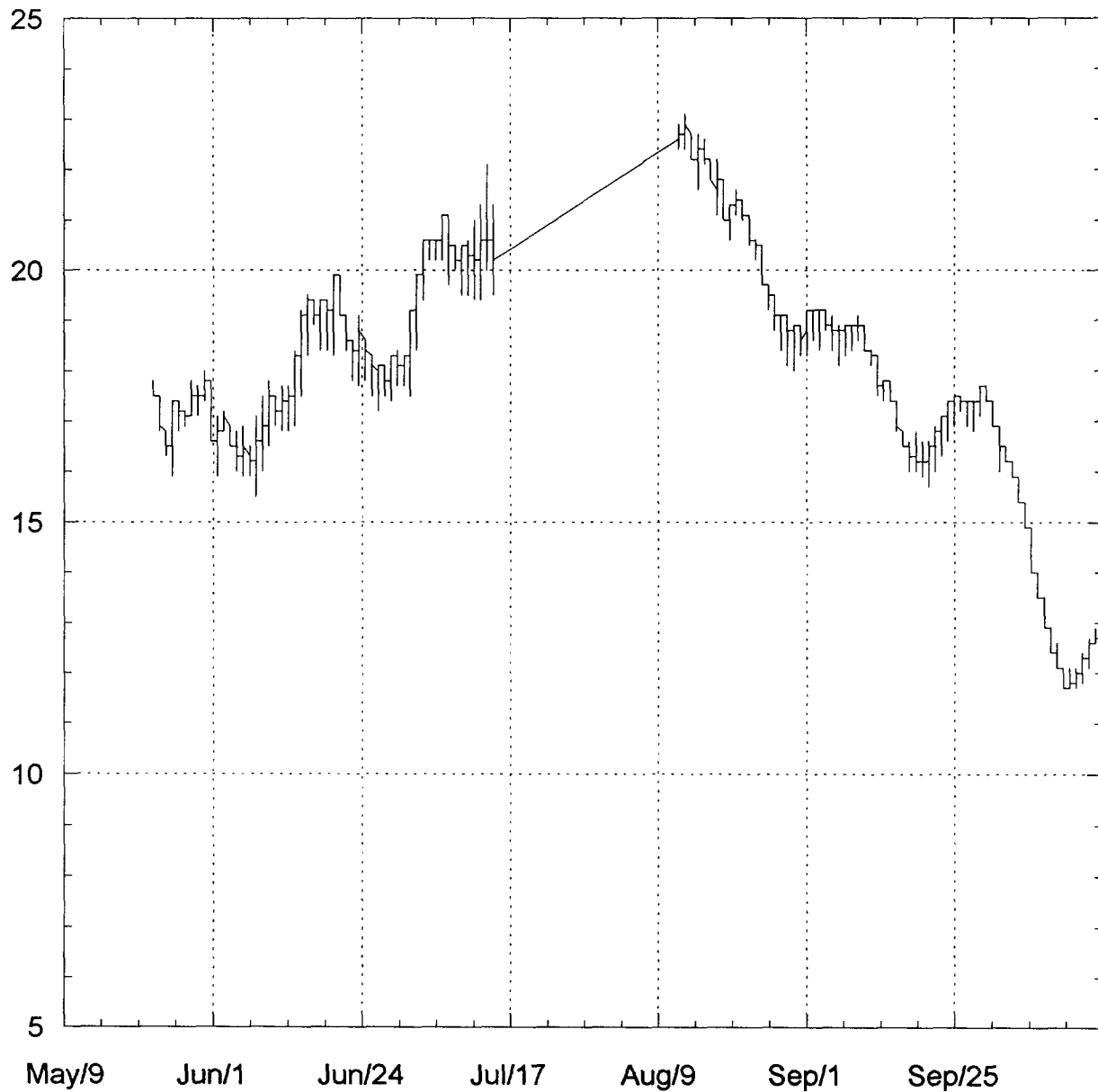
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				17.5	16.5	16.8	18.1	16.6	17.4
2				17.5	16.0	16.8	18.4	15.7	17.0
3				17.4	16.5	16.9	19.4	15.9	17.7
4				17.2	16.2	16.6	21.0	17.5	19.2
5				17.1	15.9	16.4	21.1	18.6	19.9
6				17.4	15.9	16.6	21.3	18.6	19.9
7				18.0	16.5	17.1	20.8	18.3	19.5
8				18.0	15.2	16.5	20.0	18.4	18.9
9				18.9	15.4	17.1	19.5	18.0	19.1
10				19.5	16.6	17.9	18.8	16.9	17.7
11				18.3	17.1	17.7	18.9	17.8	18.2
12				18.0	16.9	17.4	18.3	16.5	17.4
13				17.5	15.7	16.7	19.7	16.9	18.2
14				18.1	15.9	16.9	20.5	18.1	19.2
15				19.4	16.6	17.9	20.6	18.8	19.5
16				19.5	17.5	18.5	20.8	17.8	19.3
17				19.2	17.7	18.3	20.3	18.3	19.3
18				18.8	17.1	17.8	20.5	17.7	19.1
19				18.3	16.3	17.3	21.1	17.7	19.4
20				18.6	15.7	17.0	22.1	18.8	20.4
21				17.5	16.6	17.0	21.4	19.1	19.7
22				17.2	16.0	16.6	20.5	18.3	19.4
23	*15.9	*15.2	*15.6	16.6	15.9	16.3	20.8	17.8	19.4
24	15.2	13.3	14.6	17.8	14.8	16.2	20.8	17.8	19.5
25	15.2	14.3	14.9	18.0	15.9	16.9	20.3	17.5	19.1
26	16.8	13.5	15.1	18.1	16.6	17.3	20.0	17.2	18.8
27	18.0	15.9	16.8	18.3	15.7	17.0	20.6	17.5	19.2
28	18.8	16.9	17.7	18.0	16.2	16.9	21.0	18.1	19.7
29	18.9	17.7	18.4	18.4	15.9	17.1	20.6	18.3	19.6
30	19.7	18.1	18.8	18.3	16.5	17.2	20.6	18.3	19.6
31	18.9	17.5	18.2				20.8	18.0	19.5
Month	*19.7	*13.3	*16.9	19.5	14.8	17.1	22.1	15.7	19.0

