

14210000 CLACKAMAS RIVER AT ESTACADA, OR

Willamette Basin
Clackamas Subbasin

LOCATION.--Lat 45°18'00", long 122°21'10" referenced to North American Datum of 1927, in NE ¼ sec.19, T.3 S., R.4 E., Clackamas County, OR, Hydrologic Unit 17090011, on left bank, 0.2 mi downstream from River Mill Dam, 1.5 mi northwest of Estacada and at mile 23.1.

DRAINAGE AREA.--671 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--April 1908 to current year. Monthly discharge only April 1908, published in WSP 1318. Published as "near Cazadero" January 1909 to September 1957.

REVISED RECORDS.--WSP 1248: 1908-9, 1910(M), 1916, 1917(M), 1922(M), 1923. WSP 1288: Drainage area (former site). WSP 1638: 1919(M).

GAGE.--Water-stage recorder. Datum of gage is 286.93 ft above NGVD of 1929 (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Oct. 1, 1957. Oct. 1, 1957 to Feb. 16, 1965, water-stage recorder at same site at datum 12 ft higher. Feb. 17, 1965 to Sept. 30, 1991, water-stage recorder at same site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. Diurnal fluctuations and some regulation caused by powerplants at River Mill Dam and since 1958, North Fork Dam. Minor regulation since 1956 by Timothy Lake (station 14208600). One small diversion upstream from station for city of Estacada municipal water supply.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--50 years (water years 1909-1958), 2,689 ft³/s, 54.44 in/yr, 1,948,000 acre-ft/yr. 105 years (water years 1909-2013), 2,750 ft³/s, 55.69 in/yr, 1,992,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,900 ft³/s Dec. 22, 1964, gage height, 30.36 ft (present datum); minimum discharge, 50 ft³/s Mar. 10, 1961, from rating curve extended below 260 ft³/s; minimum daily, 285 ft³/s Oct. 4, 5, 1958, caused by filling of North Fork Dam forebay.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 20	0400	*23,100	*20.00
Dec 5	0400	20,000	19.20

Minimum discharge, 610 ft³/s, Sept. 13, gage height, 10.29 ft.

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	975	2,660	5,330	2,170	5,120	3,340	4,190	3,160	3,130	1,340	889	792
2	973	2,870	6,950	2,050	4,330	3,740	4,190	2,870	2,710	1,300	897	782
3	962	2,450	7,360	1,940	3,810	3,800	4,060	2,820	2,450	1,250	890	806
4	953	2,210	12,400	1,950	3,420	3,400	4,020	2,930	2,250	1,210	874	822
5	881	1,980	15,900	1,950	3,220	3,090	5,780	3,140	2,080	1,190	862	840
6	843	1,750	8,980	1,890	3,200	2,910	8,370	3,240	1,960	1,170	856	1,260
7	842	1,710	6,650	2,320	3,120	2,730	8,910	3,340	1,860	1,150	845	1,020
8	856	1,600	5,680	3,110	2,850	2,550	7,910	3,220	1,770	1,120	844	929
9	876	1,560	4,810	3,890	2,640	2,370	6,360	3,090	1,710	1,090	845	908
10	876	1,450	4,820	3,710	2,460	2,240	5,470	2,930	1,650	1,070	924	892
11	868	1,390	4,500	3,220	2,330	2,260	5,340	2,840	1,600	1,060	967	877
12	882	2,300	4,150	2,800	2,310	2,510	4,640	2,790	1,570	1,050	897	870
13	1,050	2,650	3,590	2,520	2,480	2,710	4,420	2,670	1,610	1,030	865	884
14	949	2,730	3,290	2,370	2,640	3,080	4,020	2,470	1,570	1,020	853	968
15	1,160	2,450	3,020	2,240	2,580	3,530	3,760	2,280	1,480	1,010	837	965
16	2,360	2,140	3,020	2,130	2,630	3,770	3,450	2,230	1,430	1,000	842	975
17	1,370	2,170	6,240	2,020	2,630	3,850	3,210	2,160	1,390	991	832	969
18	1,050	2,820	5,140	2,050	2,500	3,310	2,990	2,040	1,380	979	823	985
19	1,120	7,220	4,170	2,130	2,390	2,970	3,770	2,240	1,400	967	816	989
20	1,680	20,000	4,760	2,190	2,260	5,650	5,380	2,030	1,430	955	809	969
21	1,570	13,000	4,490	2,230	2,180	6,670	5,090	2,050	1,410	943	805	1,010
22	1,450	7,750	3,960	2,190	2,250	5,110	4,450	2,270	1,330	943	803	1,060
23	1,390	5,510	3,640	2,200	2,460	4,170	3,960	2,450	1,370	929	832	1,220
24	1,230	7,980	3,310	2,210	2,250	3,630	3,620	2,550	1,640	921	820	1,250
25	1,270	6,710	3,350	2,560	2,390	3,210	3,450	2,490	1,650	914	829	1,490
26	1,180	5,050	3,410	3,410	2,350	2,970	3,410	2,450	1,810	902	843	1,240
27	1,510	4,040	3,320	3,190	2,220	2,840	3,570	2,650	1,700	897	811	1,130
28	4,080	3,280	2,940	3,250	2,380	2,860	3,660	3,500	1,560	896	807	2,310
29	6,990	3,070	2,660	5,180	---	2,960	3,930	3,860	1,460	890	812	5,650
30	3,750	3,740	2,460	5,520	---	3,230	3,710	4,590	1,440	886	840	9,370
31	2,640	---	2,300	6,410	---	3,730	---	3,760	---	886	809	---
Total	48,586	126,240	156,600	87,000	77,400	105,190	139,090	87,110	51,800	31,959	26,278	44,232
Mean	1,567	4,208	5,052	2,806	2,764	3,393	4,636	2,810	1,727	1,031	848	1,474
Max	6,990	20,000	15,900	6,410	5,120	6,670	8,910	4,590	3,130	1,340	967	9,370
Min	842	1,390	2,300	1,890	2,180	2,240	2,990	2,030	1,330	886	803	782
Ac-ft	96,370	250,400	310,600	172,600	153,500	208,600	275,900	172,800	102,700	63,390	52,120	87,730
Cfsm	2.34	6.27	7.53	4.18	4.12	5.06	6.91	4.19	2.57	1.54	1.26	2.20
In.	2.69	7.00	8.68	4.82	4.29	5.83	7.71	4.83	2.87	1.77	1.46	2.45

