Appendix A
Land Use Categories

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File names and descriptions:

Values and class names found in the Land Cover of Illinois 1999-2000 Arc/Info GRID coverage.

Value	Class Names
0	Background
	AGRICULTURAL LAND
11	Corn
12	Soybeans
13	Winter Wheat
14	Other Small Grains & Hay
15	Winter Wheat/Soybeans
16	Other Agriculture
17	Rural Grassland
	FORESTED LAND
21	Upland
25	Partial Canopy/Savannah Upland
26	Coniferous
	URBAN & BUILT-UP LAND
31	High Density
32	Low/Medium Density
35	Urban Open Space
	WETLAND
41	Shallow Marsh/Wet Meadow
42	Deep Marsh
43	Seasonally/Temporally Flooded
44	Floodplain Forest
48	Swamp
49	Shallow Water
	OTHER
51	Surface Water
52	Barren & Exposed Land
53	Clouds
54	Cloud Shadows

Appendix B
SSURGO Soil Series

SSURGO Soil Series Code	SSURGO Soil Series Code Definition	Dominant Hydrologic Soil Group	Acres	Percent of watershed
16	Rushville silt loam	D	40.3	0.04%
46	Herrick silt loam	B	96.2	0.09%
48	Ebbert silt loam	C/D	5.7	0.01%
50	Virden silt loam	B/D	887.0	0.79%
112	Cowden silt loam	D	1428.9	1.27%
120	Huey silt loam	D	10.7	0.01%
165	Weir silt loam	D	1983.4	1.76%
218	Newberry silt loam	C	169.4	0.15%
333	Wakeland silt loam, occasionally flooded, brief duration	C	7.2	0.01%
451	Lawson silt loam, occasionally flooded, brief duration	C	2.0	0.00%
454	Iva silt loam	C	4045.3	3.59%
474	Piasa silt loam	D	19.0	0.02%
533	Urban land	-	47.5	0.04%
536	Dumps	-	10.2	0.01%
801	Orthents, silty, undulating	B	807.9	0.72%
865	Pits, gravel	-	14.5	0.01%
941	Virden-Piasa complex	B/D	6334.1	5.61%
993	Cowden-Piasa complex	D	5975.9	5.30%
995	Herrick-Piasa silt loams	B	109.5	0.10%
3070	Beaucoup silt loam, frequently flooded	B/D	1430.2	1.27%
3083	Wabash silty clay, frequently flooded	D	205.1	0.18%
3288	Petrolia silty clay loam, frequently flooded	C/D	238.9	0.21%
3333	Wakeland silt loam, frequently flooded	C	2938.8	2.61%
3334	Birds silt loam, frequently flooded	C/D	1734.5	1.54%
3603	Blackoar silt loam, frequently flooded	B/D	2078.0	1.84%
7026	Wagner silt loam, rarely flooded	D	188.2	0.17%
7084	Okaw silt loam, rarely flooded	D	6.9	0.01%
7466	Bartelso silt loam, rarely flooded	D	122.0	0.11%
7468	Lakaskia silt loam, rarely flooded	D	70.3	0.06%
8109	Racoon silt loam, occasionally flooded	C/D	300.6	0.27%
113A	Oconee silt loam, 0 to 2 percent slopes	C	2153.3	1.91%
113B	Oconee silt loam, 2 to 5 percent slopes	C	2599.1	2.30%
113B2	Oconee silt loam, 2 to 5 percent slopes, eroded	C	808.2	0.72%
119C3	Elco silty clay loam, 5 to 10 percent slopes, severely eroded	B	435.0	0.39%
119D2	Elco silt loam, 10 to 18 percent slopes, eroded	B	363.4	0.32%
119D3	Elco silty clay loam, 10 to 15 percent slopes, severely eroded	B	1027.8	0.91%
127B	Harrison silt loam, 2 to 5 percent slopes	B	975.0	0.86%
128B	Douglas silt loam, 2 to 7 percent slopes	B	226.5	0.20%
13A	Bluford silt loam, 0 to 2 percent slopes	C	87.9	0.08%
14B	Ava silt loam, 1 to 5 percent slopes	C	12.3	0.01%
2113B	Oconee-Orthents-Urban land complex, 2 to 5 percent slopes	-	455.6	0.40%
287A	Chauncey silt loam, 0 to 3 percent slopes	C	25.6	0.02%
31A	Pierron silt loam, 0 to 2 percent slopes	D	789.9	0.70%
3304A	Landes fine sandy loam, 0 to 2 percent slopes, frequent ly flood ed	B	42.9	0.04%
3333A	Wakeland silt loam, 0 to 2 percent slopes, frequently flooded	B/D	1195.5	1.06%
3334A	Birds silt loam, 0 to 2 percent slopes, frequently flooded	C/D	1031.8	0.91%
3415A	Orion silt loam, 0 to 2 percent slopes, frequently flooded	C	980.0	0.87%
3451A	Lawson silt loam, 0 to 2 percent slopes, frequently flooded	B	96.0	0.09%
438B	Aviston silt loam, 2 to 5 percent slopes	B	675.2	0.60%
438C2	Aviston silt loam, 5 to 10 percent slopes, eroded	B	217.2	0.19%
453B2	Muren silt loam, 2 to 5 percent slopes, eroded	B	4696.9	4.16%
46A	Herrick silt loam, 0 to 2 percent slopes	B	8639.8	7.66%
474A	Piasa silt loam, 0 to 2 percent slopes	D	754.9	0.67%
477B	Winfield silt loam, 2 to 5 percent slopes	C	2.9	0.00%
491B	Ruma silt loam, 2 to 5 percent slopes	B	670.5	0.59%
491C2	Ruma silt loam, 5 to 10 percent slopes, eroded	B	968.7	0.86%
491D2	Ruma silt loam, 10 to 18 percent slopes, eroded	B	404.8	0.36%
491D3	Ruma silty clay loam, 10 to 18 percent slopes, severely eroded	B	96.6	0.09%
4C2	Richview silt loam, 5 to 10 percent slopes, eroded	C	10.6	0.01%
50A	Virden silt loam, 0 to 2 percent slopes	C/D	986.0	0.87%
515B3	Bunkum silty clay loam, 2 to 5 percent slopes, severely eroded	C	60.7	0.05%
515C3	Bunkum silty clay loam, 5 to 10 percent slopes, severely eroded	C	1592.5	1.41%

SSURGO Soil Series Code	SSURGO Soil Series Code Definition	Dominant Hydrologic Soil Group	Acres	Percent of watershed
515D3	Bunkum silty clay loam, 10 to 18 percent slopes, severely eroded	C	517.2	0.46%
517A	Marine silt loam, 0 to 2 percent slopes	C	1631.1	1.45%
517B	Marine silt loam, 2 to 4 percent slopes	C	2546.0	2.26%
53D	Bloomfield fine sand, 10 to 15 percent slopes	A	7.3	0.01%
581B2	Tamalco silt loam, 1 to 5 percent slopes, eroded	D	355.5	0.32%
582B	Homen silt loam, 2 to 5 percent slopes	C	2464.5	2.18%
582C2	Homen silt loam, 5 to 10 percent slopes, eroded	C	702.9	0.62%
583B2	Pike silt loam, 2 to 5 percent slopes, eroded	B	18.6	0.02%
585F	Negley loam, 18 to 35 percent slopes	B	89.3	0.08%
5C2	Blair silt loam, 5 to 10 percent slopes, eroded	C	1141.3	1.01%
5C3	Blair silt loam, 5 to 10 percent slopes, severely eroded	C	2454.5	2.18%
5D3	Blair silt loam, 10 to 18 percent slopes, severely eroded	C	665.4	0.59%
620A	Darmstadt silt loam, 0 to 2 percent slopes	D	226.5	0.20%
620B3	Darmstadt silty clay loam, 2 to 5 percent slopes, severely eroded	D	70.8	0.06%
657A	Burksville silt loam, 0 to 2 percent slopes	D	873.9	0.77%
702F	Ruma-Hickory silt loams, 18 to 35 percent slopes	B	159.1	0.14%
703A	Pierron-Burksville silt loams, 0 to 2 percent slopes	D	239.0	0.21%
7338A	Hurst silt loam, 0 to 2 percent slopes, rarely flooded	D	103.4	0.09%
7338B2	Hurst silt loam, 2 to 5 percent slopes, eroded, rarely flooded	D	58.1	0.05%
7434B2	Ridgway silt loam, 2 to 5 percent slopes, eroded, rarely flooded	B	346.4	0.31%
801B	Orthents, silty, undulating	B	40.6	0.04%
801D	Orthents, silty, steep	C	48.3	0.04%
8432A	Geff silt loam, 0 to 2 percent slopes, occasionally flo oded	C	123.2	0.11%
878C3	Coulterville-Grantfork silty clay loams, 5 to 10 percent slopes, severely eroded	C/D	1176.0	1.04%
880B2	Coulterville-Darmstadt silt loams, 2 to 5 percent slopes, eroded	C/D	909.1	0.81%
882A	Oconee-Darmstadt-Coulterville silt loams, 0 to 2 percent slopes	C	0.3	0.00%
882B	Oconee-Darmstadt-Coulterville silt loams, 2 to 5 percent slopes	C	808.7	0.72%
885A	Virden-Fosterburg silt loams, 0 to 2 percent slopes	C/D	5325.9	4.72%
894A	Herrick-Biddle-Piasa silt loams, 0 to 2 percent slopes	C	2751.9	2.44%
8D2	Hickory loam, 10 to 15 percent slopes, eroded	C	21.6	0.02%
8D3	Hickory clay loam, 10 to 18 percent slopes, severely eroded	B	983.3	0.87%
8F	Hickory silt loam, 18 to 35 percent slopes	B	2123.9	1.88%
912A	Hoyleton-Darmstadt complex, 0 to 2 percent slopes	C	64.9	0.06%
912B2	Hoyleton-Darmstadt comples, 2 to 5 percent slopes, erod ed	C	20.6	0.02%
914C3	Atlas-Grantfork silty clay loams, 5 to 10 percent slopes, severely eroded	C/D	200.7	0.18%
914D3	Atlas-Grantfork silty clay loams, 10 to 18 percent slopes, severely eroded	C/D	108.2	0.10%
916A	Oconee-Darmstadt complex, 0 to 2 percent slopes	C	8948.0	7.93%
916B2	Oconee-Darmstadt complex, 2 to 5 percent slopes, eroded	C	5290.2	4.69%
934B2	Blair-Grantfork complex, 2 to 5 percent slopes, eroded	C	86.7	0.08%
934C2	Blair-Grantfork complex, 5 to 10 percent slopes, eroded	C	1608.5	1.43%
993A	Cowden-Piasa silt loams, 0 to 2 percent slopes	C/D	2537.7	2.25%
W	Water	-	570.8	0.51%

Appendix C
Historical Water Quality Data

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
NP-OHAA-AC-E	10/29/1991	1035	Ammonia, unionized	0.118742	mg/L	$
NP-OHAA-AC-E	10/29/1991	1035	BOD, carbonaceous	120	mg/L	
NP-OHAA-AC-E	10/29/1991	1035	COD, .025N K2CR2O7 MG/L	1540	mg/L	
NP-OHAA-AC-E	10/29/1991	1035	Nitrogen, Ammonia as N	6.1	mg/L	
NP-OHAA-AC-E	10/29/1991	1035	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.75	mg/L	
NP-OHAA-AC-E	10/29/1991	1035	Nitrogen, Total Kjeldahl	41.5	mg/L	
NP-OHAA-AC-E	10/29/1991	1035	Phosphorus, Total	34	mg/L	
NP-OHAA-AC-E	10/29/1991	1035	Temperature, Water	20	deg. C	
NP-OHA-AA-E	10/29/1991	950	BOD, carbonaceous	160	mg/L	
NP-OHA-AA-E	10/29/1991	950	BOD, carbonaceous	100	mg/L	
NP-OHA-AA-E	10/29/1991	950	Phosphorus, Total	24	mg/L	
NP-OHA-AA-E	10/29/1991	950	Temperature, Water	19	deg. C	
NP-OHAA-AH-E	10/29/1991	1340	Ammonia, unionized	0.11706	mg/L	$
NP-OHAA-AH-E	10/29/1991	1340	BOD, carbonaceous	510	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	BOD, carbonaceous	290	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	COD, .025N K2CR2O7 MG/L	1050	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	Nitrogen, Ammonia as N	87	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.15	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	Nitrogen, Total Kjeldahl	81	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	Phosphorus, Total	17	mg/L	
NP-OHAA-AH-E	10/29/1991	1340	Temperature, Water	21	deg. C	
NP-OHA-AB-E	10/29/1991	1015	BOD, carbonaceous	90	mg/L	
NP-OHA-AB-E	10/29/1991	1015	BOD, carbonaceous	60	mg/L	
NP-OHA-AB-E	10/29/1991	1015	Phosphorus, Total	23	mg/L	
NP-OHA-AB-E	10/29/1991	1015	Temperature, Water	19	deg. C	
NP-OHA-AD-E	10/29/1991	1100	BOD, carbonaceous	95	mg/L	
NP-OHA-AD-E	10/29/1991	1100	BOD, carbonaceous	43	mg/L	
NP-OHA-AD-E	10/29/1991	1100	Phosphorus, Total	28	mg/L	
NP-OHA-AD-E	10/29/1991	1100	Temperature, Water	21	deg. C	
NP-OHA-AE-E	10/29/1991	1115	BOD, carbonaceous	420	mg/L	
NP-OHA-AE-E	10/29/1991	1115	BOD, carbonaceous	330	mg/L	
NP-OHA-AE-E	10/29/1991	1115	Phosphorus, Total	23	mg/L	
NP-OHA-AE-E	10/29/1991	1115	Temperature, Water	21	deg. C	
NP-OHA-AF-E	10/29/1991	1235	BOD, carbonaceous	240	mg/L	
NP-OHA-AF-E	10/29/1991	1235	BOD, carbonaceous	150	mg/L	
NP-OHA-AF-E	10/29/1991	1235	Phosphorus, Total	48	mg/L	
NP-OHA-AF-E	10/29/1991	1235	Temperature, Water	20	deg. C	
OH-01	1/9/1990	1200	Ammonia, unionized	0.00802583	mg/L	$
OH-01	2/7/1990	1100	Ammonia, unionized	0.00312621	mg/L	$
OH-01	3/20/1990	1100	Ammonia, unionized	0.00506723	mg/L	$
OH-01	4/23/1990	1100	Ammonia, unionized	0.00654257	mg/L	$
OH-01	6/5/1990	1100	Ammonia, unionized	0.00228102	mg/L	$
OH-01	7/12/1990	1100	Ammonia, unionized	0.0046301	mg/L	$
OH-01	9/13/1990	1100	Ammonia, unionized	0.0017455	mg/L	$
OH-01	10/17/1990	1100	Ammonia, unionized	0.00659882	mg/L	$
OH-01	12/19/1990	1100	Ammonia, unionized	0.00487774	mg/L	$
OH-01	1/22/1991	1200	Ammonia, unionized	0.00124304	mg/L	$
OH-01	3/6/1991	1100	Ammonia, unionized	0.00290731	mg/L	$
OH-01	4/8/1991	1200	Ammonia, unionized	0.00286029	mg/L	$
OH-01	5/2/1991	1100	Ammonia, unionized	0.00323988	mg/L	$
OH-01	6/13/1991	1100	Ammonia, unionized	0.001283	mg/L	$
OH-01	7/25/1991	1100	Ammonia, unionized	0.00166803	mg/L	$
OH-01	9/11/1991	1100	Ammonia, unionized	0.00216953	mg/L	$
OH-01	10/9/1991	1100	Ammonia, unionized	0.00228524	mg/L	$
OH-01	11/20/1991	1100	Ammonia, unionized	0.00247095	mg/L	$
OH-01	1/7/1992	1100	Ammonia, unionized	0.00273115	mg/L	$
OH-01	2/13/1992	1100	Ammonia, unionized	0.00391733	mg/L	$
OH-01	3/24/1992	1000	Ammonia, unionized	0.00162336	mg/L	$
OH-01	4/27/1992	1100	Ammonia, unionized	0.00271198	mg/L	$
OH-01	6/2/1992	1100	Ammonia, unionized	0.00141233	mg/L	$
OH-01	7/28/1992	1100	Ammonia, unionized	0.000835428	mg/L	$
OH-01	8/25/1992	1100	Ammonia, unionized	0.00322945	mg/L	$
OH-01	10/5/1992	1100	Ammonia, unionized	0.00245708	mg/L	$
OH-01	11/19/1992	1100	Ammonia, unionized	0.000743264	mg/L	$
OH-01	12/30/1992	1100	Ammonia, unionized	0.00451694	mg/L	$
OH-01	2/4/1993	1100	Ammonia, unionized	0.00306729	mg/L	$
OH-01	4/8/1993	1000	Ammonia, unionized	0.000516234	mg/L	$
OH-01	5/17/1993	1100	Ammonia, unionized	0.00155164	mg/L	$
OH-01	6/21/1993	1100	Ammonia, unionized	0.0195459	mg/L	$
OH-01	8/11/1993	1100	Ammonia, unionized	0.00403681	mg/L	$
OH-01	9/2/1993	1100	Ammonia, unionized	0.00383489	mg/L	$

Primary Station ID	Start Date	Start Time	Parameter Long Name		Result Value	Units	Remark Code
OH-01	10/4/1993	1100	Ammonia, unionized		0.00316151	mg/L	$
OH-01	11/18/1993	1100	Ammonia, unionized		0.000303263	mg/L	$
OH-01	1/5/1994	1100	Ammonia, unionized		0.000621448	mg/L	$
OH-01	2/8/1994	1200	Ammonia, unionized		0.00907181	mg/L	$
OH-01	3/22/1994	1100	Ammonia, unionized		0.000818276	mg/L	$
OH-01	5/3/1994	1100	Ammonia, unionized		0.00159234	mg/L	$
OH-01	6/1/1994	1100	Ammonia, unionized		0.00290005	mg/L	$
OH-01	7/12/1994	1100	Ammonia, unionized		0.00193941	mg/L	$
OH-01	9/1/1994	1100	Ammonia, unionized		0.00140221	mg/L	$
OH-01	10/3/1994	1100	Ammonia, unionized		0.0258259	mg/L	$
OH-01	11/16/1994	1100	Ammonia, unionized		0.00198142	mg/L	$
OH-01	1/17/1995	1100	Ammonia, unionized		0.00104267	mg/L	$
OH-01	2/14/1995	1100	Ammonia, unionized		0.00124987	mg/L	$
OH-01	4/5/1995	1100	Ammonia, unionized		0.00132065	mg/L	$
OH-01	5/25/1995	1200	Ammonia, unionized		0.000613748	mg/L	$
OH-01	7/5/1995	1000	Ammonia, unionized		0.00190629	mg/L	$
OH-01	8/22/1995	900	Ammonia, unionized		4.55113E-05	mg/L	$
OH-01	9/26/1995	1000	Ammonia, unionized		0.00162196	mg/L	$
OH-01	11/2/1995	1100	Ammonia, unionized		0.00018495	mg/L	$
OH-01	12/5/1995	1100	Ammonia, unionized		0.000235297	mg/L	$
OH-01	1/17/1996	1100	Ammonia, unionized		0.00186283	mg/L	$
OH-01	2/13/1996	1100	Ammonia, unionized		0.000584129	mg/L	$
OH-01	4/11/1996	1200	Ammonia, unionized		7.19318E-05	mg/L	$
OH-01	5/9/1996	1200	Ammonia, unionized		0.00119959	mg/L	$
OH-01	6/26/1996	1000	Ammonia, unionized		0.00325987	mg/L	$
OH-01	7/17/1996	1600	Ammonia, unionized		0.000343367	mg/L	$
OH-01	8/21/1996	1100	Ammonia, unionized		0.000941677	mg/L	$
OH-01	10/23/1996	1100	Ammonia, unionized		0.000707984	mg/L	$
OH-01	11/21/1996	1100	Ammonia, unionized		0.000611004	mg/L	$
OH-01	1/8/1997	1100	Ammonia, unionized		7.77193E-05	mg/L	$
OH-01	2/11/1997	1100	Ammonia, unionized		0.0208492	mg/L	$
OH-01	3/26/1997	1100	Ammonia, unionized		0.00175218	mg/L	$
OH-01	5/8/1997	1100	Ammonia, unionized		0.00319909	mg/L	$
OH-01	6/18/1997	830	Ammonia, unionized		0.00826075	mg/L	$
OH-01	7/29/1997	1100	Ammonia, unionized		0.00414473	mg/L	$
OH-01	8/26/1997	1100	Ammonia, unionized		0.00825076	mg/L	$
OH-01	10/8/1997	1100	Ammonia, unionized		0.00370506	mg/L	$
OH-01	11/17/1997	1100	Ammonia, unionized		0.00182017	mg/L	$
OH-01	1/7/1998	1100	Ammonia, unionized		0.0157554	mg/L	$
OH-01	2/10/1998	1100	Ammonia, unionized		0.00832905	mg/L	$
OH-01	3/24/1998	1100	Ammonia, unionized		0.00216827	mg/L	$
OH-01	4/29/1998	1100	Ammonia, unionized		0.00452002	mg/L	$
OH-01	6/29/1998	1130	Ammonia, unionized		0.00757349	mg/L	$
OH-01	7/20/1998	1100	Ammonia, unionized		0.00098683	mg/L	$
OH-01	8/26/1998	1100	Ammonia, unionized		0.0011743	mg/L	$
OH-01	10/6/1998	1100	Ammonia, unionized		0.00253525	mg/L	$
OH-01	11/17/1998	1100	Ammonia, unionized		0.000440053	mg/L	$
OH-01	10/30/2002	9:00	BOD, carbonaceous		8	mg/L	
OH-01	10/30/2002	10:00	BOD, carbonaceous		2	mg/L	
OH-01	10/30/2002	9:50	BOD, carbonaceous		3	mg/L	
OH-01	10/30/2002	9:15	BOD, carbonaceous		6	mg/L	
OH-01	10/30/2002	9:00	BOD, carbonaceous		7	mg/L	
OH-01	10/30/2002	9:30	BOD, carbonaceous		1	mg/L	
OH-01	10/30/2002	10:00	BOD, carbonaceous		1	mg/L	
OH-01	12/12/2002	9:30	BOD, carbonaceous		3	mg/L	
OH-01	12/12/2002	9:50	BOD, carbonaceous		2	mg/L	
OH-01	12/12/2002	9:15	BOD, carbonaceous		2	mg/L	
OH-01	11/2/1995	1100	Carbon, Total Organic (TOC)		14	mg/L	
OH-01	7/17/1996	1600	Carbon, Total Organic (TOC)		6	mg/L	
OH-01	11/21/1996	1100	Carbon, Total Organic (TOC)		11.4	mg/L	
OH-01	6/6/2002		Carbon, Total Organic (TOC)		7.7	mg/L	
OH-01	7/24/2002		Carbon, Total Organic (TOC)		9	mg/L	
OH-01	8/26/2002		Carbon, Total Organic (TOC)		9.8	mg/L	
OH-01	9/20/2005	10:30	Carbon, Total Organic (TOC)		12	mg/l	
OH-01	10/24/2005	10:30	Carbon, Total Organic (TOC)		8.2	mg/l	
OH-01	1/9/1990	1200	COD, .025N K2CR2O7	MG/L	32	mg/L	
OH-01	2/7/1990	1100	COD, .025N K2CR2O7	MG/L	47	mg/L	
OH-01	3/20/1990	1100	COD, .025N K2CR2O7	MG/L	33	mg/L	
OH-01	4/23/1990	1100	COD, .025N K2CR2O7	MG/L	57	mg/L	
OH-01	6/5/1990	1100	COD, .025N K2CR2O7	MG/L	23	mg/L	
OH-01	7/12/1990	1100	COD, .025N K2CR2O7	MG/L	28	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name		Result Value	Units	Remark Code
OH-01	9/13/1990	1100	COD, .025N K2CR2O7	MG/L	33	mg/L	
OH-01	10/17/1990	1100	COD, .025N K2CR2O7	MG/L	47	mg/L	
OH-01	12/19/1990	1100	COD, .025N K2CR2O7	MG/L	56	mg/L	
OH-01	1/22/1991	1200	COD, .025N K2CR2O7	MG/L	25	mg/L	
OH-01	3/6/1991	1100	COD, .025N K2CR2O7	MG/L	28	mg/L	
OH-01	4/8/1991	1200	COD, .025N K2CR2O7	MG/L	30	mg/L	
OH-01	5/2/1991	1100	COD, .025N K2CR2O7	MG/L	23	mg/L	
OH-01	6/13/1991	1100	COD, .025N K2CR2O7	MG/L	29	mg/L	
OH-01	7/25/1991	1100	COD, .025N K2CR2O7	MG/L	28	mg/L	
OH-01	9/11/1991	1100	COD, .025N K2CR2O7	MG/L	37	mg/L	
OH-01	10/9/1991	1100	COD, .025N K2CR2O7	MG/L	34	mg/L	
OH-01	11/20/1991	1100	COD, .025N K2CR2O7	MG/L	78	mg/L	
OH-01	1/7/1992	1100	COD, .025N K2CR2O7	MG/L	24	mg/L	
OH-01	2/13/1992	1100	COD, .025N K2CR2O7	MG/L	22	mg/L	
OH-01	3/24/1992	1000	COD, .025N K2CR2O7	MG/L	40	mg/L	
OH-01	4/27/1992	1100	COD, .025N K2CR2O7	MG/L	32	mg/L	
OH-01	6/2/1992	1100	COD, .025N K2CR2O7	MG/L	29	mg/L	
OH-01	7/28/1992	1100	COD, .025N K2CR2O7	MG/L	29	mg/L	
OH-01	8/25/1992	1100	COD, .025N K2CR2O7	MG/L	30	mg/L	
OH-01	10/5/1992	1100	COD, .025N K2CR2O7	MG/L	47	mg/L	
OH-01	11/19/1992	1100	COD, .025N K2CR2O7	MG/L	40	mg/L	
OH-01	12/30/1992	1100	COD, .025N K2CR2O7	MG/L	26	mg/L	
OH-01	2/4/1993	1100	COD, .025N K2CR2O7	MG/L	18	mg/L	
OH-01	4/8/1993	1000	COD, .025N K2CR2O7	MG/L	23	mg/L	
OH-01	5/17/1993	1100	COD, .025N K2CR2O7	MG/L	32	mg/L	
OH-01	6/21/1993	1100	COD, .025N K2CR2O7	MG/L	35	mg/L	
OH-01	8/11/1993	1100	COD, .025N K2CR2O7	MG/L	25	mg/L	
OH-01	9/2/1993	1100	COD, .025N K2CR2O7	MG/L	31	mg/L	
OH-01	10/4/1993	1100	COD, .025N K2CR2O7	MG/L	29	mg/L	
OH-01	1/9/1990	1200	Dissolved Oxygen		11	mg/L	
OH-01	2/7/1990	1100	Dissolved Oxygen		10.7	mg/L	
OH-01	3/20/1990	1100	Dissolved Oxygen		12.4	mg/L	
OH-01	4/23/1990	1100	Dissolved Oxygen		6.2	mg/L	
OH-01	6/5/1990	1100	Dissolved Oxygen		6.4	mg/L	
OH-01	7/12/1990	1100	Dissolved Oxygen		2.9	mg/L	
OH-01	9/13/1990	1100	Dissolved Oxygen		3.5	mg/L	
OH-01	10/17/1990	1100	Dissolved Oxygen		4.8	mg/L	
OH-01	12/19/1990	1100	Dissolved Oxygen		7.2	mg/L	
OH-01	1/22/1991	1200	Dissolved Oxygen		11.7	mg/L	
OH-01	3/6/1991	1100	Dissolved Oxygen		10.8	mg/L	
OH-01	4/8/1991	1200	Dissolved Oxygen		7.7	mg/L	
OH-01	5/2/1991	1100	Dissolved Oxygen		7	mg/L	
OH-01	6/13/1991	1100	Dissolved Oxygen		3.2	mg/L	
OH-01	7/25/1991	1100	Dissolved Oxygen		4.1	mg/L	
OH-01	9/11/1991	1100	Dissolved Oxygen		2.1	mg/L	
OH-01	10/9/1991	1100	Dissolved Oxygen		4.3	mg/L	
OH-01	11/20/1991	1100	Dissolved Oxygen		3.6	mg/L	
OH-01	1/7/1992	1100	Dissolved Oxygen		10.5	mg/L	
OH-01	2/13/1992	1100	Dissolved Oxygen		15	mg/L	
OH-01	3/24/1992	1000	Dissolved Oxygen		10.7	mg/L	
OH-01	4/27/1992	1100	Dissolved Oxygen		9	mg/L	
OH-01	6/2/1992	1100	Dissolved Oxygen		4	mg/L	
OH-01	7/28/1992	1100	Dissolved Oxygen		2.7	mg/L	
OH-01	8/25/1992	1100	Dissolved Oxygen		4.3	mg/L	
OH-01	10/5/1992	1100	Dissolved Oxygen		4	mg/L	
OH-01	11/19/1992	1100	Dissolved Oxygen		8.3	mg/L	
OH-01	12/30/1992	1100	Dissolved Oxygen		10.1	mg/L	
OH-01	2/4/1993	1100	Dissolved Oxygen		11.5	mg/L	
OH-01	4/8/1993	1000	Dissolved Oxygen		9.6	mg/L	
OH-01	5/17/1993	1100	Dissolved Oxygen		5.9	mg/L	
OH-01	6/21/1993	1100	Dissolved Oxygen		4.4	mg/L	
OH-01	8/11/1993	1100	Dissolved Oxygen		3.9	mg/L	
OH-01	9/2/1993	1100	Dissolved Oxygen		3.6	mg/L	
OH-01	10/4/1993	1100	Dissolved Oxygen		7.4	mg/L	
OH-01	11/18/1993	1100	Dissolved Oxygen		8.3	mg/L	
OH-01	1/5/1994	1100	Dissolved Oxygen		12.8	mg/L	
OH-01	2/8/1994	1200	Dissolved Oxygen		13.8	mg/L	
OH-01	3/22/1994	1100	Dissolved Oxygen		14.5	mg/L	
OH-01	5/3/1994	1100	Dissolved Oxygen		9.5	mg/L	
OH-01	6/1/1994	1100	Dissolved Oxygen		4.2	mg/L	
OH-01	7/12/1994	1100	Dissolved Oxygen		4.8	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	9/1/1994	1100	Dissolved Oxygen	4	mg/L	
OH-01	10/3/1994	1100	Dissolved Oxygen	3.3	mg/L	
OH-01	11/16/1994	1100	Dissolved Oxygen	4.6	mg/L	
OH-01	1/17/1995	1100	Dissolved Oxygen	11.7	mg/L	
OH-01	2/14/1995	1100	Dissolved Oxygen	12.6	mg/L	
OH-01	4/5/1995	1100	Dissolved Oxygen	10.7	mg/L	
OH-01	5/25/1995	1200	Dissolved Oxygen	6.1	mg/L	
OH-01	7/5/1995	1000	Dissolved Oxygen	5	mg/L	
OH-01	8/22/1995	900	Dissolved Oxygen	3.2	mg/L	
OH-01	9/26/1995	1000	Dissolved Oxygen	8	mg/L	
OH-01	11/2/1995	1100	Dissolved Oxygen	2.1	mg/L	
OH-01	12/5/1995	1100	Dissolved Oxygen	5.1	mg/L	
OH-01	1/17/1996	1100	Dissolved Oxygen	11.7	mg/L	
OH-01	2/13/1996	1100	Dissolved Oxygen	12.9	mg/L	
OH-01	4/11/1996	1200	Dissolved Oxygen	11.9	mg/L	
OH-01	5/9/1996	1200	Dissolved Oxygen	5.8	mg/L	
OH-01	6/26/1996	1000	Dissolved Oxygen	4.1	mg/L	
OH-01	7/17/1996	1600	Dissolved Oxygen	5.2	mg/L	
OH-01	8/21/1996	1100	Dissolved Oxygen	4.1	mg/L	
OH-01	10/23/1996	1100	Dissolved Oxygen	4.8	mg/L	
OH-01	11/21/1996	1100	Dissolved Oxygen	6.5	mg/L	
OH-01	1/8/1997	1100	Dissolved Oxygen	11.1	mg/L	
OH-01	2/11/1997	1100	Dissolved Oxygen	11.6	mg/L	
OH-01	3/26/1997	1100	Dissolved Oxygen	8.7	mg/L	
OH-01	5/8/1997	1100	Dissolved Oxygen	5.6	mg/L	
OH-01	6/18/1997	830	Dissolved Oxygen	3.8	mg/L	
OH-01	7/29/1997	1100	Dissolved Oxygen	2.5	mg/L	
OH-01	8/26/1997	1100	Dissolved Oxygen	7.2	mg/L	
OH-01	10/8/1997	1100	Dissolved Oxygen	2.4	mg/L	
OH-01	11/17/1997	1100	Dissolved Oxygen	4.8	mg/L	
OH-01	1/7/1998	1100	Dissolved Oxygen	4.9	mg/L	
OH-01	2/10/1998	1100	Dissolved Oxygen	11	mg/L	
OH-01	3/24/1998	1100	Dissolved Oxygen	9.3	mg/L	
OH-01	4/29/1998	1100	Dissolved Oxygen	7.4	mg/L	
OH-01	6/29/1998	1130	Dissolved Oxygen	4.4	mg/L	
OH-01	7/20/1998	1100	Dissolved Oxygen	4.1	mg/L	
OH-01	8/26/1998	1100	Dissolved Oxygen	4.4	mg/L	
OH-01	10/6/1998	1100	Dissolved Oxygen	4	mg/L	
OH-01	11/17/1998	1100	Dissolved Oxygen	6.8	mg/L	
OH-01	1/21/1999		Dissolved Oxygen	9.8	mg/L	
OH-01	2/10/1999		Dissolved Oxygen	9.2	mg/L	
OH-01	3/24/1999		Dissolved Oxygen	8.5	mg/L	
OH-01	4/28/1999		Dissolved Oxygen	6.7	mg/L	
OH-01	6/1/1999		Dissolved Oxygen	4.3	mg/L	
OH-01	8/3/1999		Dissolved Oxygen	4.3	mg/L	
OH-01	8/26/1999		Dissolved Oxygen	4.7	mg/L	
OH-01	10/7/1999		Dissolved Oxygen	5.6	mg/L	
OH-01	12/1/1999		Dissolved Oxygen	4.9	mg/L	
OH-01	1/6/2000		Dissolved Oxygen	9.6	mg/L	
OH-01	2/8/2000		Dissolved Oxygen	16	mg/L	
OH-01	4/27/2000		Dissolved Oxygen	5.6	mg/L	
OH-01	6/5/2000		Dissolved Oxygen	4.6	mg/L	
OH-01	7/31/2000		Dissolved Oxygen	4.9	mg/L	
OH-01	9/20/2000		Dissolved Oxygen	4.4	mg/L	
OH-01	10/18/2000		Dissolved Oxygen	6.9	mg/L	
OH-01	11/13/2000		Dissolved Oxygen	9.1	mg/L	
OH-01	1/10/2001		Dissolved Oxygen	8.6	mg/L	
OH-01	3/5/2001		Dissolved Oxygen	10.6	mg/L	
OH-01	4/5/2001		Dissolved Oxygen	8.1	mg/L	
OH-01	5/8/2001		Dissolved Oxygen	4.4	mg/L	
OH-01	7/10/2001		Dissolved Oxygen	3.1	mg/L	
OH-01	8/9/2001		Dissolved Oxygen	2.7	mg/L	
OH-01	9/26/2001		Dissolved Oxygen	5.6	mg/L	
OH-01	11/6/2001		Dissolved Oxygen	2.8	mg/L	
OH-01	12/10/2001		Dissolved Oxygen	9	mg/L	
OH-01	1/30/2002		Dissolved Oxygen	10	mg/L	
OH-01	3/5/2002		Dissolved Oxygen	11.5	mg/L	
OH-01	4/2/2002		Dissolved Oxygen	7.8	mg/L	
OH-01	5/9/2002		Dissolved Oxygen	4.9	mg/L	
OH-01	6/6/2002		Dissolved Oxygen	3.8	mg/L	
OH-01	7/24/2002		Dissolved Oxygen	3.7	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	8/26/2002		Dissolved Oxygen	4.2	mg/L	
OH-01	10/30/2002	10:00	Dissolved Oxygen	3.1	mg/L	
OH-01	12/12/2002	9:00	Dissolved Oxygen	7.5	mg/L	
OH-01	12/12/2002	11:00	Dissolved Oxygen	8.9	mg/L	
OH-01	12/12/2002	9:00	Dissolved Oxygen	0.9	mg/L	
OH-01	12/12/2002	9:30	Dissolved Oxygen	5.5	mg/L	
OH-01	12/12/2002	9:50	Dissolved Oxygen	4	mg/L	
OH-01	1/15/2003	9:00	Dissolved Oxygen	13.2	mg/l	
OH-01	3/12/2003	8:30	Dissolved Oxygen	10.2	mg/l	
OH-01	4/16/2003	11:00	Dissolved Oxygen	6.5	mg/l	
OH-01	5/14/2003	12:30	Dissolved Oxygen	5.88	mg/l	
OH-01	6/18/2003	9:30	Dissolved Oxygen	4.8	mg/l	
OH-01	7/30/2003	13:45	Dissolved Oxygen	4.98	mg/l	
OH-01	9/10/2003	13:30	Dissolved Oxygen	5.77	mg/l	
OH-01	10/22/2003	9:45	Dissolved Oxygen	3.25	mg/l	
OH-01	11/19/2003	13:00	Dissolved Oxygen	5.3	mg/l	
OH-01	1/7/2004	10:45	Dissolved Oxygen	11.1	mg/l	
OH-01	2/25/2004	10:30	Dissolved Oxygen	10.6	mg/l	
OH-01	3/24/2004	11:45	Dissolved Oxygen	14.7	mg/l	
OH-01	5/5/2004	12:30	Dissolved Oxygen	7.2	mg/l	
OH-01	6/9/2004	11:45	Dissolved Oxygen	2.5	mg/l	
OH-01	7/21/2004	10:45	Dissolved Oxygen	2.3	mg/l	
OH-01	9/1/2004	11:15	Dissolved Oxygen	4.9	mg/l	
OH-01	11/9/2004	7:30	Dissolved Oxygen	7.7	mg/l	
OH-01	12/20/2004	13:30	Dissolved Oxygen	11.4	mg/l	
OH-01	1/6/2005	12:30	Dissolved Oxygen	10.9	mg/l	
OH-01	3/3/2005	13:30	Dissolved Oxygen	15.1	mg/l	
OH-01	4/5/2005	14:30	Dissolved Oxygen	9.9	mg/l	
OH-01	5/17/2005	9:30	Dissolved Oxygen	4.2	mg/l	
OH-01	6/14/2005	9:00	Dissolved Oxygen	3.5	mg/l	
OH-01	8/4/2005	12:30	Dissolved Oxygen	2.8	mg/l	
OH-01	9/20/2005	10:30	Dissolved Oxygen	4.1	mg/l	
OH-01	10/24/2005	10:30	Dissolved Oxygen	5.8	mg/l	
OH-01	11/14/2005	10:30	Dissolved Oxygen	3	mg/l	
OH-01	1/9/1990	1200	Fecal Coliform Bacterial	30	count/100ml	B
OH-01	2/7/1990	1100	Fecal Coliform Bacterial	5100	count/100ml	
OH-01	3/20/1990	1100	Fecal Coliform Bacterial	60	count/100ml	B
OH-01	4/23/1990	1100	Fecal Coliform Bacterial	270	count/100ml	
OH-01	6/5/1990	1100	Fecal Coliform Bacterial	450	count/100ml	
OH-01	7/12/1990	1100	Fecal Coliform Bacterial	1400	count/100ml	B
OH-01	9/13/1990	1100	Fecal Coliform Bacterial	10	count/100ml	K
OH-01	10/17/1990	1100	Fecal Coliform Bacterial	950	count/100ml	B
OH-01	12/19/1990	1100	Fecal Coliform Bacterial	1500	count/100ml	B
OH-01	1/22/1991	1200	Fecal Coliform Bacterial	20	count/100ml	B
OH-01	3/6/1991	1100	Fecal Coliform Bacterial	500	count/100ml	
OH-01	4/8/1991	1200	Fecal Coliform Bacterial	540	count/100ml	
OH-01	5/2/1991	1100	Fecal Coliform Bacterial	320	count/100ml	
OH-01	6/13/1991	1100	Fecal Coliform Bacterial	450	count/100ml	
OH-01	7/25/1991	1100	Fecal Coliform Bacterial	30	count/100ml	B
OH-01	9/11/1991	1100	Fecal Coliform Bacterial	300	count/100ml	B
OH-01	10/9/1991	1100	Fecal Coliform Bacterial	780	count/100ml	
OH-01	11/20/1991	1100	Fecal Coliform Bacterial	120000	count/100ml	B
OH-01	1/7/1992	1100	Fecal Coliform Bacterial	180	count/100ml	B
OH-01	2/13/1992	1100	Fecal Coliform Bacterial	64	count/100ml	
OH-01	3/24/1992	1000	Fecal Coliform Bacterial	10	count/100ml	K
OH-01	4/27/1992	1100	Fecal Coliform Bacterial	440	count/100ml	
OH-01	6/2/1992	1100	Fecal Coliform Bacterial	1200	count/100ml	B
OH-01	7/28/1992	1100	Fecal Coliform Bacterial	2300	count/100ml	
OH-01	8/25/1992	1100	Fecal Coliform Bacterial	300	count/100ml	B
OH-01	10/5/1992	1100	Fecal Coliform Bacterial	10	count/100ml	K
OH-01	11/19/1992	1100	Fecal Coliform Bacterial	10	count/100ml	K
OH-01	12/30/1992	1100	Fecal Coliform Bacterial	460	count/100ml	
OH-01	2/4/1993	1100	Fecal Coliform Bacterial	130	count/100ml	
OH-01	4/8/1993	1000	Fecal Coliform Bacterial	36	count/100ml	B
OH-01	5/17/1993	1100	Fecal Coliform Bacterial	640	count/100ml	
OH-01	8/11/1993	1100	Fecal Coliform Bacterial	1000	count/100ml	
OH-01	10/4/1993	1100	Fecal Coliform Bacterial	260	count/100ml	
OH-01	1/5/1994	1100	Fecal Coliform Bacterial	135	count/100ml	
OH-01	2/8/1994	1200	Fecal Coliform Bacterial	90	count/100ml	B
OH-01	3/22/1994	1100	Fecal Coliform Bacterial	40	count/100ml	B
OH-01	6/1/1994	1100	Fecal Coliform Bacterial	394	count/100ml	B

