

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT**

**EVALUATION OF LIMESTONE TREATMENT OF ACIDIC MINE DRAINAGE
IN SWATARA CREEK BASIN, SCHUYLKILL COUNTY, PENNSYLVANIA**

Acidic mine drainage (AMD) from abandoned anthracite mines has degraded water resources in the 48 mi² northern Swatara Creek Basin. To neutralize the AMD, with a goal of remediating approximately 25 miles (67 percent) of degraded streams in the basin, a variety of limestone treatment systems have been constructed (fig. XX). Most of the limestone treatment systems were installed during fall 1996 and spring 1997. The type and size of the treatment system was based on streamflow rates and chemistry determined by preliminary monitoring and field trials. The treatments, which include limestone-sand dosing, open limestone channels, anoxic and oxic limestone drains, limestone diversion wells, and constructed wetlands were constructed by the Schuylkill County Conservation District and the Northern Swatara Creek Watershed Association, with technical assistance from the USGS and the Pennsylvania Department of Environmental Protection (PaDEP). Each treatment has different advantages and disadvantages; however, all suffer from possible complication associated with variability of flow rates and chemistry of the AMD-contaminated water and from uncertainties about efficiency and longevity of the treatment.

To resolve uncertainties about treatment designs (efficiency and longevity), limestone dissolution in response to variations in water chemistry and coating (armoring) by iron and aluminum hydroxides, and appropriate uses of the various limestone treatments, the USGS has established monitoring stations upstream and downstream of each treatment. During base-flow and high-flow conditions in 1995-2005, data on discharge rate and water quality at 30 stations in the Swatara Creek basin (table XX) were collected to characterize untreated mine drainage, treatment-system performance, and cumulative downstream effects. In spring-summer 1996, two streamflow stations on Swatara Creek, Site C3, at Newtown (station 0157155014) and Swatara Creek near Ravine (station 01571820) were installed for continuous streamflow and water-quality monitoring. The data for these stations indicate cumulative effects of AMD remediation throughout the northern Swatara Creek basin.

Limestone sand dosing and open limestone channels are the simplest treatment systems where limestone is added directly to the stream channel semiannually or less frequently. Limestone sand, which can dissolve rapidly because of its small size (<1/8 inch), was dumped into Coal Run (14 tons) between stations C4 and C6 on September 4, 1996, and into Lorberry Creek (150 tons) below station E2 on February 13-14, 1997 (fig. XX). An open limestone channel was constructed within a 110-ft long segment of Swatara Creek at station B2 (fig. 9) on March 21, 1997. A total of 44 tons of sand-size fragments and 70 tons of larger fragments (1-4 inches) were installed as a series of alternating berms extending part way across the 15-ft-wide channel from opposite sides of the stream.

A limestone drain is another relatively simple treatment method, which involves the burial of limestone in air-tight trenches that intercept acidic discharge water. Keeping oxygen out of contact with the discharge water minimizes the potential for oxidation of ferrous iron and the consequent precipitation of ferric-iron armoring as iron hydroxides. Furthermore, keeping carbon dioxide within the drain can enhance limestone dissolution and alkalinity production. Limestone drains were constructed on March 15, 1995, at station E3 to treat a small acidic discharge (10-30 gpm, oxic inflow; 44 tons limestone) along Lower Rausch Creek May 21, 1997, at station A1 to treat a large discharge (50-200 gpm, anoxic inflow; 400 tons limestone) at the headwaters of Swatara Creek; and on May 20, 2000, at station C0-1 to treat a large discharge (50-500 gpm; oxic inflow; 880 tons limestone) near the headwaters of Swatara Creek (fig. XX).

In a limestone diversion well, acidic water is diverted from upstream points and the hydraulic force of the piped flow is deflected upward through limestone fragments inside 4-ft diameter "wells." Hydraulic churning abrades limestone forming fine particles and preventing the buildup of iron or aluminum hydroxides armoring. On November 14, 1995, a pair of diversion wells was installed to treat water diverted from Swatara Creek at station C2; on July 13, 1997, a single diversion well was installed to treat water from Martin Run at station C8 (fig. XX); and, on November 18-19, 1998, another pair of diversion wells was installed to treat water diverted from Lorberry Creek above station E2-0. Approximately 1 ton of limestone is consumed weekly by each operating diversion well.