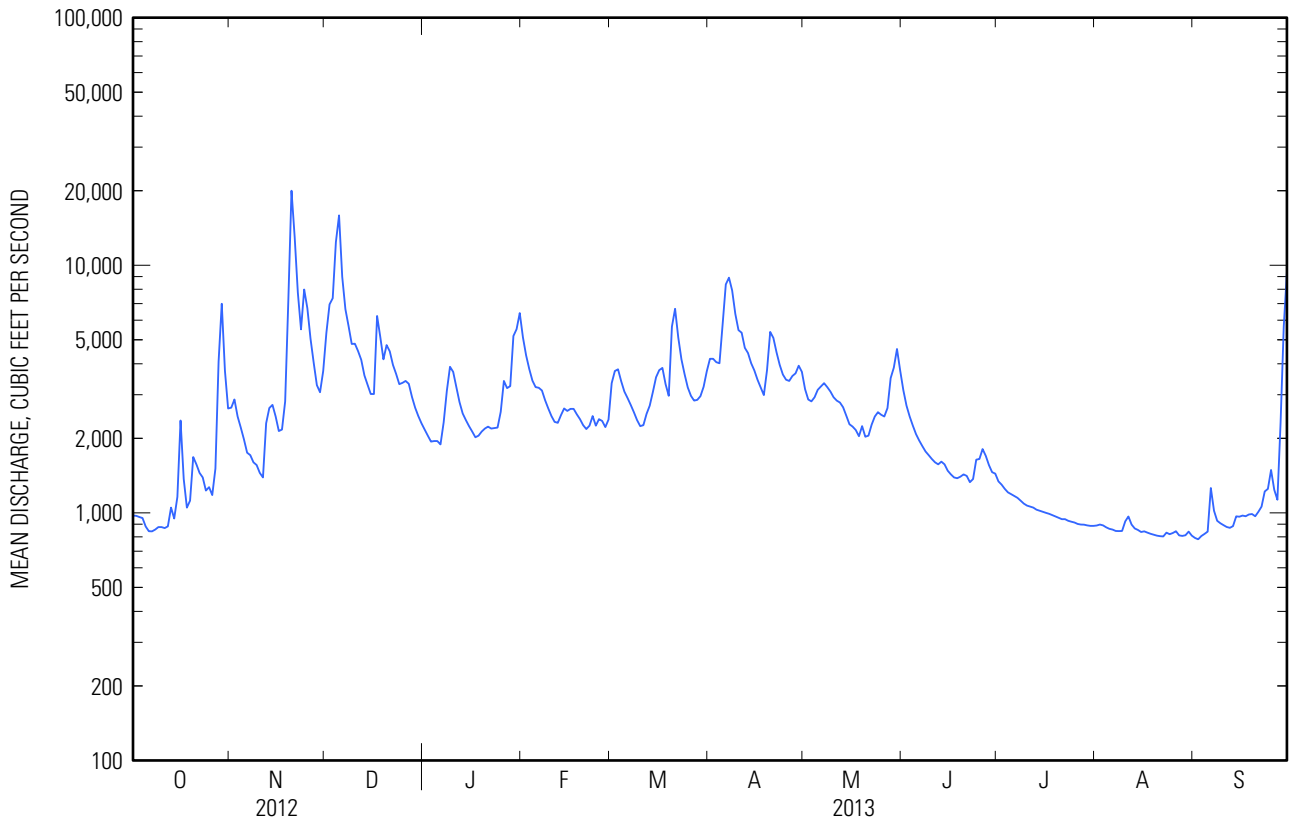
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 2013, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	1,330	3,124	4,153	4,251	3,873	3,558	3,729	3,562	2,402	1,234	911	947
Max	3,776	8,708	11,170	9,656	10,650	8,921	6,028	7,486	6,103	3,301	1,457	1,993
(WY)	(1948)	(1910)	(1965)	(1953)	(1996)	(1972)	(1943)	(1949)	(1917)	(1916)	(1916)	(1920)
Min	701	702	1,030	999	977	1,656	1,539	1,363	882	720	659	613
(WY)	(1945)	(1937)	(1977)	(1937)	(1977)	(1941)	(1941)	(1926)	(1992)	(1926)	(1992)	(1994)

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SUMMARY STATISTICS

	Calendar Year 2012		Water Year 2013		Water Years 1909 - 2013	
Annual total	1,334,615		981,485			
Annual mean	3,646		2,689		2,750	
Highest annual mean					4,407	1974
Lowest annual mean					1,454	1977
Highest daily mean	22,000	Jan 20	20,000	Nov 20	57,900	Feb 7, 1996
Lowest daily mean	823	Sep 2	782	Sep 2	285	Oct 4, 1958
Annual seven-day minimum	857	Aug 31	807	Aug 28	507	Oct 3, 1958
Annual runoff (ac-ft)	2,647,000		1,947,000		1,992,000	
Annual runoff (cfsm)	5.43		4.01		4.10	
Annual runoff (inches)	73.99		54.41		55.69	
10 percent exceeds	7,010		5,070		5,230	
50 percent exceeds	3,000		2,280		2,080	
90 percent exceeds	951		876		826	



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WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 2001 to current year.

pH: July 2001 to current year.

WATER TEMPERATURE: July 2001 to current year.

DISSOLVED OXYGEN: July 2001 to current year.

TURBIDITY: July 2001 to current year.

INSTRUMENTATION.--Water-quality monitor. Any use of trade, product, or firm names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Government.

REMARKS.--

SPECIFIC CONDUCTANCE: Records excellent.

PH: Records excellent.

WATER TEMPERATURE: Records excellent.

DISSOLVED OXYGEN: Records excellent.

TURBIDITY: Records excellent except those for Mar. 21, which are good. Data collected using a YSI 6026 turbidity sensor. Manufacturer's stated accuracy is the greater of +/- 5 percent or 2 Formazin Nephelometric Units. FNU values below 10 are reported to nearest 0.1 FNU. Negative recorded values are reported as 0.0 FNU.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 80 microsiemens Sept. 2, 2013; minimum recorded, 24 microsiemens Apr. 14, 15, 2002.

pH: Maximum recorded, 8.0 units Dec. 23, 24, 2004; minimum recorded, 6.4 units Dec. 23, 2005.

WATER TEMPERATURE: Maximum, 19.6°C Aug. 3-5, 2009; minimum, 0.8°C Dec. 10-12, 15, 2009.

DISSOLVED OXYGEN: Maximum recorded, 15.9 mg/L Dec. 3, 2007, but may have been higher during period of missing record; minimum recorded, 8.2 mg/L Aug. 14-18, 21-23, 2001.

TURBIDITY: Maximum, 278 FNU Jan. 16, 2011; minimum, <1 FNU on many days each year.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 80 microsiemens Sept. 2; minimum, 26 microsiemens Nov. 23, Mar. 23.

pH: Maximum, 7.8 units Oct. 4-11; minimum, 7.2 units on many days during year.

WATER TEMPERATURE: Maximum, 18.0°C July 25-27; minimum, 2.0°C Jan. 5, 6, 16, 17.

DISSOLVED OXYGEN: Maximum, 14.0 mg/L Mar. 21; minimum, 8.5 mg/L July 24-27.

TURBIDITY: Maximum, 86 FNU Nov. 20; minimum, 0.2 FNU Oct. 9, 12, Jan. 24, 25.

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	64	64	64	39	33	37	45	32	38	53	48	49
2	69	64	64	45	34	40	42	32	40	50	49	49
3	67	64	64	45	38	44	39	35	38	51	47	50
4	65	64	64	45	42	45	38	34	37	51	51	51
5	64	64	64	46	45	45	34	29	31	52	51	51
6	67	64	64	47	46	47	33	29	31	52	52	52
7	64	64	64	48	47	48	35	33	34	52	45	52
8	65	64	64	51	48	50	37	35	36	52	42	50
9	68	64	65	52	51	52	38	37	38	52	45	50
10	68	65	65	53	52	53	40	38	39	48	40	46
11	65	65	65	54	53	54	40	40	40	45	38	43
12	65	65	65	54	46	53	40	40	40	44	36	41
13	65	65	65	56	48	53	41	40	40	45	38	43
14	65	65	65	53	46	51	42	41	41	46	41	45
15	66	64	65	51	45	49	42	42	42	46	44	46
16	64	54	63	51	49	50	43	42	43	48	46	47
17	64	64	64	50	49	49	45	43	44	49	48	49
18	65	64	65	50	41	48	44	39	42	49	48	49
19	65	60	63	51	39	48	41	34	40	50	49	49
20	60	59	59	46	32	35	43	39	42	50	49	50
21	60	60	60	34	32	33	43	36	43	50	47	50
22	60	59	59	36	30	35	43	34	42	50	50	50
23	59	58	58	38	26	32	44	34	42	50	49	50
24	58	58	58	40	35	39	45	40	43	49	47	48
25	58	58	58	39	30	37	45	35	44	48	46	48
26	59	58	58	37	27	32	46	38	45	48	44	48
27	59	57	59	38	27	33	46	37	45	47	44	46
28	59	52	56	39	28	36	46	42	45	45	42	44
29	56	41	48	42	35	40	47	40	45	43	42	43
30	41	30	36	44	31	37	47	42	45	43	41	42
31	38	28	34	---	---	---	48	42	47	41	39	41
Month	69	28	60	56	26	44	48	29	41	53	36	47

