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7.0 Current and Background Surface Water Quality

As part of the field program, one surface water sampling event was performed on July 27, 2001. During that event, surface water samples were collected from four locations (SW-1 through SW-4). Sampling locations consisted of one upstream monitoring point for the entire study area that was positioned near the headwaters of Robinson Fork (SW-1); one point near the southern (downstream) end of the unmined study segment (SW-2); one point near the southern (downstream) end of the mined study segment (SW-3); and one downstream point for the study area near the confluence of Robinson Fork and Enlow Fork (SW-4). In addition to the collection of normal samples, one duplicate sample was collected at the SW-2 location for field quality assurance/quality control considerations. Current, as well as background, surface water sampling results are summarized in Table 7-1. Surface water sampling locations are indicated in Sheet 21. The laboratory analytical report is provided in Appendix D.

Surface water samples were obtained using the grab method. Analytical services were provided by Antech Ltd. located in Export, Pennsylvania. The analytical program included the typical suite of BMR deep mine parameters including total iron, total manganese, total aluminum, total calcium, total magnesium, total suspended solids, total dissolved solids, sulfates, alkalinity, acidity, pH, and hardness. Also, fecal coliform, nitrate, nitrite, and total phosphate were added to assist in determining potential effects from agricultural operations. In addition, pH, specific conductance, turbidity, and temperature were measured in the field during sample collection.

Regarding surface water quality, the following general observations were made:

- With the exception of manganese, metals concentrations were higher in the unmined segment.
- Total suspended solids exhibited the lowest concentration within the mined segment although total dissolved solids attained the highest concentration within this segment.
- The greatest concentration of alkalinity was reported for the mined segment.
- Sulfate levels generally increased downstream.
- The lowest level of pH was reported for mined segment.
- Specific conductance was the most elevated within the mined segment.
- The level of hardness was highest within the unmined segment.
- Levels of turbidity were the lowest within the mined segment.

- It is likely that the affects from agricultural and grazing activities are reflected in the elevated levels of total suspended solids, fecal coliform, nitrate, nitrite, total phosphate, total calcium, total magnesium, hardness, and turbidity within the unmined segment in comparison to the mined segment.

- Analytical results provided from the duplicate sample collected at the SW-2 location exhibit acceptable correlation with the normal sample collected from this point.

Surface water analytical data for Monitoring Points SW-1 through SW-4 were compared to U.S. Environmental Protection Agency primary and secondary drinking water maximum contaminant levels (MCL). Analyses for which primary or secondary MCLs have been established include fecal coliform, nitrate, nitrite, and turbidity (primary MCLs), and iron, manganese, aluminum, sulfates, total dissolved solids, and pH (secondary MCLs). Results from this comparison indicate the following:

- Samples collected from Monitoring Points SW-1, SW-2, and SW-4 slightly exceeded the primary drinking water criteria for turbidity of 5 NTU.

- Fecal coliform for each of the sampling locations exceeded the primary drinking water criteria that specifies there may be no fecal coliforms or E. coli present.

- The sample obtained from Monitoring Point SW-1 slightly exceeded the secondary MCL for iron of 0.3 milligram per liter.

- Samples collected from each of the four monitoring points exceeded the secondary MCL for manganese of 0.05 milligram per liter.

Laboratory detection limits were substantially below the primary and secondary drinking water standards.

Additionally, surface water analytical results obtained for Monitoring Points SW-1 through SW-4 during this study are within the range of background surface water quality data provided by Consol for Monitoring Points SW-8, SW-9, and SW-13. Background monitoring points are also depicted in Sheet 21.

Table 7-1
Summary of Historical Surface Water Analytical Data
Robinson Fork
West Finley Township, Washington County, Pennsylvania

Parameter	Units	Monitoring Location and Date Sampled					
		SW-8 7/9/1992	SW-9 7/9/1992	SW-13 7/9/1992	SW-8 11/9/1992	SW-9 11/9/1992	SW-13 11/9/1992
Iron (Total)	mg/l	0.17	0.19	0.17	<0.05	<0.05	<0.05
Total Suspended Solids	mg/l	5	<1	<1	2	2	4
Manganese (Total)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum (Total)	mg/l	<0.05	0.07	0.08	<0.05	<0.05	<0.05
Sulfates	mg/l	35	36	34	35	37	36
Specific Conductance	µmho	317	338	338	342	360	348
Total Dissolved Solids	mg/l	208	206	200	108	210	202
Alkalinity (Total)	mg/l	118	127	127	125	135	120
Acidity	mg/l	-108	-120	-120	-116	-124	-113
pH (Laboratory)	S.U.	8.2	8.2	8.2	8.2	8.3	8.3
pH (Field)	S.U.	8.1	8.3	8.2	8.4	8.4	8.6
Specific Conductance (Field)	µmho	–(1)	–	–	–	–	–
Temperature (Field)	^{o}C	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–
Discharge	cfs	0.814	0.576	0.183	1.89	2.65	2.49

See footnote at end of table.