Constructed wetlands for treatment of mine drainage can attenuate the transport of dissolved and suspended pollutants by promoting the production of alkalinity and the precipitation and deposition of iron and other metals. For net acidic water (acidity > alkalinity), wetlands that have compost and/or limestone substrates can be appropriate. The organic matter in the compost provides a substrate for plant rooting and for microbial reduction of sulfate. In December 1998, a 3-acre aerobic wetland system with limestone and compost substrate was installed near the mouth of Lower Rausch Creek between stations E3-1 and E3-2, and in December 2001, a 3-acre aerobic wetland system that intercepts outflow from the limestone diversion wells on Lorberry Creek below station E2-0 began operation. At the inflow to the Lorberry wetlands, a hopper with water-powered auger was installed to deliver pelletized lime or limestone as needed. The main objective for these wetlands is to reduce the downstream transport of metals, with a secondary objective of providing additional alkalinity.

Data for this project can be found in this report on pages XXX-XXX and XXX-XXX. For additional information, contact Charles Cravotta at the USGS Pennsylvania Water Science Center, 215 Limekiln Road, New Cumberland, PA 17070; 717-730-6963 (email: cravotta@usgs.gov).

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
 SWATARA CREEK PROJECT--Continued

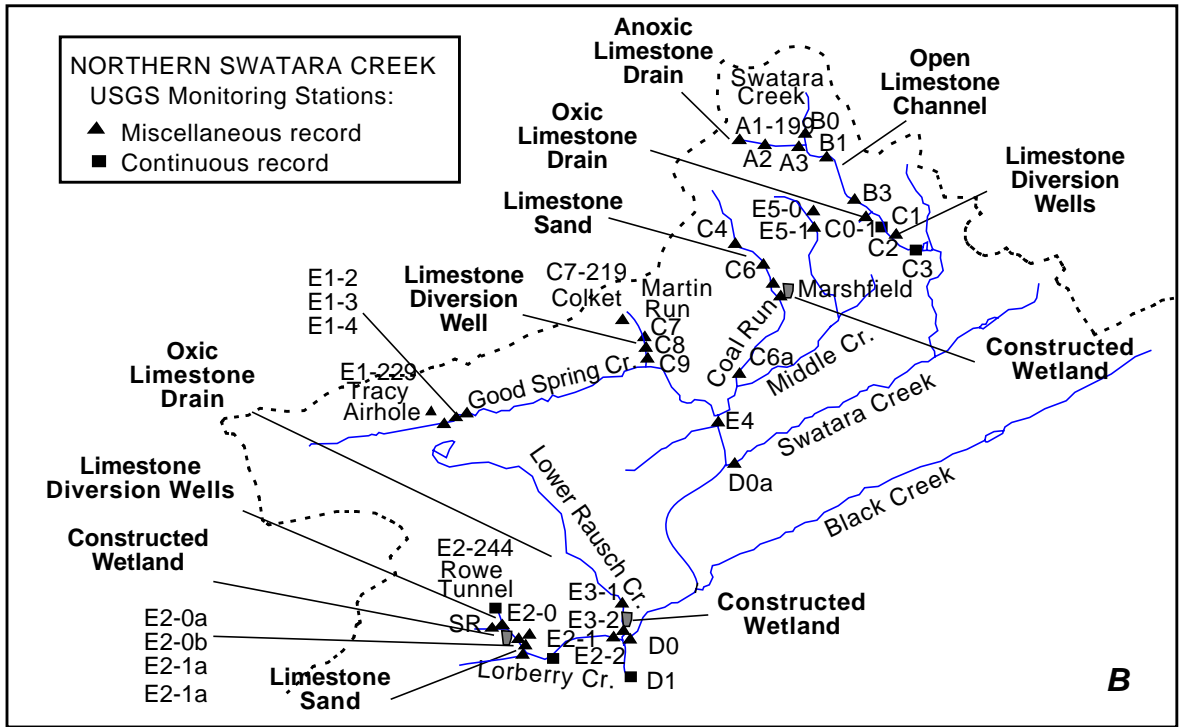
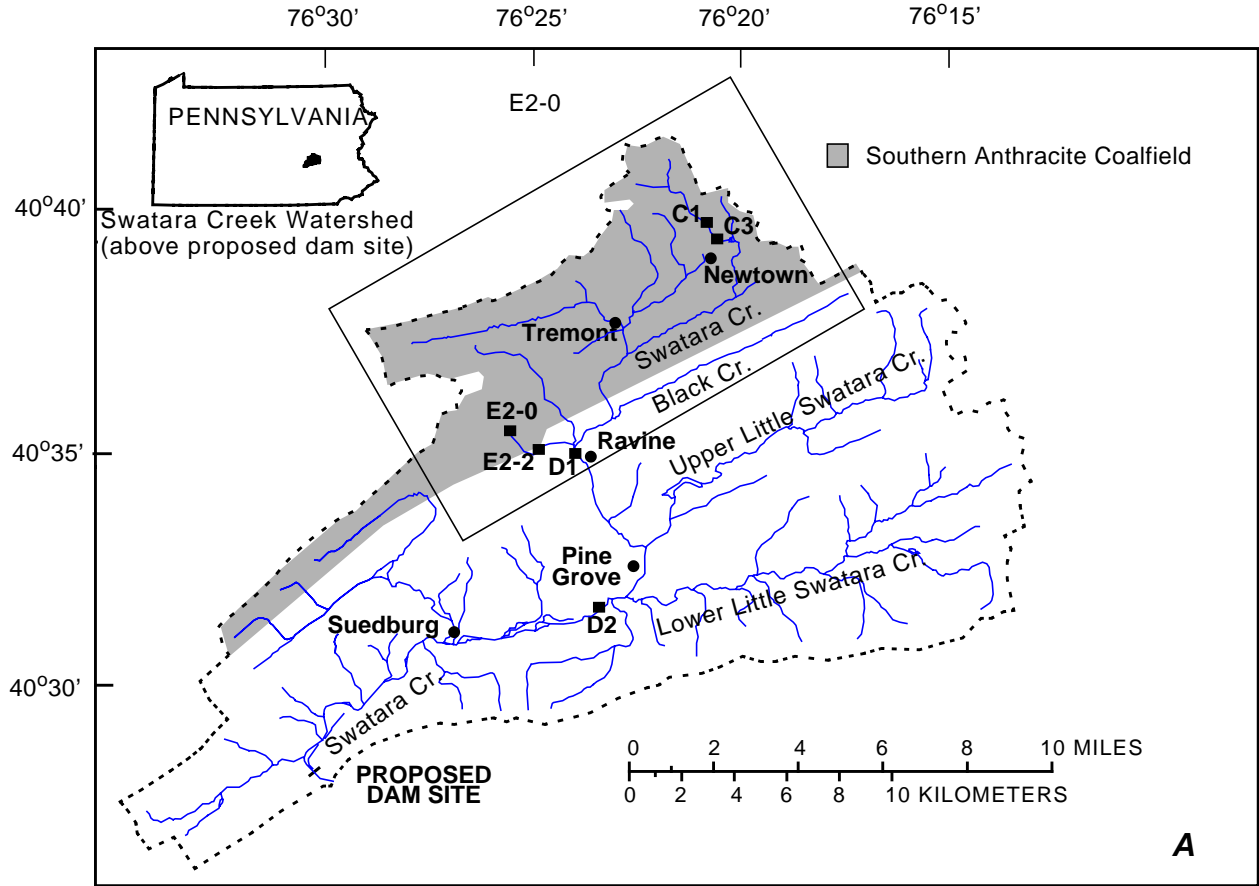


Figure 9.--Locations of water-quality and streamflow monitoring stations in the Swatara Creek Basin, Lebanon and Schuylkill Counties, Pennsylvania: A, continuous monitoring stations on Swatara Creek above the proposed dam for Swatara State Park Reservoir; B, monitoring stations within the Southern Anthracite Coalfield, above Ravine (area denoted in A).

ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued

TABLE 3.--Swatara Creek project station list.

REMARKS.--All samples collected by the U.S. Geological Survey. Abbreviations used in the following table include: AB-above; BL-below; NR-near; DS-downstream, US-upstream, ALD-anoxic limestone drain; OLD-oxic limestone drain; OLC-open limestone channel; LS-limestone sand; LDW-limestone diversion well; n.a.-not applicable.

LOCAL ID	STATION NUMBER	STATION NAME	LATITUDE	LONGITUDE	DRAINAGE AREA
CONTINUOUS-RECORD STATIONS					
C1	0157155010	SWATARA CREEK, SITE C1, 350 FT AB LDW, AB SR209 BRIDGE AT NEWTOWN, PA	40°39'34"	76°20'50"	2.58
C3	0157155014	SWATARA CREEK, SITE C3, 350 FT BL LDW, BL SR209 BRIDGE AT NEWTOWN, PA	40°39'28"	76°20'43"	2.92
E2-244	403542076263201	ROWE DRAINAGE TUNNEL, SITE E2-244, NEAR JOLIETT	40°35'42"	76°26'32"	n.a.
E2-1	01571778	LORBERRY CREEK NEAR LORBERRY JUNCTION, PA	40°35'15"	76°25'35"	3.59
D1	01571820	SWATARA CREEK NEAR RAVINE, PA	40°34'50"	76°24'18"	43.3
MISCELLANEOUS-RECORD STATIONS					
A1-199	404032076222901	WM CARL BUCK MTN MINE, SITE A1-199, NEAR NEWTOWN	40°40'32"	76°22'29"	n.a.
A2	0157154970	NORTHWEST TRIBUTARY TO SWATARA CREEK, SITE A2, AT ALD OUTFLOW, NEAR NEWTOWN, PA	40°40'32"	76°22'25"	.25
A3	0157154972	NORTHWEST TRIBUTARY TO SWATARA CREEK, SITE A3, 1500 FT BELOW ALD, NEAR NEWTOWN, PA	40°40'32"	76°21'59"	.40
B0	0157154960	SWATARA CREEK, ABOVE NORTHWEST TRIBUTARY, SITE B0, NEAR NEWTOWN, PA	40°40'34"	76°21'57"	1.14
B3	0157154984	SWATARA CREEK, BELOW NORTHWEST TRIBUTARY, SITE B3, 400 FT BELOW OLC, NEAR NEWTOWN, PA	40°40'22"	76°21'36"	1.90
C0-1	403955076211801	HEGINS MINE DISCHARGE, SITE C0-1, AT NEWTOWN, PA	40°39'55"	76°21'18"	n.a.
	403955076211802	HEGINS MINE DISCHARGE, TREATED, AT NEWTOWN, PA	40°39'55"	76°21'18"	n.a.
C2	0157155012	SWATARA CREEK, SITE C2, AT LDW OUTFLOW, AT NEWTOWN, PA	40°39'31"	76°20'47"	2.65
D0a	01571552	SWATARA CREEK AT TREMONT, PA	40°37'08"	76°23'09"	9.81
E4	01571593	GOOD SPRING CREEK BL MIDDLE CREEK AT TREMONT, PA	40°37'35"	76°23'15"	14.0
E3-1	01571758	LOWER RAUSCH CREEK, SITE E3-1 ABOVE WETLAND, NEAR LORBERRY JUNCTION, PA	40°35'34"	76°24'40"	4.65
E3-2	01571760	LOWER RAUSCH CREEK, SITE E3-2 BELOW WETLAND, AT LORBERRY JUNCTION, PA	40°35'22"	76°24'42"	4.65
E2-0b	01571773	LORBERRY CREEK DIV WELLS OUTFLOW NR LORBERRY, PA	40°35'36"	76°26'25"	1.01
E2-0	01571774	LORBERRY CREEK, SITE E2-0, AT LORBERRY, PA	40°35'32"	76°26'22"	1.15
SR	01571776	STUMPS RUN AT LORBERRY, PA	40°35'30"	76°26'23"	.65
	0157177610	LORBERRY CREEK WETLANDS INFLOW AT LORBERRY, PA	40°35'29"	76°26'23"	
	0157177614	LORBERRY CR WETLANDS CELL 2 OUTFLOW AT LORBERRY	40°35'28"	76°26'20"	
	0157177618	LORBERRY CR WETLANDS CELL 4 OUTFLOW AT LORBERRY	40°35'27"	76°26'19"	
	0157177620	LORBERRY CREEK BELOW WETLANDS AT LORBERRY, PA	40°35'27"	76°26'17"	1.80
SH	403521076260601	SHADLE MINE SHAFT AT LORBERRY, PA	40°35'21"	76°26'06"	n.a.
	01571777	LORBERRY CREEK ABOVE PANTHER HEAD DISCHARGE NEAR LORBERRY JUNCTION, PA	40°35'11"	76°25'55"	2.11
	0157177780	PANTHER HEAD, 500 FT BELOW DISCHARGE TO LORBERRY CREEK NEAR LORBERRY JUNCTION, PA	40°35'10"	76°25'56"	.01
	0157177790	UNNAMED TRIBUTARY TO LORBERRY CREEK NEAR LORBERRY JUNCTION, PA	40°35'07"	76°25'48"	1.14
E2-2	01571780	LORBERRY CREEK ABOVE LOWER RAUSCH CREEK AT LORBERRY JUNCTION, PA	40°35'20"	76°24'43"	4.17
D0	01571798	SWATARA CREEK BELOW TR412 BRIDGE AT LORBERRY JUNCTION, PA	40°35'18"	76°24'37"	42.3