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	20.6	18.0	19.5	19.5	17.1	18.2	16.8	15.2	15.9
2	20.8	18.3	19.7	19.4	17.1	18.1	15.1	14.3	14.7
3	21.6	18.8	20.2	19.5	17.1	18.2	15.5	14.9	15.1
4	21.9	18.9	20.7	19.5	17.4	18.3	15.5	14.8	15.1
5	21.8	19.5	20.8	18.8	17.2	18.0	15.1	14.3	14.7
6	22.7	19.9	21.4	18.6	16.2	17.1	14.6	13.5	14.1
7	21.9	19.2	20.7	18.3	15.2	16.6	13.9	12.9	13.3
8	20.8	18.3	19.7	18.4	15.4	16.8	13.3	12.4	12.9
9	20.5	17.8	19.4	18.8	16.3	17.5	12.9	11.8	12.2
10	21.0	18.0	19.6	18.8	16.9	17.9	12.0	11.4	11.6
11	21.1	18.4	19.9	18.6	17.7	18.2	12.3	11.5	12.0
12	21.3	18.6	20.1	18.0	16.6	17.2	12.6	12.0	12.4
13	21.1	19.2	20.0	16.9	15.4	16.3	13.3	12.3	12.7
14	21.0	18.0	19.5	17.5	16.3	16.9	13.5	12.1	12.7
15	20.5	18.8	19.4	17.1	15.7	16.6	13.5	12.0	12.7
16	20.6	16.6	18.6	16.5	15.9	16.0	13.9	12.3	13.1
17	20.3	17.5	19.0	16.2	15.5	15.8	*13.0	*12.7	*12.9
18	19.2	18.0	18.4	16.2	14.5	15.5			
19	20.0	16.8	18.2	16.3	15.1	15.6			
20	19.5	16.9	18.5	16.8	14.2	15.5			
21	19.4	17.7	18.8	17.2	14.9	15.8			
22	20.0	17.1	18.3	17.4	14.8	16.1			
23	20.3	18.1	19.1	17.7	15.2	16.6			
24	19.7	17.8	19.3	18.3	16.2	17.2			
25	19.9	18.1	19.1	18.6	15.9	17.0			
26	19.5	18.1	18.8	18.4	16.8	17.8			
27	19.1	17.5	18.4	16.8	15.5	16.3			
28	19.1	16.5	17.9	16.6	14.8	15.7			
29	18.9	16.8	18.1	17.2	15.4	16.2			
30	19.5	16.8	18.0	16.5	15.5	16.0			
31	19.2	16.3	17.8						
Month	22.7	16.3	19.2	19.5	14.2	16.8	*16.8	*11.4	*13.5