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled											
		SW-8 2/15/1993	SW-9 2/15/1993	SW-13 2/15/1993	SW-8 5/18/1993	SW-9 5/18/1993	SW-13 5/18/1993	SW-8 8/21/1993	SW-9 8/21/1993	SW-13 8/21/1993	SW-8 11/23/1993	SW-9 11/23/1993	SW-13 11/23/1993
Iron (Total)	mg/l	0.12	19.9[2]	0.12	0.12	0.09	0.07	0.11	0.10	0.09	0.18	0.11	0.15
Total Suspended Solids	mg/l	<1	7	<1	5	<1	<1	6	4	3	1	2	4
Manganese (Total)	mg/l	<0.05	0.44	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum (Total)	mg/l	0.06	0.27	0.06	<0.05	<0.05	<0.05	<0.05	0.08	0.07	0.11	0.06	0.09
Sulfates	mg/l	38	36	39	33	36	34	30	32	30	37	39	37
Specific Conductance	µmho	291	295	286	324	348	319	334	363	333	298	315	295
Total Dissolved Solids	mg/l	162	164	164	180	188	179	210	218	200	154	168	156
Alkalinity (Total)	mg/l	96	98	86	126	120	100	117	138	128	100	108	101
Acidity	mg/l	-86	-86	-85	-116	-111	-91	-109	-131	-121	-90	-98	-91
pH (Laboratory)	S.U.	8.3	8.3	8.4	8.3	8.4	8.4	8.3	8.5	8.4	8.1	8.3	8.2
pH (Field)	S.U.	8.8	8.8	8.8	8.4	8.4	8.4	8.2	8.4	8.5	8.3	8.3	8.4
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–	–	–	–
Temperature (Field)	°C	–	–	–	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–	–	–	–
Discharge	cfs	7.71	11.00	9.98	3.58	6.26	3.59	1.14	2.09	1.35	6.21	10.02	7.57

See footnotes at end of table

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled											
		SW-8 2/15/1994	SW-9 2/15/1994	SW-13 2/15/1994	SW-8 5/2/1994	SW-9 5/2/1994	SW-13 5/2/1994	SW-8 8/20/1994	SW-9 8/20/1994	SW-13 8/20/1994	SW-8 11/17/1994	SW-9 11/17/1994	SW-13 11/17/1994
Iron (Total)	mg/l	<0.05	<0.05	0.07	0.15	0.11	0.07	0.12	0.08	0.08	0.30	0.30	0.27
Total Suspended Solids	mg/l	14	7	9	6	6	9	2	2	2	6	9	6
Manganese (Total)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aluminum (Total)	mg/l	<0.05	<0.05	<0.05	0.15	0.11	0.07	0.12	0.06	0.07	0.13	0.12	0.12
Sulfates	mg/l	35	37	34	33	35	34	33	36	33	37	38	38
Specific Conductance	µmho	284	300	280	262	287	254	315	363	316	288	310	286
Total Dissolved Solids	mg/l	184	184	172	152	170	148	204	218	196	174	194	178
Alkalinity (Total)	mg/l	93	86	104	100	110	92	122	149	126	108	119	108
Acidity	mg/l	-88	-69	-101	-92	-103	-84	-117	-145	-121	-96	-107	-94
pH (Laboratory)	S.U.	8.2	8.1	8.0	8.5	8.7	8.8	8.2	8.3	8.4	7.9	7.9	7.9
pH (Field)	S.U.	8.0	7.9	8.2	8.8	8.8	8.8	8.3	8.4	8.4	8.5	8.1	8.5
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–	–	–	–
Temperature (Field)	^{o}C	–	–	–	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Phosphate (total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–	–	–	–
Discharge	cfs	14.6	29.9	16.4	12.2	19.8	7.25	1.27	2.61	1.37	9.6	17.9	7.1

See footnotes at end of table.