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

40403207622901 -- WM Carl Buck Mtn Mine, Site A1-199, nr Newtown, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	1345	1028	89203	.02	416	.0	1.5	14	4.8	5.0
DEC 22...	1300	1028	89203	.02	436	2.5	2.4	22	4.9	5.0
FEB 09...	1415	1028	89203	.02	397	--	2.0	17	4.8	4.9
MAY 05...	1235	1028	89203	.02	392	.4	1.2	10	4.8	5.0
JUN 22...	1315	1028	89203	.02	389	2.3	.9	8	4.8	4.9
JUL 18...	1645	1028	89203	.02	413	--	1.3	11	4.5	4.9
SEP 01...	1645	1028	89203	.02	410	--	.7	6	4.7	5.0

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	199	11.4	3.80	3.8	6.20	6.2	1.20	1.2	10.3	10.4
DEC 22...	196	10.1	4.00	4.0	8.40	8.0	1.40	1.4	11.7	11.5
FEB 09...	195	9.6	3.50	3.3	6.80	6.8	1.20	1.3	10.7	10.8
MAY 05...	203	9.3	3.40	3.5	6.60	6.6	1.40	1.2	12.1	11.6
JUN 22...	199	9.7	3.40	3.3	6.80	6.5	1.10	1.1	10.9	10.3
JUL 18...	185	10.4	3.50	3.0	6.10	5.2	1.30	1.2	10.7	9.5
SEP 01...	196	10.8	3.60	3.7	6.70	7.0	1.40	1.4	11.6	11.8