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OH-01	7/12/1994	1100	Fecal Coliform Bacterial	660	count/100ml	B
OH-01	9/1/1994	1100	Fecal Coliform Bacterial	960	count/100ml	B
OH-01	10/3/1994	1100	Fecal Coliform Bacterial	340	count/100ml	
OH-01	11/16/1994	1100	Fecal Coliform Bacterial	4400	count/100ml	
OH-01	1/17/1995	1100	Fecal Coliform Bacterial	1680	count/100ml	B
OH-01	2/14/1995	1100	Fecal Coliform Bacterial	18	count/100ml	B
OH-01	4/5/1995	1100	Fecal Coliform Bacterial	480	count/100ml	B
OH-01	5/25/1995	1200	Fecal Coliform Bacterial	31700	count/100ml	B
OH-01	7/5/1995	1000	Fecal Coliform Bacterial	1800	count/100ml	B
OH-01	8/22/1995	900	Fecal Coliform Bacterial	600	count/100ml	
OH-01	9/26/1995	1000	Fecal Coliform Bacterial	360	count/100ml	
OH-01	11/2/1995	1100	Fecal Coliform Bacterial	70	count/100ml	B
OH-01	12/5/1995	1100	Fecal Coliform Bacterial	153	count/100ml	B
OH-01	1/17/1996	1100	Fecal Coliform Bacterial	2010	count/100ml	B
OH-01	2/13/1996	1100	Fecal Coliform Bacterial	44	count/100ml	
OH-01	4/11/1996	1200	Fecal Coliform Bacterial	137	count/100ml	B
OH-01	5/9/1996	1200	Fecal Coliform Bacterial	9600	count/100ml	
OH-01	6/26/1996	1000	Fecal Coliform Bacterial	1140	count/100ml	B
OH-01	7/17/1996	1600	Fecal Coliform Bacterial	1700	count/100ml	B
OH-01	8/21/1996	1100	Fecal Coliform Bacterial	600	count/100ml	
OH-01	10/23/1996	1100	Fecal Coliform Bacterial	150	count/100ml	B
OH-01	11/21/1996	1100	Fecal Coliform Bacterial	157	count/100ml	B
OH-01	1/8/1997	1100	Fecal Coliform Bacterial	110	count/100ml	
OH-01	2/11/1997	1100	Fecal Coliform Bacterial	68	count/100ml	
OH-01	3/26/1997	1100	Fecal Coliform Bacterial	870	count/100ml	B
OH-01	5/8/1997	1100	Fecal Coliform Bacterial	570	count/100ml	
OH-01	6/18/1997	830	Fecal Coliform Bacterial	3000	count/100ml	
OH-01	7/29/1997	1100	Fecal Coliform Bacterial	840	count/100ml	B
OH-01	8/26/1997	1100	Fecal Coliform Bacterial	860	count/100ml	B
OH-01	10/8/1997	1100	Fecal Coliform Bacterial	300	count/100ml	
OH-01	11/17/1997	1100	Fecal Coliform Bacterial	20	count/100ml	B
OH-01	1/7/1998	1100	Fecal Coliform Bacterial	4000	count/100ml	
OH-01	2/10/1998	1100	Fecal Coliform Bacterial	18	count/100ml	B
OH-01	3/24/1998	1100	Fecal Coliform Bacterial	460	count/100ml	
OH-01	4/29/1998	1100	Fecal Coliform Bacterial	20000	count/100ml	B
OH-01	6/29/1998	1130	Fecal Coliform Bacterial	300	count/100ml	B
OH-01	7/20/1998	1100	Fecal Coliform Bacterial	360	count/100ml	
OH-01	8/26/1998	1100	Fecal Coliform Bacterial	470	count/100ml	
OH-01	10/6/1998	1100	Fecal Coliform Bacterial	1600	count/100ml	B
OH-01	11/17/1998	1100	Fecal Coliform Bacterial	190	count/100ml	
OH-01	1/6/2000	11:00	Fecal Coliform Bacterial	3810	count/100ml	B
OH-01	2/8/2000	10:00	Fecal Coliform Bacterial	20	count/100ml	B
OH-01	3/20/2000	11:00	Fecal Coliform Bacterial	23500	count/100ml	B
OH-01	4/27/2000	11:00	Fecal Coliform Bacterial	580	count/100ml	
OH-01	6/5/2000	11:00	Fecal Coliform Bacterial	2000	count/100ml	
OH-01	7/31/2000	10:00	Fecal Coliform Bacterial	7700	count/100ml	B
OH-01	9/20/2000	11:00	Fecal Coliform Bacterial	510	count/100ml	
OH-01	10/18/2000	10:00	Fecal Coliform Bacterial	2500	count/100ml	
OH-01	11/13/2000	11:00	Fecal Coliform Bacterial	10400	count/100ml	
OH-01	1/10/2001	11:00	Fecal Coliform Bacterial	25	count/100ml	B
OH-01	3/5/2001	9:00	Fecal Coliform Bacterial	14	count/100ml	B
OH-01	4/5/2001	11:00	Fecal Coliform Bacterial	525	count/100ml	B
OH-01	5/8/2001	11:00	Fecal Coliform Bacterial	1073	count/100ml	B
OH-01	7/10/2001	11:00	Fecal Coliform Bacterial	500	count/100ml	
OH-01	8/9/2001	11:00	Fecal Coliform Bacterial	220	count/100ml	
OH-01	9/26/2001	11:00	Fecal Coliform Bacterial	970	count/100ml	B
OH-01	11/6/2001	11:00	Fecal Coliform Bacterial	230	count/100ml	
OH-01	12/10/2001	11:00	Fecal Coliform Bacterial	230	count/100ml	
OH-01	1/30/2002	10:00	Fecal Coliform Bacterial	62	count/100ml	B
OH-01	3/5/2002	11:00	Fecal Coliform Bacterial	1280	count/100ml	B
OH-01	4/2/2002	11:00	Fecal Coliform Bacterial	40	count/100ml	B
OH-01	5/9/2002	11:00	Fecal Coliform Bacterial	2100	count/100ml	
OH-01	6/6/2002	9:00	Fecal Coliform Bacterial	460	count/100ml	
OH-01	7/24/2002	12:00	Fecal Coliform Bacterial	5600	count/100ml	
OH-01	8/26/2002	11:00	Fecal Coliform Bacterial	580	count/100ml	
OH-01	10/30/2002	9:00	Fecal Coliform Bacterial	28000	count/100ml	
OH-01	12/12/2002	11:00	Fecal Coliform Bacterial	6	count/100ml	B
OH-01	1/15/2003	9:00	Fecal Coliform Bacterial	36	count/100ml	B
OH-01	3/12/2003	8:30	Fecal Coliform Bacterial	2100	count/100ml	
OH-01	4/16/2003	11:00	Fecal Coliform Bacterial	320	count/100ml	
OH-01	10/22/2003	9:45	Fecal Coliform Bacterial	440	count/100ml	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	11/19/2003	13:00	Fecal Coliform Bacterial	11000	count/100ml	B
OH-01	1/7/2004	10:45	Fecal Coliform Bacterial	5300	count/100ml	
OH-01	2/25/2004	10:30	Fecal Coliform Bacterial	15	count/100ml	B
OH-01	3/24/2004	11:45	Fecal Coliform Bacterial	48	count/100ml	
OH-01	5/5/2004	12:30	Fecal Coliform Bacterial	1500	count/100ml	B
OH-01	6/9/2004	11:45	Fecal Coliform Bacterial	77000	count/100ml	B
OH-01	7/21/2004	10:45	Fecal Coliform Bacterial	390	count/100ml	
OH-01	9/1/2004	11:15	Fecal Coliform Bacterial	900	count/100ml	
OH-01	11/9/2004	7:30	Fecal Coliform Bacterial	380	count/100ml	
OH-01	12/20/2004	13:30	Fecal Coliform Bacterial	31	count/100ml	B
OH-01	1/6/2005	12:30	Fecal Coliform Bacterial	9000	count/100ml	B
OH-01	5/17/2005	9:30	Fecal Coliform Bacterial		count/100ml	
OH-01	6/14/2005	9:00	Fecal Coliform Bacterial	20000	count/100ml	L
OH-01	8/4/2005	12:30	Fecal Coliform Bacterial	440	count/100ml	
OH-01	9/20/2005	10:30	Fecal Coliform Bacterial	10000	count/100ml	
OH-01	10/24/2005	10:30	Fecal Coliform Bacterial	400	count/100ml	
OH-01	1/9/1990	1200	Nitrogen, Ammonia as N	1.5	mg/L	
OH-01	2/7/1990	1100	Nitrogen, Ammonia as N	0.67	mg/L	
OH-01	3/20/1990	1100	Nitrogen, Ammonia as N	0.1	mg/L	
OH-01	4/23/1990	1100	Nitrogen, Ammonia as N	0.38	mg/L	
OH-01	6/5/1990	1100	Nitrogen, Ammonia as N	0.24	mg/L	
OH-01	7/12/1990	1100	Nitrogen, Ammonia as N	0.22	mg/L	
OH-01	9/13/1990	1100	Nitrogen, Ammonia as N	0.19	mg/L	
OH-01	10/17/1990	1100	Nitrogen, Ammonia as N	0.94	mg/L	
OH-01	12/19/1990	1100	Nitrogen, Ammonia as N	0.62	mg/L	
OH-01	1/22/1991	1200	Nitrogen, Ammonia as N	0.38	mg/L	
OH-01	3/6/1991	1100	Nitrogen, Ammonia as N	0.32	mg/L	
OH-01	4/8/1991	1200	Nitrogen, Ammonia as N	0.08	mg/L	
OH-01	5/2/1991	1100	Nitrogen, Ammonia as N	0.21	mg/L	
OH-01	6/13/1991	1100	Nitrogen, Ammonia as N	0.19	mg/L	
OH-01	7/25/1991	1100	Nitrogen, Ammonia as N	0.13	mg/L	
OH-01	9/11/1991	1100	Nitrogen, Ammonia as N	0.24	mg/L	
OH-01	10/9/1991	1100	Nitrogen, Ammonia as N	0.29	mg/L	
OH-01	11/20/1991	1100	Nitrogen, Ammonia as N	0.6	mg/L	
OH-01	1/7/1992	1100	Nitrogen, Ammonia as N	0.29	mg/L	
OH-01	2/13/1992	1100	Nitrogen, Ammonia as N	0.13	mg/L	
OH-01	3/24/1992	1000	Nitrogen, Ammonia as N	0.28	mg/L	
OH-01	4/27/1992	1100	Nitrogen, Ammonia as N	0.27	mg/L	
OH-01	6/2/1992	1100	Nitrogen, Ammonia as N	0.21	mg/L	
OH-01	7/28/1992	1100	Nitrogen, Ammonia as N	0.16	mg/L	
OH-01	8/25/1992	1100	Nitrogen, Ammonia as N	0.16	mg/L	
OH-01	10/5/1992	1100	Nitrogen, Ammonia as N	0.44	mg/L	
OH-01	11/19/1992	1100	Nitrogen, Ammonia as N	0.18	mg/L	
OH-01	12/30/1992	1100	Nitrogen, Ammonia as N	0.9	mg/L	
OH-01	2/4/1993	1100	Nitrogen, Ammonia as N	0.47	mg/L	
OH-01	4/8/1993	1000	Nitrogen, Ammonia as N	0.04	mg/L	
OH-01	5/17/1993	1100	Nitrogen, Ammonia as N	0.13	mg/L	
OH-01	6/21/1993	1100	Nitrogen, Ammonia as N	0.64	mg/L	
OH-01	8/11/1993	1100	Nitrogen, Ammonia as N	0.2	mg/L	
OH-01	9/2/1993	1100	Nitrogen, Ammonia as N	0.23	mg/L	
OH-01	10/4/1993	1100	Nitrogen, Ammonia as N	0.13	mg/L	
OH-01	11/18/1993	1100	Nitrogen, Ammonia as N	0.1	mg/L	
OH-01	1/5/1994	1100	Nitrogen, Ammonia as N	0.12	mg/L	
OH-01	2/8/1994	1200	Nitrogen, Ammonia as N	0.78	mg/L	
OH-01	3/22/1994	1100	Nitrogen, Ammonia as N	0.01	mg/L	K
OH-01	5/3/1994	1100	Nitrogen, Ammonia as N	0.23	mg/L	
OH-01	6/1/1994	1100	Nitrogen, Ammonia as N	0.11	mg/L	
OH-01	7/12/1994	1100	Nitrogen, Ammonia as N	0.08	mg/L	
OH-01	9/1/1994	1100	Nitrogen, Ammonia as N	0.07	mg/L	
OH-01	10/3/1994	1100	Nitrogen, Ammonia as N	1.5	mg/L	
OH-01	11/16/1994	1100	Nitrogen, Ammonia as N	0.61	mg/L	
OH-01	1/17/1995	1100	Nitrogen, Ammonia as N	0.39	mg/L	
OH-01	2/14/1995	1100	Nitrogen, Ammonia as N	0.58	mg/L	
OH-01	4/5/1995	1100	Nitrogen, Ammonia as N	0.15	mg/L	
OH-01	5/25/1995	1200	Nitrogen, Ammonia as N	0.23	mg/L	
OH-01	7/5/1995	1000	Nitrogen, Ammonia as N	0.17	mg/L	
OH-01	8/22/1995	900	Nitrogen, Ammonia as N	0.01	mg/L	K
OH-01	9/26/1995	1000	Nitrogen, Ammonia as N	0.13	mg/L	
OH-01	11/2/1995	1100	Nitrogen, Ammonia as N	0.02	mg/L	
OH-01	12/5/1995	1100	Nitrogen, Ammonia as N	0.07	mg/L	
OH-01	1/17/1996	1100	Nitrogen, Ammonia as N	0.96	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	2/13/1996	1100	Nitrogen, Ammonia as N	0.68	mg/L	
OH-01	4/11/1996	1200	Nitrogen, Ammonia as N	0.01	mg/L	K
OH-01	5/9/1996	1200	Nitrogen, Ammonia as N	0.24	mg/L	
OH-01	6/26/1996	1000	Nitrogen, Ammonia as N	0.34	mg/L	
OH-01	7/17/1996	1600	Nitrogen, Ammonia as N	0.06	mg/L	
OH-01	8/21/1996	1100	Nitrogen, Ammonia as N	0.16	mg/L	
OH-01	10/23/1996	1100	Nitrogen, Ammonia as N	0.27	mg/L	
OH-01	11/21/1996	1100	Nitrogen, Ammonia as N	0.34	mg/L	
OH-01	1/8/1997	1100	Nitrogen, Ammonia as N	0.39	mg/L	
OH-01	2/11/1997	1100	Nitrogen, Ammonia as N	0.59	mg/L	
OH-01	3/26/1997	1100	Nitrogen, Ammonia as N	0.14	mg/L	
OH-01	5/8/1997	1100	Nitrogen, Ammonia as N	0.24	mg/L	
OH-01	6/18/1997	830	Nitrogen, Ammonia as N	0.98	mg/L	
OH-01	7/29/1997	1100	Nitrogen, Ammonia as N	0.36	mg/L	
OH-01	8/26/1997	1100	Nitrogen, Ammonia as N	0.7	mg/L	
OH-01	10/8/1997	1100	Nitrogen, Ammonia as N	0.34	mg/L	
OH-01	11/17/1997	1100	Nitrogen, Ammonia as N	0.56	mg/L	
OH-01	1/7/1998	1100	Nitrogen, Ammonia as N	4.2	mg/L	
OH-01	2/10/1998	1100	Nitrogen, Ammonia as N	0.46	mg/L	
OH-01	3/24/1998	1100	Nitrogen, Ammonia as N	0.63	mg/L	
OH-01	4/29/1998	1100	Nitrogen, Ammonia as N	0.54	mg/L	
OH-01	6/29/1998	1130	Nitrogen, Ammonia as N	0.32	mg/L	
OH-01	7/20/1998	1100	Nitrogen, Ammonia as N	0.36	mg/L	
OH-01	8/26/1998	1100	Nitrogen, Ammonia as N	0.32	mg/L	
OH-01	10/6/1998	1100	Nitrogen, Ammonia as N	0.25	mg/L	
OH-01	11/17/1998	1100	Nitrogen, Ammonia as N	0.23	mg/L	
OH-01	1/21/1999		Nitrogen, Ammonia as N	0.53	mg/L	
OH-01	2/10/1999		Nitrogen, Ammonia as N	0.74	mg/L	
OH-01	3/24/1999		Nitrogen, Ammonia as N	2.6	mg/L	
OH-01	4/28/1999		Nitrogen, Ammonia as N	0.19	mg/L	
OH-01	6/1/1999		Nitrogen, Ammonia as N	0.82	mg/L	
OH-01	8/3/1999		Nitrogen, Ammonia as N	0.01	mg/L	
OH-01	8/26/1999		Nitrogen, Ammonia as N	0.43	mg/L	
OH-01	10/7/1999		Nitrogen, Ammonia as N	0.44	mg/L	
OH-01	12/1/1999		Nitrogen, Ammonia as N	0.8	mg/L	
OH-01	1/6/2000		Nitrogen, Ammonia as N	0.39	mg/L	
OH-01	2/8/2000		Nitrogen, Ammonia as N	0.31	mg/L	
OH-01	4/27/2000		Nitrogen, Ammonia as N	0.45	mg/L	
OH-01	6/5/2000		Nitrogen, Ammonia as N	0.12	mg/L	
OH-01	7/31/2000		Nitrogen, Ammonia as N	0.01	mg/L	
OH-01	9/20/2000		Nitrogen, Ammonia as N	0.02	mg/L	
OH-01	10/18/2000		Nitrogen, Ammonia as N	0.03	mg/L	
OH-01	11/13/2000		Nitrogen, Ammonia as N	0.19	mg/L	
OH-01	1/10/2001		Nitrogen, Ammonia as N	0.97	mg/L	
OH-01	3/5/2001		Nitrogen, Ammonia as N	0.71	mg/L	
OH-01	4/5/2001		Nitrogen, Ammonia as N	0.22	mg/L	
OH-01	5/8/2001		Nitrogen, Ammonia as N	0.97	mg/L	
OH-01	7/10/2001		Nitrogen, Ammonia as N	0.11	mg/L	
OH-01	8/9/2001		Nitrogen, Ammonia as N	0.14	mg/L	
OH-01	9/26/2001		Nitrogen, Ammonia as N	0.38	mg/L	
OH-01	11/6/2001		Nitrogen, Ammonia as N	0.23	mg/L	
OH-01	12/10/2001		Nitrogen, Ammonia as N	0.26	mg/L	
OH-01	1/30/2002		Nitrogen, Ammonia as N	0.82	mg/L	
OH-01	3/5/2002		Nitrogen, Ammonia as N	0.71	mg/L	
OH-01	4/2/2002		Nitrogen, Ammonia as N	0.62	mg/L	
OH-01	5/9/2002		Nitrogen, Ammonia as N	0.11	mg/L	
OH-01	6/6/2002		Nitrogen, Ammonia as N	0.32	mg/L	
OH-01	7/24/2002		Nitrogen, Ammonia as N	0.27	mg/L	
OH-01	8/26/2002		Nitrogen, Ammonia as N	0.17	mg/L	
OH-01	1/9/1990	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.2	mg/L	
OH-01	2/7/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.6	mg/L	
OH-01	3/20/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.44	mg/L	
OH-01	4/23/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.3	mg/L	
OH-01	6/5/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.2	mg/L	
OH-01	7/12/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.44	mg/L	
OH-01	9/13/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.2	mg/L	
OH-01	10/17/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.5	mg/L	
OH-01	12/19/1990	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.4	mg/L	
OH-01	1/22/1991	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.9	mg/L	
OH-01	3/6/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.6	mg/L	
OH-01	4/8/1991	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.46	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	5/2/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1	mg/L	
OH-01	6/13/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.44	mg/L	
OH-01	7/25/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.57	mg/L	
OH-01	9/11/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.51	mg/L	
OH-01	10/9/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.49	mg/L	
OH-01	11/20/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.81	mg/L	
OH-01	1/7/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2	mg/L	
OH-01	2/13/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.5	mg/L	
OH-01	3/24/1992	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.9	mg/L	
OH-01	4/27/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2	mg/L	
OH-01	6/2/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.4	mg/L	
OH-01	7/28/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.57	mg/L	
OH-01	8/25/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.14	mg/L	
OH-01	10/5/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.1	mg/L	
OH-01	11/19/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1	mg/L	
OH-01	12/30/1992	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.8	mg/L	
OH-01	2/4/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.4	mg/L	
OH-01	4/8/1993	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.94	mg/L	
OH-01	5/17/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1	mg/L	
OH-01	6/21/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.3	mg/L	
OH-01	8/11/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.99	mg/L	
OH-01	9/2/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.64	mg/L	
OH-01	10/4/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.5	mg/L	
OH-01	11/18/1993	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.66	mg/L	
OH-01	1/5/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.5	mg/L	
OH-01	2/8/1994	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.75	mg/L	
OH-01	3/22/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.07	mg/L	
OH-01	5/3/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.53	mg/L	
OH-01	6/1/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.13	mg/L	
OH-01	7/12/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.18	mg/L	
OH-01	9/1/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.33	mg/L	
OH-01	10/3/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.43	mg/L	
OH-01	11/16/1994	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.2	mg/L	
OH-01	1/17/1995	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.2	mg/L	
OH-01	2/14/1995	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.1	mg/L	
OH-01	4/5/1995	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.08	mg/L	
OH-01	5/25/1995	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.69	mg/L	
OH-01	7/5/1995	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.1	mg/L	
OH-01	8/22/1995	900	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.53	mg/L	
OH-01	9/26/1995	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.48	mg/L	
OH-01	11/2/1995	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.07	mg/L	
OH-01	12/5/1995	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.09	mg/L	
OH-01	1/17/1996	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	3.2	mg/L	
OH-01	2/13/1996	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	3.6	mg/L	
OH-01	4/11/1996	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.4	mg/L	
OH-01	5/9/1996	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.72	mg/L	
OH-01	6/26/1996	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.2	mg/L	
OH-01	7/17/1996	1600	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.25	mg/L	
OH-01	8/21/1996	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.38	mg/L	
OH-01	10/23/1996	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.05	mg/L	
OH-01	11/21/1996	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.83	mg/L	
OH-01	1/8/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.5	mg/L	
OH-01	2/11/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.1	mg/L	
OH-01	3/26/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.62	mg/L	
OH-01	5/8/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.93	mg/L	
OH-01	6/18/1997	830	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	3.8	mg/L	
OH-01	7/29/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.84	mg/L	
OH-01	8/26/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.29	mg/L	
OH-01	10/8/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.41	mg/L	
OH-01	11/17/1997	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.27	mg/L	
OH-01	1/7/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.7	mg/L	
OH-01	2/10/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.2	mg/L	
OH-01	3/24/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.6	mg/L	
OH-01	4/29/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.09	mg/L	
OH-01	6/29/1998	1130	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.1	mg/L	
OH-01	7/20/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.13	mg/L	
OH-01	8/26/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.85	mg/L	
OH-01	10/6/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.73	mg/L	
OH-01	11/17/1998	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.62	mg/L	
OH-01	1/21/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	4.26	mg/L	
OH-01	2/10/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.1	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	3/24/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	3.2	mg/L	
OH-01	4/28/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.02	mg/L	
OH-01	6/1/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.4	mg/L	
OH-01	8/3/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.48	mg/L	
OH-01	8/26/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.4	mg/L	
OH-01	10/7/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.32	mg/L	
OH-01	12/1/1999		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.17	mg/L	
OH-01	1/6/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.74	mg/L	
OH-01	2/8/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.24	mg/L	
OH-01	4/27/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.76	mg/L	
OH-01	6/5/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.82	mg/L	
OH-01	7/31/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.59	mg/L	
OH-01	9/20/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.98	mg/L	
OH-01	10/18/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.48	mg/L	
OH-01	11/13/2000		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.44	mg/L	
OH-01	1/10/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.66	mg/L	
OH-01	3/5/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.1	mg/L	
OH-01	4/5/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.17	mg/L	
OH-01	5/8/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.66	mg/L	
OH-01	7/10/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.69	mg/L	
OH-01	8/9/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.41	mg/L	
OH-01	9/26/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.23	mg/L	
OH-01	11/6/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.01	mg/L	
OH-01	12/10/2001		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	4.2	mg/L	
OH-01	1/30/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.96	mg/L	
OH-01	3/5/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2	mg/L	
OH-01	4/2/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.94	mg/L	
OH-01	5/9/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.31	mg/L	
OH-01	6/6/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.59	mg/L	
OH-01	7/24/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.62	mg/L	
OH-01	8/26/2002		Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.01	mg/L	
OH-01	2/25/2004	10:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.13	mg/l	
OH-01	3/24/2004	11:45	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.75	mg/l	
OH-01	5/5/2004	12:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	5.13	mg/l	
OH-01	7/21/2004	10:45	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.35	mg/l	
OH-01	9/1/2004	11:15	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.87	mg/l	
OH-01	11/9/2004	7:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.89	mg/l	
OH-01	12/20/2004	13:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	2.17	mg/l	
OH-01	1/6/2005	12:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.51	mg/l	
OH-01	3/3/2005	13:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.83	mg/l	
OH-01	4/5/2005	14:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.25	mg/l	
OH-01	5/17/2005	9:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.94	mg/l	
OH-01	6/14/2005	9:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.24	mg/l	
OH-01	8/4/2005	12:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.5	mg/l	
OH-01	9/20/2005	10:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1	mg/l	
OH-01	10/24/2005	10:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.88	mg/l	
OH-01	11/14/2005	10:30	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		mg/l	ND
OH-01	7/17/1996	1600	Nitrogen, Total Kjeldahl	1.3	mg/L	
OH-01	11/21/1996	1100	Nitrogen, Total Kjeldahl	1.7	mg/L	
OH-01	10/7/1999		Nitrogen, Total Kjeldahl	0.96	mg/L	
OH-01	12/1/1999		Nitrogen, Total Kjeldahl	1.72	mg/L	
OH-01	1/6/2000		Nitrogen, Total Kjeldahl	1.2	mg/L	
OH-01	2/8/2000		Nitrogen, Total Kjeldahl	1.2	mg/L	
OH-01	4/27/2000		Nitrogen, Total Kjeldahl	0.99	mg/L	
OH-01	9/20/2005	10:30	Nitrogen, Total Kjeldahl	2.48	mg/l	
OH-01	10/24/2005	10:30	Nitrogen, Total Kjeldahl	1.65	mg/l	
OH-01	1/9/1990	1100	pH	7.8		
OH-01	2/7/1990	1100	pH	7.6		
OH-01	3/20/1990	1000	pH	8.6		
OH-01	4/23/1990	1100	pH	7.7		
OH-01	6/5/1990	1100	pH	7.5		
OH-01	7/12/1990	1000	pH	7.6		
OH-01	9/13/1990	12:30	pH	7.3		
OH-01	10/17/1990	1200	pH	7.4		
OH-01	12/19/1990	1100	pH	7.8		
OH-01	1/22/1991	830	pH	7.6		
OH-01	3/6/1991	1100	pH	7.8		
OH-01	4/8/1991	1100	pH	8		
OH-01	5/2/1991	1100	pH	7.7		
OH-01	6/13/1991	13:30	pH	7.1		
OH-01	7/25/1991	900	pH	7.4		