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	39	38	39	48	33	42	43	31	37	38	36	38
2	40	39	40	49	33	41	41	29	37	38	36	38
3	41	40	41	47	30	40	39	29	35	39	37	39
4	42	41	42	44	29	37	38	30	36	40	37	39
5	43	42	43	42	28	37	38	38	38	41	39	40
6	44	43	44	42	29	39	38	32	35	42	38	41
7	45	43	45	43	31	40	32	30	31	41	38	40
8	45	42	45	44	36	43	31	31	31	40	35	38
9	45	45	45	45	42	44	34	31	32	40	38	39
10	46	45	46	45	44	45	35	34	34	40	37	40
11	46	46	46	46	39	44	37	35	36	40	38	40
12	47	46	47	46	34	44	37	37	37	41	40	41
13	48	46	47	46	36	41	37	37	37	41	41	41
14	48	45	48	47	34	42	38	37	38	42	41	41
15	48	47	48	46	32	40	39	38	38	42	41	42
16	48	45	47	45	30	38	39	39	39	43	42	43
17	47	43	46	42	29	36	40	39	40	44	43	44
18	46	44	46	40	28	35	41	40	41	44	44	44
19	46	45	46	39	29	36	42	41	42	46	44	45
20	46	46	46	41	30	39	43	42	43	45	45	45
21	47	46	47	41	33	39	42	38	39	45	45	45
22	47	46	47	36	30	34	38	37	37	46	45	45
23	48	46	47	36	26	33	38	37	37	47	45	46
24	48	46	48	38	28	33	39	38	39	46	46	46
25	48	46	48	39	29	36	40	39	40	46	43	46
26	52	41	49	41	31	36	41	40	40	46	45	45
27	48	45	47	42	34	40	41	41	41	45	45	45
28	48	33	45	43	34	40	41	41	41	45	38	44
29	---	---	---	43	32	40	41	40	40	44	37	42
30	---	---	---	43	32	38	40	38	39	41	37	40
31	---	---	---	44	32	38	---	---	---	40	35	38
Month	52	33	46	49	26	39	43	29	38	47	35	42

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**SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013**

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	38	35	37	55	55	55	66	66	66	72	71	71
2	39	38	39	55	55	55	66	66	66	80	72	72
3	41	38	40	56	55	55	68	66	66	73	68	71
4	42	41	41	57	56	56	67	66	66	69	69	69
5	43	42	43	58	57	57	68	66	66	69	69	69
6	45	43	44	59	58	58	67	66	66	73	68	69
7	46	45	45	60	59	59	68	66	66	69	68	68
8	47	46	46	60	60	60	68	66	66	69	68	68
9	49	47	48	60	60	60	67	66	66	68	67	67
10	50	49	49	61	60	60	68	66	66	68	67	67
11	51	50	50	61	61	61	67	66	67	68	68	68
12	52	51	51	61	61	61	66	66	66	68	68	68
13	52	52	52	62	61	61	67	66	66	68	68	68
14	54	52	53	63	62	62	67	66	66	68	68	68
15	53	53	53	63	62	63	67	67	67	68	68	68
16	53	53	53	63	63	63	67	67	67	68	68	68
17	54	53	53	64	63	63	68	67	68	68	68	68
18	55	54	54	64	63	64	69	68	68	69	68	68
19	54	54	54	65	64	64	69	69	69	69	69	69
20	56	54	55	65	64	64	72	69	69	69	69	69
21	56	55	56	65	64	65	70	69	69	69	69	69
22	56	56	56	66	65	65	71	69	70	71	69	69
23	56	56	56	67	65	65	71	70	70	69	69	69
24	56	56	56	67	65	65	70	70	70	69	68	69
25	56	56	56	66	66	66	71	70	71	71	68	68
26	56	55	55	66	66	66	71	71	71	68	67	68
27	55	55	55	66	66	66	76	71	71	67	66	67
28	55	54	54	66	66	66	76	71	71	66	63	64
29	55	54	54	69	66	66	71	71	71	63	51	60
30	55	54	55	66	66	66	72	71	71	51	37	45
31	---	---	---	66	66	66	75	71	72	---	---	---
Month	56	35	50	69	55	62	76	66	68	80	37	67

	Max	Min	Mean
Year	80	26	50

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

pH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	October			November			December			January		
1	7.7	7.5	7.6	7.4	7.4	7.4	7.4	7.4	7.4	7.5	7.5	7.5
2	7.7	7.5	7.6	7.4	7.4	7.4	7.4	7.3	7.4	7.5	7.5	7.5
3	7.7	7.5	7.6	7.4	7.4	7.4	7.4	7.3	7.3	7.5	7.5	7.5
4	7.8	7.5	7.7	7.4	7.4	7.4	7.4	7.3	7.3	7.5	7.5	7.5
5	7.8	7.6	7.7	7.4	7.4	7.4	7.3	7.2	7.2	7.5	7.5	7.5
6	7.8	7.6	7.7	7.4	7.4	7.4	7.3	7.2	7.3	7.5	7.5	7.5
7	7.8	7.6	7.7	7.4	7.3	7.4	7.3	7.3	7.3	7.6	7.5	7.5
8	7.8	7.6	7.7	7.3	7.3	7.3	7.4	7.3	7.3	7.6	7.5	7.5
9	7.8	7.6	7.7	7.3	7.3	7.3	7.4	7.3	7.3	7.5	7.5	7.5
10	7.8	7.6	7.7	7.4	7.3	7.3	7.4	7.3	7.4	7.5	7.5	7.5
11	7.8	7.6	7.7	7.4	7.3	7.4	7.4	7.4	7.4	7.5	7.4	7.4
12	7.7	7.6	7.7	7.4	7.3	7.4	7.4	7.3	7.4	7.5	7.4	7.4
13	7.7	7.6	7.6	7.4	7.3	7.4	7.4	7.3	7.4	7.5	7.4	7.5
14	7.7	7.6	7.6	7.4	7.3	7.3	7.4	7.4	7.4	7.5	7.5	7.5
15	7.7	7.6	7.6	7.3	7.3	7.3	7.4	7.4	7.4	7.5	7.4	7.5
16	7.7	7.6	7.6	7.3	7.3	7.3	7.4	7.4	7.4	7.5	7.5	7.5
17	7.7	7.6	7.6	7.4	7.3	7.3	7.5	7.4	7.4	7.5	7.5	7.5
18	7.7	7.6	7.6	7.4	7.3	7.3	7.4	7.4	7.4	7.5	7.5	7.5
19	7.6	7.5	7.6	7.4	7.3	7.4	7.4	7.3	7.4	7.5	7.5	7.5
20	7.6	7.5	7.6	7.4	7.2	7.2	7.4	7.4	7.4	7.5	7.5	7.5
21	7.6	7.6	7.6	7.2	7.2	7.2	7.4	7.4	7.4	7.5	7.5	7.5
22	7.6	7.6	7.6	7.3	7.2	7.2	7.4	7.4	7.4	7.5	7.5	7.5
23	7.6	7.5	7.6	7.3	7.2	7.3	7.4	7.4	7.4	7.5	7.5	7.5
24	7.6	7.5	7.6	7.3	7.3	7.3	7.4	7.4	7.4	7.5	7.5	7.5
25	7.7	7.6	7.6	7.3	7.3	7.3	7.4	7.4	7.4	7.6	7.5	7.5
26	7.6	7.6	7.6	7.3	7.3	7.3	7.5	7.4	7.4	7.5	7.5	7.5
27	7.6	7.5	7.6	7.3	7.3	7.3	7.5	7.4	7.4	7.5	7.5	7.5
28	7.6	7.6	7.6	7.3	7.3	7.3	7.5	7.4	7.4	7.5	7.5	7.5
29	7.6	7.4	7.5	7.3	7.3	7.3	7.5	7.4	7.4	7.5	7.4	7.4
30	7.4	7.3	7.4	7.4	7.3	7.3	7.5	7.4	7.4	7.4	7.4	7.4
31	7.4	7.3	7.4	---	---	---	7.5	7.5	7.5	7.4	7.4	7.4
Max	7.8	7.6	7.7	7.4	7.4	7.4	7.5	7.5	7.5	7.6	7.5	7.5
Min	7.4	7.3	7.4	7.2	7.2	7.2	7.3	7.2	7.2	7.4	7.4	7.4