**Tualatin River at Oswego Canal near Lake Oswego, OR
River Mile 6.7
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/23 through 10/22
 MAX, 23.1 Aug 14 MIN, 11.7 Oct. 12

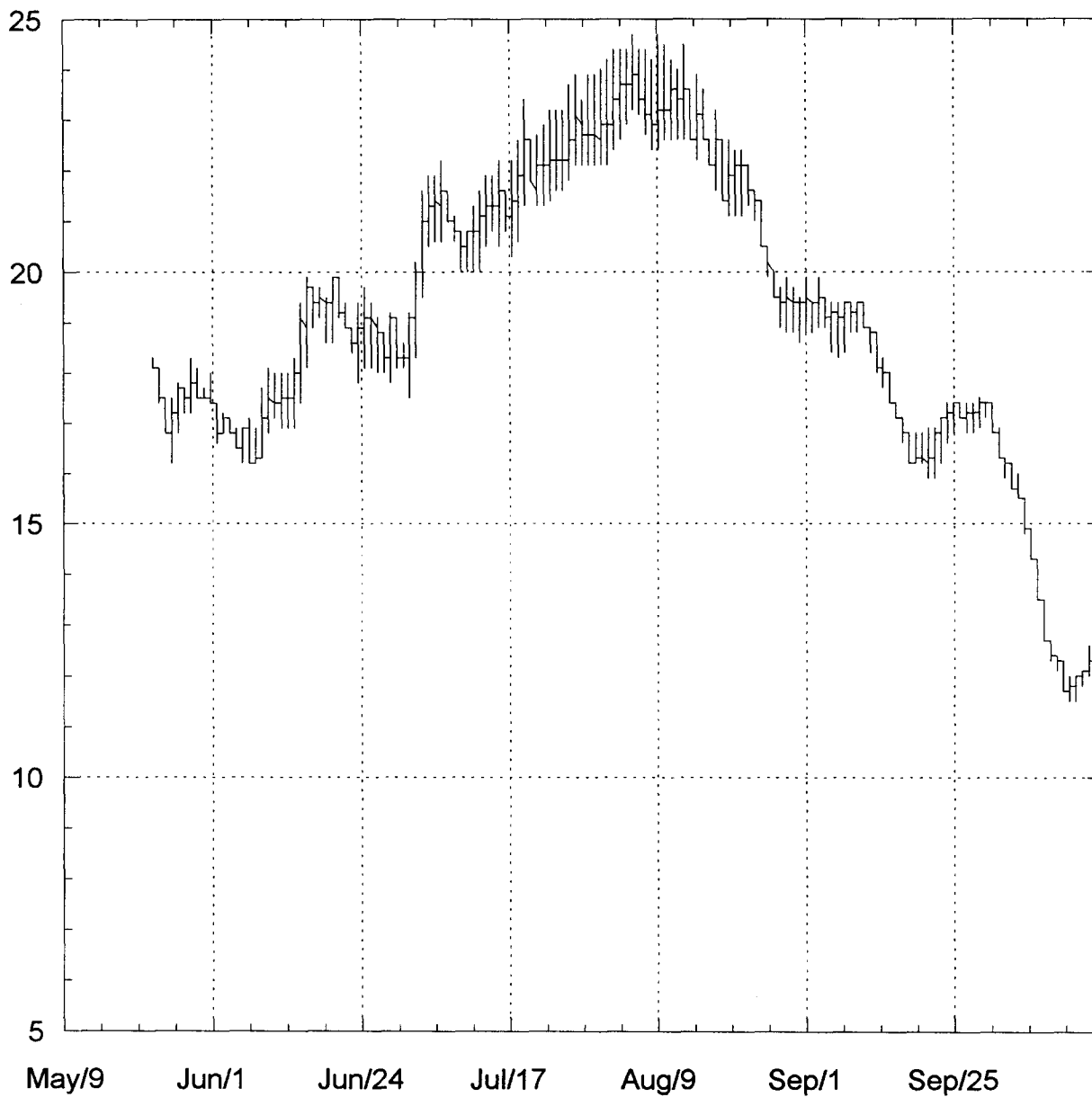
Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				17.8	16.6	17.3	18.3	17.7	17.9
2				17.1	15.9	16.5	19.2	17.5	18.3
3				17.2	16.8	17.0	19.9	18.4	19.0
4				16.9	16.5	16.7	20.6	19.4	19.9
5				16.8	16.0	16.4	20.6	20.2	20.4
6				16.9	15.9	16.4	20.6	20.2	20.5
7				16.5	15.9	16.2	21.1	20.2	20.6
8				17.1	15.5	16.3	21.1	19.7	20.7
9				17.5	16.0	16.7	20.5	20.0	20.3
10				17.8	16.5	17.1	20.5	19.5	20.0
11				17.5	16.9	17.2	20.6	19.5	20.2
12				17.7	16.8	17.2	21.0	19.4	20.0
13				17.7	16.8	17.2	21.3	19.4	20.3
14				18.4	16.9	17.5	22.1	20.0	20.6
15				19.2	17.5	18.2	21.3	19.5	20.4
16				19.5	18.3	18.9	*21.9	*17.5	*19.1
17				19.4	18.9	19.1	m	m	m
18				19.4	18.4	19.0	m	m	m
19				19.4	18.4	18.9	m	m	m
20				19.9	18.3	19.2	m	m	m
21				19.9	19.1	19.3	m	m	m
22				19.1	18.4	18.6	m	m	m
23	*17.8	*17.5	*17.7	18.6	17.8	18.3	m	m	m
24	17.5	16.8	17.0	19.1	17.7	18.3	m	m	m
25	16.8	16.3	16.5	18.6	17.8	18.2	m	m	m
26	17.4	15.9	16.6	18.3	17.5	17.9	m	m	m
27	17.4	16.8	17.0	18.1	17.2	17.8	m	m	m
28	17.2	16.9	17.0	18.1	17.5	17.8	m	m	m
29	17.8	17.1	17.3	18.3	17.4	17.8	m	m	m
30	17.7	17.1	17.4	18.4	17.7	18.0	m	m	m
31	18.0	17.4	17.6				m	m	m
Month	*18.0	*15.9	*17.1	19.9	15.5	17.7	*22.1	*17.5	*19.9