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled											
		SW-8 2/21/1995	SW-9 2/21/1995	SW-13 2/21/1995	SW-8 5/15/1995	SW-9 5/15/1995	SW-13 5/15/1995	SW-8 8/14/1995	SW-9 8/14/1995	SW-13 8/14/1995	SW-8 11/20/1995	SW-9 11/20/1995	SW-13 11/20/1995
Iron (Total)	mg/l	0.25	0.15	0.25	0.93	0.56	0.45	0.19	0.19	0.20	0.21	0.24	0.21
Total Suspended Solids	mg/l	23	11	20	54	25	44	1	2	3	0	0	0
Manganese (Total)	mg/l	0.06	<0.05	<0.05	0.14	0.09	0.13	<0.05	<0.05	<0.05	0.04	0.3	0.04
Aluminum (Total)	mg/l	0.15	0.09	0.15	0.56	0.12	0.19	0.11	0.13	0.12	0.21	0.12	0.21
Sulfates	mg/l	36	39	38	34	35	33	33	38	36	49	51	49
Specific Conductance	µmho	139	153	135	276	293	272	298	412	298	280	309	280
Total Dissolved Solids	mg/l	128	144	132	168	190	180	198	240	194	–	–	–
Alkalinity (Total)	mg/l	77	87	76	94	104	94	127	162	127	74	89	74
Acidity	mg/l	-69	-80	-68	-88	-101	-89	-123	-157	-122	-59	-74	-59
pH (Laboratory)	S.U.	7.8	8.0	7.7	7.8	8.1	7.8	8.1	8.2	8.2	7.8	8.0	7.8
pH (Field)	S.U.	7.9	8.5	8.1	8.0	8.4	8.2	8.3	8.3	8.4	8.2	8.3	8.2
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–	–	–	–
Temperature (Field)	^{o}C	–	–	–	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–	–	–	–
Discharge	cfs	35.1	56.7	24.1	30.3	53.9	26.0	1.31	2.43	1.06	9.8	19.7	9.8

See footnotes at end of table.

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled														
		SW-8 2/15/1996	SW-9 2/15/1996	SW-13 2/15/1996	SW-8 5/28/1996	SW-9 5/28/1996	SW-13 5/28/1996	SW-8 8/10/1996	SW-9 8/10/1996	SW-13 8/10/1996	SW-8 11/1/1996	SW-9 11/1/1996	SW-13 11/1/1996	SW-8 11/22/1996	SW-9 11/22/1996	SW-13 11/22/1996
Iron (Total)	mg/l	0.52	0.90	0.52	0.69	0.53	0.69	0.58	0.33	0.58	0.49	0.6	0.49	0.34	0.37	0.34
Total Suspended Solids	mg/l	1	0	1	4	8	4	4	0	4	2	2	2	1	0	1
Manganese (Total)	mg/l	0.02	0.04	0.02	0.04	0.05	0.04	0.04	0.03	0.04	0.03	0.04	0.03	0.03	0.04	0.03
Aluminum (Total)	mg/l	0	0.02	0	0.22	0.22	0.22	0.02	0	0.02	0	0	0	0.02	0	0.02
Sulfates	mg/l	53	73	53	36	39	36	28	45	28	35	40	35	40	49	40
Specific Conductance	µmho	252	302	252	251	298	251	300	465	300	263	353	263	252	312	252
Total Dissolved Solids	mg/l	167	202	167	167	198	167	200	310	200	175	235	175	168	207	168
Alkalinity (Total)	mg/l	76	95	76	98	114	98	128	196	128	118	156	118	106	135	106
Acidity	mg/l	-65	-78	-65	-83	-102	-83	-111	-176	-111	-97	-138	-97	-91	-119	-91
pH (Laboratory)	S.U.	8.2	8.3	8.2	8.5	8.5	8.5	8.2	8.3	8.2	8.2	8.3	8.2	8.1	8.2	8.1
pH (Field)	S.U.	8.3	8.4	8.3	8.5	8.5	8.5	8.3	8.3	8.3	7.9	8.1	7.9	8.0	8.1	8.0
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Temperature (Field)	^{o}C	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Discharge	cfs	12.7	18.3	12.7	11.4	20.3	11.4	0.40	1.91	0.40	3.6	8.4	3.6	6.0	13.3	6.0

See footnotes at end of table.