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	9/11/1991	10:45	pH	7.2		
OH-01	10/9/1991	1100	pH	7.5		
OH-01	11/20/1991	10:30	pH	7.2		
OH-01	1/7/1992	1200	pH	7.9		
OH-01	2/13/1992	1100	pH	8.5		
OH-01	3/24/1992	1100	pH	7.6		
OH-01	4/27/1992	1100	pH	7.7		
OH-01	6/2/1992	9:00	pH	7.3		
OH-01	7/28/1992	11:15	pH	7		
OH-01	8/25/1992	1100	pH	7.6		
OH-01	10/5/1992	10:30	pH	7.3		
OH-01	11/19/1992	1100	pH	7.4		
OH-01	12/30/1992	1100	pH	7.6		
OH-01	2/4/1993	1100	pH	7.8		
OH-01	4/8/1993	1100	pH	7.8		
OH-01	5/17/1993	1100	pH	7.6		
OH-01	6/21/1993	1100	pH	7.8		
OH-01	8/11/1993	1100	pH	7.6		
OH-01	9/2/1993	1100	pH	7.5		
OH-01	10/4/1993	1100	pH	8		
OH-01	11/18/1993	13:30	pH	7.3		
OH-01	1/5/1994	1000	pH	7.8		
OH-01	2/8/1994	1100	pH	8.1		
OH-01	3/22/1994	1100	pH	8.6		
OH-01	5/3/1994	1600	pH	7.5		
OH-01	6/1/1994	1100	pH	7.8		
OH-01	7/12/1994	1100	pH	7.7		
OH-01	9/1/1994	1100	pH	7.7		
OH-01	10/3/1994	1100	pH	7.7		
OH-01	11/16/1994	13:45	pH	7.2		
OH-01	1/17/1995	1100	pH	7.4		
OH-01	2/14/1995	1100	pH	7.4		
OH-01	4/5/1995	1100	pH	7.7		
OH-01	5/25/1995	1200	pH	6.9		
OH-01	7/5/1995	13:30	pH	7.4		
OH-01	8/22/1995	900	pH	6.9		
OH-01	9/26/1995	1100	pH	7.6		
OH-01	11/2/1995	1100	pH	7.6		
OH-01	12/5/1995	10:30	pH	7.3		
OH-01	1/17/1996	8:30	pH	7.3		
OH-01	2/13/1996	10:30	pH	7		
OH-01	4/11/1996	1100	pH	7.5		
OH-01	5/9/1996	12:30	pH	7.1		
OH-01	6/26/1996	7:30	pH	7.3		
OH-01	7/17/1996	13:00	pH	7		
OH-01	8/21/1996	11:45	pH	7		
OH-01	10/23/1996	9:45	pH	7.1		
OH-01	11/21/1996	10:45	pH	7.1		
OH-01	1/8/1997	1100	pH	6.3		
OH-01	2/11/1997	1130	pH	8.5		
OH-01	3/26/1997	1100	pH	7.8		
OH-01	5/8/1997	1200	pH	7.6		
OH-01	6/18/1997	9:30	pH	7.3		
OH-01	7/29/1997	9:30	pH	7.3		
OH-01	8/26/1997	11:45	pH	7.4		
OH-01	10/8/1997	14:30	pH	7.4		
OH-01	11/17/1997	9:00	pH	7.4		
OH-01	1/7/1998	12:30	pH	7.3		
OH-01	2/10/1998	1100	pH	8.1		
OH-01	3/24/1998	12:30	pH	7.3		
OH-01	4/29/1998	1100	pH	7.5		
OH-01	6/29/1998	1100	pH	7.6		
OH-01	7/20/1998	1100	pH	6.6		
OH-01	8/26/1998	1100	pH	6.8		
OH-01	10/6/1998	11:00	pH	7.4		
OH-01	11/17/1998	1100	pH	7		
OH-01	1/21/1999	1100	pH	6.5		
OH-01	2/10/1999	1200	pH	7.1		
OH-01	3/24/1999	1100	pH	7.1		
OH-01	4/28/1999	1100	pH	7.5		
OH-01	6/1/1999	1100	pH	7.2		

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	8/3/1999	1100	pH	7		
OH-01	8/26/1999	1100	pH	7		
OH-01	10/7/1999	1100	pH	6.7		
OH-01	12/1/1999	1100	pH	6.9		
OH-01	1/6/2000	1100	pH	6.9		
OH-01	2/8/2000	1100	pH	7.2		
OH-01	4/27/2000	1000	pH	7		
OH-01	6/5/2000	1100	pH	7		
OH-01	7/31/2000	1100	pH	6.4		
OH-01	9/20/2000	1100	pH	6.4		
OH-01	10/18/2000	1100	pH	6.6		
OH-01	11/13/2000	1100	pH	7		
OH-01	1/10/2001	1100	pH	7.7		
OH-01	3/5/2001	1100	pH	7.6		
OH-01	4/5/2001	1100	pH	7		
OH-01	5/8/2001	1100	pH	6.9		
OH-01	7/10/2001	1200	pH	7.4		
OH-01	8/9/2001	1100	pH	6.9		
OH-01	9/26/2001	1100	pH	6.7		
OH-01	11/6/2001	1100	pH	6.7		
OH-01	12/10/2001	1200	pH	6.6		
OH-01	1/30/2002	1100	pH	8		
OH-01	3/5/2002	1000	pH	6.6		
OH-01	4/2/2002	1100	pH	6.7		
OH-01	5/9/2002	1100	pH	6.5		
OH-01	6/6/2002	1100	pH	7.4		
OH-01	7/24/2002	1200	pH	7.3		
OH-01	8/26/2002	1100	pH	6.9		
OH-01	1/15/2003	9:00	pH	7.7		
OH-01	3/12/2003	8:30	pH	7.5		
OH-01	4/16/2003	11:00	pH	7.9		
OH-01	5/14/2003	12:30	pH	7.4		
OH-01	6/18/2003	9:30	pH	7.45		
OH-01	7/30/2003	13:45	pH	7.38		
OH-01	9/10/2003	13:30	pH	7.33		
OH-01	10/22/2003	9:45	pH	7.2		
OH-01	11/19/2003	13:00	pH	7		
OH-01	1/7/2004	10:45	pH	7.2		
OH-01	2/25/2004	10:30	pH	7.7		
OH-01	3/24/2004	11:45	pH	8.3		
OH-01	5/5/2004	12:30	pH	7.4		
OH-01	6/9/2004	11:45	pH	6.9		
OH-01	7/21/2004	10:45	pH	7.4		
OH-01	9/1/2004	11:15	pH	7.1		
OH-01	11/9/2004	7:30	pH	7.5		
OH-01	12/20/2004	13:30	pH	7.6		
OH-01	1/6/2005	12:30	pH	7.73		
OH-01	3/3/2005	13:30	pH	8.4		
OH-01	4/5/2005	14:30	pH	8.2		
OH-01	5/17/2005	9:30	pH	7.5		
OH-01	6/14/2005	9:00	pH	8.2		
OH-01	8/4/2005	12:30	pH	7.3		
OH-01	9/20/2005	10:30	pH	7.1		
OH-01	10/24/2005	10:30	pH	7.6		
OH-01	11/14/2005	10:30	pH	7.4		
OH-01	1/9/1990	1200	Phosphorus, Dissolved	1.3	mg/L	
OH-01	2/7/1990	1100	Phosphorus, Dissolved	0.51	mg/L	
OH-01	3/20/1990	1100	Phosphorus, Dissolved	0.86	mg/L	
OH-01	4/23/1990	1100	Phosphorus, Dissolved	0.69	mg/L	
OH-01	6/5/1990	1100	Phosphorus, Dissolved	0.52	mg/L	
OH-01	7/12/1990	1100	Phosphorus, Dissolved	0.62	mg/L	
OH-01	9/13/1990	1100	Phosphorus, Dissolved	0.83	mg/L	
OH-01	10/17/1990	1100	Phosphorus, Dissolved	0.92	mg/L	
OH-01	12/19/1990	1100	Phosphorus, Dissolved	0.64	mg/L	
OH-01	1/22/1991	1200	Phosphorus, Dissolved	0.52	mg/L	
OH-01	3/6/1991	1100	Phosphorus, Dissolved	0.32	mg/L	
OH-01	4/8/1991	1200	Phosphorus, Dissolved	0.45	mg/L	
OH-01	5/2/1991	1100	Phosphorus, Dissolved	0.52	mg/L	
OH-01	6/13/1991	1100	Phosphorus, Dissolved	0.7	mg/L	
OH-01	7/25/1991	1100	Phosphorus, Dissolved	0.47	mg/L	
OH-01	9/11/1991	1100	Phosphorus, Dissolved	1.2	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	10/9/1991	1100	Phosphorus, Dissolved	2.3	mg/L	
OH-01	11/20/1991	1100	Phosphorus, Dissolved	1.5	mg/L	
OH-01	1/7/1992	1100	Phosphorus, Dissolved	0.82	mg/L	
OH-01	2/13/1992	1100	Phosphorus, Dissolved	0.68	mg/L	
OH-01	3/24/1992	1000	Phosphorus, Dissolved	0.7	mg/L	
OH-01	4/27/1992	1100	Phosphorus, Dissolved	0.41	mg/L	
OH-01	6/2/1992	1100	Phosphorus, Dissolved	0.56	mg/L	
OH-01	7/28/1992	1100	Phosphorus, Dissolved	0.71	mg/L	
OH-01	8/25/1992	1100	Phosphorus, Dissolved	0.36	mg/L	
OH-01	10/5/1992	1100	Phosphorus, Dissolved	0.98	mg/L	
OH-01	11/19/1992	1100	Phosphorus, Dissolved	0.7	mg/L	
OH-01	12/30/1992	1100	Phosphorus, Dissolved	0.79	mg/L	
OH-01	2/4/1993	1100	Phosphorus, Dissolved	0.46	mg/L	
OH-01	4/8/1993	1000	Phosphorus, Dissolved	0.381	mg/L	
OH-01	5/17/1993	1100	Phosphorus, Dissolved	0.37	mg/L	
OH-01	6/21/1993	1100	Phosphorus, Dissolved	0.43	mg/L	
OH-01	8/11/1993	1100	Phosphorus, Dissolved	0.47	mg/L	
OH-01	9/2/1993	1100	Phosphorus, Dissolved	0.71	mg/L	
OH-01	10/4/1993	1100	Phosphorus, Dissolved	0.28	mg/L	
OH-01	11/18/1993	1100	Phosphorus, Dissolved	0.8	mg/L	
OH-01	1/5/1994	1100	Phosphorus, Dissolved	0.16	mg/L	
OH-01	2/8/1994	1200	Phosphorus, Dissolved	0.2	mg/L	
OH-01	3/22/1994	1100	Phosphorus, Dissolved	0.19	mg/L	
OH-01	5/3/1994	1100	Phosphorus, Dissolved	0.17	mg/L	
OH-01	6/1/1994	1100	Phosphorus, Dissolved	0.31	mg/L	
OH-01	7/12/1994	1100	Phosphorus, Dissolved	0.29	mg/L	
OH-01	9/1/1994	1100	Phosphorus, Dissolved	0.46	mg/L	
OH-01	10/3/1994	1100	Phosphorus, Dissolved	1.2	mg/L	
OH-01	11/16/1994	1100	Phosphorus, Dissolved	1.3	mg/L	
OH-01	1/17/1995	1100	Phosphorus, Dissolved	0.6	mg/L	
OH-01	2/14/1995	1100	Phosphorus, Dissolved	0.34	mg/L	
OH-01	4/5/1995	1100	Phosphorus, Dissolved	0.91	mg/L	
OH-01	5/25/1995	1200	Phosphorus, Dissolved	0.42	mg/L	
OH-01	7/5/1995	1000	Phosphorus, Dissolved	0.426	mg/L	
OH-01	8/22/1995	900	Phosphorus, Dissolved	0.66	mg/L	
OH-01	9/26/1995	1000	Phosphorus, Dissolved	0.34	mg/L	
OH-01	11/2/1995	1100	Phosphorus, Dissolved	0.96	mg/L	
OH-01	12/5/1995	1100	Phosphorus, Dissolved	1.3	mg/L	
OH-01	1/17/1996	1100	Phosphorus, Dissolved	1.374	mg/L	
OH-01	2/13/1996	1100	Phosphorus, Dissolved	0.74	mg/L	
OH-01	4/11/1996	1200	Phosphorus, Dissolved	0.3	mg/L	
OH-01	5/9/1996	1200	Phosphorus, Dissolved	0.27	mg/L	
OH-01	6/26/1996	1000	Phosphorus, Dissolved	0.3	mg/L	
OH-01	7/17/1996	1600	Phosphorus, Dissolved	0.28	mg/L	
OH-01	8/21/1996	1100	Phosphorus, Dissolved	0.51	mg/L	
OH-01	10/23/1996	1100	Phosphorus, Dissolved	0.69	mg/L	
OH-01	11/21/1996	1100	Phosphorus, Dissolved	0.82	mg/L	
OH-01	1/8/1997	1100	Phosphorus, Dissolved	0.57	mg/L	
OH-01	2/11/1997	1100	Phosphorus, Dissolved	0.27	mg/L	
OH-01	3/26/1997	1100	Phosphorus, Dissolved	0.2	mg/L	
OH-01	5/8/1997	1100	Phosphorus, Dissolved	0.25	mg/L	
OH-01	6/18/1997	830	Phosphorus, Dissolved	0.44	mg/L	
OH-01	7/29/1997	1100	Phosphorus, Dissolved	0.54	mg/L	
OH-01	8/26/1997	1100	Phosphorus, Dissolved	0.44	mg/L	
OH-01	10/8/1997	1100	Phosphorus, Dissolved	0.31	mg/L	
OH-01	11/17/1997	1100	Phosphorus, Dissolved	1.3	mg/L	
OH-01	1/7/1998	1100	Phosphorus, Dissolved	1.4	mg/L	
OH-01	2/10/1998	1100	Phosphorus, Dissolved	0.46	mg/L	
OH-01	3/24/1998	1100	Phosphorus, Dissolved	0.26	mg/L	
OH-01	4/29/1998	1100	Phosphorus, Dissolved	0.42	mg/L	
OH-01	6/29/1998	1130	Phosphorus, Dissolved	0.39	mg/L	
OH-01	7/20/1998	1100	Phosphorus, Dissolved	0.41	mg/L	
OH-01	8/26/1998	1100	Phosphorus, Dissolved	0.4	mg/L	
OH-01	10/6/1998	1100	Phosphorus, Dissolved	0.42	mg/L	
OH-01	11/17/1998	1100	Phosphorus, Dissolved	0.97	mg/L	
OH-01	1/21/1999		Phosphorus, Dissolved	0.58	mg/L	
OH-01	2/10/1999		Phosphorus, Dissolved	0.21	mg/L	
OH-01	3/24/1999		Phosphorus, Dissolved	0.54	mg/L	
OH-01	4/28/1999		Phosphorus, Dissolved	0.29	mg/L	
OH-01	6/1/1999		Phosphorus, Dissolved	0.49	mg/L	
OH-01	8/3/1999		Phosphorus, Dissolved	0.37	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	8/26/1999		Phosphorus, Dissolved	0.37	mg/L	
OH-01	10/7/1999		Phosphorus, Dissolved	0.39	mg/L	
OH-01	12/1/1999		Phosphorus, Dissolved	2	mg/L	
OH-01	1/6/2000		Phosphorus, Dissolved	1.9	mg/L	
OH-01	2/8/2000		Phosphorus, Dissolved	1.1	mg/L	
OH-01	4/27/2000		Phosphorus, Dissolved	0.46	mg/L	
OH-01	6/5/2000		Phosphorus, Dissolved	0.34	mg/L	
OH-01	7/31/2000		Phosphorus, Dissolved	0.34	mg/L	
OH-01	9/20/2000		Phosphorus, Dissolved	0.45	mg/L	
OH-01	10/18/2000		Phosphorus, Dissolved	1.1	mg/L	
OH-01	11/13/2000		Phosphorus, Dissolved	0.48	mg/L	
OH-01	1/10/2001		Phosphorus, Dissolved	0.23	mg/L	
OH-01	3/5/2001		Phosphorus, Dissolved	0.18	mg/L	
OH-01	4/5/2001		Phosphorus, Dissolved	0.21	mg/L	
OH-01	5/8/2001		Phosphorus, Dissolved	0.41	mg/L	
OH-01	7/10/2001		Phosphorus, Dissolved	0.64	mg/L	
OH-01	8/9/2001		Phosphorus, Dissolved	0.57	mg/L	
OH-01	9/26/2001		Phosphorus, Dissolved	0.4	mg/L	
OH-01	11/6/2001		Phosphorus, Dissolved	1	mg/L	
OH-01	12/10/2001		Phosphorus, Dissolved	0.38	mg/L	
OH-01	1/30/2002		Phosphorus, Dissolved	0.43	mg/L	
OH-01	3/5/2002		Phosphorus, Dissolved	0.35	mg/L	
OH-01	4/2/2002		Phosphorus, Dissolved	0.21	mg/L	
OH-01	5/9/2002		Phosphorus, Dissolved	0.3	mg/L	
OH-01	6/6/2002		Phosphorus, Dissolved	0.41	mg/L	
OH-01	7/24/2002		Phosphorus, Dissolved	0.73	mg/L	
OH-01	8/26/2002		Phosphorus, Dissolved	0.43	mg/L	
OH-01	2/25/2004	10:30	Phosphorus, Dissolved	0.244	mg/l	
OH-01	3/24/2004	11:45	Phosphorus, Dissolved	0.108	mg/l	
OH-01	5/5/2004	12:30	Phosphorus, Dissolved	0.357	mg/l	
OH-01	5/17/2005	9:30	Phosphorus, Dissolved	0.373	mg/l	
OH-01	6/14/2005	9:00	Phosphorus, Dissolved	0.435	mg/l	
OH-01	8/4/2005	12:30	Phosphorus, Dissolved	0.444	mg/l	
OH-01	9/20/2005	10:30	Phosphorus, Dissolved	0.665	mg/l	
OH-01	10/24/2005	10:30	Phosphorus, Dissolved	0.398	mg/l	
OH-01	11/14/2005	10:30	Phosphorus, Dissolved	0.69	mg/l	
OH-01	1/9/1990	1200	Phosphorus, Total	1.6	mg/L	
OH-01	2/7/1990	1100	Phosphorus, Total	1.1	mg/L	
OH-01	3/20/1990	1100	Phosphorus, Total	1.1	mg/L	
OH-01	4/23/1990	1100	Phosphorus, Total	0.92	mg/L	
OH-01	6/5/1990	1100	Phosphorus, Total	0.69	mg/L	
OH-01	7/12/1990	1100	Phosphorus, Total	0.73	mg/L	
OH-01	9/13/1990	1100	Phosphorus, Total	1.2	mg/L	
OH-01	10/17/1990	1100	Phosphorus, Total	2.2	mg/L	
OH-01	12/19/1990	1100	Phosphorus, Total	1.4	mg/L	
OH-01	1/22/1991	1200	Phosphorus, Total	0.63	mg/L	
OH-01	3/6/1991	1100	Phosphorus, Total	0.609	mg/L	
OH-01	4/8/1991	1200	Phosphorus, Total	0.71	mg/L	
OH-01	5/2/1991	1100	Phosphorus, Total	0.686	mg/L	
OH-01	6/13/1991	1100	Phosphorus, Total	0.85	mg/L	
OH-01	7/25/1991	1100	Phosphorus, Total	0.64	mg/L	
OH-01	9/11/1991	1100	Phosphorus, Total	1.555	mg/L	
OH-01	10/9/1991	1100	Phosphorus, Total	2.6	mg/L	
OH-01	11/20/1991	1100	Phosphorus, Total	2.1	mg/L	
OH-01	1/7/1992	1100	Phosphorus, Total	1.1	mg/L	
OH-01	2/13/1992	1100	Phosphorus, Total	0.84	mg/L	
OH-01	3/24/1992	1000	Phosphorus, Total	0.88	mg/L	
OH-01	4/27/1992	1100	Phosphorus, Total	0.73	mg/L	
OH-01	6/2/1992	1100	Phosphorus, Total	0.76	mg/L	
OH-01	7/28/1992	1100	Phosphorus, Total	1	mg/L	
OH-01	8/25/1992	1100	Phosphorus, Total	0.63	mg/L	
OH-01	10/5/1992	1100	Phosphorus, Total	1.6	mg/L	
OH-01	11/19/1992	1100	Phosphorus, Total	1.1	mg/L	
OH-01	12/30/1992	1100	Phosphorus, Total	1	mg/L	
OH-01	2/4/1993	1100	Phosphorus, Total	0.61	mg/L	
OH-01	4/8/1993	1000	Phosphorus, Total	0.54	mg/L	
OH-01	5/17/1993	1100	Phosphorus, Total	0.59	mg/L	
OH-01	6/21/1993	1100	Phosphorus, Total	0.81	mg/L	
OH-01	8/11/1993	1100	Phosphorus, Total	0.61	mg/L	
OH-01	9/2/1993	1100	Phosphorus, Total	0.94	mg/L	
OH-01	10/4/1993	1100	Phosphorus, Total	0.51	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	11/18/1993	1100	Phosphorus, Total	1.1	mg/L	
OH-01	1/5/1994	1100	Phosphorus, Total	0.32	mg/L	
OH-01	2/8/1994	1200	Phosphorus, Total	0.34	mg/L	
OH-01	3/22/1994	1100	Phosphorus, Total	0.38	mg/L	
OH-01	5/3/1994	1100	Phosphorus, Total	0.42	mg/L	
OH-01	6/1/1994	1100	Phosphorus, Total	0.41	mg/L	
OH-01	7/12/1994	1100	Phosphorus, Total	0.43	mg/L	
OH-01	9/1/1994	1100	Phosphorus, Total	0.59	mg/L	
OH-01	10/3/1994	1100	Phosphorus, Total	1.7	mg/L	
OH-01	11/16/1994	1100	Phosphorus, Total	1.8	mg/L	
OH-01	1/17/1995	1100	Phosphorus, Total	0.8	mg/L	
OH-01	2/14/1995	1100	Phosphorus, Total	0.54	mg/L	
OH-01	4/5/1995	1100	Phosphorus, Total	1.2	mg/L	
OH-01	5/25/1995	1200	Phosphorus, Total	0.82	mg/L	
OH-01	7/5/1995	1000	Phosphorus, Total	0.64	mg/L	
OH-01	8/22/1995	900	Phosphorus, Total	0.85	mg/L	
OH-01	9/26/1995	1000	Phosphorus, Total	0.45	mg/L	
OH-01	11/2/1995	1100	Phosphorus, Total	1.2	mg/L	
OH-01	12/5/1995	1100	Phosphorus, Total	1.8	mg/L	
OH-01	1/17/1996	1100	Phosphorus, Total	1.704	mg/L	
OH-01	2/13/1996	1100	Phosphorus, Total	0.91	mg/L	
OH-01	4/11/1996	1200	Phosphorus, Total	0.61	mg/L	
OH-01	5/9/1996	1200	Phosphorus, Total	1.2	mg/L	
OH-01	6/26/1996	1000	Phosphorus, Total	0.55	mg/L	
OH-01	7/17/1996	1600	Phosphorus, Total	0.52	mg/L	
OH-01	8/21/1996	1100	Phosphorus, Total	0.79	mg/L	
OH-01	10/23/1996	1100	Phosphorus, Total	1.1	mg/L	
OH-01	11/21/1996	1100	Phosphorus, Total	1.3	mg/L	
OH-01	1/8/1997	1100	Phosphorus, Total	0.82	mg/L	
OH-01	2/11/1997	1100	Phosphorus, Total	0.49	mg/L	
OH-01	3/26/1997	1100	Phosphorus, Total	0.42	mg/L	
OH-01	5/8/1997	1100	Phosphorus, Total	0.57	mg/L	
OH-01	6/18/1997	830	Phosphorus, Total	0.7	mg/L	
OH-01	7/29/1997	1100	Phosphorus, Total	0.98	mg/L	
OH-01	8/26/1997	1100	Phosphorus, Total	0.69	mg/L	
OH-01	10/8/1997	1100	Phosphorus, Total	0.55	mg/L	
OH-01	11/17/1997	1100	Phosphorus, Total	1.4	mg/L	
OH-01	1/7/1998	1100	Phosphorus, Total	1.9	mg/L	
OH-01	2/10/1998	1100	Phosphorus, Total	0.8	mg/L	
OH-01	3/24/1998	1100	Phosphorus, Total	0.45	mg/L	
OH-01	4/29/1998	1100	Phosphorus, Total	0.75	mg/L	
OH-01	6/29/1998	1130	Phosphorus, Total	0.5	mg/L	
OH-01	7/20/1998	1100	Phosphorus, Total	0.54	mg/L	
OH-01	8/26/1998	1100	Phosphorus, Total	0.48	mg/L	
OH-01	10/6/1998	1100	Phosphorus, Total	0.65	mg/L	
OH-01	11/17/1998	1100	Phosphorus, Total	1.2	mg/L	
OH-01	1/21/1999		Phosphorus, Total	0.87	mg/L	
OH-01	2/10/1999		Phosphorus, Total	0.4	mg/L	
OH-01	3/24/1999		Phosphorus, Total	0.9	mg/L	
OH-01	4/28/1999		Phosphorus, Total	0.51	mg/L	
OH-01	6/1/1999		Phosphorus, Total	0.98	mg/L	
OH-01	8/3/1999		Phosphorus, Total	0.51	mg/L	
OH-01	8/26/1999		Phosphorus, Total	0.55	mg/L	
OH-01	10/7/1999		Phosphorus, Total	0.55	mg/L	
OH-01	12/1/1999		Phosphorus, Total	2.4	mg/L	
OH-01	1/6/2000		Phosphorus, Total	2.3	mg/L	
OH-01	2/8/2000		Phosphorus, Total	1.6	mg/L	
OH-01	4/27/2000		Phosphorus, Total	0.73	mg/L	
OH-01	6/5/2000		Phosphorus, Total	0.61	mg/L	
OH-01	7/31/2000		Phosphorus, Total	0.53	mg/L	
OH-01	9/20/2000		Phosphorus, Total	0.7	mg/L	
OH-01	10/18/2000		Phosphorus, Total	1.5	mg/L	
OH-01	11/13/2000		Phosphorus, Total	0.87	mg/L	
OH-01	1/10/2001		Phosphorus, Total	0.41	mg/L	
OH-01	3/5/2001		Phosphorus, Total	0.29	mg/L	
OH-01	4/5/2001		Phosphorus, Total	0.46	mg/L	
OH-01	5/8/2001		Phosphorus, Total	0.62	mg/L	
OH-01	7/10/2001		Phosphorus, Total	0.73	mg/L	
OH-01	8/9/2001		Phosphorus, Total	0.84	mg/L	
OH-01	9/26/2001		Phosphorus, Total	0.62	mg/L	
OH-01	11/6/2001		Phosphorus, Total	1.7	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	12/10/2001		Phosphorus, Total	0.62	mg/L	
OH-01	1/30/2002		Phosphorus, Total	0.62	mg/L	
OH-01	3/5/2002		Phosphorus, Total	0.69	mg/L	
OH-01	4/2/2002		Phosphorus, Total	0.45	mg/L	
OH-01	5/9/2002		Phosphorus, Total	0.72	mg/L	
OH-01	6/6/2002		Phosphorus, Total	0.54	mg/L	
OH-01	7/24/2002		Phosphorus, Total	0.97	mg/L	
OH-01	8/26/2002		Phosphorus, Total	0.74	mg/L	
OH-01	2/25/2004	10:30	Phosphorus, Total	0.379	mg/l	
OH-01	3/24/2004	11:45	Phosphorus, Total	0.247	mg/l	
OH-01	5/5/2004	12:30	Phosphorus, Total	0.593	mg/l	
OH-01	5/17/2005	9:30	Phosphorus, Total	0.488	mg/l	
OH-01	6/14/2005	9:00	Phosphorus, Total	1.066	mg/l	
OH-01	8/4/2005	12:30	Phosphorus, Total	0.518	mg/l	
OH-01	9/20/2005	10:30	Phosphorus, Total	2.48	mg/l	
OH-01	10/24/2005	10:30	Phosphorus, Total	0.61	mg/l	
OH-01	11/14/2005	10:30	Phosphorus, Total	0.88	mg/l	
OH-01	1/9/1990	1200	Temperature, Water	0.4	deg. C	
OH-01	2/7/1990	1100	Temperature, Water	4.3	deg. C	
OH-01	3/20/1990	1100	Temperature, Water	5.9	deg. C	
OH-01	4/23/1990	1100	Temperature, Water	18.3	deg. C	
OH-01	6/5/1990	1100	Temperature, Water	16.4	deg. C	
OH-01	7/12/1990	1100	Temperature, Water	24.3	deg. C	
OH-01	9/13/1990	1100	Temperature, Water	22.2	deg. C	
OH-01	10/17/1990	1100	Temperature, Water	15.4	deg. C	
OH-01	12/19/1990	1100	Temperature, Water	5.1	deg. C	
OH-01	1/22/1991	1200	Temperature, Water	0	deg. C	
OH-01	3/6/1991	1100	Temperature, Water	6.9	deg. C	
OH-01	4/8/1991	1200	Temperature, Water	19.1	deg. C	
OH-01	5/2/1991	1100	Temperature, Water	16.8	deg. C	
OH-01	6/13/1991	1100	Temperature, Water	24.3	deg. C	
OH-01	7/25/1991	1100	Temperature, Water	23.7	deg. C	
OH-01	9/11/1991	1100	Temperature, Water	25.2	deg. C	
OH-01	10/9/1991	1100	Temperature, Water	13.9	deg. C	
OH-01	11/20/1991	1100	Temperature, Water	14.4	deg. C	
OH-01	1/7/1992	1100	Temperature, Water	4.5	deg. C	
OH-01	2/13/1992	1100	Temperature, Water	2.1	deg. C	
OH-01	3/24/1992	1000	Temperature, Water	7	deg. C	
OH-01	4/27/1992	1100	Temperature, Water	11.1	deg. C	
OH-01	6/2/1992	1100	Temperature, Water	17.9	deg. C	
OH-01	7/28/1992	1100	Temperature, Water	23.9	deg. C	
OH-01	8/25/1992	1100	Temperature, Water	23.7	deg. C	
OH-01	10/5/1992	1100	Temperature, Water	15.4	deg. C	
OH-01	11/19/1992	1100	Temperature, Water	8.5	deg. C	
OH-01	12/30/1992	1100	Temperature, Water	5.2	deg. C	
OH-01	2/4/1993	1100	Temperature, Water	2.8	deg. C	
OH-01	4/8/1993	1000	Temperature, Water	11.4	deg. C	
OH-01	5/17/1993	1100	Temperature, Water	16.4	deg. C	
OH-01	6/21/1993	1100	Temperature, Water	23.2	deg. C	
OH-01	8/11/1993	1100	Temperature, Water	23.7	deg. C	
OH-01	9/2/1993	1100	Temperature, Water	24.2	deg. C	
OH-01	10/4/1993	1100	Temperature, Water	13.8	deg. C	
OH-01	11/18/1993	1100	Temperature, Water	7.5	deg. C	
OH-01	1/5/1994	1100	Temperature, Water	0.01	deg. C	
OH-01	2/8/1994	1200	Temperature, Water	1.5	deg. C	
OH-01	3/22/1994	1100	Temperature, Water	12.4	deg. C	
OH-01	5/3/1994	1100	Temperature, Water	12.2	deg. C	
OH-01	6/1/1994	1100	Temperature, Water	21.1	deg. C	
OH-01	7/12/1994	1100	Temperature, Water	23.1	deg. C	
OH-01	9/1/1994	1100	Temperature, Water	20.4	deg. C	
OH-01	10/3/1994	1100	Temperature, Water	18.3	deg. C	
OH-01	11/16/1994	1100	Temperature, Water	11.3	deg. C	
OH-01	1/17/1995	1100	Temperature, Water	3.1	deg. C	
OH-01	2/14/1995	1100	Temperature, Water	0.5	deg. C	
OH-01	4/5/1995	1100	Temperature, Water	9.4	deg. C	
OH-01	5/25/1995	1200	Temperature, Water	17.8	deg. C	
OH-01	7/5/1995	1000	Temperature, Water	21.8	deg. C	
OH-01	8/22/1995	900	Temperature, Water	25.2	deg. C	
OH-01	9/26/1995	1000	Temperature, Water	17	deg. C	
OH-01	11/2/1995	1100	Temperature, Water	13	deg. C	
OH-01	12/5/1995	1100	Temperature, Water	8.8	deg. C	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OH-01	1/17/1996	1100	Temperature, Water	2	deg. C	
OH-01	2/13/1996	1100	Temperature, Water	0.5	deg. C	
OH-01	4/11/1996	1200	Temperature, Water	12.7	deg. C	
OH-01	5/9/1996	1200	Temperature, Water	20.1	deg. C	
OH-01	6/26/1996	1000	Temperature, Water	22.8	deg. C	
OH-01	7/17/1996	1600	Temperature, Water	25.2	deg. C	
OH-01	8/21/1996	1100	Temperature, Water	25.6	deg. C	
OH-01	10/23/1996	1100	Temperature, Water	11.5	deg. C	
OH-01	11/21/1996	1100	Temperature, Water	6.7	deg. C	
OH-01	1/8/1997	1100	Temperature, Water	2.3	deg. C	
OH-01	2/11/1997	1100	Temperature, Water	4.1	deg. C	
OH-01	3/26/1997	1100	Temperature, Water	11	deg. C	
OH-01	5/8/1997	1100	Temperature, Water	17.9	deg. C	
OH-01	6/18/1997	830	Temperature, Water	21	deg. C	
OH-01	7/29/1997	1100	Temperature, Water	25.4	deg. C	
OH-01	8/26/1997	1100	Temperature, Water	22.5	deg. C	
OH-01	10/8/1997	1100	Temperature, Water	21.4	deg. C	
OH-01	11/17/1997	1100	Temperature, Water	5.5	deg. C	
OH-01	1/7/1998	1100	Temperature, Water	10.2	deg. C	
OH-01	2/10/1998	1100	Temperature, Water	7	deg. C	
OH-01	3/24/1998	1100	Temperature, Water	9.1	deg. C	
OH-01	4/29/1998	1100	Temperature, Water	14.7	deg. C	
OH-01	6/29/1998	1130	Temperature, Water	26	deg. C	
OH-01	7/20/1998	1100	Temperature, Water	27.8	deg. C	
OH-01	8/26/1998	1100	Temperature, Water	25.4	deg. C	
OH-01	10/6/1998	1100	Temperature, Water	20.4	deg. C	
OH-01	11/17/1998	1100	Temperature, Water	10.4	deg. C	
OH-01	1/21/1999		Temperature, Water	4.1	deg. C	
OH-01	2/10/1999		Temperature, Water	10.7	deg. C	
OH-01	3/24/1999		Temperature, Water	9.7	deg. C	
OH-01	4/28/1999		Temperature, Water	16.7	deg. C	
OH-01	6/1/1999		Temperature, Water	21.2	deg. C	
OH-01	8/3/1999		Temperature, Water	24.5	deg. C	
OH-01	8/26/1999		Temperature, Water	22.1	deg. C	
OH-01	10/7/1999		Temperature, Water	15.1	deg. C	
OH-01	12/1/1999		Temperature, Water	5.9	deg. C	
OH-01	1/6/2000		Temperature, Water	3	deg. C	
OH-01	2/8/2000		Temperature, Water	2.5	deg. C	
OH-01	4/27/2000		Temperature, Water	15.1	deg. C	
OH-01	6/5/2000		Temperature, Water	20	deg. C	
OH-01	7/31/2000		Temperature, Water	23.2	deg. C	
OH-01	9/20/2000		Temperature, Water	20.4	deg. C	
OH-01	10/18/2000		Temperature, Water	15.6	deg. C	
OH-01	11/13/2000		Temperature, Water	9	deg. C	
OH-01	1/10/2001		Temperature, Water	0	deg. C	
OH-01	3/5/2001		Temperature, Water	3.9	deg. C	
OH-01	4/5/2001		Temperature, Water	15.2	deg. C	
OH-01	5/8/2001		Temperature, Water	19.1	deg. C	
OH-01	7/10/2001		Temperature, Water	26.8	deg. C	
OH-01	8/9/2001		Temperature, Water	26.8	deg. C	
OH-01	9/26/2001		Temperature, Water	14.2	deg. C	
OH-01	11/6/2001		Temperature, Water	11.7	deg. C	
OH-01	12/10/2001		Temperature, Water	6.8	deg. C	
OH-01	1/30/2002		Temperature, Water	6.6	deg. C	
OH-01	3/5/2002		Temperature, Water	3.6	deg. C	
OH-01	4/2/2002		Temperature, Water	12.6	deg. C	
OH-01	5/9/2002		Temperature, Water	20	deg. C	
OH-01	6/6/2002		Temperature, Water	20.8	deg. C	
OH-01	7/24/2002		Temperature, Water	24.8	deg. C	
OH-01	8/26/2002		Temperature, Water	24.1	deg. C	
OH-01	1/15/2003	9:00	Temperature, Water	0.2	deg C	
OH-01	3/12/2003	8:30	Temperature, Water	5.4	deg C	
OH-01	4/16/2003	11:00	Temperature, Water	17.1	deg C	
OH-01	5/14/2003	12:30	Temperature, Water	17.5	deg C	
OH-01	6/18/2003	9:30	Temperature, Water	22.4	deg C	
OH-01	7/30/2003	13:45	Temperature, Water	23.8	deg C	
OH-01	9/10/2003	13:30	Temperature, Water	21	deg C	
OH-01	10/22/2003	9:45	Temperature, Water	14.3	deg C	
OH-01	11/19/2003	13:00	Temperature, Water	13.8	deg C	
OH-01	1/7/2004	10:45	Temperature, Water	-0.02	deg C	
OH-01	2/25/2004	10:30	Temperature, Water	4.5	deg C	