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	m	m	m	18.9	18.3	18.6	17.4	16.9	17.3
2	m	m	m	19.2	18.3	18.8	16.9	16.0	16.4
3	m	m	m	19.2	18.6	19.0	16.5	16.2	16.3
4	m	m	m	19.2	18.4	18.9	16.2	15.9	16.0
5	m	m	m	19.2	18.8	18.9	15.9	15.4	15.7
6	m	m	m	19.1	18.4	18.7	15.4	14.9	15.1
7	m	m	m	18.9	18.1	18.6	14.9	14.0	14.5
8	m	m	m	18.9	18.3	18.6	14.0	13.5	13.7
9	m	m	m	18.9	18.4	18.8	13.5	12.9	13.1
10	m	m	m	19.1	18.6	18.8	12.9	12.4	12.6
11	m	m	m	18.9	18.4	18.7	12.6	12.1	12.4
12	m	m	m	18.4	18.1	18.2	12.1	11.7	11.8
13	*22.9	*22.4	*22.7	18.3	17.5	17.7	12.1	11.7	11.8
14	23.1	22.4	22.7	17.8	17.4	17.6	12.1	11.7	11.9
15	22.7	22.2	22.5	17.8	17.4	17.5	12.4	11.8	12.1
16	22.7	21.6	22.0	17.4	16.8	17.0	12.7	12.1	12.4
17	22.6	22.1	22.3	16.8	16.5	16.6	12.9	12.6	12.7
18	22.2	21.8	22.0	16.6	16.0	16.4	13.2	12.6	12.8
19	22.2	21.1	21.5	16.8	16.0	16.3	13.2	12.7	13.0
20	21.8	21.0	21.5	16.6	15.9	16.2	13.0	12.6	12.8
21	21.3	20.6	20.9	16.6	15.7	16.2	12.9	12.3	12.5
22	21.6	21.1	21.3	16.9	16.0	16.4	*12.6	*12.1	*12.3
23	21.4	21.0	21.2	17.1	16.3	16.6			
24	21.1	20.5	20.8	17.4	16.6	17.0			
25	20.6	20.2	20.4	17.5	16.9	17.2			
26	20.5	19.7	20.0	17.5	17.2	17.3			
27	19.7	19.2	19.4	17.4	16.9	17.2			
28	19.5	18.8	19.0	17.4	16.8	17.2			
29	19.1	18.4	18.8	17.7	17.1	17.4			
30	19.1	18.1	18.6	17.7	17.4	17.5			
31	18.9	18.0	18.5						
Month	*23.1	*18.0	*20.8	19.2	15.7	17.7	*17.4	*11.7	*13.7