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

pH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	February			March			April			May		
1	7.4	7.4	7.4	7.5	7.4	7.5	7.4	7.2	7.3	7.4	7.2	7.3
2	7.5	7.4	7.4	7.5	7.4	7.4	7.3	7.2	7.3	7.4	7.3	7.4
3	7.5	7.4	7.4	7.5	7.4	7.4	7.3	7.2	7.3	7.4	7.3	7.4
4	7.5	7.4	7.5	7.5	7.4	7.4	7.4	7.2	7.3	7.4	7.3	7.4
5	7.5	7.5	7.5	7.4	7.4	7.4	7.4	7.3	7.4	7.4	7.3	7.4
6	7.5	7.5	7.5	7.4	7.4	7.4	7.4	7.3	7.3	7.4	7.3	7.4
7	7.6	7.5	7.5	7.5	7.4	7.4	7.3	7.2	7.3	7.4	7.3	7.4
8	7.5	7.5	7.5	7.5	7.4	7.4	7.3	7.2	7.3	7.4	7.3	7.4
9	7.5	7.5	7.5	7.5	7.4	7.4	7.4	7.2	7.3	7.4	7.3	7.4
10	7.5	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.3	7.4	7.3	7.4
11	7.4	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.3	7.4	7.3	7.4
12	7.5	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.3	7.4	7.3	7.4
13	7.5	7.4	7.4	7.5	7.4	7.5	7.4	7.3	7.4	7.4	7.3	7.3
14	7.5	7.4	7.4	7.5	7.4	7.5	7.4	7.3	7.4	7.4	7.3	7.4
15	7.5	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.4	7.4	7.4	7.4
16	7.5	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.4	7.4	7.4	7.4
17	7.4	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.4
18	7.5	7.4	7.4	7.4	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.4
19	7.5	7.4	7.4	7.4	7.4	7.4	7.5	7.3	7.4	7.4	7.4	7.4
20	7.5	7.4	7.4	7.4	7.4	7.4	7.3	7.3	7.3	7.5	7.4	7.4
21	7.5	7.4	7.4	7.4	7.3	7.4	7.3	7.2	7.3	7.5	7.4	7.4
22	7.5	7.4	7.4	7.3	7.3	7.3	7.3	7.2	7.3	7.4	7.4	7.4
23	7.5	7.4	7.4	7.4	7.3	7.3	7.3	7.2	7.3	7.4	7.4	7.4
24	7.5	7.4	7.4	7.4	7.3	7.3	7.3	7.2	7.3	7.5	7.4	7.4
25	7.5	7.4	7.4	7.4	7.4	7.4	7.4	7.2	7.3	7.5	7.4	7.4
26	7.5	7.3	7.4	7.4	7.3	7.3	7.4	7.2	7.3	7.5	7.4	7.4
27	7.5	7.4	7.5	7.4	7.3	7.3	7.4	7.2	7.3	7.5	7.4	7.4
28	7.5	7.4	7.5	7.4	7.3	7.3	7.3	7.2	7.3	7.5	7.3	7.4
29	---	---	---	7.4	7.3	7.3	7.3	7.2	7.3	7.5	7.4	7.4
30	---	---	---	7.4	7.3	7.3	7.3	7.2	7.3	7.5	7.3	7.4
31	---	---	---	7.4	7.3	7.3	---	---	---	7.5	7.3	7.4
Max	7.6	7.5	7.5	7.5	7.4	7.5	7.5	7.3	7.4	7.5	7.4	7.4
Min	7.4	7.3	7.4	7.3	7.3	7.3	7.3	7.2	7.3	7.4	7.2	7.3

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

pH, WATER, UNFILTERED, FIELD, STANDARD UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	June			July			August			September		
1	7.5	7.3	7.4	7.4	7.3	7.3	7.4	7.3	7.3	7.6	7.5	7.5
2	7.5	7.3	7.4	7.4	7.3	7.3	7.4	7.3	7.3	7.6	7.5	7.6
3	7.5	7.4	7.4	7.4	7.3	7.4	7.4	7.3	7.3	7.6	7.4	7.5
4	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.3	7.4	7.5	7.4	7.4
5	7.5	7.4	7.5	7.4	7.3	7.4	7.5	7.4	7.4	7.5	7.4	7.4
6	7.5	7.5	7.5	7.4	7.3	7.3	7.5	7.4	7.4	7.5	7.4	7.4
7	7.5	7.4	7.5	7.5	7.3	7.4	7.4	7.3	7.4	7.5	7.4	7.4
8	7.4	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.5
9	7.4	7.3	7.4	7.5	7.4	7.4	7.4	7.3	7.3	7.5	7.4	7.5
10	7.4	7.3	7.4	7.5	7.4	7.4	7.4	7.3	7.3	7.5	7.4	7.5
11	7.5	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.3	7.5	7.4	7.4
12	7.5	7.4	7.4	7.5	7.4	7.4	7.3	7.3	7.3	7.5	7.4	7.4
13	7.5	7.4	7.4	7.5	7.4	7.4	7.4	7.3	7.4	7.5	7.4	7.4
14	7.5	7.4	7.5	7.5	7.4	7.4	7.6	7.3	7.5	7.5	7.4	7.4
15	7.5	7.4	7.5	7.5	7.4	7.5	7.6	7.5	7.5	7.4	7.4	7.4
16	7.5	7.4	7.4	7.5	7.4	7.5	7.6	7.5	7.5	7.4	7.3	7.4
17	7.5	7.4	7.4	7.5	7.4	7.4	7.6	7.4	7.5	7.5	7.4	7.4
18	7.5	7.3	7.4	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.4
19	7.4	7.3	7.3	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.4
20	7.4	7.3	7.3	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.4
21	7.5	7.3	7.4	7.5	7.4	7.4	7.6	7.5	7.5	7.5	7.4	7.5
22	7.5	7.4	7.4	7.5	7.4	7.4	7.6	7.4	7.5	7.5	7.4	7.4
23	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.4	7.5	7.4	7.4
24	7.4	7.3	7.4	7.5	7.4	7.4	7.6	7.4	7.5	7.5	7.4	7.4
25	7.4	7.3	7.4	7.5	7.4	7.4	7.6	7.5	7.6	7.5	7.4	7.4
26	7.4	7.3	7.4	7.5	7.4	7.4	7.6	7.5	7.6	7.5	7.4	7.4
27	7.4	7.4	7.4	7.5	7.4	7.4	7.7	7.5	7.6	7.5	7.4	7.4
28	7.4	7.4	7.4	7.5	7.4	7.5	7.7	7.6	7.6	7.4	7.4	7.4
29	7.5	7.3	7.4	7.4	7.3	7.4	7.7	7.6	7.6	7.4	7.3	7.3
30	7.4	7.3	7.4	7.4	7.3	7.4	7.6	7.5	7.6	7.3	7.2	7.3
31	---	---	---	7.5	7.3	7.4	7.6	7.5	7.6	---	---	---
Max	7.5	7.5	7.5	7.5	7.4	7.5	7.7	7.6	7.6	7.6	7.5	7.6
Min	7.4	7.3	7.3	7.4	7.3	7.3	7.3	7.3	7.3	7.3	7.2	7.3

	Max	Min	Median
Year Maximum	7.8	7.6	7.7
Year Minimum	7.2	7.2	7.2

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	12.4	12.1	12.2	9.8	9.6	9.7	6.8	6.2	6.4	4.1	3.7	3.9
2	12.5	12.3	12.4	9.8	9.5	9.6	7.1	6.8	6.9	3.7	3.1	3.4
3	12.4	12.0	12.2	9.6	9.4	9.5	7.0	6.7	6.9	3.1	2.6	2.8
4	12.0	11.5	11.8	9.5	9.4	9.4	7.3	6.7	6.9	2.6	2.4	2.5
5	11.7	11.4	11.6	9.6	9.4	9.5	7.5	6.8	7.2	2.4	2.0	2.1
6	11.4	10.9	11.1	9.7	9.6	9.6	6.8	6.4	6.6	2.1	2.0	2.0
7	10.9	10.6	10.7	9.8	9.7	9.7	6.4	6.3	6.4	3.3	2.1	2.6
8	10.7	10.3	10.4	9.7	9.6	9.7	6.4	6.3	6.3	3.8	3.3	3.5
9	10.3	10.0	10.1	9.6	9.1	9.4	6.3	6.0	6.2	4.4	3.7	3.9
10	10.3	9.9	10.1	9.1	8.4	8.8	6.0	5.8	5.9	4.6	4.4	4.5
11	10.3	10.1	10.2	8.4	8.0	8.2	6.2	5.8	6.0	4.6	4.2	4.4
12	10.2	10.1	10.1	8.0	7.5	7.8	6.2	6.0	6.1	4.2	3.8	3.9
13	10.2	10.0	10.1	7.5	7.2	7.3	6.0	5.7	5.8	3.8	3.3	3.6
14	10.3	10.1	10.2	7.6	7.4	7.6	5.8	5.4	5.6	3.3	2.7	2.9
15	10.2	10.1	10.1	7.7	7.5	7.6	5.4	5.0	5.1	2.7	2.4	2.6
16	10.3	10.0	10.2	7.8	7.6	7.7	5.0	4.8	4.9	2.4	2.0	2.1
17	10.2	10.0	10.1	7.6	7.1	7.4	4.9	4.3	4.6	2.4	2.0	2.3
18	10.4	10.1	10.2	7.2	7.0	7.0	4.7	4.4	4.6	2.4	2.3	2.4
19	10.7	10.4	10.5	7.4	7.2	7.3	4.7	4.5	4.5	2.3	2.2	2.3
20	10.6	10.1	10.3	8.2	7.4	7.9	4.5	4.5	4.5	2.5	2.2	2.3
21	10.1	10.0	10.0	7.6	7.1	7.4	4.6	4.4	4.5	2.6	2.5	2.5
22	10.0	9.5	9.8	7.1	6.5	6.9	4.8	4.6	4.7	2.5	2.4	2.5
23	9.5	9.1	9.3	6.6	6.3	6.4	4.9	4.8	4.9	2.7	2.5	2.5
24	9.1	8.9	9.0	7.2	6.5	6.7	5.0	4.9	5.0	2.9	2.7	2.7
25	8.9	8.6	8.7	7.4	7.1	7.3	5.0	4.8	4.9	3.5	2.9	3.2
26	8.6	8.4	8.5	7.1	6.4	6.7	4.8	4.6	4.6	3.9	3.5	3.6
27	8.4	8.3	8.4	6.4	5.9	6.1	4.6	4.3	4.5	4.6	3.9	4.4
28	8.3	8.0	8.1	5.9	5.7	5.7	4.5	4.2	4.3	4.6	4.6	4.6
29	9.3	8.3	8.9	5.8	5.6	5.7	4.6	4.4	4.5	4.6	4.3	4.5
30	9.8	9.3	9.5	6.2	5.8	5.9	4.6	4.5	4.6	4.8	4.3	4.4
31	9.8	9.7	9.7	---	---	---	4.5	4.1	4.2	5.2	4.8	5.0
Month	12.5	8.0	10.1	9.8	5.6	7.8	7.5	4.1	5.4	5.2	2.0	3.2