Primary Station ID	Start Date	Start Time	Parameter Long Name		Result Value	Units	Remark Code
OH-01	3/24/2004	11:45	Temperature, Water		9.6	deg C	
OH-01	5/5/2004	12:30	Temperature, Water		14	deg C	
OH-01	6/9/2004	11:45	Temperature, Water		23.5	deg C	
OH-01	7/21/2004	10:45	Temperature, Water		24.9	deg C	
OH-01	9/1/2004	11:15	Temperature, Water		20.6	deg C	
OH-01	11/9/2004	7:30	Temperature, Water		8.8	deg C	
OH-01	12/20/2004	13:30	Temperature, Water		0.1	deg C	
OH-01	1/6/2005	12:30	Temperature, Water		4.3	deg C	
OH-01	3/3/2005	13:30	Temperature, Water		5.2	deg C	
OH-01	4/5/2005	14:30	Temperature, Water		16.9	deg C	
OH-01	5/17/2005	9:30	Temperature, Water		16	deg C	
OH-01	6/14/2005	9:00	Temperature, Water		21.8	deg C	
OH-01	8/4/2005	12:30	Temperature, Water		26.3	deg C	
OH-01	9/20/2005	10:30	Temperature, Water		21	deg C	
OH-01	10/24/2005	10:30	Temperature, Water		10.8	deg C	
OH-01	11/14/2005	10:30	Temperature, Water		10.2	deg C	
OHA-01	4/15/1991	1225	Ammonia, unionized		0.000818637	mg/L	$
OHA-01	9/18/1991	1230	Ammonia, unionized		0.0128534	mg/L	$
OHA-01	10/28/1991	1045	Ammonia, unionized		0.0193602	mg/L	$
OHA-01	4/15/1991	1225	BOD, carbonaceous		8	mg/L	
OHA-01	4/15/1991	1225	BOD, carbonaceous		3	mg/L	
OHA-01	9/18/1991	1230	BOD, carbonaceous		5	mg/L	
OHA-01	9/18/1991	1230	BOD, carbonaceous		2	mg/L	
OHA-01	10/28/1991	1045	BOD, carbonaceous		26	mg/L	
OHA-01	10/28/1991	1045	BOD, carbonaceous		11	mg/L	
OHA-01	4/15/1991	1225	COD, .025N K2CR2O7	MG/L	66	mg/L	
OHA-01	9/18/1991	1230	COD, .025N K2CR2O7	MG/L	37	mg/L	
OHA-01	10/28/1991	1045	COD, .025N K2CR2O7	MG/L	180	mg/L	
OHA-01	4/15/1991	1225	Dissolved Oxygen		6.9	mg/L	
OHA-01	9/18/1991	1230	Dissolved Oxygen		1.7	mg/L	
OHA-01	10/28/1991	1045	Dissolved Oxygen		1.1	mg/L	
OHA-01	4/15/1991	1225	Nitrogen, Ammonia as N		0.59	mg/L	
OHA-01	9/18/1991	1230	Nitrogen, Ammonia as N		0.89	mg/L	
OHA-01	10/28/1991	1045	Nitrogen, Ammonia as N		2.9	mg/L	
OHA-01	4/15/1991	1225	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		1.6	mg/L	
OHA-01	9/18/1991	1230	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.21	mg/L	
OHA-01	10/28/1991	1045	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.05	mg/L	
OHA-01	4/15/1991	1225	Nitrogen, Total Kjeldahl		4.2	mg/L	
OHA-01	9/18/1991	1230	Nitrogen, Total Kjeldahl		1.8	mg/L	
OHA-01	10/28/1991	1045	Nitrogen, Total Kjeldahl		8.3	mg/L	
OHA-01	4/15/1991	1225	Phosphorus, Total		1.7	mg/L	
OHA-01	9/18/1991	1230	Phosphorus, Total		2	mg/L	
OHA-01	10/28/1991	1045	Phosphorus, Total		4.7	mg/L	
OHA-01	4/15/1991	1225	Temperature, Water		15.2	deg. C	
OHA-01	9/18/1991	1230	Temperature, Water		19	deg. C	
OHA-01	10/28/1991	1045	Temperature, Water		17.8	deg. C	
OHA-02	4/15/1991	1200	Ammonia, unionized		0.00129329	mg/L	$
OHA-02	9/18/1991	1215	Ammonia, unionized		0.0486782	mg/L	$
OHA-02	10/28/1991	1110	Ammonia, unionized		0.010088	mg/L	$
OHA-02	4/15/1991	1200	BOD, carbonaceous		13	mg/L	
OHA-02	4/15/1991	1200	BOD, carbonaceous		4	mg/L	
OHA-02	9/18/1991	1215	BOD, carbonaceous		10	mg/L	
OHA-02	9/18/1991	1215	BOD, carbonaceous		3	mg/L	
OHA-02	10/28/1991	1110	BOD, carbonaceous		18	mg/L	
OHA-02	10/28/1991	1110	BOD, carbonaceous		6	mg/L	
OHA-02	4/15/1991	1200	COD, .025N K2CR2O7	MG/L	120	mg/L	
OHA-02	9/18/1991	1215	COD, .025N K2CR2O7	MG/L	44	mg/L	
OHA-02	10/28/1991	1110	COD, .025N K2CR2O7	MG/L	140	mg/L	
OHA-02	4/15/1991	1200	Dissolved Oxygen		6.4	mg/L	
OHA-02	9/18/1991	1215	Dissolved Oxygen		0.8	mg/L	
OHA-02	10/28/1991	1110	Dissolved Oxygen		2.7	mg/L	
OHA-02	4/15/1991	1200	Nitrogen, Ammonia as N		1.2	mg/L	
OHA-02	9/18/1991	1215	Nitrogen, Ammonia as N		4.2	mg/L	
OHA-02	10/28/1991	1110	Nitrogen, Ammonia as N		1.5	mg/L	
OHA-02	4/15/1991	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		1.5	mg/L	
OHA-02	9/18/1991	1215	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.11	mg/L	
OHA-02	10/28/1991	1110	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.43	mg/L	
OHA-02	4/15/1991	1200	Nitrogen, Total Kjeldahl		6.1	mg/L	
OHA-02	9/18/1991	1215	Nitrogen, Total Kjeldahl		5.7	mg/L	
OHA-02	10/28/1991	1110	Nitrogen, Total Kjeldahl		3.9	mg/L	
OHA-02	4/15/1991	1200	Phosphorus, Total		2.1	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OHA-02	9/18/1991	1215	Phosphorus, Total	1.5	mg/L	
OHA-02	10/28/1991	1110	Phosphorus, Total	3.5	mg/L	
OHA-02	4/15/1991	1200	Temperature, Water	14.9	deg. C	
OHA-02	9/18/1991	1215	Temperature, Water	19.1	deg. C	
OHA-02	10/28/1991	1110	Temperature, Water	17.9	deg. C	
OHA-03	9/8/2008	11:30:00	BOD, carbonaceous	5.7	mg/l	J7
OHA-03	9/8/2008	11:30:00	BOD, carbonaceous	3.1	mg/l	V
OHA-03	9/15/2008	12:00:00	BOD, carbonaceous	5	mg/l	
OHA-03	9/15/2008	12:00:00	BOD, carbonaceous	4.4	mg/l	
OHA-03	9/8/2008	11:30:00	Chlorophyll a, corrected for pheophytin	66.7	ug/l	
OHA-03	9/15/2008	12:00:00	Chlorophyll a, corrected for pheophytin	8.93	ug/l	
OHA-03	9/8/2008	11:30:00	Chlorophyll a, uncorrected for pheophytin	71.4	ug/l	
OHA-03	9/15/2008	12:00:00	Chlorophyll a, uncorrected for pheophytin	10.8	ug/l	
OHA-03	7/22/2008	12:32:00	Hardness, Total	251000	ug/l	
OHA-03	7/29/2008	13:50:00	Hardness, Total	152000	ug/l	
OHA-03	9/8/2008	11:30:00	Hardness, Total	137000	ug/l	
OHA-03	9/15/2008	12:00:00	Hardness, Total	65700	ug/l	
OHA-03	4/15/1991	12:00:00 AM	Manganese, Total	289	µg/L	
OHA-03	9/18/1991	12:00:00 AM	Manganese, Total	788	µg/L	
OHA-03	10/28/1991	12:00:00 AM	Manganese, Total	751	µg/L	
OHA-03	7/22/2008		Manganese, Total	724	ug/l	
OHA-03	7/22/2008	12:32:00	Manganese, Total	724	ug/l	
OHA-03	7/29/2008		Manganese, Total	270	ug/l	
OHA-03	7/29/2008	13:50:00	Manganese, Total	270	ug/l	
OHA-03	9/8/2008		Manganese, Total	209	ug/l	
OHA-03	9/8/2008	11:30:00	Manganese, Total	209	ug/l	
OHA-03	9/15/2008		Manganese, Total	98.4	ug/l	
OHA-03	9/15/2008	12:00:00	Manganese, Total	98.4	ug/l	
OHA-03	9/8/2008	11:30:00	Nitrogen, Ammonia as N	0.546	mg/l	
OHA-03	9/15/2008	12:00:00	Nitrogen, Ammonia as N	0.37	mg/l	
OHA-03	9/8/2008	11:30:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.7	mg/l	
OHA-03	9/15/2008	12:00:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.524	mg/l	
OHA-03	9/8/2008	11:30:00	Nitrogen, Total Kjeldahl	1.76	mg/l	
OHA-03	9/15/2008	12:00:00	Nitrogen, Total Kjeldahl	1.43	mg/l	
OHA-03	9/8/2008	11:30:00	Phosphorus, Total	2.21	mg/l	
OHA-03	9/15/2008	12:00:00	Phosphorus, Total	1.36	mg/l	
OHA-03	9/8/2008	11:30:00	Solids, Total Suspended (TSS)	17	mg/l	
OHA-03	9/15/2008	12:00:00	Solids, Total Suspended (TSS)	38	mg/l	
OHA-03	4/15/1991	1130	Ammonia, unionized	0.00217857	mg/L	$
OHA-03	9/18/1991	1200	Ammonia, unionized	0.00809763	mg/L	$
OHA-03	10/28/1991	1125	Ammonia, unionized	0.0253685	mg/L	$
OHA-03	4/15/1991	1130	BOD, carbonaceous	10	mg/L	
OHA-03	4/15/1991	1130	BOD, carbonaceous	4	mg/L	
OHA-03	9/18/1991	1200	BOD, carbonaceous	12	mg/L	
OHA-03	9/18/1991	1200	BOD, carbonaceous	5	mg/L	
OHA-03	10/28/1991	1125	BOD, carbonaceous	19	mg/L	
OHA-03	10/28/1991	1125	BOD, carbonaceous	8	mg/L	
OHA-03	4/15/1991	1130	COD, .025N K2CR2O7 MG/L	110	mg/L	
OHA-03	9/18/1991	1200	COD, .025N K2CR2O7 MG/L	62	mg/L	
OHA-03	10/28/1991	1125	COD, .025N K2CR2O7 MG/L	180	mg/L	
OHA-03	4/15/1991	1130	Dissolved Oxygen	7.3	mg/L	
OHA-03	9/18/1991	1200	Dissolved Oxygen	1	mg/L	
OHA-03	10/28/1991	1125	Dissolved Oxygen	0.6	mg/L	
OHA-03	4/15/1991	1130	Nitrogen, Ammonia as N	0.8	mg/L	
OHA-03	9/18/1991	1200	Nitrogen, Ammonia as N	0.84	mg/L	
OHA-03	10/28/1991	1125	Nitrogen, Ammonia as N	3.8	mg/L	
OHA-03	4/15/1991	1130	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.3	mg/L	
OHA-03	9/18/1991	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.47	mg/L	
OHA-03	10/28/1991	1125	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.1	mg/L	
OHA-03	4/15/1991	1130	Nitrogen, Total Kjeldahl	5.3	mg/L	
OHA-03	9/18/1991	1200	Nitrogen, Total Kjeldahl	2.8	mg/L	
OHA-03	10/28/1991	1125	Nitrogen, Total Kjeldahl	6.9	mg/L	
OHA-03	4/15/1991	1130	Phosphorus, Total	2.2	mg/L	
OHA-03	9/18/1991	1200	Phosphorus, Total	2.5	mg/L	
OHA-03	10/28/1991	1125	Phosphorus, Total	4.8	mg/L	
OHA-03	4/15/1991	1130	Temperature, Water	15	deg. C	
OHA-03	9/18/1991	1200	Temperature, Water	19.7	deg. C	
OHA-03	10/28/1991	1125	Temperature, Water	17.8	deg. C	
OHA-04	7/22/2008	11:20:00	BOD, carbonaceous	5.8	mg/l	
OHA-04	7/22/2008	11:20:00	BOD, carbonaceous	5.6	mg/l	
OHA-04	7/29/2008	12:43:00	BOD, carbonaceous	9.8	mg/l	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OHA-04	7/29/2008	12:43:00	BOD, carbonaceous	9.7	mg/l	
OHA-04	9/8/2008	12:40:00	BOD, carbonaceous	3.1	mg/l	J7
OHA-04	9/8/2008	12:40:00	BOD, carbonaceous	3.4	mg/l	V
OHA-04	9/15/2008	13:25:00	BOD, carbonaceous	4.6	mg/l	
OHA-04	9/15/2008	13:25:00	BOD, carbonaceous	4.8	mg/l	
OHA-04	7/22/2008	11:20:00	Chlorophyll a, corrected for pheophytin	54.1	ug/l	
OHA-04	7/29/2008	12:43:00	Chlorophyll a, corrected for pheophytin	12.1	ug/l	
OHA-04	9/8/2008	12:40:00	Chlorophyll a, corrected for pheophytin	4.54	ug/l	
OHA-04	9/15/2008	13:25:00	Chlorophyll a, corrected for pheophytin	5.89	ug/l	
OHA-04	7/22/2008	11:20:00	Chlorophyll a, uncorrected for pheophytin	61.5	ug/l	
OHA-04	7/29/2008	12:43:00	Chlorophyll a, uncorrected for pheophytin	11.2	ug/l	
OHA-04	9/8/2008	12:40:00	Chlorophyll a, uncorrected for pheophytin	5.01	ug/l	
OHA-04	9/15/2008	13:25:00	Chlorophyll a, uncorrected for pheophytin	6.86	ug/l	
OHA-04	7/22/2008	11:20:00	Hardness, Total	123000	ug/l	
OHA-04	7/29/2008	12:43:00	Hardness, Total	119000	ug/l	
OHA-04	9/8/2008	12:40:00	Hardness, Total	68700	ug/l	
OHA-04	9/15/2008	13:25:00	Hardness, Total	51800	ug/l	
OHA-04	7/22/2008	11:20:00	Manganese, Total	948	ug/l	
OHA-04	7/29/2008	12:43:00	Manganese, Total	878	ug/l	
OHA-04	9/8/2008	12:40:00	Manganese, Total	334	ug/l	
OHA-04	9/15/2008	13:25:00	Manganese, Total	83.7	ug/l	
OHA-04	7/22/2008	11:20:00	Nitrogen, Ammonia as N	0.03	mg/l	J
OHA-04	7/29/2008	12:43:00	Nitrogen, Ammonia as N	ND	mg/l	ND
OHA-04	9/8/2008	12:40:00	Nitrogen, Ammonia as N	0.559	mg/l	
OHA-04	9/15/2008	13:25:00	Nitrogen, Ammonia as N	0.114	mg/l	
OHA-04	7/22/2008	11:20:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.032	mg/l	J
OHA-04	7/29/2008	12:43:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	ND	mg/l	ND
OHA-04	9/8/2008	12:40:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.29	mg/l	
OHA-04	9/15/2008	13:25:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.688	mg/l	
OHA-04	7/22/2008	11:20:00	Nitrogen, Total Kjeldahl	2.2	mg/l	
OHA-04	7/29/2008	12:43:00	Nitrogen, Total Kjeldahl	4.77	mg/l	
OHA-04	9/8/2008	12:40:00	Nitrogen, Total Kjeldahl	1.54	mg/l	
OHA-04	9/15/2008	13:25:00	Nitrogen, Total Kjeldahl	1.49	mg/l	
OHA-04	7/22/2008	11:20:00	Phosphorus, Total	1.54	mg/l	
OHA-04	7/29/2008	12:43:00	Phosphorus, Total	1.09	mg/l	
OHA-04	9/8/2008	12:40:00	Phosphorus, Total	1.54	mg/l	
OHA-04	9/15/2008	13:25:00	Phosphorus, Total	1.18	mg/l	
OHA-04	7/22/2008	11:20:00	Solids, Total Suspended (TSS)	129	mg/l	
OHA-04	7/29/2008	12:43:00	Solids, Total Suspended (TSS)	23	mg/l	
OHA-04	9/8/2008	12:40:00	Solids, Total Suspended (TSS)	9	mg/l	
OHA-04	9/15/2008	13:25:00	Solids, Total Suspended (TSS)	32	mg/l	
OHA-04	4/15/1991	1100	Ammonia, unionized	0.0029068	mg/L	$
OHA-04	9/18/1991	1145	Ammonia, unionized	0.0587845	mg/L	$
OHA-04	10/28/1991	1145	Ammonia, unionized	0.0151019	mg/L	$
OHA-04	4/15/1991	1100	BOD, carbonaceous	12	mg/L	
OHA-04	4/15/1991	1100	BOD, carbonaceous	5	mg/L	
OHA-04	9/18/1991	1145	BOD, carbonaceous	6	mg/L	
OHA-04	9/18/1991	1145	BOD, carbonaceous	1	mg/L	
OHA-04	10/28/1991	1145	BOD, carbonaceous	19	mg/L	
OHA-04	10/28/1991	1145	BOD, carbonaceous	7	mg/L	
OHA-04	4/15/1991	1100	COD, .025N K2CR2O7 MG/L	120	mg/L	
OHA-04	9/18/1991	1145	COD, .025N K2CR2O7 MG/L	48	mg/L	
OHA-04	10/28/1991	1145	COD, .025N K2CR2O7 MG/L	160	mg/L	
OHA-04	4/15/1991	1100	Dissolved Oxygen	7.2	mg/L	
OHA-04	9/18/1991	1145	Dissolved Oxygen	2.9	mg/L	
OHA-04	10/28/1991	1145	Dissolved Oxygen	2.1	mg/L	
OHA-04	4/15/1991	1100	Nitrogen, Ammonia as N	0.69	mg/L	
OHA-04	9/18/1991	1145	Nitrogen, Ammonia as N	4.1	mg/L	
OHA-04	10/28/1991	1145	Nitrogen, Ammonia as N	1.8	mg/L	
OHA-04	4/15/1991	1100	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.3	mg/L	
OHA-04	9/18/1991	1145	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.15	mg/L	
OHA-04	10/28/1991	1145	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.33	mg/L	
OHA-04	4/15/1991	1100	Nitrogen, Total Kjeldahl	4.8	mg/L	
OHA-04	9/18/1991	1145	Nitrogen, Total Kjeldahl	5.3	mg/L	
OHA-04	10/28/1991	1145	Nitrogen, Total Kjeldahl	5.7	mg/L	
OHA-04	4/15/1991	1100	Phosphorus, Total	2.3	mg/L	
OHA-04	9/18/1991	1145	Phosphorus, Total	0.42	mg/L	
OHA-04	10/28/1991	1145	Phosphorus, Total	3.9	mg/L	
OHA-04	4/15/1991	1100	Temperature, Water	14.7	deg. C	
OHA-04	9/18/1991	1145	Temperature, Water	18.9	deg. C	
OHA-04	10/28/1991	1145	Temperature, Water	17.8	deg. C	