**Tualatin River at West Linn, OR
River Mile 1.8
1997**



Temperature - Degrees Celsius
Source Agency - Tualatin Basin Watermaster

Period of Record: 5/23 through 10/23
 MAX, 24.7 Aug 6 MIN, 11.5 Oct. 13

Source Agency: Tualatin Basin Watermaster
 * = Partial Record

TEMPERATURE, WATER (DEG. C), MAY TO OCTOBER 1997

Day	Max	May Min	Mean	Max	June Min	Mean	Max	July Min	Mean
1				18.0	17.4	17.7	18.6	18.1	18.2
2				17.4	16.6	17.0	19.2	17.5	18.3
3				17.2	16.8	17.0	20.2	18.3	19.1
4				17.1	16.8	17.0	21.6	19.5	20.4
5				16.9	16.5	16.7	21.9	20.5	21.0
6				16.9	16.2	16.6	21.9	20.6	21.2
7				17.1	16.2	16.6	22.2	20.6	21.3
8				16.9	16.2	16.4	21.6	21.0	21.1
9				17.7	16.3	16.9	21.1	20.6	20.8
10				18.1	16.8	17.4	20.8	20.0	20.3
11				18.0	17.1	17.5	20.8	20.0	20.4
12				18.0	16.9	17.3	21.3	20.0	20.5
13				18.0	16.9	17.4	21.6	20.0	20.7
14				18.3	16.9	17.5	21.9	20.5	21.0
15				19.4	17.4	18.2	21.9	20.8	21.2
16				19.9	18.1	18.9	22.2	20.5	21.3
17				19.7	18.9	19.3	21.6	20.8	21.2
18				19.7	19.1	19.3	22.2	20.3	21.1
19				19.5	18.6	19.1	22.6	20.6	21.6
20				19.9	18.6	19.2	23.4	21.3	22.2
21				19.9	19.1	19.3	22.6	21.8	22.0
22				19.4	18.9	19.1	22.7	21.3	21.8
23	*18.3	*18.1	*18.2	18.9	18.4	18.7	22.9	21.3	22.0
24	18.1	17.4	17.6	19.4	17.8	18.6	23.2	21.4	22.1
25	17.5	16.8	17.0	19.7	18.1	18.8	23.2	21.6	22.3
26	17.5	16.2	16.8	19.4	18.1	18.7	23.2	21.6	22.2
27	17.8	16.8	17.2	19.1	18.0	18.6	23.7	21.8	22.5
28	17.7	17.2	17.5	18.8	18.0	18.3	23.9	22.1	22.8
29	18.3	17.2	17.6	19.2	17.8	18.4	23.4	22.1	22.7
30	18.1	17.5	17.8	19.1	18.1	18.4	23.9	22.1	22.8
31	17.7	17.5	17.6				23.9	22.1	22.8
Month	*18.3	*16.2	*17.6	19.9	16.2	18.0	23.9	17.5	21.2

