APPENDIX C2
Water Quality Data

Water Quality Data, Columbia River at Umatilla, OR (1992-2000)
Washington Department of Ecology Station No. 31A070

Date	Flow (cfs)	Temperature (C)	Conductivity (µmhos)	Dissolved Oxygen (mg/L)	Oxygen (saturation %)	pH	Suspended solids (mg/L)	Turbidity (NTU)	Fecal Coliform (colonies /100ml)	Total Persulfate Nitrogen (mg/L)	Total Phosphorus (mg/L)
10/5/1992	79,000	17.3	143	9.7	99.9	8.5	5	1.3	5	NA	0.025
11/2/1992	98,200	13.4	145	10.4	98.2	7.8	4	1.5	8	NA	0.02
12/1/1992	143,000	8.5	171	10.7	90.5	8	5	2	3	NA	0.028
1/4/1993	146,000	3	150	12.7	94.6	8.4	2	0.5	7	NA	0.022
2/1/1993	84,900	2.4	178	13.3	96	8.2	3	2	3	NA	0.023
3/1/1993	89,800	0.8	166	14.3	99.3	8.4	4	0.9	1k	NA	0.011
4/5/1993	157,000	7.4	161	12.2	101.8	8.3	5	**5.2**	6	NA	0.041
5/3/1993	196,000	10.6	151	12.3	111.8	7.8	8	**5.7**	1	NA	0.034
6/7/1993	228,000	14.4	110	11.6	113.4	7.7	7	3.4	6	NA	0.016
7/5/1993	137,200	16.6	127	9.7	99.4	8.1	9	3.4	4	NA	0.018
8/2/1993	156,700	**19.3**	119	9.7	104.4	8.4	6	2.1	12s	NA	0.019
9/6/1993	67,800	**19.8**	132	9.6	105.1	8.3	5	2.6	2x	NA	0.013
10/11/1993	83,200	16.8	161	9.5	97.8	8.3	55	2.4	17	0.269	0.026
11/7/1993	108,000	9.6	160	10.7	93.9	8.4	10	2.3	16	0.325	0.025
12/13/1993	116,000	7.2	176	11.8	99.1	8.3	15	1.6	NA	0.338	0.024
1/9/1994	114,000	5.3	183	11.8	93.5	8	5	**5.1**	4	0.447	0.035
2/14/1994	96,200	2.9	169	13.2	98	8.1	3	1.1	1k	0.384	0.018
3/14/1994	149,000	4.6	196	13.9	108.4	8.2	4	1.4	3	0.392	0.02
4/11/1994	118,000	7.4	171	12.8	106.7	8.5	6	2.7	1	0.26	0.027
5/9/1994	244,000	11.2	140	12.2	111.9	**8.6**	7	3.7	9	0.252	0.023
6/13/1994	185,000	14.3	128	11	108.7	8.3	6	2.6	6	0.119	0.010k
7/11/1994	190,000	18	128	10.1	107	8.3	8	3.4	1u	0.16	0.019
8/8/1994	82,700	**21.5**	139	**9.3**	106.2	8.3	6	3.9	2	0.17	0.012
9/12/1994	82,900	19	144	10.1	108.8	8.5	3	1.7	1	0.123	0.014
10/3/1994	70,000	**18.2**	148	10.2	108.2	**8.7**	6	2.6	15	0.148	0.019
11/20/1994	97,200	8.2	175	11.2	94.5	8.2	4	1.5	3u	0.367	0.012
12/12/1994	121,000	5.2	160	11.6	91.5	8.3	2	1.4	3x	0.295	0.027
1/2/1995	98,600	5.5	170	12.5	97.8	8.2	2	2.3	3	0.326	0.012
2/13/1995	175,800	3.4	246	12.7	96.3	7.7	10	**14**	3x	0.693	0.029
3/12/1995	137,100	4.3	164	12.7	98.6	8.1	5	**6.3**	5	0.562	0.029