Primary Station ID	Start Date	Start Time	Parameter Long Name		Result Value	Units	Remark Code
OHA-05	4/15/1991	1000	Ammonia, unionized		0.00144804	mg/L	$
OHA-05	9/18/1991	1130	Ammonia, unionized		0.00425193	mg/L	$
OHA-05	10/28/1991	1230	Ammonia, unionized		0.0287395	mg/L	$
OHA-05	4/15/1991	1000	BOD, carbonaceous		10	mg/L	
OHA-05	4/15/1991	1000	BOD, carbonaceous		4	mg/L	
OHA-05	9/18/1991	1130	BOD, carbonaceous		14	mg/L	
OHA-05	9/18/1991	1130	BOD, carbonaceous		5	mg/L	
OHA-05	10/28/1991	1230	BOD, carbonaceous		48	mg/L	
OHA-05	10/28/1991	1230	BOD, carbonaceous		19	mg/L	
OHA-05	4/15/1991	1000	COD, .025N K2CR2O7	MG/L	84	mg/L	
OHA-05	9/18/1991	1130	COD, .025N K2CR2O7	MG/L	58	mg/L	
OHA-05	10/28/1991	1230	COD, .025N K2CR2O7	MG/L	240	mg/L	
OHA-05	4/15/1991	1000	Dissolved Oxygen		8.4	mg/L	
OHA-05	9/18/1991	1130	Dissolved Oxygen		3.3	mg/L	
OHA-05	10/28/1991	1230	Dissolved Oxygen		0.4	mg/L	
OHA-05	4/15/1991	1000	Nitrogen, Ammonia as N		0.47	mg/L	
OHA-05	9/18/1991	1130	Nitrogen, Ammonia as N		0.22	mg/L	
OHA-05	10/28/1991	1230	Nitrogen, Ammonia as N		4	mg/L	
OHA-05	4/15/1991	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		1.2	mg/L	
OHA-05	9/18/1991	1130	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.03	mg/L	
OHA-05	10/28/1991	1230	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.08	mg/L	
OHA-05	4/15/1991	1000	Nitrogen, Total Kjeldahl		4.7	mg/L	
OHA-05	9/18/1991	1130	Nitrogen, Total Kjeldahl		1.5	mg/L	
OHA-05	10/28/1991	1230	Nitrogen, Total Kjeldahl		9	mg/L	
OHA-05	4/15/1991	1000	Phosphorus, Total		2.1	mg/L	
OHA-05	9/18/1991	1130	Phosphorus, Total		0.57	mg/L	
OHA-05	10/28/1991	1230	Phosphorus, Total		5.6	mg/L	
OHA-05	4/15/1991	1000	Temperature, Water		13.6	deg. C	
OHA-05	9/18/1991	1130	Temperature, Water		19.9	deg. C	
OHA-05	10/28/1991	1230	Temperature, Water		18.8	deg. C	
OHA-06	4/15/1991	900	Ammonia, unionized		0.00205013	mg/L	$
OHA-06	9/18/1991	1115	Ammonia, unionized		0.0119043	mg/L	$
OHA-06	10/28/1991	1245	Ammonia, unionized		0.028021	mg/L	$
OHA-06	4/15/1991	900	BOD, carbonaceous		7	mg/L	
OHA-06	4/15/1991	900	BOD, carbonaceous		5	mg/L	
OHA-06	9/18/1991	1115	BOD, carbonaceous		12	mg/L	
OHA-06	9/18/1991	1115	BOD, carbonaceous		9	mg/L	
OHA-06	10/28/1991	1245	BOD, carbonaceous		12	mg/L	
OHA-06	10/28/1991	1245	BOD, carbonaceous		4	mg/L	
OHA-06	4/15/1991	900	COD, .025N K2CR2O7	MG/L	79	mg/L	
OHA-06	9/18/1991	1115	COD, .025N K2CR2O7	MG/L	150	mg/L	
OHA-06	10/28/1991	1245	COD, .025N K2CR2O7	MG/L	130	mg/L	
OHA-06	4/15/1991	900	Dissolved Oxygen		8.5	mg/L	
OHA-06	9/18/1991	1115	Dissolved Oxygen		6.7	mg/L	
OHA-06	10/28/1991	1245	Dissolved Oxygen		0.7	mg/L	
OHA-06	4/15/1991	900	Nitrogen, Ammonia as N		0.89	mg/L	
OHA-06	9/18/1991	1115	Nitrogen, Ammonia as N		0.23	mg/L	
OHA-06	10/28/1991	1245	Nitrogen, Ammonia as N		3.9	mg/L	
OHA-06	4/15/1991	900	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.89	mg/L	
OHA-06	9/18/1991	1115	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.3	mg/L	
OHA-06	10/28/1991	1245	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.21	mg/L	
OHA-06	4/15/1991	900	Nitrogen, Total Kjeldahl		5	mg/L	
OHA-06	9/18/1991	1115	Nitrogen, Total Kjeldahl		3.2	mg/L	
OHA-06	10/28/1991	1245	Nitrogen, Total Kjeldahl		5.04	mg/L	
OHA-06	9/18/1991	1115	pH		8.2		
OHA-06	4/15/1991	900	Phosphorus, Total		1.9	mg/L	
OHA-06	9/18/1991	1115	Phosphorus, Total		1.4	mg/L	
OHA-06	10/28/1991	1245	Phosphorus, Total		4.2	mg/L	
OHA-06	4/15/1991	900	Temperature, Water		12.8	deg. C	
OHA-06	9/18/1991	1115	Temperature, Water		18.1	deg. C	
OHA-06	10/28/1991	1245	Temperature, Water		18.8	deg. C	
OHAA-07	4/15/1991	1030	Ammonia, unionized		0.00478134	mg/L	$
OHAA-07	9/18/1991	1300	Ammonia, unionized		0.00714379	mg/L	$
OHAA-07	10/28/1991	1200	Ammonia, unionized		0.0224681	mg/L	$
OHAA-07	4/15/1991	1030	BOD, carbonaceous		9	mg/L	
OHAA-07	4/15/1991	1030	BOD, carbonaceous		5	mg/L	
OHAA-07	9/18/1991	1300	BOD, carbonaceous		10	mg/L	
OHAA-07	9/18/1991	1300	BOD, carbonaceous		1	mg/L	
OHAA-07	10/28/1991	1200	BOD, carbonaceous		29	mg/L	
OHAA-07	10/28/1991	1200	BOD, carbonaceous		14	mg/L	
OHAA-07	9/8/2008	14:05:00	BOD, carbonaceous		2.7	mg/l	J7

Primary Station ID	Start Date	Start Time	Parameter Long Name		Result Value	Units	Remark Code
OHAA-07	9/8/2008	14:05:00	BOD, carbonaceous		2.4	mg/l	V
OHAA-07	9/15/2008	14:20:00	BOD, carbonaceous		4.5	mg/l	
OHAA-07	9/15/2008	14:20:00	BOD, carbonaceous		4.1	mg/l	
OHAA-07	9/8/2008	14:05:00	Chlorophyll a, corrected for pheophytin		5.55	ug/l	
OHAA-07	9/15/2008	14:20:00	Chlorophyll a, corrected for pheophytin		5.08	ug/l	
OHAA-07	9/8/2008	14:05:00	Chlorophyll a, uncorrected for pheophytin		6.19	ug/l	
OHAA-07	9/15/2008	14:20:00	Chlorophyll a, uncorrected for pheophytin		6.62	ug/l	
OHAA-07	4/15/1991	1030	COD, .025N K2CR2O7	MG/L	110	mg/L	
OHAA-07	9/18/1991	1300	COD, .025N K2CR2O7	MG/L	61	mg/L	
OHAA-07	10/28/1991	1200	COD, .025N K2CR2O7	MG/L	200	mg/L	
OHAA-07	4/15/1991	1030	Dissolved Oxygen		7.5	mg/L	
OHAA-07	9/18/1991	1300	Dissolved Oxygen		3	mg/L	
OHAA-07	10/28/1991	1200	Dissolved Oxygen		0.5	mg/L	
OHAA-07	7/22/2008	12:32:00	Hardness, Total		314000	ug/l	
OHAA-07	7/29/2008	13:40:00	Hardness, Total		185000	ug/l	
OHAA-07	9/8/2008	14:05:00	Hardness, Total		189000	ug/l	
OHAA-07	9/15/2008	14:20:00	Hardness, Total		69900	ug/l	
OHAA-07	4/15/1991	12:00:00 AM	Manganese, Total		257	µg/L	
OHAA-07	9/18/1991	12:00:00 AM	Manganese, Total		340	µg/L	
OHAA-07	10/28/1991	12:00:00 AM	Manganese, Total		1006	µg/L	
OHAA-07	7/22/2008		Manganese, Total		529	ug/l	
OHAA-07	7/22/2008	12:32:00	Manganese, Total		529	ug/l	
OHAA-07	7/29/2008		Manganese, Total		310	ug/l	
OHAA-07	7/29/2008	13:40:00	Manganese, Total		310	ug/l	
OHAA-07	9/8/2008		Manganese, Total		409	ug/l	
OHAA-07	9/8/2008	14:05:00	Manganese, Total		409	ug/l	
OHAA-07	9/15/2008		Manganese, Total		121	ug/l	
OHAA-07	9/15/2008	14:20:00	Manganese, Total		121	ug/l	
OHAA-07	4/15/1991	1030	Nitrogen, Ammonia as N		1.6	mg/L	
OHAA-07	9/18/1991	1300	Nitrogen, Ammonia as N		0.89	mg/L	
OHAA-07	10/28/1991	1200	Nitrogen, Ammonia as N		4.2	mg/L	
OHAA-07	9/8/2008	14:05:00	Nitrogen, Ammonia as N		0.638	mg/l	
OHAA-07	9/15/2008	14:20:00	Nitrogen, Ammonia as N		0.483	mg/l	
OHAA-07	4/15/1991	1030	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		1.1	mg/L	
OHAA-07	9/18/1991	1300	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		9.9	mg/L	
OHAA-07	10/28/1991	1200	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.03	mg/L	
OHAA-07	9/8/2008	14:05:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.234	mg/l	
OHAA-07	9/15/2008	14:20:00	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N		0.65	mg/l	
OHAA-07	4/15/1991	1030	Nitrogen, Total Kjeldahl		5.9	mg/L	
OHAA-07	9/18/1991	1300	Nitrogen, Total Kjeldahl		3	mg/L	
OHAA-07	10/28/1991	1200	Nitrogen, Total Kjeldahl		6.4	mg/L	
OHAA-07	9/8/2008	14:05:00	Nitrogen, Total Kjeldahl		1.09	mg/l	
OHAA-07	9/15/2008	14:20:00	Nitrogen, Total Kjeldahl		1.87	mg/l	
OHAA-07	4/15/1991	1030	Phosphorus, Total		2.2	mg/L	
OHAA-07	9/18/1991	1300	Phosphorus, Total		3	mg/L	
OHAA-07	10/28/1991	1200	Phosphorus, Total		5.3	mg/L	
OHAA-07	9/8/2008	14:05:00	Phosphorus, Total		1.16	mg/l	
OHAA-07	9/15/2008	14:20:00	Phosphorus, Total		1.53	mg/l	
OHAA-07	9/8/2008	14:05:00	Solids, Total Suspended (TSS)		11	mg/l	
OHAA-07	9/15/2008	14:20:00	Solids, Total Suspended (TSS)		34	mg/l	
OHAA-07	4/15/1991	1030	Temperature, Water		13.2	deg. C	
OHAA-07	9/18/1991	1300	Temperature, Water		17.2	deg. C	
OHAA-07	10/28/1991	1200	Temperature, Water		17.9	deg. C	
OHAA-08	4/15/1991	12:00:00 AM	Manganese, Total		152	µg/L	
OHAA-08	9/18/1991	12:00:00 AM	Manganese, Total		526	µg/L	
OHAA-08	10/28/1991	12:00:00 AM	Manganese, Total		488	µg/L	
OHAA-08	4/15/1991	930	Ammonia, unionized		0.00131473	mg/L	$
OHAA-08	9/18/1991	1315	Ammonia, unionized		0.207986	mg/L	$
OHAA-08	10/28/1991	1215	Ammonia, unionized		0.0571268	mg/L	$
OHAA-08	9/18/1991	1315	Ammonia, unionized (calculated)		0.252888	mg/L	
OHAA-08	4/15/1991	930	BOD, carbonaceous		8	mg/L	
OHAA-08	4/15/1991	930	BOD, carbonaceous		4	mg/L	
OHAA-08	9/18/1991	1315	BOD, carbonaceous		39	mg/L	
OHAA-08	9/18/1991	1315	BOD, carbonaceous		20	mg/L	
OHAA-08	10/28/1991	1215	BOD, carbonaceous		40	mg/L	
OHAA-08	10/28/1991	1215	BOD, carbonaceous		27	mg/L	
OHAA-08	4/15/1991	930	COD, .025N K2CR2O7	MG/L	67	mg/L	
OHAA-08	9/18/1991	1315	COD, .025N K2CR2O7	MG/L	250	mg/L	
OHAA-08	10/28/1991	1215	COD, .025N K2CR2O7	MG/L	260	mg/L	
OHAA-08	4/15/1991	930	Dissolved Oxygen		6.8	mg/L	
OHAA-08	9/18/1991	1315	Dissolved Oxygen		0.2	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OHAA-08	10/28/1991	1215	Dissolved Oxygen	0.5	mg/L	
OHAA-08	9/18/1991	1315	Hardness, Total	202.216		
OHAA-08	9/18/1991	1315	Hardness, Total	202		
OHAA-08	4/15/1991	930	Nitrogen, Ammonia as N	0.43	mg/L	
OHAA-08	9/18/1991	1315	Nitrogen, Ammonia as N	9.5	mg/L	
OHAA-08	10/28/1991	1215	Nitrogen, Ammonia as N	7.5	mg/L	
OHAA-08	4/15/1991	930	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.93	mg/L	
OHAA-08	9/18/1991	1315	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.8	mg/L	
OHAA-08	10/28/1991	1215	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.9	mg/L	
OHAA-08	4/15/1991	930	Nitrogen, Total Kjeldahl	3.2	mg/L	
OHAA-08	9/18/1991	1315	Nitrogen, Total Kjeldahl	7	mg/L	
OHAA-08	10/28/1991	1215	Nitrogen, Total Kjeldahl	6.8	mg/L	
OHAA-08	9/18/1991	1315	pH	7.8		
OHAA-08	4/15/1991	930	Phosphorus, Total	2	mg/L	
OHAA-08	9/18/1991	1315	Phosphorus, Total	12	mg/L	
OHAA-08	10/28/1991	1215	Phosphorus, Total	6.8	mg/L	
OHAA-08	4/15/1991	930	Temperature, Water	13.5	deg. C	
OHAA-08	9/18/1991	1315	Temperature, Water	18.5	deg. C	
OHAA-08	10/28/1991	1215	Temperature, Water	19.6	deg. C	
OHA-AV-A1	10/10/2002	9:00 AM	BOD, Biochemical oxygen demand	8		
OHA-AV-A1	10/10/2002	9:00 AM	BOD, carbonaceous	7		
OHA-AV-A1	10/10/2002	9:15	Dissolved Oxygen	6.4	mg/L	
OHA-AV-A1	10/10/2002	9:00 AM	Dissolved Oxygen	0.9		
OHA-AV-A1	10/10/2002	9:00:00 AM	Manganese, Total	1600		
OHA-AV-A1	10/10/2002	9:00 AM	Temperature, Water	14		
OHA-AV-C1	10/10/2002	9:30 AM	BOD, Biochemical oxygen demand	3		
OHA-AV-C1	10/10/2002	9:30 AM	BOD, carbonaceous	1		
OHA-AV-C1	10/10/2002	9:30 AM	Dissolved Oxygen	5.5		
OHA-AV-C1	10/10/2002	9:30:00 AM	Manganese, Total	83		
OHA-AV-C1	10/10/2002	9:30 AM	Temperature, Water	18		
OHA-AV-C3	10/10/2002	10:00 AM	BOD, Biochemical oxygen demand	2		
OHA-AV-C3	10/10/2002	10:00 AM	BOD, carbonaceous	1	K	
OHA-AV-C3	10/10/2002	10:00 AM	Dissolved Oxygen	3.1		
OHA-AV-C3	10/10/2002	10:00:00 AM	Manganese, Total	220		
OHA-AV-C3	10/10/2002	10:00 AM	Temperature, Water	14		
OHA-AV-D1	10/10/2002	9:50 AM	BOD, Biochemical oxygen demand	3		
OHA-AV-D1	10/10/2002	9:50 AM	BOD, carbonaceous	2		
OHA-AV-D1	10/10/2002	9:50 AM	Dissolved Oxygen	4		
OHA-AV-D1	10/10/2002	9:50:00 AM	Manganese, Total	200		
OHA-AV-D1	10/10/2002	9:50 AM	Temperature, Water	14		
OHA-AV-E1	10/10/2002	9:15 AM	BOD, Biochemical oxygen demand	6		
OHA-AV-E1	10/10/2002	9:15 AM	BOD, carbonaceous	2		
OHA-AV-E1	10/10/2002	9:15 AM	Dissolved Oxygen	6.4		
OHA-AV-E1	10/10/2002	9:00	Temperature, Water	9.2	deg. C	
OHA-AV-E1	10/10/2002	11:00	Temperature, Water	3.1	deg. C	
OHA-AV-E1	10/10/2002	9:00	Temperature, Water	14	deg. C	
OHA-AV-E1	10/10/2002	9:30	Temperature, Water	18	deg. C	
OHA-AV-E1	10/10/2002	10:00	Temperature, Water	14	deg. C	
OHA-AV-E1	10/10/2002	9:50	Temperature, Water	14	deg. C	
OHA-AV-E1	10/10/2002	9:15	Temperature, Water	19	deg. C	
OHA-AV-E1	10/10/2002	9:15 AM	Temperature, Water	19		
OHCA-AL-C1	7/28/1994	1445	Ammonia, unionized	0.122	mg/L	
OHCA-AL-C1	7/28/1994	1445	BOD, carbonaceous	19	mg/L	
OHCA-AL-C1	7/28/1994	1445	BOD, carbonaceous	9	mg/l	
OHCA-AL-C1	7/28/1994	1445	Conductivity	2210	umhos/cm	
OHCA-AL-C1	7/28/1994	1445	Discharge	0.14	cfs	
OHCA-AL-C1	7/28/1994	1445	Dissolved Oxygen	4.2	mg/L	
OHCA-AL-C1	7/28/1994	1445	Hardness, Total	434	mg/L	
OHCA-AL-C1	7/28/1994	1445	Nitrogen, Ammonia as N	7.4	mg/L	
OHCA-AL-C1	7/28/1994	1445	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	12.2	mg/L	
OHCA-AL-C1	7/28/1994	1445	pH	7.5		
OHCA-AL-C1	7/28/1994	1445	Phosphorus, Total	4.1	mg/L	
OHCA-AL-C1	7/28/1994	1445	Suspended Solids, Total (TSS)	19	mg/L	
OHCA-AL-C1	7/28/1994	1445	Temperature, Water	24	deg. C	
OHCA-AL-C2	7/28/1994	1500	Ammonia, unionized	0.184	mg/L	
OHCA-AL-C2	7/28/1994	1500	BOD, carbonaceous	13	mg/L	
OHCA-AL-C2	7/28/1994	1500	BOD, carbonaceous	5	mg/l	
OHCA-AL-C2	7/28/1994	1500	Conductivity	1900	umhos/cm	
OHCA-AL-C2	7/28/1994	1500	Discharge	0.15	cfs	
OHCA-AL-C2	7/28/1994	1500	Dissolved Oxygen	4.5	mg/L	
OHCA-AL-C2	7/28/1994	1500	Hardness, Total	405	mg/L	

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OHCA-AL-C2	7/28/1994	1500	Nitrogen, Ammonia as N	5.7	mg/L	
OHCA-AL-C2	7/28/1994	1500	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	9.3	mg/L	
OHCA-AL-C2	7/28/1994	1500	pH	7.8		
OHCA-AL-C2	7/28/1994	1500	Phosphorus, Total	3.1	mg/L	
OHCA-AL-C2	7/28/1994	1500	Suspended Solids, Total (TSS)	20	mg/L	
OHCA-AL-C2	7/28/1994	1500	Temperature, Water	24	deg. C	
OHCA-AL-C3	7/28/1994	1540	Ammonia, unionized	0.023	mg/L	
OHCA-AL-C3	7/28/1994	1540	BOD, carbonaceous	7	mg/L	
OHCA-AL-C3	7/28/1994	1540	BOD, carbonaceous	2	mg/l	
OHCA-AL-C3	7/28/1994	1540	Conductivity	1279	umhos/cm	
OHCA-AL-C3	7/28/1994	1540	Discharge	0.3	cfs	
OHCA-AL-C3	7/28/1994	1540	Dissolved Oxygen	4.2	mg/L	
OHCA-AL-C3	7/28/1994	1540	Hardness, Total	347	mg/L	
OHCA-AL-C3	7/28/1994	1540	Nitrogen, Ammonia as N	1.2	mg/L	
OHCA-AL-C3	7/28/1994	1540	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	4.6	mg/L	
OHCA-AL-C3	7/28/1994	1540	pH	7.6		
OHCA-AL-C3	7/28/1994	1540	Phosphorus, Total	1.6	mg/L	
OHCA-AL-C3	7/28/1994	1540	Suspended Solids, Total (TSS)	48	mg/L	
OHCA-AL-C3	7/28/1994	1540	Temperature, Water	23	deg. C	
OHCA-AL-D1	7/28/1994	1350	Ammonia, unionized	0.023	mg/L	
OHCA-AL-D1	7/28/1994	1350	BOD, carbonaceous	1	mg/l	k
OHCA-AL-D1	7/28/1994	1350	BOD, carbonaceous	2	mg/L	
OHCA-AL-D1	7/28/1994	1350	Conductivity	867	umhos/cm	
OHCA-AL-D1	7/28/1994	1350	Discharge	0.06	cfs	
OHCA-AL-D1	7/28/1994	1350	Dissolved Oxygen	2.6	mg/L	
OHCA-AL-D1	7/28/1994	1350	Hardness, Total	286	mg/L	
OHCA-AL-D1	7/28/1994	1350	Nitrogen, Ammonia as N	1.1	mg/L	
OHCA-AL-D1	7/28/1994	1350	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.08	mg/L	
OHCA-AL-D1	7/28/1994	1350	pH	7.7		
OHCA-AL-D1	7/28/1994	1350	Phosphorus, Total	0.44	mg/L	
OHCA-AL-D1	7/28/1994	1350	Suspended Solids, Total (TSS)	40	mg/L	
OHCA-AL-D1	7/28/1994	1350	Temperature, Water	21	deg. C	
OHCA-AL-E1	7/28/1994	1420	Ammonia, unionized	0.06	mg/L	
OHCA-AL-E1	7/28/1994	1420	BOD, carbonaceous	22	mg/L	
OHCA-AL-E1	7/28/1994	1420	BOD, carbonaceous	**10**	mg/l	
OHCA-AL-E1	7/28/1994	1420	Conductivity	2020	umhos/cm	
OHCA-AL-E1	7/28/1994	1420	Discharge	0.28	cfs	
OHCA-AL-E1	7/28/1994	1420	Dissolved Oxygen	4.8	mg/L	
OHCA-AL-E1	7/28/1994	1420	Hardness, Total	428	mg/L	
OHCA-AL-E1	7/28/1994	1420	Nitrogen, Ammonia as N	6.7	mg/L	
OHCA-AL-E1	7/28/1994	1420	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	14	mg/L	
OHCA-AL-E1	7/28/1994	1420	pH	7.2		
OHCA-AL-E1	7/28/1994	1420	Phosphorus, Total	4.5	mg/L	
OHCA-AL-E1	7/28/1994	1420	Suspended Solids, Total (TSS)	70	mg/L	
OHCA-AL-E1	7/28/1994	1420	Temperature, Water	25	deg. C	
OHC-AL-C2	7/28/1994	1500	Ammonia, unionized	0.184	mg/L	
OHC-AL-C2	7/28/1994	1500	BOD, carbonaceous	13	mg/L	
OHC-AL-C2	7/28/1994	1500	BOD, carbonaceous	5	mg/l	
OHC-AL-C2	7/28/1994	1500	Dissolved Oxygen	4.5	mg/L	
OHC-AL-C2	7/28/1994	1500	Nitrogen, Ammonia as N	5.7	mg/L	
OHC-AL-C2	7/28/1994	1500	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	9.3	mg/L	
OHC-AL-C2	7/28/1994	1500	Phosphorus, Total	3.1	mg/L	
OHC-AL-C2	7/28/1994	1500	Temperature, Water	24	deg. C	
OHC-AL-C3	7/28/1994	1540	Ammonia, unionized	0.023	mg/L	
OHC-AL-C3	7/28/1994	1540	BOD, carbonaceous	7	mg/L	
OHC-AL-C3	7/28/1994	1540	BOD, carbonaceous	2	mg/l	
OHC-AL-C3	7/28/1994	1540	Dissolved Oxygen	4.2	mg/L	
OHC-AL-C3	7/28/1994	1540	Nitrogen, Ammonia as N	1.2	mg/L	
OHC-AL-C3	7/28/1994	1540	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	4.6	mg/L	
OHC-AL-C3	7/28/1994	1540	Phosphorus, Total	1.6	mg/L	
OHC-AL-C3	7/28/1994	1540	Temperature, Water	23	deg. C	
OHC-AL-D1	7/28/1994	1350	Ammonia, unionized	0.023	mg/L	
OHC-AL-D1	7/28/1994	1350	BOD, carbonaceous	1	mg/l	k
OHC-AL-D1	7/28/1994	1350	BOD, carbonaceous	2	mg/L	
OHC-AL-D1	7/28/1994	1350	Dissolved Oxygen	2.6	mg/L	
OHC-AL-D1	7/28/1994	1350	Nitrogen, Ammonia as N	1.1	mg/L	
OHC-AL-D1	7/28/1994	1350	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.08	mg/L	
OHC-AL-D1	7/28/1994	1350	Phosphorus, Total	0.44	mg/L	
OHC-AL-D1	7/28/1994	1350	Temperature, Water	21	deg. C	
OHF-TR-A1	7/29/1998	1300	Ammonia, unionized	0.002	mg/L	
OHF-TR-A1	7/29/1998	1300	Ammonia, unionized	0.002	mg/L	

Primary Station ID	Start Date	Start Time	Parameter Long Name	Result Value	Units	Remark Code
OHF-TR-A1	7/29/1998	1300	BOD, carbonaceous	1	mg/L	
OHF-TR-A1	7/29/1998	1300	BOD, carbonaceous	1	mg/L	
OHF-TR-A1	7/29/1998	1300	BOD, carbonaceous	1	mg/L	
OHF-TR-A1	7/29/1998	1300	BOD, carbonaceous	1	mg/L	
OHF-TR-A1	7/29/1998	1300	Carbon, Total Organic (TOC)	6.0	mg/L	
OHF-TR-A1	7/29/1998	1300	Carbon, Total Organic (TOC)	6.0	mg/L	
OHF-TR-A1	7/29/1998	1300	Dissolved Oxygen	2.2	mg/L	
OHF-TR-A1	7/29/1998	1300	Dissolved Oxygen	2.2	mg/L	
OHF-TR-A1	7/29/1998	1300	Nitrogen, Ammonia as N	0.18	mg/L	
OHF-TR-A1	7/29/1998	1300	Nitrogen, Ammonia as N	0.18	mg/L	
OHF-TR-A1	7/29/1998	1300	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.48	mg/L	
OHF-TR-A1	7/29/1998	1300	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.48	mg/L	
OHF-TR-A1	7/29/1998	1300	Phosphorus, Total	0.32	mg/L	
OHF-TR-A1	7/29/1998	1300	Phosphorus, Total	0.32	mg/L	
OHF-TR-A1	7/29/1998	1300	Temperature, Water	23	deg. C	
OHF-TR-A1	7/29/1998	1300	Temperature, Water	23	deg. C	
OHF-TR-C1	7/29/1998	1340	Ammonia, unionized	0.012	mg/L	
OHF-TR-C1	7/29/1998	1340	Ammonia, unionized	0.012	mg/L	
OHF-TR-C1	7/29/1998	1340	BOD, carbonaceous	4	mg/L	
OHF-TR-C1	7/29/1998	1340	BOD, carbonaceous	4	mg/L	
OHF-TR-C1	7/29/1998	1340	BOD, carbonaceous	1	mg/L	
OHF-TR-C1	7/29/1998	1340	BOD, carbonaceous	1	mg/L	
OHF-TR-C1	7/29/1998	1340	Carbon, Total Organic (TOC)	6.9	mg/L	
OHF-TR-C1	7/29/1998	1340	Carbon, Total Organic (TOC)	6.9	mg/L	
OHF-TR-C1	7/29/1998	1340	Dissolved Oxygen	3.7	mg/L	
OHF-TR-C1	7/29/1998	1340	Dissolved Oxygen	3.7	mg/L	
OHF-TR-C1	7/29/1998	1340	Nitrogen, Ammonia as N	1.1	mg/L	
OHF-TR-C1	7/29/1998	1340	Nitrogen, Ammonia as N	1.1	mg/L	
OHF-TR-C1	7/29/1998	1340	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.12	mg/L	
OHF-TR-C1	7/29/1998	1340	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	1.12	mg/L	
OHF-TR-C1	7/29/1998	1340	Phosphorus, Total	2.1	mg/L	
OHF-TR-C1	7/29/1998	1340	Phosphorus, Total	2.1	mg/L	
OHF-TR-C1	7/29/1998	1340	Temperature, Water	24.6	deg. C	
OHF-TR-C1	7/29/1998	1340	Temperature, Water	24.6	deg. C	
OHF-TR-C3	7/29/1998	1400	Ammonia, unionized	0.004	mg/L	
OHF-TR-C3	7/29/1998	1400	BOD, carbonaceous	1	mg/L	k
OHF-TR-C3	7/29/1998	1400	BOD, carbonaceous	1	mg/L	
OHF-TR-C3	7/29/1998	1400	Carbon, Total Organic (TOC)	5.9	mg/L	
OHF-TR-C3	7/29/1998	1400	Dissolved Oxygen	6.7	mg/L	
OHF-TR-C3	7/29/1998	1400	Nitrogen, Ammonia as N	0.27	mg/L	
OHF-TR-C3	7/29/1998	1400	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	3.44	mg/L	
OHF-TR-C3	7/29/1998	1400	Phosphorus, Total	0.98	mg/L	
OHF-TR-C3	7/29/1998	1400	Temperature, Water	23.4	deg. C	
OH-HL-D1	9/26/2002	1000	BOD, Biochemical oxygen demand	4	mg/L	
OH-HL-D1	9/26/2002	1000	BOD, carbonaceous	1	mg/L	
OH-HL-D1	9/26/2002		BOD, carbonaceous	1	mg/L	
OH-HL-D1	9/26/2002	1000	Conductivity	320	µmhos/cm	
OH-HL-D1	9/26/2002		Dissolved Oxygen	3.1	mg/L	
OH-HL-D1	9/26/2002	1000	Dissolved Oxygen	3.1	mg/L	
OH-HL-D1	9/26/2002	1000	Nitrogen, Ammonia as N	0.35	mg/L	
OH-HL-D1	9/26/2002		Nitrogen, Ammonia as N	0.35	mg/L	
OH-HL-D1	9/26/2002	1000	Nitrogen, Nitrite (NO2) + Nitrate (NO3) as N	0.39	mg/L	
OH-HL-D1	9/26/2002	1000	pH	7.0		
OH-HL-D1	9/26/2002		Phosphorus, Total	0.75	mg/L	
OH-HL-D1	9/26/2002	1000	Phosphorus, Total	0.75	mg/L	
OH-HL-D1	9/26/2002	1000	Suspended Solids, Total (TSS)	48	mg/L	
OH-HL-D1	9/26/2002		Temperature, Water	15	deg. C	
OH-HL-D1	9/26/2002	1000	Temperature, Water	15	deg. C	

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Appendix D
Drainage Area Ratio Calculations

Watershed	Area (Sq. Mi.)		Total NPDES Discharge in Watershed (CFS)
USGS 05595200 RICHLAND CREEK NEAR HECKER, IL	129		18.70

Watershed	Area (Sq. Mi.)	Ratio (Surrogate Gage)	Total NPDES Discharge in Watershed (CFS)
Sugar Creek segment OH-01	124.2	0.96	4.675
Sugar Creek segment OH-HL-D1	33.8	0.26	0.110
Lake Branch segment OHA-02	22.1	0.17	0.265
Lake Branch segment OHA-03	17.2	0.13	0.265
Lake Branch segment OHA-04	10.9	0.08	0.060
Lake Branch segment OHA-05	8.1	0.06	0.060
Lake Branch segment OHA-06	5.4	0.04	0.060
Bull Branch segment OHAA-07	3.6	0.03	0.006
Grassy Branch segment OHC	12.9	0.10	0.140
Trenton Creek segment OHF-TR-A1	2.9	0.02	-
Trenton Creek segment OHF-TR-C1	3.5	0.03	0.022

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Appendix E
Manganese Load Duration Curve Calculations

Station	Date	Flow (cfs)	Flow Exceedence %	Total Mn (µg/L)	Actual Load (lb/day)	Allowable Load (lb/day)	Exceedence
OHA-03	9/15/2008	169.60	1.4%	98.4	90.02	914.80	No
OHA-03	4/15/1991	91.45	3.0%	289	142.56	493.28	No
OHA-03	10/28/1991	15.15	12.6%	751	61.35	81.70	No
OHA-03	7/29/2008	5.71	25.8%	270	8.31	30.79	No
OHA-03	7/22/2008	2.03	45.0%	724	7.91	10.93	No
OHA-03	9/8/2008	1.68	48.0%	209	1.89	9.06	No
OHA-03	9/18/1991	0.26	65.3%	788	1.12	1.43	No
OHA-03	10/10/2002	0.26	65.3%	1600	2.28	1.43	Yes
OHA-03	10/10/2002	0.26	65.3%	83	0.12	1.43	No
OHA-03	10/10/2002	0.26	65.3%	220	0.31	1.43	No
OHA-03	10/10/2002	0.26	65.3%	200	0.29	1.43	No