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled								
		SW-8 1/2/1997	SW-9 1/2/1997	SW-13 1/2/1997	SW-8 5/23/1997	SW-9 5/23/1997	SW-13 5/23/1997	SW-8 8/2/1997	SW-9 8/2/1997	SW-13 8/2/1997
Iron (Total)	mg/l	0.20	0.39	0.20	0.62	0.35	0.62	0.52	0.25	0.52
Total Suspended Solids	mg/l	0	0	0	11	5	11	18	3	18
Manganese (Total)	mg/l	0.04	0.05	0.04	0.05	0.04	0.05	0.12	0.02	0.12
Aluminum (Total)	mg/l	0.11	0.02	0.11	0.41	0.22	0.41	0.30	0.01	0.30
Sulfates	mg/l	38	43	38	33	46	33	34	46	34
Specific Conductance	µmho	225	262	225	238	305	238	306	521	306
Total Dissolved Solids	mg/l	150	174	150	158	203	158	204	347	204
Alkalinity (Total)	mg/l	98	120	98	87	111	87	128	205	128
Acidity	mg/l	-78	-102	-78	-61	-89	-61	-104	-191	-104
pH (Laboratory)	S.U.	7.8	7.9	7.8	7.3	7.7	7.3	8.4	8.0	8.4
pH (Field)	S.U.	7.6	7.8	7.6	8.0	8.4	8.0	7.7	8.0	7.7
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–
Temperature (Field)	^{o}C	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–
Discharge	cfs	2.8	17.1	2.8	10.25	16.60	10.25	0.9	0.86	0.9

See footnotes at end of table.

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled											
		SW-8 2/13/1998	SW-9 2/13/1998	SW-13 2/13/1998	SW-8 4/3/1998	SW-9 4/3/1998	SW-13 4/3/1998	SW-8 7/30/1998	SW-9 7/30/1998	SW-13 7/30/1998	SW-8 10/16/1998	SW-9 10/16/1998	SW-13 10/16/1998
Iron (Total)	mg/l	0.25	0.29	0.25	0.50	0.16	0.50	0.24	0.24	0.24	0.26	0.14	0.26
Total Suspended Solids	mg/l	2	0	2	15	4	15	4	8	4	10	0	10
Manganese (Total)	mg/l	0.03	0.04	0.03	0.07	0.06	0.07	0.05	0.01	0.05	0.03	0.02	0.03
Aluminum (Total)	mg/l	0.04	0.17	0.04	0.26	0.04	0.26	0.08	0.12	0.08	0.12	0.08	0.12
Sulfates	mg/l	35	41	35	46	53	46	31	49	31	43	51	43
Specific Conductance	µmho	246	298	246	302	372	302	350	513	350	345	522	345
Total Dissolved Solids	mg/l	164	198	164	201	248	201	233	342	233	230	348	230
Alkalinity (Total)	mg/l	80	98	80	113	135	113	140	201	140	135	199	135
Acidity	mg/l	-67	-84	-67	-97	-102	-97	-129	-191	-129	-111	-172	-111
pH (Laboratory)	S.U.	7.2	7.5	7.2	7.8	8.2	7.8	8.0	8.2	8.0	8.3	8.4	8.3
pH (Field)	S.U.	8.2	7.8	8.2	8.6	8.5	8.6	7.8	8.2	7.8	8.2	8.5	8.2
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–	–	–	–
Temperature (Field)	^{o}C	–	–	–	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–	–	–	–
Discharge	cfs	20.6	52.4	20.6	6.83	8.07	6.83	0.67	1.44	0.67	0.65	2.76	0.65

See footnotes at end of table.

Table 7-1
(Continued)