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	5.5	5.2	5.3	5.5	5.1	5.3	8.1	7.5	7.8	8.8	7.8	8.2
2	5.5	5.4	5.4	5.9	5.4	5.6	8.0	7.6	7.8	8.5	7.3	7.9
3	5.4	5.2	5.3	6.0	5.8	5.9	8.1	7.3	7.7	8.9	8.0	8.4
4	5.2	5.1	5.1	6.0	5.6	5.8	8.0	7.3	7.5	9.6	8.4	8.9
5	5.2	4.9	5.0	5.9	5.3	5.5	7.5	7.3	7.4	10.4	9.3	9.7
6	5.4	5.2	5.3	5.3	4.8	5.1	7.3	6.6	7.1	10.8	9.9	10.3
7	5.4	5.3	5.4	4.8	4.5	4.7	6.6	5.9	6.3	11.2	10.2	10.7
8	5.4	5.2	5.3	5.1	4.6	4.8	6.0	5.5	5.9	11.2	10.4	10.8
9	5.3	5.2	5.3	5.3	4.9	5.0	6.0	5.3	5.6	11.6	10.6	11.0
10	5.2	4.8	4.9	5.4	5.2	5.3	6.4	5.9	6.1	11.8	10.9	11.3
11	4.9	4.7	4.8	5.4	5.4	5.4	6.8	6.3	6.5	12.0	11.2	11.6
12	5.2	4.9	5.0	5.4	5.2	5.3	6.8	6.6	6.7	12.0	11.5	11.8
13	5.4	5.2	5.2	6.0	5.4	5.7	6.7	6.3	6.5	12.3	11.8	12.0
14	5.7	5.3	5.4	6.7	6.0	6.2	6.6	6.3	6.4	12.4	12.0	12.2
15	5.9	5.7	5.8	7.1	6.6	6.8	6.6	6.1	6.3	12.5	11.5	11.9
16	5.9	5.8	5.8	7.1	6.9	7.0	6.5	6.0	6.2	11.7	11.2	11.4
17	6.0	5.6	5.8	7.0	6.6	6.8	6.8	6.1	6.4	11.2	10.7	10.9
18	5.6	5.3	5.4	6.6	5.9	6.1	6.8	6.4	6.6	11.1	10.7	10.9
19	5.5	5.2	5.3	5.9	5.3	5.5	7.0	6.6	6.8	10.8	10.6	10.7
20	5.2	5.0	5.1	5.9	5.4	5.7	7.8	6.9	7.3	10.6	10.4	10.6
21	5.2	5.0	5.0	5.9	5.4	5.7	7.6	7.2	7.4	10.9	10.5	10.7
22	5.0	5.0	5.0	5.5	4.8	5.0	7.7	7.1	7.4	10.7	10.3	10.5
23	5.0	4.9	5.0	4.8	4.6	4.7	8.0	7.0	7.4	10.5	9.7	10.1
24	5.0	4.8	4.9	4.8	4.4	4.6	8.0	7.0	7.5	9.7	9.1	9.3
25	4.9	4.8	4.8	5.2	4.7	4.9	8.3	7.3	7.7	9.5	9.1	9.3
26	4.8	4.5	4.6	5.5	5.0	5.2	8.8	7.7	8.1	9.8	9.4	9.5
27	4.9	4.6	4.7	6.1	5.4	5.6	9.3	8.2	8.7	9.9	9.4	9.7
28	5.2	4.9	5.0	6.6	6.0	6.2	9.6	8.7	9.1	10.2	9.8	9.9
29	---	---	---	7.1	6.4	6.6	9.6	9.0	9.3	10.2	9.7	10.0
30	---	---	---	7.8	6.8	7.1	9.3	8.7	8.9	10.4	9.6	10.0
31	---	---	---	8.1	7.3	7.7	---	---	---	10.3	9.4	9.9
Month	6.0	4.5	5.2	8.1	4.4	5.7	9.6	5.3	7.2	12.5	7.3	10.3

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	10.5	9.4	9.9	15.2	14.6	14.9	17.4	17.0	17.2	16.6	16.5	16.6
2	10.7	10.0	10.4	15.8	15.1	15.4	17.0	16.7	16.8	16.7	16.6	16.6
3	11.3	10.6	10.8	16.4	15.8	16.1	16.8	16.5	16.7	16.7	16.5	16.6
4	12.0	11.3	11.5	17.1	16.4	16.7	16.9	16.7	16.8	16.7	16.5	16.6
5	12.5	12.0	12.2	17.5	17.0	17.2	16.9	16.6	16.7	16.5	16.3	16.4
6	13.0	12.5	12.8	17.4	17.1	17.3	17.1	16.8	17.0	16.3	15.8	16.0
7	13.3	13.0	13.2	17.4	17.0	17.1	17.2	17.0	17.1	15.8	15.6	15.6
8	13.9	13.3	13.6	17.1	16.8	16.9	17.4	17.1	17.3	15.7	15.5	15.6
9	14.2	13.9	14.1	17.4	17.0	17.2	17.5	17.3	17.4	15.6	15.4	15.5
10	14.5	14.1	14.3	17.6	17.3	17.5	17.6	17.4	17.5	15.8	15.5	15.6
11	14.6	14.3	14.5	17.6	17.4	17.5	17.5	17.2	17.3	16.0	15.6	15.8
12	14.4	14.1	14.3	17.5	17.2	17.4	17.2	17.0	17.1	16.1	15.9	16.0
13	14.1	13.6	14.0	17.4	17.2	17.3	17.2	17.0	17.1	16.1	15.9	16.0
14	13.7	13.4	13.6	17.5	17.2	17.3	17.3	17.0	17.2	15.9	15.8	15.9
15	13.6	13.3	13.4	17.4	17.1	17.3	17.4	17.2	17.3	16.0	15.9	16.0
16	13.8	13.4	13.6	17.4	17.2	17.3	17.4	17.2	17.3	15.9	15.7	15.8
17	14.1	13.6	13.9	17.3	17.0	17.2	17.4	17.2	17.3	15.7	15.5	15.6
18	14.5	14.1	14.3	17.3	17.0	17.1	17.5	17.2	17.4	15.5	15.2	15.3
19	14.3	14.0	14.1	17.2	17.0	17.1	17.6	17.4	17.5	15.2	14.9	15.1
20	14.3	13.9	14.1	17.3	17.1	17.2	17.7	17.4	17.6	15.1	14.8	14.9
21	14.3	14.1	14.2	17.3	16.9	17.1	17.6	17.5	17.6	14.9	14.6	14.7
22	14.2	13.9	14.0	17.5	17.3	17.4	17.6	17.4	17.5	14.6	14.1	14.4
23	14.2	14.0	14.1	17.7	17.3	17.5	17.4	17.0	17.2	14.1	13.7	13.9
24	14.0	13.7	13.8	17.8	17.6	17.7	17.0	16.7	16.8	13.7	13.4	13.6
25	13.8	13.6	13.7	18.0	17.8	17.8	16.7	16.5	16.6	13.4	12.8	13.1
26	13.6	13.2	13.4	18.0	17.8	17.9	16.5	16.2	16.3	12.8	12.6	12.7
27	13.5	13.2	13.3	18.0	17.8	17.9	16.5	16.2	16.3	12.7	12.3	12.5
28	13.8	13.4	13.6	17.9	17.7	17.8	16.6	16.4	16.5	12.3	12.0	12.2
29	14.2	13.8	14.1	17.8	17.6	17.7	16.8	16.5	16.6	12.0	11.1	11.5
30	14.7	14.1	14.4	17.7	17.5	17.6	16.5	16.3	16.4	11.1	10.2	10.7
31	---	---	---	17.7	17.4	17.5	16.6	16.4	16.5	---	---	---
Month	14.7	9.4	13.4	18.0	14.6	17.2	17.7	16.2	17.0	16.7	10.2	14.9