Station	Date	Flow (cfs)	Flow Exceedence %	Total Mn (µg/L)	Actual Load (lb/day)	Allowable Load (lb/day)	Exceedence
OHAA-07	9/15/2008	32.98	1.38%	121	21.52	177.84	No
OHAA-07	4/15/1991	17.76	2.97%	257	24.61	95.77	No
OHAA-07	4/15/1991	17.76	2.97%	152	14.56	95.77	No
OHAA-07	10/28/1991	2.90	12.62%	1006	15.72	15.63	Yes
OHAA-07	10/28/1991	2.90	12.62%	488	7.63	15.63	No
OHAA-07	7/29/2008	1.07	25.77%	310	1.77	5.72	No
OHAA-07	7/22/2008	0.35	45.02%	529	0.98	1.85	No
OHAA-07	9/8/2008	0.28	47.99%	409	0.61	1.49	No
OHAA-07	9/18/1991	0.00	65.29%	340	-	-	No
OHAA-07	9/18/1991	0.00	65.29%	526	-	-	No

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Appendix F
Fecal Coliform Load Duration Curve Calculations

Station	Date	Flow (cfs)	Flow Exceedence %	Fecal Coliform (cfu/100ml)	Actual Load (Mil Col/day)	Allowable Load (Mil Col/day)	Exceedence
OH-01	5/9/2002	2206.315	0.68%	2100	113,593,012	10,818,382	Yes
OH-01	5/25/1995	1599.683	1.17%	31700	1,244,245,878	7,850,132	Yes
OH-01	9/20/2005	1098.972	1.99%	10000	270,007,366	5,400,147	Yes
OH-01	10/30/2002	229.4666	8.14%	28000	160,391,726	1,145,655	Yes
OH-01	6/14/2005	160.1373	10.39%	20000	80,642,658	806,427	Yes
OH-01	5/9/1996	127.3984	12.15%	9600	31,019,294	646,235	Yes
OH-01	6/18/1997	103.3257	14.18%	3000	7,926,714	528,448	Yes
OH-01	7/31/2000	100.437	14.42%	7700	19,801,053	514,313	Yes
OH-01	10/23/1996	73.47563	18.45%	150	286,793	382,391	No
OH-01	10/6/1998	52.29168	23.41%	1600	2,229,901	278,738	Yes
OH-01	5/8/1997	38.81098	28.72%	570	606,413	212,777	Yes
OH-01	6/29/1998	33.99644	30.80%	300	283,828	189,219	Yes
OH-01	5/5/2004	33.03354	31.32%	1500	1,383,806	184,507	Yes
OH-01	6/9/2004	28.219	34.26%	77000	61,965,719	160,950	Yes
OH-01	10/4/1993	23.40447	37.57%	260	178,610	137,392	Yes
OH-01	7/5/1995	23.40447	37.57%	1800	1,236,531	137,392	Yes
OH-01	6/6/2002	23.40447	37.57%	460	316,002	137,392	Yes
OH-01	7/29/1997	21.47865	38.92%	840	537,471	127,969	Yes
OH-01	10/18/2000	21.47865	38.92%	2500	1,599,617	127,969	Yes
OH-01	5/2/1991	16.66412	42.99%	320	167,059	104,412	Yes
OH-01	8/11/1993	16.66412	42.99%	1000	522,059	104,412	Yes
OH-01	5/17/1993	15.70121	43.89%	640	319,041	99,700	Yes
OH-01	6/1/1994	13.7754	46.02%	394	177,846	90,277	Yes
OH-01	6/5/1990	10.88668	49.02%	450	171,321	76,143	Yes
OH-01	6/26/1996	8.960862	51.50%	1140	380,303	66,720	Yes
OH-01	5/8/2001	8.960862	51.50%	1073	357,951	66,720	Yes
OH-01	9/1/2004	8.960862	51.50%	900	300,239	66,720	Yes
OH-01	8/9/2001	7.035048	53.80%	220	63,026	57,297	Yes
OH-01	7/12/1994	6.072141	54.82%	660	173,531	52,585	Yes
OH-01	7/17/1996	5.109234	56.54%	1700	406,927	47,874	Yes
OH-01	8/26/1998	4.146328	57.85%	470	101,431	43,162	Yes
OH-01	7/24/2002	4.146328	57.85%	5600	1,208,542	43,162	Yes
OH-01	7/20/1998	3.183421	59.04%	360	69,211	38,451	Yes
OH-01	7/28/1992	0.2947	63.63%	2300	279,636	24,316	Yes
OH-01	8/26/1997	0.2947	63.63%	860	104,560	24,316	Yes
OH-01	10/24/2005	0.2947	63.63%	400	48,632	24,316	Yes
OH-01	7/21/2004	-0.668207	65.28%	390	38,229	19,605	Yes
OH-01	9/1/1994	-1.631114	67.40%	960	71,487	14,893	Yes
OH-01	6/5/2000	-1.631114	67.40%	2000	148,932	14,893	Yes
OH-01	10/22/2003	-1.631114	67.40%	440	32,765	14,893	Yes
OH-01	6/2/1992	-3.556928	71.86%	1200	32,821	5,470	Yes
OH-01	8/21/1996	-3.556928	71.86%	600	16,410	5,470	Yes
OH-01	7/12/1990	-4.519835	74.49%	1400	5,310	759	Yes
OH-01	6/13/1991	-5.482742	77.04%	450	(8,894)	(3,953)	No
OH-01	7/25/1991	-5.482742	77.04%	30	(593)	(3,953)	Yes
OH-01	8/25/1992	-6.445649	79.58%	300	(12,997)	(8,664)	No
OH-01	7/10/2001	-6.445649	79.58%	500	(21,661)	(8,664)	No
OH-01	9/26/2001	-6.445649	79.58%	970	(42,022)	(8,664)	No
OH-01	8/26/2002	-6.445649	79.58%	580	(25,127)	(8,664)	No
OH-01	8/22/1995	-7.408556	82.74%	600	(40,128)	(13,376)	No
OH-01	8/4/2005	-7.408556	82.74%	440	(29,427)	(13,376)	No
OH-01	9/11/1991	-8.371463	86.10%	300	(27,131)	(18,087)	No
OH-01	10/9/1991	-8.371463	86.10%	780	(70,541)	(18,087)	No
OH-01	9/20/2000	-8.371463	86.10%	510	(46,123)	(18,087)	No
OH-01	10/17/1990	-8.467754	88.96%	950	(88,153)	(18,559)	No
OH-01	10/3/1994	-8.564045	89.31%	340	(32,350)	(19,030)	No
OH-01	10/8/1997	-9.526952	93.37%	300	(35,612)	(23,741)	No
OH-01	9/13/1990	-9.815824	94.07%	10	(1,258)	(25,155)	Yes
OH-01	10/5/1992	-10.00841	94.61%	10	(1,305)	(26,097)	Yes
OH-01	9/26/1995	-10.77873	96.65%	360	(53,759)	(29,866)	No

NPDES permitteddisacherges in the Sugar Creek watershed and Disinfection Exemption Status			
NPDES	**Name**	**Disinfection Exemtion**	**Exempted Reach/Notes**
ILG580017	ALBERS STP	Yes	Unnamed trib of Grassy Branch from point of discharge to confluence with Grassy Branch and thence confluence with Sugar Creek
IL0020001	AVISTON STP	Yes	Lake Branch from the point of discharge to the confluence of Sugar Creek
IL0075388	CASTLE RIDGE ESTATES SUBDIVSN	Yes	Unnamed tributary of Mill Creek from the point of discharge to the confluence of Mill Creek to the bridge located in Section 27, T3N, R72
IL0063762	DAMIANSVILLE STP	Yes	Unnamed trib of Sugar Creek from point of discharge to confluence with Sugar Creek
IL0029173	HIGHLAND STP	Yes	Lindethal Creek from the point of discharge to its confluence with Sugar Creek and thence to the point of confluence with Lake Branch
ILG551027	IL DOT-I-70 REST AREA	Yes	Unnamed trib of Sugar Creek from discharge to approximately 1 mile downstream on the unnamed trib
IL0032603	NEW BADEN STP	Yes	Unnamed tributary of Sugar Creek from the discharge to the Bridge in Section 9T1N, R5W
ILG580137	PIERRON WEST STP	Yes	Unnamed trib of Sugar Creek from the Bond/Madison County line to confluence with Sugar Creek and thence to IL Route 143 bridge
ILG580002	SAINT ROSE SD STP	Yes	Unnamed trib of Sugar Creek from discharge to County Road Bridge approximately 1 ½ miles downstream of discharge
ILG640083	ST. ROSE PUBLIC WATER DISTRICT	N/A	filter backwash
IL0026701	TRENTON STP	Yes	Unnamed trib of Sugar Creek from discharge to confluence with Sugar Creek
ILG551011	WESCLIN HIGH SCHOOL DIST 3	Yes	Unnamed trib of Sugar Creek from discharge to IL Route 160 bridge

Appendix G
QUAL2K Model Files

QUAL2K FORTRAN
Stream Water Quality Model
Steve Chapra, Hua Tao and Greg Pelletier
Version 2.11b8

System ID:		
River name	**Lake Branch**	
Saved file name	**Lake_Branch_Bull_Branch_2010_v1**	
Directory where file saved	**C:\IEPA 2010\Qual2K**	
Month	**9**	
Day	**18**	
Year	**1991**	
Local time hours to UTC	**-6**	
Daylight savings time	**Yes**	
Calculation:		
Calculation step	**0.1**	**hours**
Final time	**30**	**day**
Solution method (integration)	**Euler**	
Solution method (pH)	**Brent**	
Time zone	**Central Standard Time**	
Program determined calc step	**0.093750**	**hours**
Time of last calculation	**0.14**	**minutes**
Time of sunrise	**6:42 AM**	
Time of solar noon	**12:52 PM**	
Time of sunset	**7:02 PM**	
Photoperiod	**12.34**	**hours**

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Headwater Data:

Number of Headwaters	2	TC: These are measured values from OHA06 (Lake Br) and OHAA-08 (Bull Branch) on 9/18/91

Headwater 0 (Mainstem)

Headwater label	Reach No	Flow	Elevation	Weir				Rating Curves			
		Rate		Height	Width	adam	bdam	Velocity		Depth	
		(m^3/s)	(m)	(m)	(m)			Coefficient	Exponent	Coefficient	Exponent
Mainstem headwater	1	0.012	462.000			1.2500	0.9000				
Water Quality Constituents	**Units**	**12:00 AM**	**1:00 AM**	**2:00 AM**	**3:00 AM**	**4:00 AM**	**5:00 AM**	**6:00 AM**	**7:00 AM**	**8:00 AM**	**9:00 AM**
Temperature	C	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10
Conductivity	umhos										
Inorganic Solids	mgD/L										
Dissolved Oxygen	mg/L	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
CBODslow	mgO2/L										
CBODfast	mgO2/L	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Organic Nitrogen	ugN/L	2970.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00
NH4-Nitrogen	ugN/L	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
NO3-Nitrogen	ugN/L	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
Organic Phosphorus	ugP/L	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00
Inorganic Phosphorus (SRP)	ugP/L	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00
Phytoplankton	ugA/L										
Internal Nitrogen (INP)	ugN/L										
Internal Phosphorus (IPP)	ugP/L										
Detritus (POM)	mgD/L										
Pathogen	cfu/100 mL										
Alkalinity	mgCaCO3/L	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Constituent i											
Constituent ii											
Constituent iii											
pH	s.u.	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20

Manning Formula					Prescribed								
Channel Slope	Manning n	Bot Width m	Side Slope	Side Slope	Dispersion m2/s								
0.0010	0.0700	0.01	2.9000	2.9000									
10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10	18.10
6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00	3200.00
230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00
920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20	8.20

Headwater 1 (Tributary 1)											
Headwater label	Reach No	Flow	Elevation	Weir				Rating Curves			
		Rate		Height	Width	adam	bdam	Velocity		Depth	
		(m^3/s)	(m)	(m)	(m)			Coefficient	Exponent	Coefficient	Exponent
Bull Branch Headwater	4	0.006	474.000			1.2500	0.9000				
Water Quality Constituents	Units	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM
Temperature	C	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50
Conductivity	umhos										
Inorganic Solids	mgD/L										
Dissolved Oxygen	mg/L	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
CBODslow	mgO2/L										
CBODfast	mgO2/L	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Organic Nitrogen	ugN/L	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NH4-Nitrogen	ugN/L	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00
NO3-Nitrogen	ugN/L	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00
Organic Phosphorus	ugP/L	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00
Inorganic Phosphorus (SRP)	ugP/L	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00
Phytoplankton	ugA/L										
Internal Nitrogen	ugN/L										
Internal Phosphorus	ugP/L										
Detritus (POM)	mgD/L										
Pathogen	cfu/100 mL										
Alkalinity	mgCaCO3/L	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Constituent i											
Constituent ii											
Constituent iii											
pH	s.u.	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80

Manning Formula					Prescribed								
Channel Slope	Manning n	Bot Width m	Side Slope	Side Slope	Dispersion m2/s								
0.0020	0.1300	0.01	2.8000	2.8000									
10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50	18.50
0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00	9500.00
1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00	1800.00
7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00	7850.00
12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00	12000.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Reach Data:

Reach for diel plot	8								
Element for diel plot	2	*Reach*	*Headwater*	*Reach*			*Location*		*Element*
Reach	*Downstream*	*Number*	*Reach*	*length*	*Downstream*		*Upstream*	*Downstream*	*Number*
Label	*end of reach label*			*(km)*	*Latitude*	*Longitude*	*(km)*	*(km)*	*>=1*
Lake Branch Headwater (OHA-06)	OHA-05	1	Yes	1.53	38.65	89.57	16.228	14.701	5
Lake Branch (OHA-05)	OHA-04	2		2.01	38.63	89.57	14.701	12.690	5
Lake Branch (OHA-04)	Lake-Bull Branch Confluence	3		3.11	38.63	89.54	12.690	9.578	5
Bull Branch Headwater (OHAA-08)	OHAA-07	4	Yes	2.49	38.62	89.56	6.048	3.554	5
Bull Branch (OHAA-07)	Lake-Bull Branch Confluence	5		3.55	38.61	89.59	3.554	0.000	5
Lake Branch (OHA-03)	OHA-02	6		2.12	38.59	89.60	9.578	7.460	5
Lake Branch (OHA-02)	OHA-01	7		3.05	38.57	89.62	7.460	4.406	5
Lake Branch (OHA-01)	Sugar Creek Confluence	8		4.41	38.54	89.62	4.406	0.000	5

								Hydraulic Model (Weir Overrides Manning Formula; Manning Formula Override Rating Curves)							
Elevation		Downstream						Weir				Rating Curves			
Upstream	Downstream	Latitude			Longitude			Height	Width	adam	bdam	Velocity		Depth	
(m)	(m)	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	(m)	(m)			Coefficient	Exponent	Coefficient	Exponent
140.818	137.160	38.00	38	43	-89.00	-34	-5			1.2500	0.9000				
137.160	134.112	38.00	37	44	-89.00	-34	-29			1.2500	0.9000				
134.112	131.369	38.00	37	52	-89.00	-32	-39			1.2500	0.9000				
144.475	140.513	38.00	36	55	-89.00	-33	-27			1.2500	0.9000				
140.513	131.369	38.00	36	21	-89.00	-35	-29			1.2500	0.9000				
131.369	130.759	38.00	35	24	-89.00	-35	-43			1.2500	0.9000				
130.759	127.711	38.00	34	14	-89.00	-37	-2			1.2500	0.9000				
127.711	124.968	38.00	32	15	-89.00	-37	-20			1.2500	0.9000				

Manning Formula					Prescribed	Bottom	Bottom	Prescribed	Prescribed	Prescribed	Prescribed
Channel	Manning	Bot Width	Side	Side	Dispersion	Algae	SOD	SOD	CH4 flux	NH4 flux	Inorg P flux
Slope	n	m	Slope	Slope	m2/s	Coverage	Coverage	gO2/m2/d	gO2/m2/d	mgN/m2/d	mgP/m2/d
0.0010	0.0700	0.01	2.9000	2.9000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0010	0.0700	0.01	2.9000	2.9000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0010	0.0700	0.01	2.9000	2.9000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0020	0.1300	0.01	2.8000	2.8000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0020	0.1300	0.01	2.8000	2.8000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0010	0.0700	0.01	2.9000	1.3000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0010	0.0700	0.01	2.9000	1.3000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000
0.0010	0.0700	0.01	2.9000	1.3000	0.00	50.00%	100.00%	10.00	0.0000	0.0000	0.0000

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Air Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly air temperature for each reach (degrees C)						
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is us						
Mainstem headwater	Lake Branch Headwater (OHA-06)	OHA-05	1	16.23	14.70	17.61	17.61	17.61	17.61	17.61	17.61	17.61
OHA-05	Lake Branch (OHA-05)	OHA-04	2	14.70	12.69	17.61	17.61	17.61	17.61	17.61	17.61	17.61
OHA-04	Lake Branch (OHA-04)	Lake-Bull Branch Con	3	12.69	9.58	17.61	17.61	17.61	17.61	17.61	17.61	17.61
Bull Branch Headwate	Bull Branch Headwater (OHAA-08)	OHAA-07	4	6.05	3.55	17.61	17.61	17.61	17.61	17.61	17.61	17.61
OHAA-07	Bull Branch (OHAA-07)	Lake-Bull Branch Con	5	3.55	0.00	17.61	17.61	17.61	17.61	17.61	17.61	17.61
Lake-Bull Branch Con	Lake Branch (OHA-03)	OHA-02	6	9.58	7.46	17.61	17.61	17.61	17.61	17.61	17.61	17.61
OHA-02	Lake Branch (OHA-02)	OHA-01	7	7.46	4.41	17.61	17.61	17.61	17.61	17.61	17.61	17.61
OHA-01	Lake Branch (OHA-01)	Sugar Creek Confluen	8	4.41	0.00	17.61	17.61	17.61	17.61	17.61	17.61	17.61

7:00 AM	*8:00 AM*	*9:00 AM*	*10:00 AM*	*11:00 AM*	*12:00 PM*	*1:00 PM*	*2:00 PM*	*3:00 PM*	*4:00 PM*	*5:00 PM*	*6:00 PM*	*7:00 PM*	*8:00 PM*	*9:00 PM*	*10:00 PM*	*11:00 PM*
ed to estimate values between the hourly inputs.)																
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**
17.61	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**	**17.61**

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Dew Point Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly dewpoint temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	Lake Branch Headwat	OHA-05	1	16.23	14.70	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
OHA-05	Lake Branch (OHA-05)	OHA-04	2	14.70	12.69	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
OHA-04	Lake Branch (OHA-04)	Lake-Bull Branch Con	3	12.69	9.58	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
Bull Branch Headwate	Bull Branch Headwate	OHAA-07	4	6.05	3.55	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
OHAA-07	Bull Branch (OHAA-07	Lake-Bull Branch Con	5	3.55	0.00	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
Lake-Bull Branch Con	Lake Branch (OHA-03)	OHA-02	6	9.58	7.46	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
OHA-02	Lake Branch (OHA-02)	OHA-01	7	7.46	4.41	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
OHA-01	Lake Branch (OHA-01)	Sugar Creek Confluen	8	4.41	0.00	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83

8:00 AM	*9:00 AM*	*10:00 AM*	*11:00 AM*	*12:00 PM*	*1:00 PM*	*2:00 PM*	*3:00 PM*	*4:00 PM*	*5:00 PM*	*6:00 PM*	*7:00 PM*	*8:00 PM*	*9:00 PM*	*10:00 PM*	*11:00 PM*
te values between the hourly inputs.															
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83
11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83	11.83

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Wind Speed Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Wind speed for each reach 7m above water surface (m/s)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	Lake Branch Headwat	OHA-05	1	16.23	14.70	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
OHA-05	Lake Branch (OHA-05)	OHA-04	2	14.70	12.69	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
OHA-04	Lake Branch (OHA-04)	Lake-Bull Branch Con	3	12.69	9.58	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
Bull Branch Headwate	Bull Branch Headwate	OHAA-07	4	6.05	3.55	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
OHAA-07	Bull Branch (OHAA-07	Lake-Bull Branch Con	5	3.55	0.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
Lake-Bull Branch Con	Lake Branch (OHA-03)	OHA-02	6	9.58	7.46	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
OHA-02	Lake Branch (OHA-02)	OHA-01	7	7.46	4.41	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
OHA-01	Lake Branch (OHA-01)	Sugar Creek Confluen	8	4.41	0.00	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98
2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98	2.98

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Cloud Cover Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly cloud cover shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of sky that is covered by clouds. The input values are applied as point estimates at each ti							
Mainstem headwater	Lake Branch Headwat	OHA-05	1	16.23	14.70	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
OHA-05	Lake Branch (OHA-05)	OHA-04	2	14.70	12.69	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
OHA-04	Lake Branch (OHA-04)	Lake-Bull Branch Con	3	12.69	9.58	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Bull Branch Headwate	Bull Branch Headwate	OHAA-07	4	6.05	3.55	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
OHAA-07	Bull Branch (OHAA-07	Lake-Bull Branch Con	5	3.55	0.00	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Lake-Bull Branch Con	Lake Branch (OHA-03)	OHA-02	6	9.58	7.46	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
OHA-02	Lake Branch (OHA-02)	OHA-01	7	7.46	4.41	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
OHA-01	Lake Branch (OHA-01)	Sugar Creek Confluen	8	4.41	0.00	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%

8:00 AM	*9:00 AM*	*10:00 AM*	*11:00 AM*	*12:00 PM*	*1:00 PM*	*2:00 PM*	*3:00 PM*	*4:00 PM*	*5:00 PM*	*6:00 PM*	*7:00 PM*	*8:00 PM*	*9:00 PM*	*10:00 PM*	*11:00 PM*
me. Linear interpolation is used to estimate values between the hourly inputs															
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Shade Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Integrated hourly effective shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of solar radiation that is blocked because of shade from topography and vegetation. Hourl							
Mainstem headwater	Lake Branch Headwat	OHA-05	1	16.23	14.70	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHA-05	Lake Branch (OHA-05)	OHA-04	2	14.70	12.69	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHA-04	Lake Branch (OHA-04)	Lake-Bull Branch Con	3	12.69	9.58	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bull Branch Headwate	Bull Branch Headwate	OHAA-07	4	6.05	3.55	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHAA-07	Bull Branch (OHAA-07	Lake-Bull Branch Con	5	3.55	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Lake-Bull Branch Con	Lake Branch (OHA-03)	OHA-02	6	9.58	7.46	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHA-02	Lake Branch (OHA-02)	OHA-01	7	7.46	4.41	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHA-01	Lake Branch (OHA-01)	Sugar Creek Confluen	8	4.41	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
y values are applied as integrated values for each hour, e.g. the value at 12:00 AM is applied from 12:00 to 1:00 AM															
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Water Column Rates

Parameter	*Value*	*Units*	*Symbol*
Stoichiometry:			
Carbon	**40**	**gC**	**gC**
Nitrogen	**7.2**	**gN**	**gN**
Phosphorus	**1**	**gP**	**gP**
Dry weight	**100**	**gD**	**gD**
Chlorophyll	**1**	**gA**	**gA**
Inorganic suspended solids:			
Settling velocity	**0.3**	**m/d**	v_i
Oxygen:			
Reaeration model	**Internal**		
User reaeration coefficient α	**3.93**		α
User reaeration coefficient β	**0.5**		β
User reaeration coefficient γ	**1.5**		γ
Temp correction	**1.024**		θ_a
Reaeration wind effect	**None**		
O2 for carbon oxidation	**2.69**	**gO_2/gC**	r_{oc}
O2 for NH4 nitrification	**4.57**	**gO_2/gN**	r_{on}
Oxygen inhib model CBOD oxidation	**Exponential**		
Oxygen inhib parameter CBOD oxidation	**0.60**	**L/mgO2**	K_{socf}
Oxygen inhib model nitrification	**Exponential**		
Oxygen inhib parameter nitrification	**0.60**	**L/mgO2**	K_{sona}
Oxygen enhance model denitrification	**Exponential**		
Oxygen enhance parameter denitrification	**0.60**	**L/mgO2**	K_{sodn}
Oxygen inhib model phyto resp	**Exponential**		
Oxygen inhib parameter phyto resp	**0.60**	**L/mgO2**	K_{sop}
Oxygen enhance model bot alg resp	**Exponential**		
Oxygen enhance parameter bot alg resp	**0.60**	**L/mgO2**	K_{sob}
Slow CBOD:			
Hydrolysis rate	**1**	**/d**	k_{hc}
Temp correction	**1.047**		θ_{hc}
Oxidation rate	**0**	**/d**	k_{dcs}
Temp correction	**1.047**		θ_{dcs}
Fast CBOD:			
Oxidation rate	**1.8**	**/d**	k_{dc}
Temp correction	**1.047**		θ_{dc}
Organic N:			
Hydrolysis	**0.4**	**/d**	k_{hn}

Temp correction	1.07		θ_{hn}
Settling velocity	0.1	m/d	v_{on}
Ammonium:			
Nitrification	0.1	/d	k_{na}
Temp correction	1.07		θ_{na}
Nitrate:			
Denitrification	1	/d	k_{dn}
Temp correction	1.07		θ_{dn}
Sed denitrification transfer coeff	0.1	m/d	v_{di}
Temp correction	1.07		θ_{di}
Organic P:			
Hydrolysis	0.2	/d	k_{hp}
Temp correction	1.07		θ_{hp}
Settling velocity	0.1	m/d	v_{op}
Inorganic P:			
Settling velocity	0.001	m/d	v_{ip}
Inorganic P sorption coefficient	0	L/mgD	K_{dpi}
Sed P oxygen attenuation half sat constant	0.05	mgO_2/L	k_{spi}
Phytoplankton:			
Max Growth rate	2.5	/d	k_{gp}
Temp correction	1.07		θ_{gp}
Respiration rate	0.2	/d	k_{rp}
Temp correction	1.07		θ_{rp}
Excretion rate	0	/d	k_{ep}
Temp correction	1.07		θ_{dp}
Death rate	0.2	/d	k_{dp}
Temp correction	1.07		θ_{dp}
External Nitrogen half sat constant	25	ugN/L	k_{sPp}
External Phosphorus half sat constant	5	ugP/L	k_{sNp}
Inorganic carbon half sat constant	1.30E-05	moles/L	k_{sCp}
Light model	Half saturation		
Light constant	100	langleys/d	K_{Lp}
Ammonia preference	25	ugN/L	k_{hnxp}
Subsistence quota for nitrogen	0	mgN/mgA	q_{0Np}
Subsistence quota for phosphorus	0	mgP/mgA	q_{0Pp}
Maximum uptake rate for nitrogen	0	mgN/mgA/d	ρ_{mNp}
Maximum uptake rate for phosphorus	0	mgP/mgA/d	ρ_{mPp}
Internal nitrogen half sat constant	0	mgN/mgA	K_{qNp}
Internal phosphorus half sat constant	0	mgP/mgA	K_{qPp}
Settling velocity	0.5	m/d	v_a

Bottom Algae:			
Growth model	**Zero-order**		
Max Growth rate	**10**	**mgA/m^2/d or /d**	C_{gb}
Temp correction	**1.07**		θ_{gb}
First-order model carrying capacity	**1000**	**mgA/m^2**	$a_{b,max}$
Respiration rate	**0.1**	**/d**	k_{rb}
Temp correction	**1.07**		θ_{rb}
Excretion rate	**0.05**	**/d**	k_{eb}
Temp correction	**1.07**		θ_{db}
Death rate	**0.1**	**/d**	k_{db}
Temp correction	**1.07**		θ_{db}
External nitrogen half sat constant	**300**	**ugN/L**	k_{sPb}
External phosphorus half sat constant	**100**	**ugP/L**	k_{sNb}
Inorganic carbon half sat constant	**1.30E-05**	**moles/L**	k_{sCb}
Light model	**Half saturation**		
Light constant	**100**	**langleys/d**	K_{Lb}
Ammonia preference	**25**	**ugN/L**	k_{hnxb}
Subsistence quota for nitrogen	**0.72**	**mgN/mgA**	q_{0N}
Subsistence quota for phosphorus	**0.1**	**mgP/mgA**	q_{0P}
Maximum uptake rate for nitrogen	**72**	**mgN/mgA/d**	ρ_{mN}
Maximum uptake rate for phosphorus	**10**	**mgP/mgA/d**	ρ_{mP}
Internal nitrogen half sat constant	**0.9**	**mgN/mgA**	K_{qN}
Internal phosphorus half sat constant	**0.13**	**mgP/mgA**	K_{qP}
Detritus (POM):			
Dissolution rate	**0.5**	**/d**	k_{dt}
Temp correction	**1.07**		θ_{dt}
Fraction of dissolution to fast CBOD	**1.00**		F_f
Settling velocity	**0.1**	**m/d**	v_{dt}
Pathogens:			
Decay rate	**0.8**	**/d**	k_{dx}
Temp correction	**1.07**		θ_{dx}
Settling velocity	**1**	**m/d**	v_x
Light efficiency factor	**1.00**		α_{path}
pH:			
Partial pressure of carbon dioxide	**347**	**ppm**	p_{CO2}
Constituent i			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent ii			
First-order reaction rate	**0**	**/d**	

Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent iii			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Diffuse Source Data:

			Location		Diffuse	Diffuse		Spec	Inorg	Diss	CBOD	CBOD
	Tributary	Headwater	Up	Down	Abstraction	Inflow	Temp	Cond	SS	Oxygen	slow	fast
Name	No.*	Label	km	km	m3/s	m3/s	C	umhos	mgD/L	mg/L	mgO2/L	mgO2/L
diffuse1	0	Mainstem headwater	16.00	0.00		0.0580	18.10					
diffuseBullBr	1	Bull Branch Headwater	6.00	0.00		0.0120	18.10					

Organic N	Ammon N	Nitrate N	Organic P	Inorganic P	Phyto plankton	Internal Nitrogen	Internal Phosphorus	Detritus	Pathogen	Alk	Constituent i	Constituent ii	Constituent iii	pH
ugN/L	ugN/L	ugN/L	ugP/L	ugP/L	ug/L	ugN/L	ugP/L	mgD/L	cfu/100 mL	mgCaCO3/L				
250.00	500.00		0.00	0.00									100.00	7.00
3500.00				0.00									100.00	7.00

QUAL2K
Stream Water Quality Model
Lake Branch (9/18/1991)
Point Source Data:

				Point		Temperature			Specific Conductance			Inorganic Suspended Solids		
	Tributary	Headwater	Location	Abstraction	Inflow	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
Name	No.	Label	km	m3/s	m3/s	°C	°C	max	umhos	umhos	max	mg/L	mg/L	max
Aviston STP	0	Mainstem headwater	9.60		0.0071	18.10								
Saint Rose STP	0	Mainstem headwater	16.20		0.0017	18.10								

Dissolved Oxygen			Slow CBOD			Fast CBOD			Organic N			Ammonia N			Nitrate + Nitrite N		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
mg/L	mg/L	max	mgO2/L	mgO2/L	max	mgO2/L	mgO2/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max
6.461111111						40			8000.00			5000.00			3000.00		
6.46						3.83			3000.00			230.00			300.00		

Organic P			Inorganic P			Phytoplankton			Internal Nitrogen			Internal Phosphorus			Detritus		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
ugP/L	ugP/L	max	ugP/L	ugP/L	max	ugA/L	ugA/L	max	ugN/L	ugN/L	max	ugP/L	ugP/L	max	mgD/L	mgD/L	max
4500.00			8000.00														
500.00			900.00														

Pathogen Indicator Bacteria			Alkalinity			Constituent i			Constituent ii			Constituent iii			pH		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
cfu/100ml	cfu/100ml	max	mgCaCO3/L	mgCaCO3/L	max			max			max			max	s.u.	s.u.	max
1607.58			100.00												7.90		
			100.00												7.85		

QUAL2K FORTRAN
Stream Water Quality Model
Steve Chapra, Hua Tao and Greg Pelletier
Version 2.11b8