4/10/1995	109,000	8.2	146	12	101.9	8.2	5	**6**	5x	0.47	0.046
5/8/1995	225,200	10.6	163	12.4	112.2	8.2	8	4.8	4	0.292	0.058
6/12/1995	297,700	15	105	11.5	113.8	8	8	5	10	0.265	0.022
7/10/1995	199,000	18.9	114	9.6	102.9	8	8	4.9	2	0.285	0.029
8/14/1995	133,000	**19.5**	153	**9.3**	100.2	8.2	7	4.8	5	0.231	0.028
9/11/1995	110,000	**20.3**	153	**9.2**	99.9	8.3	6	3.5	5	0.239	0.012
10/11/1995	136,600	16.4	163	**9.4**	96.5	7.9	8	3.2	NA	0.287	0.024
11/15/1995	172,300	10.7	183	10.8	95.8	7.7	5	4	13	0.392	0.028
12/13/1995	294,000	5.8	134	14.4	117.2	7.5	8	**9.9**	13	0.312	0.027
1/15/1996	259,500	4.1	157	13.7	106.2	8	5	**5.9**	5	0.365	0.024
2/14/1996	330,000	2.6	144	16.1	117.5	8.1	77	**120**	**130s**	1.02	0.181j
3/13/1996	308,400	4.4	143	15.4	118.6	7.1	9	**10**	6	0.376	0.031
4/17/1996	349,500	8.8	153	13.7	118.9	8.5	11	**9.6**	5	0.366	0.014
5/12/1996	247,000	10.9	144	12.9	117.5	8.5	11	**7.3**	2s	0.218	0.025
6/9/1996	476,300	14.4	116	12.8	125.5	8	14	**8.7**	15	0.19	0.022
7/17/1996	264,400	**18.7**	127	10.6	114.7	8	9	4.5	7	0.14	0.012
8/11/1996	140,400	20	128	10.2	113.2	8.2	8	**5.2**	1	0.112	0.022
9/8/1996	116,900	**18.8**	127	10	108.1	8.2	6	4.7	1u	0.209	0.023
10/16/1996	131,000	15.8	144	**9.4**	93.6	8.1	7	**6.8**	12	0.258	0.010u
11/13/1996	143,100	11	NA	10.5	96.2	8.2	4	2.5	7	0.336	0.018
12/11/1996	161,000	6.6	153	12	99.6	8.1	3	2.3	1	0.309	0.799
1/15/1997	262,000	2.5	146	15.8	115	7.8	11	**17**	32	0.553	0.051
2/12/1997	298,000	2.1	123	15.4	112.2	7.7	16	**24**	10	0.841	0.118
3/12/1997	122,200	5	188	14.1	110.3	8.2	10	**7.3**	3	0.673	0.069
4/16/1997	269,000	8.4	183	12.8	109.6	8.1	10	**11**	10	0.639	0.077
5/14/1997	481,500	12.7	129	13.4	127.1	8	16	**11**	20x	0.343	0.073
6/11/1997	560,000	15.8	110	12.7	128.6	7.8	16	**12**	21	0.147j	0.088j
7/16/1997	327,000	17.7	124	11.4	118.9	8.2	14	**6.6**	4	0.488	0.028
8/13/1997	190,500	**20.2**	128	10.2	111.3	8.3	9	4.4	1	0.213	0.028
9/17/1997	NA	17.7	146	**9**	95.5	8.1	8	4.5	7	0.272	0.043
10/14/1997	220,000	14.1	133	11.5	111.3	8.2	6	2.9	11	0.321	0.043
11/5/1997	144,800	11.5	180	9.9	90.1	7.9	18	3.3	16	0.491	0.07
12/10/1997	168,000	6.5	NA	11.2	**89.1**	7.8	4	1.5	1	0.266	0.03