	Max	Min	Mean
Year	18.0	2.0	9.8

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	10.6	10.2	10.4	11.5	11.3	11.4	12.6	12.1	12.3	13.0	12.8	12.9
2	10.5	10.2	10.3	11.5	11.1	11.3	13.0	12.2	12.7	13.2	13.0	13.0
3	10.4	10.2	10.3	11.2	11.0	11.1	13.0	12.8	12.9	13.4	13.2	13.2
4	10.7	10.2	10.4	11.3	11.1	11.2	13.2	12.7	13.1	13.5	13.4	13.4
5	10.4	10.2	10.3	11.3	11.0	11.2	13.4	13.2	13.3	13.6	13.5	13.6
6	10.5	10.3	10.4	11.3	10.7	11.1	13.5	13.3	13.4	13.6	13.5	13.6
7	10.6	10.3	10.5	11.2	10.8	11.0	13.4	13.1	13.2	13.6	13.2	13.4
8	10.7	10.4	10.5	11.2	10.7	11.0	13.2	12.9	13.0	13.3	13.0	13.1
9	11.2	10.5	10.9	11.2	10.6	11.1	13.0	12.5	12.8	13.2	12.7	12.9
10	11.1	10.9	11.0	11.3	11.1	11.3	12.7	12.6	12.6	12.7	12.6	12.6
11	11.3	10.9	11.1	11.5	11.3	11.4	12.6	12.3	12.4	12.8	12.6	12.6
12	11.3	10.9	11.1	11.9	11.5	11.7	12.3	12.1	12.2	13.1	12.7	12.9
13	11.1	10.9	11.0	12.0	11.6	11.8	12.3	12.2	12.2	13.4	13.1	13.2
14	11.1	10.9	11.0	12.0	11.7	11.8	12.3	12.2	12.2	13.4	13.2	13.3
15	11.3	11.0	11.1	11.8	11.6	11.7	12.4	12.3	12.3	13.5	13.4	13.4
16	11.4	11.1	11.2	11.8	11.6	11.6	12.6	12.3	12.4	13.8	13.5	13.7
17	11.4	10.9	11.2	11.9	11.6	11.7	13.8	12.3	13.2	13.8	13.6	13.7
18	11.0	10.7	10.9	11.9	11.8	11.9	13.1	12.6	12.7	13.7	13.4	13.6
19	10.9	10.6	10.7	13.1	11.7	12.5	12.7	12.6	12.7	13.7	13.5	13.6
20	11.2	10.8	11.0	13.4	13.0	13.2	13.2	12.6	12.8	13.7	13.5	13.6
21	11.3	11.0	11.2	13.3	12.9	13.1	12.7	12.5	12.5	13.6	13.4	13.4
22	11.2	10.6	11.0	13.4	13.1	13.2	12.5	12.4	12.5	13.4	13.3	13.4
23	11.2	10.7	11.0	13.1	12.7	12.9	12.5	12.4	12.4	13.4	13.3	13.3
24	11.4	10.8	11.2	13.4	12.7	13.2	12.5	12.4	12.4	13.4	13.3	13.3
25	11.4	11.0	11.2	13.2	12.3	12.7	12.5	12.4	12.4	13.4	13.1	13.2
26	11.6	11.0	11.3	12.4	12.3	12.4	12.7	12.5	12.5	13.1	12.9	13.0
27	11.8	11.4	11.5	12.6	12.4	12.5	12.7	12.6	12.6	12.9	12.5	12.7
28	12.8	11.8	12.1	12.6	12.3	12.4	12.8	12.6	12.6	12.8	12.6	12.6
29	12.8	12.1	12.5	12.4	12.3	12.4	12.9	12.7	12.8	13.0	12.6	12.8
30	12.1	11.4	11.6	12.4	12.1	12.2	12.9	12.8	12.8	13.9	12.7	13.0
31	11.5	11.4	11.5	---	---	---	12.9	12.8	12.8	13.9	12.8	13.4
Month	12.8	10.2	11.0	13.4	10.6	11.9	13.8	12.1	12.7	13.9	12.5	13.2

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	12.8	12.5	12.6	12.9	12.6	12.8	11.9	11.7	11.8	11.9	11.5	11.7
2	12.5	12.3	12.4	12.6	12.4	12.5	11.9	11.7	11.8	12.1	11.9	12.0
3	12.6	12.4	12.5	12.4	12.3	12.3	12.0	11.8	11.9	12.0	11.6	11.8
4	12.6	12.5	12.6	12.4	12.2	12.3	11.9	11.8	11.9	11.7	11.4	11.6
5	12.6	12.5	12.5	12.5	12.2	12.3	12.9	11.8	12.2	11.4	11.1	11.2
6	12.6	12.3	12.5	12.7	12.5	12.6	13.2	12.9	13.0	11.1	10.8	10.9
7	12.5	12.3	12.3	12.8	12.7	12.7	13.4	13.2	13.2	11.0	10.9	10.9
8	12.6	12.3	12.4	12.8	12.6	12.7	13.6	13.0	13.4	10.9	10.8	10.8
9	12.7	12.5	12.5	12.7	12.4	12.5	13.4	12.7	13.1	11.0	10.8	10.8
10	12.8	12.6	12.6	12.6	12.4	12.5	12.7	12.6	12.7	11.0	10.9	10.9
11	12.8	12.7	12.7	12.6	12.4	12.5	12.6	12.2	12.4	11.0	10.7	10.8
12	12.8	12.6	12.7	12.7	12.5	12.6	12.2	12.1	12.1	10.8	10.6	10.6
13	12.7	12.4	12.5	12.7	12.5	12.6	12.3	12.0	12.2	10.6	10.4	10.5
14	12.6	12.5	12.6	12.5	12.2	12.3	12.2	12.1	12.2	10.6	10.4	10.5
15	12.6	12.4	12.4	12.3	12.1	12.2	12.4	12.2	12.3	10.8	10.4	10.5
16	12.4	12.3	12.3	12.2	12.0	12.0	12.4	12.3	12.4	10.9	10.7	10.8
17	12.4	12.3	12.3	12.2	11.9	12.0	12.4	12.3	12.3	11.0	10.9	10.9
18	12.4	12.4	12.4	12.4	12.1	12.3	12.4	12.3	12.3	11.0	10.9	10.9
19	12.4	12.3	12.3	12.4	12.3	12.4	12.3	12.1	12.2	11.1	10.9	11.0
20	12.5	12.3	12.4	13.8	12.3	12.8	12.2	11.9	12.0	11.1	11.0	11.1
21	12.5	12.3	12.4	14.0	12.6	13.3	12.0	11.8	11.9	11.1	10.9	11.0
22	12.6	12.3	12.4	12.9	12.6	12.7	12.1	11.9	12.0	11.0	10.9	10.9
23	12.6	12.5	12.5	12.9	12.7	12.8	12.1	11.9	12.0	11.1	10.8	10.9
24	12.6	12.4	12.5	12.9	12.9	12.9	12.0	11.9	12.0	11.4	11.1	11.3
25	12.6	12.5	12.5	12.9	12.7	12.7	12.0	11.8	11.9	11.4	11.2	11.3
26	12.8	12.6	12.7	12.7	12.5	12.6	11.9	11.7	11.8	11.3	11.2	11.2
27	12.9	12.6	12.7	12.7	12.5	12.6	11.7	11.6	11.6	11.3	11.2	11.2
28	12.9	12.6	12.8	12.6	12.4	12.4	11.6	11.5	11.5	11.2	11.0	11.1
29	---	---	---	12.4	12.2	12.3	11.5	11.3	11.4	11.3	11.1	11.2
30	---	---	---	12.3	11.9	12.1	11.6	11.4	11.4	11.3	11.1	11.2
31	---	---	---	12.0	11.8	11.9	---	---	---	11.5	11.3	11.4
Month	12.9	12.3	12.5	14.0	11.8	12.5	13.6	11.3	12.2	12.1	10.4	11.1