System ID:		
River name	**Grassy Branch**	
Saved file name	**OHC_Grassy_Branch_v1_091310**	
Directory where file saved	**C:\IEPA 2010\Qual2K**	
Month	**7**	
Day	**28**	
Year	**1994**	
Local time hours to UTC	**-5**	
Daylight savings time	**Yes**	
Calculation:		
Calculation step	**0.1**	**hours**
Final time	**30**	**day**
Solution method (integration)	**Euler**	
Solution method (pH)	**Brent**	
Time zone	**Eastern Standard Time**	
Program determined calc step	**0.093750**	**hours**
Time of last calculation	**0.05**	**minutes**
Time of sunrise	**6:52 AM**	
Time of solar noon	**1:59 PM**	
Time of sunset	**9:06 PM**	
Photoperiod	**14.23**	**hours**

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Headwater Data:

Number of Headwaters	1	*Measured values from OHC Grassy Branch on 7/28/1994*

Headwater 0 (Mainstem)

Headwater label	*Reach No*	*Flow*	*Elevation*	*Weir*				*Rating Curves*			
		Rate		*Height*	*Width*	*adam*	*bdam*	*Velocity*		*Depth*	
		(m^3/s)	*(m)*	*(m)*	*(m)*			*Coefficient*	*Exponent*	*Coefficient*	*Exponent*
Mainstem headwater	1	0.001	127.100			1.2500	0.9000	0.0250	0.000	0.5000	0.000
Water Quality Constituents	*Units*	*12:00 AM*	*1:00 AM*	*2:00 AM*	*3:00 AM*	*4:00 AM*	*5:00 AM*	*6:00 AM*	*7:00 AM*	*8:00 AM*	*9:00 AM*
Temperature	C	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00
Conductivity	umhos										
Inorganic Solids	mgD/L										
Dissolved Oxygen	mg/L	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
CBODslow	mgO2/L										
CBODfast	mgO2/L	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Organic Nitrogen	ugN/L										
NH4-Nitrogen	ugN/L	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00
NO3-Nitrogen	ugN/L	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
Organic Phosphorus	ugP/L	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
Inorganic Phosphorus (SRP)	ugP/L	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00
Phytoplankton	ugA/L										
Internal Nitrogen (INP)	ugN/L										
Internal Phosphorus (IPP)	ugP/L										
Detritus (POM)	mgD/L										
Pathogen	cfu/100 mL										
Alkalinity	mgCaCO3/L	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Constituent i											
Constituent ii											
Constituent iii											
pH	s.u.	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70

Manning Formula					Prescribed								
Channel Slope	Manning n	Bot Width m	Side Slope	Side Slope	Dispersion m2/s								
10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00
2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00	1100.00
80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00
290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00	290.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Reach Data:

Reach for diel plot	3																		Hydra
Element for diel plot	2	Reach	Headwater	Reach			Location		Element	Elevation		Downstream							
Reach	Downstream	Number	Reach	length	Downstream		Upstream	Downstream	Number	Upstream	Downstream	Latitude			Longitude				
Label	end of reach label			(km)	Latitude	Longitude	(km)	(km)	>=1	(m)	(m)	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds		
Seg 1 - OHC-AL-HW	OHC-AL-D1	1	Yes	9.79	38.54	88.39	12.326	2.536	5	141.427	127.102	38.00	32	29.76	-89.00	36	20.88		
Seg 2 - OHC-AL-D1	OHC-AL-C2	2		0.58	38.54	88.39	2.536	1.958	3	127.102	126.492	38.00	32	29.76	-89.00	36	20.88		
Seg 3 - OHC-AL-C2	OHC-AL_C3	3		0.52	38.54	88.39	1.958	1.436	2	126.492	125.578	38.00	32	19.32	-89.00	36	37.80		
Seg 4 - OHC-AL-C3	Sugar Creek	4		1.44	38.06	88.38	1.436	0.000	5	125.578	124.663	38.00	3	47.64	-89.00	37	18.48		

aulic Model (Weir Overrides Manning Formula; Manning Formula Override Rating Curves)																			
Weir				Rating Curves				Manning Formula					Prescribed	Bottom	Bottom	Prescribed	Prescribed	Prescribed	Prescribed
Height	Width	adam	bdam	Velocity		Depth		Channel	Manning	Bot Width	Side	Side	Dispersion	Algae	SOD	SOD	CH4 flux	NH4 flux	Inorg P flux
(m)	(m)			Coefficient	Exponent	Coefficient	Exponent	Slope	n	m	Slope	Slope	m2/s	Coverage	Coverage	gO2/m2/d	gO2/m2/d	mgN/m2/d	mgP/m2/d
		1.2500	0.9000	0.0250	0.000	0.5000	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.0250	0.000	0.5000	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.2000	0.000	0.5000	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.2000	0.000	0.5000	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Air Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly air temperature for each reach (degrees C)						
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is use						
Mainstem headwater	Seg 1 - OHC-AL-HW	OHC-AL-D1	1	12.33	2.54	16.00	16.00	16.00	16.00	16.00	16.00	16.00
OHC-AL-D1	Seg 2 - OHC-AL-D1	OHC-AL-C2	2	2.54	1.96	16.00	16.00	16.00	16.00	16.00	16.00	16.00
OHC-AL-C2	Seg 3 - OHC-AL-C2	OHC-AL_C3	3	1.96	1.44	16.00	16.00	16.00	16.00	16.00	16.00	16.00
OHC-AL_C3	Seg 4 - OHC-AL-C3	Sugar Creek	4	1.44	0.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

7:00 AM	*8:00 AM*	*9:00 AM*	*10:00 AM*	*11:00 AM*	*12:00 PM*	*1:00 PM*	*2:00 PM*	*3:00 PM*	*4:00 PM*	*5:00 PM*	*6:00 PM*	*7:00 PM*	*8:00 PM*	*9:00 PM*	*10:00 PM*	*11:00 PM*
ed to estimate values between the hourly inputs.)																
16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Dew Point Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly dewpoint temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	Seg 1 - OHC-AL-HW	OHC-AL-D1	1	12.33	2.54	15.56	14.44	13.89	13.89	13.33	13.33	13.33	13.89
OHC-AL-D1	Seg 2 - OHC-AL-D1	OHC-AL-C2	2	2.54	1.96	15.56	14.44	13.89	13.89	13.33	13.33	13.33	13.89
OHC-AL-C2	Seg 3 - OHC-AL-C2	OHC-AL_C3	3	1.96	1.44	15.56	14.44	13.89	13.89	13.33	13.33	13.33	13.89
OHC-AL_C3	Seg 4 - OHC-AL-C3	Sugar Creek	4	1.44	0.00								

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
15.00	15.56	15.56	15.56	13.89	12.22	12.22	11.67	10.56	11.67	12.22	11.67	12.78	15.56	15.56	15.00
15.00	15.56	15.56	15.56	13.89	12.22	12.22	11.67	10.56	11.67	12.22	11.67	12.78	15.56	15.56	15.00
15.00	15.56	15.56	15.56	13.89	12.22	12.22	11.67	10.56	11.67	12.22	11.67	12.78	15.56	15.56	15.00

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Wind Speed Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Wind speed for each reach 7m above water surface (m/s)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	Seg 1 - OHC-AL-HW	OHC-AL-D1	1	12.33	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OHC-AL-D1	Seg 2 - OHC-AL-D1	OHC-AL-C2	2	2.54	1.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OHC-AL-C2	Seg 3 - OHC-AL-C2	OHC-AL_C3	3	1.96	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OHC-AL_C3	Seg 4 - OHC-AL-C3	Sugar Creek	4	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Cloud Cover Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly cloud cover shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of sky that is covered by clouds. The input values are applied as point estimates at each ti							
Mainstem headwater	Seg 1 - OHC-AL-HW	OHC-AL-D1	1	12.33	2.54	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	25.0%	25.0%
OHC-AL-D1	Seg 2 - OHC-AL-D1	OHC-AL-C2	2	2.54	1.96	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	25.0%	25.0%
OHC-AL-C2	Seg 3 - OHC-AL-C2	OHC-AL_C3	3	1.96	1.44	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	25.0%	25.0%
OHC-AL_C3	Seg 4 - OHC-AL-C3	Sugar Creek	4	1.44	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	25.0%	25.0%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
me. Linear interpolation is used to estimate values between the hourly inputs															
25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	75.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	75.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	75.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%
25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	75.0%	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Water Column Rates

Parameter	*Value*	*Units*	*Symbol*
Stoichiometry:			
Carbon	**40**	**gC**	**gC**
Nitrogen	**7.2**	**gN**	**gN**
Phosphorus	**1**	**gP**	**gP**
Dry weight	**100**	**gD**	**gD**
Chlorophyll	**1**	**gA**	**gA**
Inorganic suspended solids:			
Settling velocity	**0.3**	**m/d**	v_i
Oxygen:			
Reaeration model	**Internal**		
User reaeration coefficient α	**3.93**		α
User reaeration coefficient β	**0.5**		β
User reaeration coefficient γ	**1.5**		γ
Temp correction	**1.024**		θ_a
Reaeration wind effect	**Banks-Herrera**		
O2 for carbon oxidation	**2.69**	**gO_2/gC**	r_{oc}
O2 for NH4 nitrification	**4.57**	**gO_2/gN**	r_{on}
Oxygen inhib model CBOD oxidation	**Exponential**		
Oxygen inhib parameter CBOD oxidation	**0.60**	**L/mgO2**	K_{socf}
Oxygen inhib model nitrification	**Exponential**		
Oxygen inhib parameter nitrification	**0.60**	**L/mgO2**	K_{sona}
Oxygen enhance model denitrification	**Exponential**		
Oxygen enhance parameter denitrification	**0.60**	**L/mgO2**	K_{sodn}
Oxygen inhib model phyto resp	**Exponential**		
Oxygen inhib parameter phyto resp	**0.60**	**L/mgO2**	K_{sop}
Oxygen enhance model bot alg resp	**Exponential**		
Oxygen enhance parameter bot alg resp	**0.60**	**L/mgO2**	K_{sob}
Slow CBOD:			
Hydrolysis rate	**0.1**	**/d**	k_{hc}
Temp correction	**1.047**		θ_{hc}
Oxidation rate	**0**	**/d**	k_{dcs}
Temp correction	**1.047**		θ_{dcs}
Fast CBOD:			
Oxidation rate	**1.8**	**/d**	k_{dc}
Temp correction	**1.047**		θ_{dc}
Organic N:			
Hydrolysis	**0.4**	**/d**	k_{hn}

Temp correction	1.07		θ_{hn}
Settling velocity	0.1	m/d	v_{on}
Ammonium:			
Nitrification	0.1	/d	k_{na}
Temp correction	1.07		θ_{na}
Nitrate:			
Denitrification	1	/d	k_{dn}
Temp correction	1.07		θ_{dn}
Sed denitrification transfer coeff	0.1	m/d	v_{di}
Temp correction	1.07		θ_{di}
Organic P:			
Hydrolysis	0.2	/d	k_{hp}
Temp correction	1.07		θ_{hp}
Settling velocity	0.1	m/d	v_{op}
Inorganic P:			
Settling velocity	0.001	m/d	v_{ip}
Inorganic P sorption coefficient	0	L/mgD	K_{dpi}
Sed P oxygen attenuation half sat constant	0.05	mgO_2/L	k_{spi}
Phytoplankton:			
Max Growth rate	2.5	/d	k_{gp}
Temp correction	1.07		θ_{gp}
Respiration rate	0.2	/d	k_{rp}
Temp correction	1.07		θ_{rp}
Excretion rate	0	/d	k_{ep}
Temp correction	1.07		θ_{dp}
Death rate	0.2	/d	k_{dp}
Temp correction	1.07		θ_{dp}
External Nitrogen half sat constant	25	ugN/L	k_{sPp}
External Phosphorus half sat constant	5	ugP/L	k_{sNp}
Inorganic carbon half sat constant	1.30E-05	moles/L	k_{sCp}
Light model	Half saturation		
Light constant	100	langleys/d	K_{Lp}
Ammonia preference	25	ugN/L	k_{hnxp}
Subsistence quota for nitrogen	0	mgN/mgA	q_{0Np}
Subsistence quota for phosphorus	0	mgP/mgA	q_{0Pp}
Maximum uptake rate for nitrogen	0	mgN/mgA/d	ρ_{mNp}
Maximum uptake rate for phosphorus	0	mgP/mgA/d	ρ_{mPp}
Internal nitrogen half sat constant	0	mgN/mgA	K_{qNp}
Internal phosphorus half sat constant	0	mgP/mgA	K_{qPp}
Settling velocity	0.5	m/d	v_a

Bottom Algae:			
Growth model	**Zero-order**		
Max Growth rate	**10**	**mgA/m^2/d or /d**	C_{gb}
Temp correction	**1.07**		θ_{gb}
First-order model carrying capacity	**1000**	**mgA/m^2**	$a_{b,max}$
Respiration rate	**0.1**	**/d**	k_{rb}
Temp correction	**1.07**		θ_{rb}
Excretion rate	**0.05**	**/d**	k_{eb}
Temp correction	**1.07**		θ_{db}
Death rate	**0.1**	**/d**	k_{db}
Temp correction	**1.07**		θ_{db}
External nitrogen half sat constant	**300**	**ugN/L**	k_{sPb}
External phosphorus half sat constant	**100**	**ugP/L**	k_{sNb}
Inorganic carbon half sat constant	**1.30E-05**	**moles/L**	k_{sCb}
Light model	**Half saturation**		
Light constant	**100**	**langleys/d**	K_{Lb}
Ammonia preference	**25**	**ugN/L**	k_{hnxb}
Subsistence quota for nitrogen	**0.72**	**mgN/mgA**	q_{0N}
Subsistence quota for phosphorus	**0.1**	**mgP/mgA**	q_{0P}
Maximum uptake rate for nitrogen	**72**	**mgN/mgA/d**	ρ_{mN}
Maximum uptake rate for phosphorus	**10**	**mgP/mgA/d**	ρ_{mP}
Internal nitrogen half sat constant	**0.9**	**mgN/mgA**	K_{qN}
Internal phosphorus half sat constant	**0.13**	**mgP/mgA**	K_{qP}
Detritus (POM):			
Dissolution rate	**0.5**	**/d**	k_{dt}
Temp correction	**1.07**		θ_{dt}
Fraction of dissolution to fast CBOD	**1.00**		F_f
Settling velocity	**0.1**	**m/d**	v_{dt}
Pathogens:			
Decay rate	**0.8**	**/d**	k_{dx}
Temp correction	**1.07**		θ_{dx}
Settling velocity	**1**	**m/d**	v_x
Light efficiency factor	**1.00**		α_{path}
pH:			
Partial pressure of carbon dioxide	**347**	**ppm**	p_{CO2}
Constituent i			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent ii			
First-order reaction rate	**0**	**/d**	

Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent iii			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Diffuse Source Data:

	Tributary	Headwater	Location		Diffuse	Diffuse		Spec	Inorg	Diss	CBOD	CBOD
			Up	Down	Abstraction	Inflow	Temp	Cond	SS	Oxygen	slow	fast
Name	No.*	Label	km	km	m3/s	m3/s	C	umhos	mgD/L	mg/L	mgO2/L	mgO2/L
diffuse 1	0	Mainstem headwater	12.326	2.536		0.0010	23.00					
diffuse 2	0	Mainstem headwater	2.54	1.96		0.0000	23.00					
diffuse 3	0	Mainstem headwater	1.96	1.44		0.0000	23.00					
diffuse 4	0	Mainstem headwater	1.44	0.00		0.0001	23.00					

Organic N	Ammon N	Nitrate N	Organic P	Inorganic P	Phyto plankton	Internal Nitrogen	Internal Phosphorus	Detritus	Pathogen	Alk	Constituent i	Constituent ii	Constituent iii	pH
ugN/L	ugN/L	ugN/L	ugP/L	ugP/L	ug/L	ugN/L	ugP/L	mgD/L	cfu/100 mL	mgCaCO3/L				
													100.00	7.00
													100.00	7.00
													100.00	7.00
													100.00	7.00

QUAL2K
Stream Water Quality Model
Grassy Branch (7/28/1994)
Point Source Data:

values from FRSS synoptic data

				Point		Temperature			Specific Conductance			Inorganic Suspended Solids		
	Tributary	Headwater	Location	Abstraction	Inflow	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
Name	No.	Label	km	m3/s	m3/s	°C	°C	max	umhos	umhos	max	mg/L	mg/L	max
Albers STP	0	Mainstem headwater	1.69		0.0079	25.00			2020.00					

Dissolved Oxygen			Slow CBOD			Fast CBOD			Organic N			Ammonia N			Nitrate + Nitrite N		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
mg/L	mg/L	max	mgO2/L	mgO2/L	max	mgO2/L	mgO2/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max
4.80						10.00						6700.00			14000.00		

Organic P			Inorganic P			Phytoplankton			Internal Nitrogen			Internal Phosphorus			Detritus		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
ugP/L	ugP/L	max	ugP/L	ugP/L	max	ugA/L	ugA/L	max	ugN/L	ugN/L	max	ugP/L	ugP/L	max	mgD/L	mgD/L	max
1556.00			2944.00														

Pathogen Indicator Bacteria			Alkalinity			Constituent i			Constituent ii			Constituent iii			pH		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
cfu/100ml	cfu/100ml	max	mgCaCO3/L	mgCaCO3/L	max			max			max			max	s.u.	s.u.	max
			100.00												7.20		

QUAL2K FORTRAN
Stream Water Quality Model
Steve Chapra, Hua Tao and Greg Pelletier
Version 2.11b8

System ID:		
River name	**Trenton Creek**	
Saved file name	**OHF_Trenton_v1_082410.xls**	
Directory where file saved	**C:\IEPA 2010\Qual2K**	
Month	**7**	
Day	**29**	
Year	**1998**	
Local time hours to UTC	**-6**	
Daylight savings time	**Yes**	
Calculation:		
Calculation step	**0.1**	**hours**
Final time	**30**	**day**
Solution method (integration)	**Euler**	
Solution method (pH)	**Brent**	
Time zone	**Central Standard Time**	
Program determined calc step	**0.093750**	**hours**
Time of last calculation	**0.04**	**minutes**
Time of sunrise	**5:57 AM**	
Time of solar noon	**1:05 PM**	
Time of sunset	**8:12 PM**	
Photoperiod	**14.24**	**hours**

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Headwater Data:

0.002

Number of Headwaters	1	*Measured values from OHF-TR-A1 Trenton Creek 7/29/1998*									
Headwater 0 (Mainstem)											
Headwater label	*Reach No*	*Flow*	*Elevation*	*Weir*				*Rating Curves*			
		Rate		*Height*	*Width*	*adam*	*bdam*	*Velocity*		*Depth*	
		(m^3/s)	*(m)*	*(m)*	*(m)*			*Coefficient*	*Exponent*	*Coefficient*	*Exponent*
Mainstem headwater	1	0.050	149.657			1.2500	0.9000	0.0400	0.000	0.4700	0.000
Water Quality Constituents	*Units*	*12:00 AM*	*1:00 AM*	*2:00 AM*	*3:00 AM*	*4:00 AM*	*5:00 AM*	*6:00 AM*	*7:00 AM*	*8:00 AM*	*9:00 AM*
Temperature	C	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
Conductivity	umhos										
Inorganic Solids	mgD/L										
Dissolved Oxygen	mg/L	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
CBODslow	mgO2/L										
CBODfast	mgO2/L	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Organic Nitrogen	ugN/L	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00
NH4-Nitrogen	ugN/L	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
NO3-Nitrogen	ugN/L	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
Organic Phosphorus	ugP/L	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00
Inorganic Phosphorus (SRP)	ugP/L	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00
Phytoplankton	ugA/L										
Internal Nitrogen (INP)	ugN/L										
Internal Phosphorus (IPP)	ugP/L										
Detritus (POM)	mgD/L										
Pathogen	cfu/100 mL										
Alkalinity	mgCaCO3/L	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Constituent i											
Constituent ii											
Constituent iii											
pH	s.u.	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

Manning Formula					Prescribed								
Channel Slope	Manning n	Bot Width m	Side Slope	Side Slope	Dispersion m2/s								
10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00
230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00
920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Reach Data:

ch slope =
0.026766222

Reach for diel plot		1																Hydra
Element for diel plot		1	Reach	Headwater	Reach			Location		Element	Elevation		Downstream					
Reach	Downstream		Number	Reach	length	Downstream		Upstream	Downstream	Number	Upstream	Downstream	Latitude			Longitude		
Label	end of reach label				(km)	Latitude	Longitude	(km)	(km)	>=1	(m)	(m)	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
OHF HW	OHF-TR-A1		1	Yes	2.0913	38.61	89.68	5.591	3.500	5	149.657	140.208	38.00	36	36	-89.00	-40	-47
OHF-TR-A1	OHF-TR-C1		2		3.5000	38.60	89.65	3.500	0.000	10	140.208	130.759	38.00	35	50	-89.00	-38	-57

aulic Model (Weir Overrides Manning Formula; Manning Formula Override Rating Curves)																			
Weir				Rating Curves				Manning Formula					Prescribed	Bottom	Bottom	Prescribed	Prescribed	Prescribed	Prescribed
Height	Width	adam	bdam	Velocity		Depth		Channel	Manning	Bot Width	Side	Side	Dispersion	Algae	SOD	SOD	CH4 flux	NH4 flux	Inorg P flux
(m)	(m)			Coefficient	Exponent	Coefficient	Exponent	Slope	n	m	Slope	Slope	m2/s	Coverage	Coverage	gO2/m2/d	gO2/m2/d	mgN/m2/d	mgP/m2/d
		1.2500	0.9000	0.0400	0.000	0.4700	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.2000	0.000	0.3000	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Air Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly air temperature for each reach (degrees C)								
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estimate values be								
Mainstem headwater	OHF HW	OHF-TR-A1	1	5.591	3.500	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
OHF-TR-A1	OHF-TR-A1	OHF-TR-C1	2	3.50	0.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00

9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
tween the hourly inputs.)														
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Dew Point Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly dewpoint temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	OHF HW	OHF-TR-A1	1	5.591	3.500	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
OHF-TR-A1	OHF-TR-A1	OHF-TR-C1	2	3.50	0.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Wind Speed Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Wind speed for each reach 7m above water surface (m/s)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	OHF HW	OHF-TR-A1	1	5.591	3.500	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14
OHF-TR-A1	OHF-TR-A1	OHF-TR-C1	2	3.50	0.00	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14
3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Cloud Cover Data:

				Upstream	Downstream
Upstream	Reach	Downstream	Reach	Distance	Distance
Label	Label	Label	Number	km	km
Mainstem headwater	OHF HW	OHF-TR-A1	1	5.591	3.500
OHF-TR-A1	OHF-TR-A1	OHF-TR-C1	2	3.50	0.00

12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Hourly cloud cover shade for each reach (Percent)							
(Percent of sky that is covered by clouds. The input values are applied as point estimates at each ti							
52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%
52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM
ne. Linear interpolation is used to estimate values between the hourly inputs.)							
52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%
52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%

4:00 PM	*5:00 PM*	*6:00 PM*	*7:00 PM*	*8:00 PM*	*9:00 PM*	*10:00 PM*	*11:00 PM*
52.6%	**52.6%**	**52.6%**	**52.6%**	**52.6%**	**52.6%**	**52.6%**	**52.6%**
52.6%	**52.6%**	**52.6%**	**52.6%**	**52.6%**	**52.6%**	**52.6%**	**52.6%**

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Cloud Cover Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly cloud cover shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of sky that is covered by clouds. The input values are applied as point estimates at each ti							
Mainstem headwater	OHF HW	OHF-TR-A1	1	5.591	3.500	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%
OHF-TR-A1	OHF-TR-A1	OHF-TR-C1	2	3.50	0.00	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
me. Linear interpolation is used to estimate values between the hourly inputs															
52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%
52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%	52.6%

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Water Column Rates

Parameter	*Value*	*Units*	*Symbol*
Stoichiometry:			
Carbon	**40**	**gC**	**gC**
Nitrogen	**7.2**	**gN**	**gN**
Phosphorus	**1**	**gP**	**gP**
Dry weight	**100**	**gD**	**gD**
Chlorophyll	**1**	**gA**	**gA**
Inorganic suspended solids:			
Settling velocity	**0.3**	**m/d**	v_i
Oxygen:			
Reaeration model	**Internal**		
User reaeration coefficient α	**3.93**		α
User reaeration coefficient β	**0.5**		β
User reaeration coefficient γ	**1.5**		γ
Temp correction	**1.024**		θ_a
Reaeration wind effect	**None**		
O2 for carbon oxidation	**2.69**	**gO_2/gC**	r_{oc}
O2 for NH4 nitrification	**4.57**	**gO_2/gN**	r_{on}
Oxygen inhib model CBOD oxidation	**Exponential**		
Oxygen inhib parameter CBOD oxidation	**0.60**	**L/mgO2**	K_{socf}
Oxygen inhib model nitrification	**Exponential**		
Oxygen inhib parameter nitrification	**0.60**	**L/mgO2**	K_{sona}
Oxygen enhance model denitrification	**Exponential**		
Oxygen enhance parameter denitrification	**0.60**	**L/mgO2**	K_{sodn}
Oxygen inhib model phyto resp	**Exponential**		
Oxygen inhib parameter phyto resp	**0.60**	**L/mgO2**	K_{sop}
Oxygen enhance model bot alg resp	**Exponential**		
Oxygen enhance parameter bot alg resp	**0.60**	**L/mgO2**	K_{sob}
Slow CBOD:			
Hydrolysis rate	**1**	**/d**	k_{hc}
Temp correction	**1.047**		θ_{hc}
Oxidation rate	**0**	**/d**	k_{dcs}
Temp correction	**1.047**		θ_{dcs}
Fast CBOD:			
Oxidation rate	**3.2**	**/d**	k_{dc}
Temp correction	**1.047**		θ_{dc}
Organic N:			
Hydrolysis	**0.02**	**/d**	k_{hn}

Temp correction	1.07		θ_{hn}
Settling velocity	0.1	m/d	v_{on}
Ammonium:			
Nitrification	1	/d	k_{na}
Temp correction	1.07		θ_{na}
Nitrate:			
Denitrification	1	/d	k_{dn}
Temp correction	1.07		θ_{dn}
Sed denitrification transfer coeff	0.1	m/d	v_{di}
Temp correction	1.07		θ_{di}
Organic P:			
Hydrolysis	0.2	/d	k_{hp}
Temp correction	1.07		θ_{hp}
Settling velocity	1	m/d	v_{op}
Inorganic P:			
Settling velocity	1	m/d	v_{ip}
Inorganic P sorption coefficient	0	L/mgD	K_{dpi}
Sed P oxygen attenuation half sat constant	0.05	mgO_2/L	k_{spi}
Phytoplankton:			
Max Growth rate	2.5	/d	k_{gp}
Temp correction	1.07		θ_{gp}
Respiration rate	0.2	/d	k_{rp}
Temp correction	1.07		θ_{rp}
Excretion rate	0	/d	k_{ep}
Temp correction	1.07		θ_{dp}
Death rate	0.2	/d	k_{dp}
Temp correction	1.07		θ_{dp}
External Nitrogen half sat constant	25	ugN/L	k_{sPp}
External Phosphorus half sat constant	5	ugP/L	k_{sNp}
Inorganic carbon half sat constant	1.30E-05	moles/L	k_{sCp}
Light model	Half saturation		
Light constant	100	langleys/d	K_{Lp}
Ammonia preference	25	ugN/L	k_{hnxp}
Subsistence quota for nitrogen	0	mgN/mgA	q_{0Np}
Subsistence quota for phosphorus	0	mgP/mgA	q_{0Pp}
Maximum uptake rate for nitrogen	0	mgN/mgA/d	ρ_{mNp}
Maximum uptake rate for phosphorus	0	mgP/mgA/d	ρ_{mPp}
Internal nitrogen half sat constant	0	mgN/mgA	K_{qNp}
Internal phosphorus half sat constant	0	mgP/mgA	K_{qPp}
Settling velocity	0.5	m/d	v_a

Bottom Algae:			
Growth model	**Zero-order**		
Max Growth rate	**10**	**mgA/m^2/d or /d**	C_{gb}
Temp correction	**1.07**		θ_{gb}
First-order model carrying capacity	**1000**	**mgA/m^2**	$a_{b,max}$
Respiration rate	**0.1**	**/d**	k_{rb}
Temp correction	**1.07**		θ_{rb}
Excretion rate	**0.05**	**/d**	k_{eb}
Temp correction	**1.07**		θ_{db}
Death rate	**0.1**	**/d**	k_{db}
Temp correction	**1.07**		θ_{db}
External nitrogen half sat constant	**300**	**ugN/L**	k_{sPb}
External phosphorus half sat constant	**100**	**ugP/L**	k_{sNb}
Inorganic carbon half sat constant	**1.30E-05**	**moles/L**	k_{sCb}
Light model	**Half saturation**		
Light constant	**100**	**langleys/d**	K_{Lb}
Ammonia preference	**25**	**ugN/L**	k_{hnxb}
Subsistence quota for nitrogen	**0.72**	**mgN/mgA**	q_{0N}
Subsistence quota for phosphorus	**0.1**	**mgP/mgA**	q_{0P}
Maximum uptake rate for nitrogen	**72**	**mgN/mgA/d**	ρ_{mN}
Maximum uptake rate for phosphorus	**10**	**mgP/mgA/d**	ρ_{mP}
Internal nitrogen half sat constant	**0.9**	**mgN/mgA**	K_{qN}
Internal phosphorus half sat constant	**0.13**	**mgP/mgA**	K_{qP}
Detritus (POM):			
Dissolution rate	**0.5**	**/d**	k_{dt}
Temp correction	**1.07**		θ_{dt}
Fraction of dissolution to fast CBOD	**1.00**		F_f
Settling velocity	**0.1**	**m/d**	v_{dt}
Pathogens:			
Decay rate	**0.8**	**/d**	k_{dx}
Temp correction	**1.07**		θ_{dx}
Settling velocity	**1**	**m/d**	v_x
Light efficiency factor	**1.00**		α_{path}
pH:			
Partial pressure of carbon dioxide	**347**	**ppm**	p_{CO2}
Constituent i			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent ii			
First-order reaction rate	**0**	**/d**	

Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent iii			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Diffuse Source Data:

	Tributary	Headwater	Location		Diffuse	Diffuse		Spec	Inorg	Diss	CBOD	CBOD
			Up	Down	Abstraction	Inflow	Temp	Cond	SS	Oxygen	slow	fast
Name	No.*	Label	km	km	m3/s	m3/s	C	umhos	mgD/L	mg/L	mgO2/L	mgO2/L
diffuse HW	0	Mainstem headwater	5.591	3.682		0.0070	24.00					
diffuse A1	0	Mainstem headwater	3.682	0.000		0.0082	24.00					

Organic N	Ammon N	Nitrate N	Organic P	Inorganic P	Phyto plankton	Internal Nitrogen	Internal Phosphorus	Detritus	Pathogen	Alk	Constituent i	Constituent ii	Constituent iii	pH
ugN/L	ugN/L	ugN/L	ugP/L	ugP/L	ug/L	ugN/L	ugP/L	mgD/L	cfu/100 mL	mgCaCO3/L				
250.00	200.00		0.00	0.00									100.00	7.00
250.00	200.00		0.00	0.00									100.00	7.00

QUAL2K
Stream Water Quality Model
Trenton Creek (7/29/1998)
Point Source Data:

AVG values from IEPA DMR spreadsheet received 05/10

				Point		Temperature			Specific Conductance			Inorganic Suspended Solids		
	Tributary	Headwater	Location	Abstraction	Inflow	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
Name	No.	Label	km	m3/s	m3/s	°C	°C	max	umhos	umhos	max	mg/L	mg/L	max
Trenton STP (OHF-TR-E1)	0	Mainstem headwater	3.41		0.0500	24.60	24.00							

Dissolved Oxygen			Slow CBOD			Fast CBOD			Organic N			Ammonia N			Nitrate + Nitrite N		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
mg/L	mg/L	max	mgO2/L	mgO2/L	max	mgO2/L	mgO2/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max
4.6						2.0			8000.00			2000.00			650.00		

Organic P			Inorganic P			Phytoplankton			Internal Nitrogen			Internal Phosphorus			Detritus		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
ugP/L	ugP/L	max	ugP/L	ugP/L	max	ugA/L	ugA/L	max	ugN/L	ugN/L	max	ugP/L	ugP/L	max	mgD/L	mgD/L	max
970.00			1830.00														