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Date	Flow (cfs)	Temperature (C)	Conductivity (µmhos)	Dissolved Oxygen (mg/L)	Oxygen (saturation %)	pH	Suspended solids (mg/L)	Turbidity (NTU)	Fecal Coliform (colonies /100ml)	Total Persulfate Nitrogen (mg/L)	Total Phosphorus (mg/L)
2/11/1998	218,000	3.2	168	12.7	95.5	7.8	4	3.4	1u	0.533	0.033
3/11/1998	180,000	4.4	165	12.9	99.1	7.9	5	3.2	5	0.471	0.028
4/8/1998	170,000	7.3	169	12.1	101.5	8	44	**5.2**	3	0.439	0.031
5/12/1998	308,000	11.8	106	12.2	115.4	8.1	8	**7.4**	6	0.289	0.032
6/16/1998	236,200	15	111	11.3	113.4	8.2	8	**7.3**	2	0.252	0.046
7/15/1998	234,000	**19.1**	119	9.7	104.3	7.5	7	4.9	1u	0.191	0.026
8/12/1998	175,000	**20.9**	140	9.8	109.4	8.2	7	3.4	9j	0.17	0.016
9/8/1998	113,400	**22.4**	149	9.6	112.3	**8.6**	5	2.9	1	0.188	0.042
10/14/1998	118,200	15.1	182	9.5	94.6	7.4	4	1.7	1u	0.328	0.010u
11/3/1998	106,500	12.6	176	10.6	99.3	8.5	4	1.7	1	0.331	0.018
12/16/1998	151,000	6.5	169	11.2	**89.8**	6.6	3	1.7	2	0.414	0.022
1/13/1999	216,100	3.8	198	13.6	103.1	7.2	5	**6.6**	2	0.574	0.172
2/3/1999	203,200	2.3	121	13.9	102	7.7	4	**5.7**	3	0.424	0.035
3/17/1999	243,600	4	170	13.9	106.5	7.7	5	**5.7**	1u	0.498	0.037
4/14/1999	254,500	6.8	160	13.4	107.3	7.2	6	**8**	6	0.483	0.05
5/12/1999	273,900	9.4	134	12.7	111.2	8.3	8	**6.1**	2	0.342	0.038
6/16/1999	338,000	13.9	118	12	117.2	8.3	10	**6.1**	8	0.248	0.027
7/7/1999	210,800	14.8	112	11.1	109.8	8.2	10	**5.5**	1	0.218	0.03
8/4/1999	230,000	**18.8**	119	10.1	112.2	8	9	**5.2**	1	0.231	0.027
9/8/1999	173,100	17.1	121	10.4	108.6	8.2	7	4.4	1	0.231	0.025
10/6/1999	NA	14.3	129	9.7	95.2	7.8	5	2.6	4	0.277	0.023
11/3/1999	NA	8.5	375	10.8	92.5	**5.4**	11j	3.8	13	0.266	0.025
12/8/1999	NA	6.8	141	11.4	93.3	7.9	3	2.2	3	0.279	0.022
1/5/2000	NA	3.8	138	12.3	92.8	7.6	2	1.6	1	0.295	0.019
2/9/2000	NA	2.2	192	14.2	103.6	8.4	3	2.2	3	0.533	0.043
3/8/2000	NA	3.4	173	12.4	101.5	7.6	8	4.6	1	0.616	0.037
4/5/2000	NA	7.1	147	12.6	104.9	7.8	7	4.1	3	0.361	0.022
5/3/2000	NA	9.3	128	12.4	109.6	NA	9	**5.5**	3	0.248	0.025
6/7/2000	NA	13.6	96	10.6	103.8	7.8j	10	6.4	6	0.16	0.015
7/12/2000	NA	16.5	116	9.9	102.2	8	5	4.3	1	0.157	0.014
8/16/2000	NA	**18.5**	116	10.3	110.4	7.9	5	3	4	0.153	0.018
9/6/2000	NA	17.2	121	9.8	101.4	8	5	2.7	5	0.154	0.015
Data range for period of reco		0.8-22.4	96-375	9-16.1	89.1-128.6	5.4-8.7	2-77	0.5-120	1-32	0.112-1.02	0.011-0.799
Water Quality Standards[1]		18	NA	9.5	90%	6.5-8.5	NA	5	50	NA	NA

[1] Surface Water Standards per WAC 173-201A (1997) for Class A surface waters
[2] EPA Drinking Water Standards (1975)
cfs - cubic feet per second
umohs/cm - micromohs per centimeter
mg/L = milligrams per liter
Bold - exceeds applicable water quality standard
NA - Not Available
Source: Ecology 2002b

NTU - nephelometric turbidity units
ml - milliliters
blank - Data Not Available
u - not detected at reported limit
j - Estimated result
x - high background count
k - actual value known to be less
s - spreader