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

DISSOLVED OXYGEN, WATER, UNFILTERED, MILLIGRAMS PER LITER
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	11.6	11.3	11.4	10.0	9.7	9.9	9.0	8.6	8.8	9.2	8.8	8.9
2	11.5	11.1	11.3	9.9	9.6	9.8	9.1	8.8	8.9	9.2	8.8	8.9
3	11.2	10.9	11.0	9.8	9.4	9.7	9.2	8.9	9.0	9.1	8.8	8.9
4	11.0	10.8	10.9	9.7	9.3	9.5	9.3	8.9	9.1	9.1	8.8	8.9
5	11.1	10.8	10.9	9.4	9.1	9.3	9.3	9.0	9.1	9.1	8.8	8.9
6	10.9	10.6	10.8	9.2	8.8	9.0	9.3	8.9	9.1	9.4	8.9	9.2
7	10.7	10.4	10.6	9.2	8.8	9.0	9.1	8.8	8.9	9.5	9.2	9.3
8	10.6	10.2	10.4	9.4	9.0	9.2	9.0	8.7	8.8	9.4	9.1	9.2
9	10.3	10.0	10.2	9.3	9.0	9.1	9.0	8.6	8.8	9.4	9.1	9.3
10	10.2	9.8	10.0	9.3	8.9	9.1	9.0	8.6	8.8	9.4	9.1	9.2
11	10.1	9.8	9.9	9.2	8.8	9.0	9.0	8.7	8.8	9.3	9.0	9.1
12	10.1	9.8	9.9	9.2	8.8	9.0	9.1	8.7	8.9	9.3	9.0	9.1
13	10.2	9.9	10.0	9.2	8.8	9.0	9.2	8.9	9.0	9.3	9.0	9.1
14	10.4	10.1	10.2	9.2	8.9	9.0	9.4	9.0	9.2	9.2	9.0	9.1
15	10.5	10.2	10.4	9.2	8.9	9.1	9.3	9.0	9.1	9.2	8.9	9.0
16	10.5	10.3	10.4	9.2	8.9	9.0	9.3	8.8	9.0	9.2	8.9	9.0
17	10.4	10.1	10.3	9.2	8.9	9.0	9.1	8.8	8.9	9.3	9.0	9.1
18	10.3	10.0	10.1	9.2	8.9	9.0	9.2	8.8	8.9	9.5	9.1	9.3
19	10.1	9.9	10.0	9.1	8.7	8.9	9.2	8.8	9.0	9.4	9.2	9.3
20	10.0	9.8	9.9	9.0	8.7	8.9	9.1	8.8	8.9	9.4	9.2	9.3
21	10.2	9.9	10.0	8.9	8.6	8.8	9.1	8.7	8.9	9.5	9.2	9.3
22	10.3	10.0	10.1	9.0	8.6	8.8	9.1	8.7	8.9	9.6	9.3	9.4
23	10.2	9.8	10.1	8.9	8.6	8.7	9.0	8.7	8.8	9.8	9.5	9.6
24	10.0	9.7	9.9	9.0	8.5	8.7	9.0	8.8	8.9	9.9	9.6	9.8
25	10.0	9.7	9.8	8.9	8.5	8.7	9.2	8.8	9.0	10.2	9.9	10.1
26	10.1	9.9	10.0	8.9	8.5	8.7	9.2	8.9	9.0	10.3	10.1	10.2
27	10.1	9.9	10.0	8.9	8.5	8.7	9.2	8.9	9.1	10.2	10.0	10.1
28	10.0	9.8	9.9	8.9	8.6	8.7	9.3	8.9	9.1	10.6	10.1	10.3
29	10.0	9.6	9.8	8.9	8.6	8.7	9.3	8.9	9.0	11.7	10.4	10.8
30	10.2	9.7	10	8.9	8.6	8.7	9.2	8.9	9.1	12.3	11.6	12.0
31	---	---	---	8.9	8.6	8.7	9.2	8.8	9.0	---	---	---
Month	11.6	9.6	10.3	10.0	8.5	9.0	9.4	8.6	9.0	12.3	8.8	9.5

	Max	Min	Mean
Year	14.0	8.5	11.2

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	October			November			December			January		
1	1.7	0.4	0.8	---	---	---	7.9	1.3	2.5	2.0	1.3	1.4
2	1.8	0.4	0.8	11	2.4	6.2	9.8	3.0	5.1	1.4	1.1	1.2
3	3.1	0.4	0.7	---	---	---	14	5.3	7.3	1.9	1.1	1.3
4	1.6	0.4	0.7	---	---	---	36	5.3	9.1	1.9	1.2	1.5
5	1.3	0.4	0.7	---	---	---	58	36	49	2.0	0.9	1.1
6	0.9	0.4	0.6	---	---	---	41	14	23	1.1	0.8	0.9
7	1.2	0.4	0.6	---	---	---	16	6.9	11	1.0	0.6	0.8
8	1.4	0.3	0.5	---	---	---	7.2	5.7	6.7	2.7	0.6	0.7
9	0.9	0.2	0.5	---	---	---	5.9	3.7	4.5	2.3	0.6	0.9
10	1.2	0.3	0.5	---	---	---	3.9	2.5	3.2	4.3	2.2	2.9
11	2.9	0.3	0.5	---	---	---	2.5	1.9	2.1	4.3	3.0	3.3
12	4.2	0.2	0.6	---	---	---	2.6	1.7	1.9	8.3	2.0	2.7
13	1.6	0.5	0.8	8.5	0.9	3.9	2.2	1.7	1.8	2.0	1.0	1.4
14	2.5	0.4	0.7	11	1.4	4.8	2.9	1.5	1.6	1.4	0.8	0.9
15	1.8	0.5	0.9	---	---	---	1.6	1.1	1.4	1.4	0.8	0.8
16	3.7	1.3	2.0	---	---	---	3.6	1.2	1.3	0.9	0.5	0.7
17	2.5	0.5	1.0	---	---	---	3.0	1.3	1.8	0.7	0.5	0.6
18	1.7	0.5	0.7	7.9	1.2	2.3	11	2.3	8.2	0.8	0.4	0.5
19	1.9	0.5	1.0	33	1.2	6.0	8.4	3.8	6.0	0.8	0.4	0.5
20	2.4	1.2	1.5	86	32	64	3.9	2.4	3.0	0.8	0.4	0.5
21	2.1	1.2	1.5	57	25	35	4.9	2.1	2.3	1.4	0.4	0.5
22	2.0	1.3	1.5	27	12	18	3.5	2.3	2.7	0.8	0.4	0.5
23	2.1	1.2	1.7	18	6.4	8.7	2.6	2.0	2.2	0.6	0.4	0.5
24	2.5	1.2	1.5	12	4.7	6.7	2.5	1.9	2.1	0.7	0.2	0.4
25	3.8	1.3	1.7	19	6.6	8.6	2.2	1.7	1.9	0.9	0.2	0.4
26	3.1	1.1	1.9	9.0	4.0	5.6	2.1	1.5	1.8	0.9	0.3	0.5
27	2.9	0.8	1.9	14	2.9	4.1	2.1	1.5	1.7	1.9	0.5	0.8
28	6.8	1.3	3.0	8.0	2.2	3.1	2.7	1.6	1.9	2.3	1.2	1.4
29	22	5.4	8.8	8.9	1.7	2.3	2.5	2.1	2.3	4.2	1.8	3.0
30	17	7.9	10	9.7	1.3	2.2	2.5	2.0	2.1	15	2.9	9.7
31	---	---	---	---	---	---	2.1	1.5	1.8	12	7.2	8.5
Max	---	---	---	---	---	---	58	36	49	15	7.2	9.7
Min	---	---	---	---	---	---	1.6	1.1	1.3	0.6	0.2	0.4