Parameter	Units	Monitoring Location and Date Sampled											
		SW-8 1/29/1999	SW-9 1/29/1999	SW-13 1/29/1999	SW-8 4/27/1999	SW-9 4/27/1999	SW-13 4/27/1999	SW-8 7/9/1999	SW-9 7/9/1999	SW-13 7/9/1999	SW-8 10/16/1999	SW-9 10/16/1999	SW-13 10/16/1999
Iron (Total)	mg/l	0.49	0.37	0.49	0.59	0.34	0.59	0.40	0.22	0.40	0.32	0.43	0.32
Total Suspended Solids	mg/l	0	0	0	4	2	4	10	3	10	7	18	7
Manganese (Total)	mg/l	0.02	0.01	0.02	0.07	0.05	0.07	0.16	0.03	0.16	0.05	0.05	0.05
Aluminum (Total)	mg/l	0.20	0.17	0.20	0.33	0.17	0.33	0.54	0.13	0.54	0.20	0.33	0.20
Sulfates	mg/l	33	45	33	33	43	33	35	49	35	56	56	56
Specific Conductance	µmho	248	339	248	266	337	266	490	565	490	432	751	432
Total Dissolved Solids	mg/l	165	225	165	177	224	177	326	375	326	288	500	288
Alkalinity (Total)	mg/l	75	110	75	90	114	90	214	216	214	146	253	146
Acidity	mg/l	-63	-101	-63	-77	-100	-77	-189	-185	-189	-125	-232	-125
pH (Laboratory)	S.U.	7.7	8.0	7.7	8.0	8.2	8.0	8.5	8.5	8.5	8.0	8.2	8.0
pH (Field)	S.U.	8.4	8.5	8.4	8.0	8.4	8.0	8.4	8.5	8.4	8.2	7.7	8.2
Specific Conductance (Field)	µmho	–	–	–	–	–	–	–	–	–	–	–	–
Temperature (Field)	^{o}C	-	–	–	–	–	–	–	–	–	–	–	–
Fecal Coliform	colonies/1	–	–	–	–	–	–	–	–	–	–	–	–
Nitrate	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Nitrite	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Phosphate (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Calcium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Hardness	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Magnesium (Total)	mg/l	–	–	–	–	–	–	–	–	–	–	–	–
Turbidity (Field)	NTU	–	–	–	–	–	–	–	–	–	–	–	–
Discharge	cfs	12.2	24.8	12.2	14.3	38.1	14.3	0.14	1.17	0.14	0.25	0.47	0.25

See footnotes at end of table.

Table 7-1
(Continued)

Parameters	Units	Monitoring Location and Date Sampled							
		SW-8 2/25/2000	SW-9 2/25/2000	SW-13 2/25/2000	SW-1 7/27/2001	SW-2 7/27/2001	SW-2 DUP 7/27/2001	SW-3 7/27/2001	SW-4 7/27/2001
Iron (Total)	mg/l	0.2	0.1	0.2	0.39	0.24	0.27	0.16	0.12
Total Suspended Solids	mg/l	8	<5	8	5	7	6	<4	18
Manganese (Total)	mg/l	<0.01	<0.01	<0.01	0.071	0.055	0.049	0.095	0.066
Aluminum (Total)	mg/l	0.3	0.2	0.3	0.15	0.17	0.16	0.100	0.086
Sulfates	mg/l	46	70	46	27	26	26	30	33
Specific Conductance	µmho	230	330	230	–	–	–	–	–
Total Dissolved Solids	mg/l	149	241	149	210	220	220	270	230
Alkalinity (Total)	mg/l	72	117	72	140	150	150	170	140
Acidity	mg/l	-68	-112	-68	<2.0	<2.0	<2.0	<2.0	<2.0
pH (Laboratory)	S.U.	7.9	8.0	7.9	8.06	8.18	8.21	8.03	8.28
pH (Field)	S.U.	8.0	8.2	8.0	8.03	7.88	7.88	7.64	7.89
Specific Conductance (Field)	µmho	–	–	–	318.3	343.4	343.4	434.2	378.3
Temperature (Field)	^{o}C	–	–	–	18.4	19.5	19.5	18.5	25
Fecal Coliform	colonies/1	–	–	–	>6,000	>6,000	>6,000	13	12
Nitrate	mg/l	–	–	–	0.11	0.40	0.39	<0.10	<0.10
Nitrite	mg/l	–	–	–	<0.010	0.017	0.017	<0.010	<0.010
Phosphate (Total)	mg/l	–	–	–	0.026	0.069	0.069	0.033	0.055
Calcium (Total)	mg/l	–	–	–	53	56	54	46	36
Hardness	mg/l	–	–	–	160	170	160	140	120
Magnesium (Total)	mg/l	–	–	–	6.8	7.2	6.8	6.2	6.1
Turbidity (Field)	NTU	–	–	–	6.66	6.18	6.18	3.3	15.7
Discharge	cfs	14.0	28.1	14.0	–	–	–	–	–

(1)Dash denotes not analyzed.

(2)Anomalous result; 1/15/93 Total Iron = 0.11, 3/29/93 Total Iron = 0.59.