Day	Max	August Min	Mean	Max	September Min	Mean	Max	October Min	Mean
1	24.0	22.1	22.8	19.5	18.6	19.1	17.4	16.8	17.2
2	24.2	22.1	22.9	19.9	18.8	19.2	16.9	16.3	16.8
3	24.4	22.4	23.2	19.5	18.8	19.1	16.3	15.9	16.1
4	24.4	22.6	23.3	19.9	18.9	19.3	16.2	15.7	16.0
5	24.4	22.9	23.5	19.5	18.9	19.1	16.0	15.5	15.7
6	24.7	23.2	23.8	19.4	18.4	18.9	15.5	14.8	15.2
7	24.4	23.1	23.6	19.4	18.3	18.8	14.9	14.3	14.6
8	24.4	22.7	23.3	19.4	18.4	18.9	14.3	13.5	13.9
9	24.2	22.4	23.0	19.4	18.8	19.0	13.5	12.7	13.1
10	24.7	22.4	23.2	19.4	18.8	19.1	12.7	12.3	12.5
11	24.5	22.6	23.3	19.4	18.9	19.1	12.4	12.1	12.2
12	24.2	22.6	23.3	18.9	18.4	18.7	12.3	11.7	11.8
13	24.0	22.6	23.2	18.8	18.0	18.2	12.0	11.5	11.7
14	24.5	22.6	23.4	18.3	17.7	18.0	12.0	11.5	11.7
15	23.6	22.6	22.9	18.0	17.4	17.5	12.1	11.8	12.0
16	23.9	22.2	22.8	17.4	17.1	17.2	12.6	12.0	12.2
17	23.6	22.6	22.9	17.1	16.6	16.9	12.6	12.3	12.5
18	22.6	22.1	22.3	16.8	16.3	16.5	12.9	12.6	12.7
19	23.2	21.6	22.2	16.8	16.2	16.3	13.2	12.4	12.8
20	22.6	21.4	21.8	16.8	16.2	16.4	12.9	12.3	12.6
21	22.6	21.1	21.6	16.9	15.9	16.3	12.7	12.0	12.3
22	22.4	21.1	21.8	16.9	15.9	16.3	12.4	12.0	12.2
23	22.4	21.1	21.7	17.1	16.2	16.6	*12.3	*12.0	*12.1
24	22.1	21.3	21.6	17.4	16.6	16.9			
25	21.6	21.0	21.3	17.4	16.8	17.1			
26	21.4	20.5	20.7	17.4	17.1	17.2			
27	20.5	19.9	20.2	17.4	16.8	17.1			
28	20.2	19.5	19.7	17.4	16.8	17.0			
29	19.7	18.9	19.3	17.5	16.9	17.2			
30	19.9	18.8	19.2	17.4	17.1	17.3			
31	19.7	18.8	19.2						
Month	24.7	18.8	22.1	19.9	15.9	17.7	*17.4	*11.5	*13.5

**Tualaltin River
River Mile Index**

APPENDIX F

	TUALATIN RIVER		
	RIVER MILE INDEX		
	-211400300		
<u>Mile</u>	<u>Description</u>	<u>Drainage Area</u>	<u>Elevation</u>
		square miles	feet - 0.00 gage datum
0.00	Mouth of Tualatin River at Willamette River River Mile 28.5 (LB Willamette)	712	
0.20	Weiss Bridge- Petes Mtn Rd.		
1.60	Fields Creek (RB-02114003000010)		
1.69	State Hwy 212 Bridge (Fields Bridge)		
1.75	West Linn Stream Gage Station - LB (USGS #14207500)	706	85.61
2.40	Tate Creek (LB-02114003000020)		
3.45	Lake Oswego Corp. Diversion Dam		
4.25	Interstate 205 Bridge		
4.56	Wilson Creek (LB-02114003000080)		
5.34	Boat Launch -LB		
5.36	Shipley Creek (LB-02114003000100)		
5.38	Shipley Bridge- Stafford Rd. (NWS Wire Weight Gage)		
5.62	Pecan Creek (LB-02114003000120)		
6.02	Athey Creek (RB-02114003000123)		
6.70	Saum Creek (RB-02114003000130)		
6.70	Oswego Canal Diversion (LB; River Elevation Recording Gage #14206990, Headgate, and Canal Recording Gage #14207000)		
7.36	Boat Launch - LB (Dogwood Drive)		
7.67	Browns Ferry Park Canoe Launch - RB		
7.83	Clackamas/Washington Counties Line (Underground Cable Crossing Sign)		
8.18	Interstate 5 Bridge		

8.60	Boones Ferry Road Bridge		
8.64	Hedges Creek (RB-02114003000150)		
8.90	Tualatin Park Boat Launch (RB)		
8.91	Southern Pacific RR Bridge		
	Tualatin River at Tualatin Elevation Recording Station (#14206970) - RB		
9.32	Fanno Creek (LB-02114003000180)	26.8	
	(Index available)		
9.33	Durham Treatment Plant Outfall (LB)		
9.34	Oregon Electric RR Bridge		
9.80	Cook Park Boat Launch LB)		
11.50	US Hwy. 99W Bridge (Pacific Highway)		
	Canoe Launch - LB (access from southeast of bridge)		
12.68	Overhead BPA Transmission Line; Vancouver-Eugene		
12.80	Rivermeade Boat Launch (Private) - LB		
15.20	Rock Creek-South (RB-02114003000250)	13.7	
15.50	Chicken Creek (RB-02114003000270)		
16.09	Chicken Creek Drainage Ditch (RB)		
16.22	Shamberg Bridge (Elsner Road)		
	Rated Staff Gage for Stream Flow - RB		
21.12	Overhead BPA Transmission Line; Big Eddy-Keeler		
26.90	State Hwy. 210 bridge (Scholls)		
28.20	McFee Creek (RB-02114003000310)		
30.76	Unnamed Stream (LB-02114003000320) (Jacktown)		
31.62	Burris Creek (RB-02114003000330)		
31.92	Christensen Creek (RB-02114003000350)		
33.30	Harris Bridge (State Highway 208)		
	Farmington Recording Stream Gage (#14206500) - LB	568	100.42
35.68	Butternut Creek (LB-02114003000380)		
37.38	Gordon Creek (LB-02114003000400)		