Pathogen Indicator Bacteria			Alkalinity			Constituent i			Constituent ii			Constituent iii			pH		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
cfu/100ml	cfu/100ml	max	mgCaCO3/L	mgCaCO3/L	max			max			max			max	s.u.	s.u.	max
			100.00												7.00		

QUAL2K FORTRAN
Stream Water Quality Model
Steve Chapra, Hua Tao and Greg Pelletier
Version 2.11b8

System ID:		
River name	**OH-HL-D1**	
Saved file name	**OH-HL-D1_V1_110810.xls**	
Directory where file saved	**C:\IEPA 2010\Qual2K**	
Month	**9**	
Day	**26**	
Year	**2002**	
Local time hours to UTC	**-5**	
Daylight savings time	**Yes**	
Calculation:		
Calculation step	**0.1**	**hours**
Final time	**30**	**day**
Solution method (integration)	**Euler**	
Solution method (pH)	**Brent**	
Time zone	**Eastern Standard Time**	
Program determined calc step	**0.093750**	**hours**
Time of last calculation	**0.06**	**minutes**
Time of sunrise	**7:44 AM**	
Time of solar noon	**1:44 PM**	
Time of sunset	**7:44 PM**	
Photoperiod	**11.99**	**hours**

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Headwater Data:

Number of Headwaters	1

Headwater 0 (Mainstem)

Headwater label	*Reach No*	*Flow*	*Elevation*	*Weir*				*Rating Curves*			
		Rate		*Height*	*Width*	*adam*	*bdam*	*Velocity*		*Depth*	
		(m^3/s)	*(m)*	*(m)*	*(m)*			*Coefficient*	*Exponent*	*Coefficient*	*Exponent*
Mainstem headwater	1	0.0010				1.2500	0.9000	0.1128	0.000	0.0396	0.000
Water Quality Constituents	*Units*	*12:00 AM*	*1:00 AM*	*2:00 AM*	*3:00 AM*	*4:00 AM*	*5:00 AM*	*6:00 AM*	*7:00 AM*	*8:00 AM*	*9:00 AM*
Temperature	C	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Conductivity	umhos										
Inorganic Solids	mgD/L										
Dissolved Oxygen	mg/L	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
CBODslow	mgO2/L										
CBODfast	mgO2/L	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Organic Nitrogen	ugN/L	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00
NH4-Nitrogen	ugN/L	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
NO3-Nitrogen	ugN/L	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
Organic Phosphorus	ugP/L	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00
Inorganic Phosphorus (SRP)	ugP/L	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00
Phytoplankton	ugA/L										
Internal Nitrogen (INP)	ugN/L										
Internal Phosphorus (IPP)	ugP/L										
Detritus (POM)	mgD/L										
Pathogen	cfu/100 mL										
Alkalinity	mgCaCO3/L	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Constituent i											
Constituent ii											
Constituent iii											
pH	s.u.	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

Manning Formula					Prescribed								
Channel Slope	Manning n	Bot Width m	Side Slope	Side Slope	Dispersion m2/s								
10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00	2970.00
230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00	230.00
300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00	300.00
480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00	480.00
920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00	920.00
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Reach Data:

Reach for diel plot		3																	Hydr
Element for diel plot		2	Reach	Headwater	Reach			Location		Element	Elevation		Downstream						
Reach	Downstream		Number	Reach	length	Downstream		Upstream	Downstream	Number	Upstream	Downstream	Latitude			Longitude			
Label	end of reach label				(km)	Latitude	Longitude	(km)	(km)	>=1	(m)	(m)	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
1 - Headwater	Top Seg 2		1	Yes	6.397	38.783	88.389	16.840	10.443	5	170.688	153.010	38	46	58.08	-89	36	40.32	
2	Top Seg 3		2		4.138	38.757	88.362	10.443	6.304	5	153.010	146.304	38	45	23.76	-89	38	17.88	
3	Confluence		3		6.304	38.712	88.352	6.304	0.000	5	146.304	141.122	38	42	43.92	-89	38	53.52	

aulic Model (Weir Overrides Manning Formula; Manning Formula Override Rating Curves)																			
Weir				Rating Curves				Manning Formula					Prescribed	Bottom	Bottom	Prescribed	Prescribed	Prescribed	Prescribed
Height	Width	adam	bdam	Velocity		Depth		Channel	Manning	Bot Width	Side	Side	Dispersion	Algae	SOD	SOD	CH4 flux	NH4 flux	Inorg P flux
(m)	(m)			Coefficient	Exponent	Coefficient	Exponent	Slope	n	m	Slope	Slope	m2/s	Coverage	Coverage	gO2/m2/d	gO2/m2/d	mgN/m2/d	mgP/m2/d
		1.2500	0.9000	0.0079	0.000	0.2100	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.0079	0.000	0.2100	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.0079	0.000	0.2100	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Air Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly air temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headw	1 - Headwater	Top Seg 2	1	16.84	10.44	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Top Seg 2	2	Top Seg 3	2	10.44	6.30	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Top Seg 3	3	Confluence	3	6.30	0.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.)															
7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Dew Point Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly dewpoint temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	1 - Headwater	Top Seg 2	1	16.84	10.44	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
Top Seg 2	2	Top Seg 3	2	10.44	6.30	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
Top Seg 3	3	Confluence	3	6.30	0.00	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50
12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Wind Speed Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Wind speed for each reach 7m above water surface (m/s)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	1 - Headwater	Top Seg 2	1	16.84	10.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Seg 2	2.00	Top Seg 3	2	10.44	6.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Seg 3	3.00	Confluence	3	6.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Cloud Cover Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly cloud cover shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of sky that is covered by clouds. The input values are applied as point estimates at each ti							
Mainstem headwater	1 - Headwater	Top Seg 2	1	16.84	10.44	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Top Seg 2	2.00	Top Seg 3	2	10.44	6.30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Top Seg 3	3.00	Confluence	3	6.30	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
me. Linear interpolation is used to estimate values between the hourly inputs															
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Water Column Rates

Parameter	Value	Units	Symbol
Stoichiometry:			
Carbon	40	gC	gC
Nitrogen	7.2	gN	gN
Phosphorus	1	gP	gP
Dry weight	100	gD	gD
Chlorophyll	1	gA	gA
Inorganic suspended solids:			
Settling velocity	0.3	m/d	v_i
Oxygen:			
Reaeration model	Internal		
User reaeration coefficient α	3.93		α
User reaeration coefficient β	0.5		β
User reaeration coefficient γ	1.5		γ
Temp correction	1.024		θ_a
Reaeration wind effect	Banks-Herrera		
O2 for carbon oxidation	2.69	gO_2/gC	r_{oc}
O2 for NH4 nitrification	4.57	gO_2/gN	r_{on}
Oxygen inhib model CBOD oxidation	Exponential		
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2	K_{socf}
Oxygen inhib model nitrification	Exponential		
Oxygen inhib parameter nitrification	0.60	L/mgO2	K_{sona}
Oxygen enhance model denitrification	Exponential		
Oxygen enhance parameter denitrification	0.60	L/mgO2	K_{sodn}
Oxygen inhib model phyto resp	Exponential		
Oxygen inhib parameter phyto resp	0.60	L/mgO2	K_{sop}
Oxygen enhance model bot alg resp	Exponential		
Oxygen enhance parameter bot alg resp	0.60	L/mgO2	K_{sob}
Slow CBOD:			
Hydrolysis rate	0.1	/d	k_{hc}
Temp correction	1.047		θ_{hc}
Oxidation rate	0	/d	k_{dcs}
Temp correction	1.047		θ_{dcs}
Fast CBOD:			
Oxidation rate	1	/d	k_{dc}
Temp correction	1.047		θ_{dc}
Organic N:			
Hydrolysis	0.2	/d	k_{hn}

Temp correction	1.07		θ_{hn}
Settling velocity	0.12	m/d	v_{on}
Ammonium:			
Nitrification	0.1	/d	k_{na}
Temp correction	1.07		θ_{na}
Nitrate:			
Denitrification	1	/d	k_{dn}
Temp correction	1.07		θ_{dn}
Sed denitrification transfer coeff	0.1	m/d	v_{di}
Temp correction	1.07		θ_{di}
Organic P:			
Hydrolysis	0.01	/d	k_{hp}
Temp correction	1.07		θ_{hp}
Settling velocity	0.1	m/d	v_{op}
Inorganic P:			
Settling velocity	0.1	m/d	v_{ip}
Inorganic P sorption coefficient	0	L/mgD	K_{dpi}
Sed P oxygen attenuation half sat constant	0.05	mgO_2/L	k_{spi}
Phytoplankton:			
Max Growth rate	2.5	/d	k_{gp}
Temp correction	1.07		θ_{gp}
Respiration rate	0.2	/d	k_{rp}
Temp correction	1.07		θ_{rp}
Excretion rate	0	/d	k_{ep}
Temp correction	1.07		θ_{dp}
Death rate	0.2	/d	k_{dp}
Temp correction	1.07		θ_{dp}
External Nitrogen half sat constant	25	ugN/L	k_{sPp}
External Phosphorus half sat constant	5	ugP/L	k_{sNp}
Inorganic carbon half sat constant	1.30E-05	moles/L	k_{sCp}
Light model	Half saturation		
Light constant	100	langleys/d	K_{Lp}
Ammonia preference	25	ugN/L	k_{hnxp}
Subsistence quota for nitrogen	0	mgN/mgA	q_{0Np}
Subsistence quota for phosphorus	0	mgP/mgA	q_{0Pp}
Maximum uptake rate for nitrogen	0	mgN/mgA/d	ρ_{mNp}
Maximum uptake rate for phosphorus	0	mgP/mgA/d	ρ_{mPp}
Internal nitrogen half sat constant	0	mgN/mgA	K_{qNp}
Internal phosphorus half sat constant	0	mgP/mgA	K_{qPp}
Settling velocity	0.5	m/d	v_a

Bottom Algae:			
Growth model	**Zero-order**		
Max Growth rate	**50**	**mgA/m^2/d or /d**	C_{gb}
Temp correction	**1.07**		θ_{gb}
First-order model carrying capacity	**1000**	**mgA/m^2**	$a_{b,max}$
Respiration rate	**0.1**	**/d**	k_{rb}
Temp correction	**1.07**		θ_{rb}
Excretion rate	**0.05**	**/d**	k_{eb}
Temp correction	**1.07**		θ_{db}
Death rate	**0.1**	**/d**	k_{db}
Temp correction	**1.07**		θ_{db}
External nitrogen half sat constant	**300**	**ugN/L**	k_{sPb}
External phosphorus half sat constant	**100**	**ugP/L**	k_{sNb}
Inorganic carbon half sat constant	**1.30E-05**	**moles/L**	k_{sCb}
Light model	**Half saturation**		
Light constant	**100**	**langleys/d**	K_{Lb}
Ammonia preference	**25**	**ugN/L**	k_{hnxb}
Subsistence quota for nitrogen	**0.72**	**mgN/mgA**	q_{0N}
Subsistence quota for phosphorus	**0.1**	**mgP/mgA**	q_{0P}
Maximum uptake rate for nitrogen	**72**	**mgN/mgA/d**	ρ_{mN}
Maximum uptake rate for phosphorus	**5**	**mgP/mgA/d**	ρ_{mP}
Internal nitrogen half sat constant	**0.9**	**mgN/mgA**	K_{qN}
Internal phosphorus half sat constant	**0.13**	**mgP/mgA**	K_{qP}
Detritus (POM):			
Dissolution rate	**0.5**	**/d**	k_{dt}
Temp correction	**1.07**		θ_{dt}
Fraction of dissolution to fast CBOD	**1.00**		F_f
Settling velocity	**0.1**	**m/d**	v_{dt}
Pathogens:			
Decay rate	**0.8**	**/d**	k_{dx}
Temp correction	**1.07**		θ_{dx}
Settling velocity	**1**	**m/d**	v_x
Light efficiency factor	**1.00**		α_{path}
pH:			
Partial pressure of carbon dioxide	**347**	**ppm**	p_{CO2}
Constituent i			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent ii			
First-order reaction rate	**0**	**/d**	

Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent iii			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Diffuse Source Data:

			Location		Diffuse	Diffuse		Spec	Inorg	Diss	CBOD	CBOD
	Tributary	Headwater	Up	Down	Abstraction	Inflow	Temp	Cond	SS	Oxygen	slow	fast
Name	No.*	Label	km	km	m3/s	m3/s	C	umhos	mgD/L	mg/L	mgO2/L	mgO2/L
n/a												

Organic N	Ammon N	Nitrate N	Organic P	Inorganic P	Phyto plankton	Internal Nitrogen	Internal Phosphorus	Detritus	Pathogen	Alk	Constituent i	Constituent ii	Constituent iii	pH
ugN/L	ugN/L	ugN/L	ugP/L	ugP/L	ug/L	ugN/L	ugP/L	mgD/L	cfu/100 mL	mgCaCO3/L				

QUAL2K
Stream Water Quality Model
OH-HL-D1 (9/26/2002)
Point Source Data:

values are averages (no synoptic available)

				Point		Temperature			Specific Conductance			Inorganic Suspended Solids		
	Tributary	Headwater	Location	Abstraction	Inflow	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
Name	No.	Label	km	m3/s	m3/s	°C	°C	max	umhos	umhos	max	mg/L	mg/L	max
PIERRON WEST STP	0	Mainstem headwater	10.44		0.0029	15.00								
IL DOT-I-70 REST AREA	0	Mainstem headwater	6.30		0.0003	15.00								

Dissolved Oxygen			Slow CBOD			Fast CBOD			Organic N			Ammonia N			Nitrate + Nitrite N		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
mg/L	mg/L	max	mgO2/L	mgO2/L	max	mgO2/L	mgO2/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max	ugN/L	ugN/L	max
						5.09						6700.00			14000.00		
						15.37						6700.00			14000.00		

Organic P			Inorganic P			Phytoplankton			Internal Nitrogen			Internal Phosphorus			Detritus		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
ugP/L	ugP/L	max	ugP/L	ugP/L	max	ugA/L	ugA/L	max	ugN/L	ugN/L	max	ugP/L	ugP/L	max	mgD/L	mgD/L	max
1556.00			2944.00														
1556.00			2944.00														

Pathogen Indicator Bacteria			Alkalinity			Constituent i			Constituent ii			Constituent iii			pH		
mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of	mean	range/2	time of
cfu/100ml	cfu/100ml	max	mgCaCO3/L	mgCaCO3/L	max			max			max			max	s.u.	s.u.	max
			100.00												7.81		
			100.00												7.96		

QUAL2K FORTRAN
Stream Water Quality Model
Steve Chapra, Hua Tao and Greg Pelletier
Version 2.11b8

System ID:		
River name	**OH-01 Sugar Creek**	
Saved file name	**OH-01_112310_v1**	
Directory where file saved	**C:\IEPA 2010\Qual2K**	
Month	**7**	
Day	**24**	
Year	**2002**	
Local time hours to UTC	**-6**	
Daylight savings time	**Yes**	
Calculation:		
Calculation step	**0.1**	**hours**
Final time	**30**	**day**
Solution method (integration)	**Euler**	
Solution method (pH)	**Brent**	
Time zone	**Central Standard Time**	
Program determined calc step	**0.093750**	**hours**
Time of last calculation	**0.05**	**minutes**
Time of sunrise	**5:48 AM**	
Time of solar noon	**1:00 PM**	
Time of sunset	**8:11 PM**	
Photoperiod	**14.37**	**hours**

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Headwater Data:

Number of Headwaters	1	*Measured values from OH-05 on 7/24/02*

Headwater 0 (Mainstem)

Headwater label	*Reach No*	*Flow*	*Elevation*	*Weir*				*Rating Curves*			
		Rate		*Height*	*Width*	*adam*	*bdam*	*Velocity*		*Depth*	
		(m^3/s)	*(m)*	*(m)*	*(m)*			*Coefficient*	*Exponent*	*Coefficient*	*Exponent*
Mainstem headwater	1	0.123	140.200			1.2500	0.9000	0.0194	0.000	0.9815	0.000
Water Quality Constituents	*Units*	*12:00 AM*	*1:00 AM*	*2:00 AM*	*3:00 AM*	*4:00 AM*	*5:00 AM*	*6:00 AM*	*7:00 AM*	*8:00 AM*	*9:00 AM*
Temperature	C	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10
Conductivity	umhos										
Inorganic Solids	mgD/L										
Dissolved Oxygen	mg/L	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
CBODslow	mgO2/L										
CBODfast	mgO2/L	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Organic Nitrogen	ugN/L										
NH4-Nitrogen	ugN/L	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00
NO3-Nitrogen	ugN/L	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00
Organic Phosphorus	ugP/L	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
Inorganic Phosphorus (SRP)	ugP/L	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00
Phytoplankton	ugA/L										
Internal Nitrogen (INP)	ugN/L										
Internal Phosphorus (IPP)	ugP/L										
Detritus (POM)	mgD/L										
Pathogen	cfu/100 mL										
Alkalinity	mgCaCO3/L	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00
Constituent i											
Constituent ii											
Constituent iii											
pH	s.u.	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70

Manning Formula					Prescribed								
Channel Slope	Manning n	Bot Width m	Side Slope	Side Slope	Dispersion m2/s								
10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10	27.10
6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40	6.40
1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00	240.00
1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00	1480.00
80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00	740.00
155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00	155.00
7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70	7.70

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Reach Data:

Reach for diel plot	3																	Hydr
Element for diel plot	2	Reach	Headwater	Reach			Location		Element	Elevation		Downstream						
Reach	Downstream	Number	Reach	length	Downstream		Upstream	Downstream	Number	Upstream	Downstream	Latitude			Longitude			
Label	end of reach label			(km)	Latitude	Longitude	(km)	(km)	>=1	(m)	(m)	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds	
1 - OH-01 Headwater (OH-05)		1	Yes	5.33	38.66	88.37	40.030	34.698	5	140.208	136.246	38.00	39	33	-89.00	37	33.24	
2 -	OHF-TR-C3 model confluence	2		10.20	38.65	88.36	34.698	24.497	5	136.246	124.054	38.00	38	42	-89.00	38	42	
3 - OH-01	Sugar Creek Confluence	3		24.50	38.47	88.38	24.497	0.000	5	124.054	121.920	38.00	28	20	-89.00	36	54.72	

aulic Model (Weir Overrides Manning Formula; Manning Formula Override Rating Curves)																			
Weir				Rating Curves				Manning Formula					Prescribed	Bottom	Bottom	Prescribed	Prescribed	Prescribed	Prescribed
Height	Width	adam	bdam	Velocity		Depth		Channel	Manning	Bot Width	Side	Side	Dispersion	Algae	SOD	SOD	CH4 flux	NH4 flux	Inorg P flux
(m)	(m)			Coefficient	Exponent	Coefficient	Exponent	Slope	n	m	Slope	Slope	m2/s	Coverage	Coverage	gO2/m2/d	gO2/m2/d	mgN/m2/d	mgP/m2/d
		1.2500	0.9000	0.0194	0.000	0.9815	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.0194	0.000	0.9815	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000
		1.2500	0.9000	0.0194	0.000	0.9815	0.000						0.00	50.00%	50.00%	10.00	0.0000	0.0000	0.0000

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Air Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly air temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estimate							
Mainstem head	1 - OH-01 Headwater	(OH-05)	1	40.03	34.70	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78
	2 -	OHF-TR-C3 model conflu	2	34.70	24.50	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78
OHF-TR-C3 mod	3 - OH-01	Sugar Creek Confluence	3	24.50	0.00	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
values between the hourly inputs.)															
24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78
24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78
24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78	24.78

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Dew Point Temperature Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly dewpoint temperature for each reach (degrees C)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	1 - OH-01 Headwater (OH-05)		1	40.03	34.70	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17
	2 -	OHF-TR-C3 model conflu	2	34.70	24.50	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17
OHF-TR-C3 model cor	3 - OH-01	Sugar Creek Confluence	3	24.50	0.00	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17
20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17
20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Wind Speed Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Wind speed for each reach 7m above water surface (m/s)							
Label	Label	Label	Number	km	km	(The input values are applied as point estimates at each time. Linear interpolation is used to estima							
Mainstem headwater	1 - OH-01 Headwater (OH-05)		1	40.03	34.70	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
	2 -	OHF-TR-C3 model cor	2	34.70	24.50	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
OHF-TR-C3 model cor	3 - OH-01	Sugar Creek Confluen	3	24.50	0.00	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
te values between the hourly inputs.															
2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83
2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Cloud Cover Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Hourly cloud cover shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of sky that is covered by clouds. The input values are applied as point estimates at each ti							
Mainstem headwater	1 - OH-01 Headwater (OH-05)		1	40.03	34.70	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2 -	OHF-TR-C3 model conflu	2	34.70	24.50	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHF-TR-C3 model cor	3 - OH-01	Sugar Creek Confluence	3	24.50	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
me. Linear interpolation is used to estimate values between the hourly inputs															
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Shade Data:

				Upstream	Downstream	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM
Upstream	Reach	Downstream	Reach	Distance	Distance	Integrated hourly effective shade for each reach (Percent)							
Label	Label	Label	Number	km	km	(Percent of solar radiation that is blocked because of shade from topography and vegetation. Hourl							
Mainstem headwater	1 - OH-01 Headwater (OH-05)		1	40.03	34.70	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2 -	OHF-TR-C3 model cor	2	34.70	24.50	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
OHF-TR-C3 model cor	3 - OH-01	Sugar Creek Confluen	3	24.50	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
y values are applied as integrated values for each hour, e.g. the value at 12:00 AM is applied from 12:00 to 1:00 AM															
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Water Column Rates

Parameter	*Value*	*Units*	*Symbol*
Stoichiometry:			
Carbon	**40**	**gC**	**gC**
Nitrogen	**7.2**	**gN**	**gN**
Phosphorus	**1**	**gP**	**gP**
Dry weight	**100**	**gD**	**gD**
Chlorophyll	**1**	**gA**	**gA**
Inorganic suspended solids:			
Settling velocity	**0.3**	**m/d**	v_i
Oxygen:			
Reaeration model	**Internal**		
User reaeration coefficient α	**3.93**		α
User reaeration coefficient β	**0.5**		β
User reaeration coefficient γ	**1.5**		γ
Temp correction	**1.024**		θ_a
Reaeration wind effect	**Banks-Herrera**		
O2 for carbon oxidation	**2.69**	**gO_2/gC**	r_{oc}
O2 for NH4 nitrification	**4.57**	**gO_2/gN**	r_{on}
Oxygen inhib model CBOD oxidation	**Exponential**		
Oxygen inhib parameter CBOD oxidation	**0.60**	**L/mgO2**	K_{socf}
Oxygen inhib model nitrification	**Exponential**		
Oxygen inhib parameter nitrification	**0.60**	**L/mgO2**	K_{sona}
Oxygen enhance model denitrification	**Exponential**		
Oxygen enhance parameter denitrification	**0.60**	**L/mgO2**	K_{sodn}
Oxygen inhib model phyto resp	**Exponential**		
Oxygen inhib parameter phyto resp	**0.60**	**L/mgO2**	K_{sop}
Oxygen enhance model bot alg resp	**Exponential**		
Oxygen enhance parameter bot alg resp	**0.60**	**L/mgO2**	K_{sob}
Slow CBOD:			
Hydrolysis rate	**0.1**	**/d**	k_{hc}
Temp correction	**1.047**		θ_{hc}
Oxidation rate	**0**	**/d**	k_{dcs}
Temp correction	**1.047**		θ_{dcs}
Fast CBOD:			
Oxidation rate	**1**	**/d**	k_{dc}
Temp correction	**1.047**		θ_{dc}
Organic N:			
Hydrolysis	**0.4**	**/d**	k_{hn}

Temp correction	1.07		θ_{hn}
Settling velocity	0.1	m/d	v_{on}
Ammonium:			
Nitrification	0.1	/d	k_{na}
Temp correction	1.07		θ_{na}
Nitrate:			
Denitrification	1	/d	k_{dn}
Temp correction	1.07		θ_{dn}
Sed denitrification transfer coeff	0.1	m/d	v_{di}
Temp correction	1.07		θ_{di}
Organic P:			
Hydrolysis	0.2	/d	k_{hp}
Temp correction	1.07		θ_{hp}
Settling velocity	0.001	m/d	v_{op}
Inorganic P:			
Settling velocity	0.001	m/d	v_{ip}
Inorganic P sorption coefficient	0	L/mgD	K_{dpi}
Sed P oxygen attenuation half sat constant	0.05	mgO_2/L	k_{spi}
Phytoplankton:			
Max Growth rate	2.5	/d	k_{gp}
Temp correction	1.07		θ_{gp}
Respiration rate	0.2	/d	k_{rp}
Temp correction	1.07		θ_{rp}
Excretion rate	0	/d	k_{ep}
Temp correction	1.07		θ_{dp}
Death rate	0.2	/d	k_{dp}
Temp correction	1.07		θ_{dp}
External Nitrogen half sat constant	25	ugN/L	k_{sPp}
External Phosphorus half sat constant	5	ugP/L	k_{sNp}
Inorganic carbon half sat constant	1.30E-05	moles/L	k_{sCp}
Light model	Half saturation		
Light constant	100	langleys/d	K_{Lp}
Ammonia preference	25	ugN/L	k_{hnxp}
Subsistence quota for nitrogen	0	mgN/mgA	q_{0Np}
Subsistence quota for phosphorus	0	mgP/mgA	q_{0Pp}
Maximum uptake rate for nitrogen	0	mgN/mgA/d	ρ_{mNp}
Maximum uptake rate for phosphorus	0	mgP/mgA/d	ρ_{mPp}
Internal nitrogen half sat constant	0	mgN/mgA	K_{qNp}
Internal phosphorus half sat constant	0	mgP/mgA	K_{qPp}
Settling velocity	0.5	m/d	v_a

Bottom Algae:			
Growth model	**Zero-order**		
Max Growth rate	**10**	**mgA/m^2/d or /d**	C_{gb}
Temp correction	**1.07**		θ_{gb}
First-order model carrying capacity	**1000**	**mgA/m^2**	$a_{b,max}$
Respiration rate	**0.1**	**/d**	k_{rb}
Temp correction	**1.07**		θ_{rb}
Excretion rate	**0.05**	**/d**	k_{eb}
Temp correction	**1.07**		θ_{db}
Death rate	**0.1**	**/d**	k_{db}
Temp correction	**1.07**		θ_{db}
External nitrogen half sat constant	**300**	**ugN/L**	k_{sPb}
External phosphorus half sat constant	**100**	**ugP/L**	k_{sNb}
Inorganic carbon half sat constant	**1.30E-05**	**moles/L**	k_{sCb}
Light model	**Half saturation**		
Light constant	**100**	**langleys/d**	K_{Lb}
Ammonia preference	**25**	**ugN/L**	k_{hnxb}
Subsistence quota for nitrogen	**0.72**	**mgN/mgA**	q_{0N}
Subsistence quota for phosphorus	**0.1**	**mgP/mgA**	q_{0P}
Maximum uptake rate for nitrogen	**72**	**mgN/mgA/d**	ρ_{mN}
Maximum uptake rate for phosphorus	**5**	**mgP/mgA/d**	ρ_{mP}
Internal nitrogen half sat constant	**0.9**	**mgN/mgA**	K_{qN}
Internal phosphorus half sat constant	**0.13**	**mgP/mgA**	K_{qP}
Detritus (POM):			
Dissolution rate	**0.5**	**/d**	k_{dt}
Temp correction	**1.07**		θ_{dt}
Fraction of dissolution to fast CBOD	**1.00**		F_f
Settling velocity	**0.1**	**m/d**	v_{dt}
Pathogens:			
Decay rate	**0.8**	**/d**	k_{dx}
Temp correction	**1.07**		θ_{dx}
Settling velocity	**1**	**m/d**	v_x
Light efficiency factor	**1.00**		α_{path}
pH:			
Partial pressure of carbon dioxide	**347**	**ppm**	p_{CO2}
Constituent i			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent ii			
First-order reaction rate	**0**	**/d**	

Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}
Constituent iii			
First-order reaction rate	**0**	**/d**	
Temp correction	**1**		θ_{dx}
Settling velocity	**0**	**m/d**	v_{dt}

QUAL2K
Stream Water Quality Model
OH-01 Sugar Creek (7/24/2002)
Light Parameters and Surface Heat Transfer Models:

Parameter	*Value*	*Unit*	
Photosynthetically Available Radiation	0.47		
Background light extinction	0.2	*/m*	k_{eb}
Linear chlorophyll light extinction	0.0088	*1/m-(ugA/L)*	α_p
Nonlinear chlorophyll light extinction	0.054	*1/m-(ugA/L)2/3*	α_{pn}
ISS light extinction	0.052	*1/m-(mgD/L)*	α_i
Detritus light extinction	0.174	*1/m-(mgD/L)*	α_o
Solar shortwave radiation model			
Atmospheric attenuation model for solar	Bras		
Bras solar parameter (used if Bras solar model is selected)			
atmospheric turbidity coefficient (2=clear, 5=smoggy, default=2)	2		n_{fac}
Ryan-Stolzenbach solar parameter (used if Ryan-Stolzenbach solar model is selected)			
atmospheric transmission coefficient (0.70-0.91, default 0.8)	0.8		a_{tc}
Downwelling atmospheric longwave IR radiation			
atmospheric longwave emissivity model	Brunt		
Evaporation and air convection/conduction			
wind speed function for evaporation and air convection/conduction	Brady-Graves-Geyer		
Sediment heat parameters			
Sediment thermal thickness	15	*cm*	H_s
Sediment thermal diffusivity	0.0064	cm^2/s	α_s
Sediment density	1.6	g/cm^3	ρ_s
Water density	1	g/cm^3	ρ_w
Sediment heat capacity	0.4	$cal/(g\ ^oC)$	C_{ps}
Water heat capacity	1	$cal/(g\ ^oC)$	C_{pw}
Sediment diagenesis model			
Compute SOD and nutrient fluxes	No		

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Appendix H
Responsiveness Summary

Appendix H:
Responsiveness Summary
Sugar Creek/ Lake Branch TMDL

Responsiveness Summary

This responsiveness summary responds to substantive questions and comments received during the stage three public comment period from July 21, 2011 through August 20, 2011 postmarked, including those from the July 21, 2011 public meeting discussed below.

What is a TMDL?

A Total Maximum Daily Load (TMDL) is the sum of the allowable amount of a pollutant that a water body can receive from all contributing sources and still meet water quality standards or designated uses. The Sugar Creek/Lake Branch TMDL report contains a plan detailing the actions necessary to reduce pollutant loads to the impaired water bodies and ensure compliance with applicable water quality standards. The Illinois EPA implements the TMDL program in accordance with Section 303(d) of the federal Clean Water Act and regulations there under.

Background

The Sugar Creek/Lake Branch watershed is located in southern Illinois and drains approximately 112,700 acres. The watershed is in Madison, Clinton, Bond, and St. Clair counties. The Clean Water Act and USEPA regulations require that states develop TMDLs for waters on the Section 303(d) List. Illinois EPA currently develops TMDLs for pollutants that have numeric water quality standards. Sugar Creek is impaired due to dissolved oxygen and fecal coliform. Lake and Bull Branch are impaired due to dissolved oxygen and manganese. Grassy Branch and Trenton Creek are impaired due to dissolved oxygen. Therefore, TMDLs were developed for dissolved oxygen, fecal coliform, and manganese.

Public Meetings

Public meetings were held in the Highland City Council Chambers, 1115 Broadway, Highland, Illinois on May 13, 2009 and July 21, 2011. The Illinois EPA provided public notice for both meetings by placing display ads in the Highland News Leader and Sparta News Plain Dealer. This notice gave the date, time, location, and purpose of the meeting. The notice also provided references to obtain additional information about this specific site, the TMDL Program and other related issues. Approximately 85 individuals and organizations were also sent the public notice by first class mail. The draft TMDL Report was available for review at the Highland City Council Chambers and also on the Agency's web page at http://www.epa.state.il.us/water/tmdl .

The public meeting started at 6:00 p.m. on July 21, 2011. There were 21 attendees at the meeting and the meeting concluded at 7:15 p.m. with the meeting record remaining open until midnight, August 20, 2011. There were no public comments during the comment period.