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	February			March			April			May		
1	9.0	5.0	7.5	4.9	2.7	3.3	2.2	0.8	1.0	2.3	1.0	1.5
2	5.5	3.3	4.3	4.0	3.0	3.3	1.7	1.0	1.4	1.8	0.9	1.2
3	4.1	2.4	3.0	5.6	2.6	3.3	3.0	0.9	1.3	3.7	0.9	1.2
4	2.7	1.8	2.1	2.9	2.0	2.2	2.0	1.1	1.2	1.5	0.8	1.1
5	2.4	1.5	1.8	2.6	1.6	1.9	2.2	1.0	1.4	1.7	0.9	1.2
6	1.9	1.3	1.4	2.3	1.2	1.5	10	1.6	5.3	1.5	0.9	1.2
7	2.2	1.2	1.4	1.3	0.9	1.0	15	8.0	10	2.3	0.9	1.2
8	4.1	2.0	2.4	2.8	1.0	1.4	10	8.0	9.0	3.7	0.8	1.1
9	3.1	2.0	2.3	3.6	1.9	2.9	8.9	4.6	6.6	1.8	1.0	1.2
10	2.1	1.3	1.6	3.7	1.7	2.2	4.9	2.9	4.2	1.7	0.9	1.2
11	1.6	1.1	1.3	2.2	1.2	1.5	4.2	2.1	2.7	3.0	0.9	1.2
12	1.4	0.9	1.1	1.5	0.7	1.2	3.3	2.1	2.4	2.4	0.8	1.1
13	1.5	0.9	1.0	1.5	0.4	0.5	2.3	1.5	1.9	1.8	0.9	1.1
14	1.7	0.8	1.0	2.0	0.5	0.8	2.5	1.5	1.8	2.3	0.9	1.1
15	4.6	0.9	1.1	2.5	0.5	0.6	3.4	1.9	2.3	1.5	0.9	1.1
16	2.9	1.1	1.3	1.3	0.6	0.9	2.4	1.5	1.7	2.6	0.9	1.1
17	2.3	1.1	1.3	2.1	1.1	1.3	2.5	1.2	1.4	1.8	0.8	1.1
18	1.6	0.9	1.2	5.0	1.2	3.7	2.2	1.3	1.6	1.6	0.8	1.0
19	2.2	1.0	1.3	3.1	1.6	1.9	2.1	1.3	1.5	2.1	0.9	1.2
20	2.2	0.9	1.2	6.9	1.5	2.1	4.0	1.2	1.5	1.8	0.9	1.1
21	1.3	0.8	1.0	17	2.2	11	4.6	3.0	3.7	2.3	0.9	1.1
22	1.5	0.7	0.9	16	6.3	9.4	3.5	2.1	2.6	4.3	1.1	1.3
23	1.4	0.8	1.0	6.3	3.6	4.5	2.4	1.7	2.0	2.1	1.1	1.4
24	3.9	1.0	1.4	4.6	2.5	3.0	2.1	1.3	1.6	2.5	1.2	1.7
25	9.1	3.7	4.7	3.3	1.6	2.0	3.0	1.1	1.3	2.5	1.5	1.7
26	4.7	3.2	3.2	3.5	1.2	1.6	5.8	1.1	1.3	2.5	1.4	1.7
27	4.7	2.7	3.1	2.0	1.2	1.4	1.7	1.1	1.3	2.4	1.5	1.8
28	6.3	4.5	5.5	1.9	1.1	1.4	2.7	1.1	1.3	3.9	1.5	2.0
29	---	---	---	1.4	0.9	1.2	3.3	1.1	1.4	3.5	1.5	2.5
30	---	---	---	1.6	0.8	1.0	2.5	1.2	1.5	3.9	2.1	2.7
31	---	---	---	1.8	0.8	1.0	---	---	---	4.1	2.5	3.1
Max	9.1	5.0	7.5	17	6.3	11	15	8.0	10	4.3	2.5	3.1
Min	1.3	0.7	0.9	1.3	0.4	0.5	1.7	0.8	1.0	1.5	0.8	1.0

14210000 CLACKAMAS RIVER AT ESTACADA, OR—Continued

TURBIDITY, WATER, UNFILT, NEAR IR LED LIGHT, 780-900 NM, DETECT ANG. 90 DEG, FORMAZIN NEPHELOMETRIC UNITS
WATER YEAR OCTOBER 2012 TO SEPTEMBER 2013

Day	Max	Min	Median	Max	Min	Median	Max	Min	Median	Max	Min	Median
	June			July			August			September		
1	4.5	2.1	2.5	2.2	0.7	1.0	1.2	0.5	0.9	---	---	---
2	6.3	1.8	2.4	1.3	0.6	0.9	1.7	0.7	0.9	---	---	---
3	3.3	1.3	2.1	1.4	0.5	0.7	1.5	0.6	0.9	---	---	---
4	4.0	1.3	2.1	3.4	0.5	0.7	1.8	0.6	0.8	2.0	0.4	0.7
5	3.3	1.0	1.6	1.1	0.5	0.7	4.4	0.5	0.8	2.5	0.4	0.7
6	1.5	0.9	1.2	2.5	0.5	0.8	10	0.6	1.0	8.0	0.5	1.0
7	2.6	0.9	1.1	3.1	0.6	0.8	1.7	0.5	0.8	1.5	0.7	1.0
8	2.0	0.7	1.0	3.4	0.7	0.9	2.5	0.7	0.9	1.6	0.5	0.8
9	1.4	0.6	0.9	1.3	0.6	0.9	1.3	0.7	0.9	2.1	0.5	0.8
10	3.2	0.6	0.9	2.4	0.6	0.9	2.1	0.8	1.1	1.9	0.6	0.8
11	1.6	0.6	0.9	1.5	0.7	0.9	4.6	0.8	1.6	2.3	0.5	0.8
12	1.7	0.6	0.8	1.9	0.7	1.0	6.2	0.8	2.4	7.0	0.6	0.9
13	1.4	0.7	0.9	1.7	0.6	0.9	7.8	0.8	4.0	4.4	0.6	0.9
14	2.4	0.7	0.9	1.3	0.7	0.9	8.8	0.5	1.5	2.9	0.6	0.9
15	1.9	0.5	0.8	1.5	0.7	0.9	1.7	0.5	0.7	7.8	0.4	0.9
16	2.0	0.4	0.8	1.5	0.6	0.9	3.0	0.5	0.7	2.0	0.5	1.0
17	1.5	0.6	0.8	1.5	0.6	0.9	1.4	0.4	0.7	6.8	0.7	1.0
18	1.6	0.6	0.8	2.0	0.7	0.9	1.6	0.4	0.7	3.7	0.8	1.1
19	2.0	0.7	0.9	1.4	0.6	1.0	1.8	0.4	0.7	4.5	0.8	1.2
20	3.0	0.7	0.9	1.7	0.7	1.0	2.6	0.5	0.8	6.5	0.6	1.2
21	2.3	0.7	1.0	2.8	0.8	1.6	1.6	0.5	0.8	2.1	0.6	1.1
22	2.7	0.6	0.8	3.4	0.9	2.0	3.6	0.6	0.8	2.4	0.9	1.3
23	3.1	0.5	0.8	8.3	0.7	1.9	1.7	0.7	1.0	8.2	0.8	1.2
24	2.2	0.7	0.9	2.9	0.7	1.4	1.9	0.7	1.0	7.9	0.8	1.2
25	1.7	0.6	0.9	5.5	0.9	2.0	2.4	0.8	1.1	2.2	0.8	1.2
26	6.0	0.9	1.1	2.8	0.7	1.7	---	---	---	2.2	0.9	1.1
27	1.9	0.9	1.3	4.9	0.8	1.3	---	---	---	2.2	0.7	1.1
28	1.9	0.8	1.3	3.0	0.8	1.3	---	---	---	3.5	0.9	1.3
29	1.8	0.9	1.1	2.5	0.7	1.0	---	---	---	12	1.9	4.2
30	2.4	0.9	1.1	3.3	0.7	1.0	---	---	---	48	9.9	18
31	---	---	---	3.2	0.5	0.8	---	---	---	---	---	---
Max	6.3	2.1	2.5	8.3	0.9	2.0	---	---	---	---	---	---
Min	1.4	0.4	0.8	1.1	0.5	0.7	---	---	---	---	---	---