38.08	Rock Creek Treatment Plant Outfall (LB)		
38.09	Rock Creek (LB-02114003000420)	74.6	
	Beaverton Creek (LB-02114003000420060)	36	
38.44	Rood Bridge Small Watercraft Launch - LB		
	Rood Bridge Road Bridge		
	Recording Stream Gage (#14206440) - LB		105.16
40.44	Davis Creek (RB-02114003000430)		
41.64	Minter Bridge Road Bridge		
43.88	Jackson Slough (LB)		
	Jackson Bottom Wetlands		
	Hillsboro Treatment Plant Effluent Outfall (LB)		
44.40	State Highway 219 Bridge		
	Rated Staff Gage for Stream Flow - RB		
44.73	Dairy Creek (LB-02114003000480) - index available	226	
	Mckay Creek (LB-02114003000480020) - index available	63.4	
	East Fork Dairy Creek (02114003000480080) - index available		
	West Fork Dairy Creek (02114003000480090) - index available		
51.54	Golf Course Road Bridge		
	Golf Course Recording Stream Gage (#14204800) - RB		
53.74	LaFollett Road (Bridge removed)		
55.24	Forest Grove Treatment Plant Outfall		
	Fern Hill Wetlands		
55.32	Fernhill Road Bridge		
56.10	Springhill Pump Plant Intake		
56.80	Gales Creek (LB-02114003000560) - index available	78.6	
57.38	Carpenter Creek (LB-02114003000580)		
57.84	Dilley Creek (LB-02114003000600)		
58.04	Johnson Creek (LB-02114003000602)		
58.82	Springhill Road Bridge		
	Tualatin River at Dilley Stream Gage (LB)	125	147.57
	(USGS 14-2035.00)		
59.02	O'Neil Creek (LB-02114003000620)		
60.00	Scoggins Creek (LB-02114003000640) - index available		

60.80	Wapato Creek (RB-02114003000670)		
	Wapato Creek Improvement District Return Flow		
62.00	Wapato Improvement District Headgate (RB)		
62.24	Southern Pacific RR Bridge		
62.25	State Highway 47 Bridge (Gaston)		
62.30	Bates Road Bridge		
62.80	Black Jack Creek (LB-02114003000700)		
62.90	Overhead BPA Transmission Line; Forest Grove-McMinnville		
63.13	TVID Patten Valley Pump Station Outfall #1		
63.87	Tualatin River at Gaston Recording Stream Gage (14202500) - RB	48.5	
64.26	TVID Patten Valley Pump Station Outfall #2		
65.34	Williams Canyon (RB-02114003000730)		
65.90	Mt. Richmond Road Bridge		
67.30	Hering Creek (LB-02114003000760)		
67.83	South Road Bridge (Cherry Grove)		
68.44	Roaring Creek (RB-02114003000790) □		
69.42	Little Lee Falls		
70.70	Raines Bridge- Tualatin River below Lee Falls Rated Staff Gage for Stream Flow (LB)		
71.07	Lee Falls		
73.28	Haines Falls		
73.30	City of Hillsboro Haines Falls Intake - LB		
74.00	Lee Creek (LB-02114003000860)		
74.05	Patten Creek (RB-02114003000870)		
75.70	Sunday Creek (LB-02114003000900)		
76.60	Maple Creek (LB-02114003000940)		
76.95	Ki-A-Cut Falls		

78.00	Barney Reservoir Aqueduct Outfall (RB)		
79.3+	Headwaters of Tualatin River		
	River Miles based on OWRD GIS Database overlay on Washington County		
	Assessor Maps		
	Prepared by: Tualatin Basin Watermaster - October 1997		
	111 NE Lincoln, 220L MS 49		
	Hillsboro, OR 97124		