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

404032076222901 -- WM Carl Buck Mtn Mine, Site A1-199, nr Newtown, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd water, recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	3	17.9	--	56.3	--	--	--	400	400	--
DEC 22...	3	15.6	--	65.9	--	--	--	500	500	--
FEB 09...	3	16.1	--	60.7	--	--	--	400	400	--
MAY 05...	3	16.6	<.01	51.7	<.01	<.030	<.020	400	400	.18
JUN 22...	4	15.6	<.01	47.7	<.01	<.030	<.020	300	--	.32
JUL 18...	4	15.5	--	60.6	--	--	--	300	300	--
SEP 01...	4	16.8	--	58.6	--	--	--	300	300	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
NOV 02...	10100	10300	890	880	70.0	70.0	130	130
DEC 22...	13100	12400	1110	1060	85.0	85.0	175	165
FEB 09...	10000	10100	960	980	70.0	70.0	150	150
MAY 05...	10200	10100	880	830	70.0	70.0	150	155
JUN 22...	14100	13400	960	900	75.0	70.0	165	145
JUL 18...	10000	8680	820	720	65.0	55.0	130	115
SEP 01...	11200	11600	1000	1000	65.0	70.0	135	130

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157154972 -- NW Trib to Swatara Cr, Site A3, near Newtown, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	1300	1028	89203	2.3	237	5.1	10.2	92	6.9	6.7
DEC 22...	1215	1028	89203	.52	155	3.6	12.1	99	7.2	6.8
FEB 09...	1300	1028	89203	.91	323	--	11.7	96	6.2	6.6
MAR 23...	1445	1028	89203	1.4	255	--	12.2	94	7.2	6.4
MAY 04...	1450	1028	89203	.93	237	11	11.4	99	7.2	6.8
JUN 22...	1145	1028	89203	.34	189	11	9.7	92	7.1	7.3
JUL 18...	1500	1028	89203	1.5	217	--	9.0	92	6.6	6.7
SEP 01...	1545	1028	89203	.25	203	--	9.5	96	6.8	6.9

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water, unfltrd recoverable, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	205	10.7	17.8	18.4	5.20	5.3	1.20	1.2	9.20	9.2
DEC 22...	205	6.8	17.5	15.7	6.90	6.1	1.70	1.5	11.4	10.3
FEB 09...	199	6.6	15.7	15.6	5.60	5.6	1.40	1.4	9.70	9.6
MAR 23...	132	4.4	9.50	10.3	3.70	4.0	1.40	1.5	6.40	7.0
MAY 04...	211	9.1	15.9	16.4	5.60	5.8	1.70	1.6	10.9	11.0
JUN 22...	210	13.0	18.5	19.7	6.00	6.5	1.10	1.2	10.5	10.8
JUL 18...	161	16.8	10.6	9.2	4.40	3.7	1.70	1.5	9.30	8.4
SEP 01...	197	15.9	17.5	18.0	5.80	6.1	1.50	1.5	10.4	10.8

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157154972 -- NW Trib to Swatara Cr, Site A3, near Newtown, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	19	15.8	--	48.5	--	--	--	<100	<100	--
DEC 22...	17	14.1	--	55.8	--	--	--	<100	200	--
FEB 09...	18	13.6	--	49.5	--	--	--	<100	200	--
MAR 23...	12	8.0	<.01	29.9	.57	<.030	<.020	<100	400	.18
MAY 04...	22	15.2	<.01	42.2	.50	<.030	<.020	<100	200	.19
JUN 22...	21	14.9	<.01	41.5	.45	<.030	<.020	<100	<100	.22
JUL 18...	10	13.8	--	38.7	--	--	--	<100	200	--
SEP 01...	18	15.2	--	47.1	--	--	--	<100	<100	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
NOV 02...	990	1550	590	590	40.0	40.0	50.0	65.0
DEC 22...	4390	4550	900	830	55.0	50.0	125	120
FEB 09...	2670	3140	780	780	45.0	45.0	85.0	95.0
MAR 23...	2560	3670	540	560	30.0	30.0	95.0	110
MAY 04...	1450	2880	660	650	40.0	45.0	60.0	80.0
JUN 22...	890	2800	600	620	40.0	45.0	85.0	75.0
JUL 18...	2120	2300	590	520	35.0	30.0	85.0	110
SEP 01...	160	1750	1000	1000	30.0	35.0	45.0	55.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157154960 -- Swatara Creek, ab NW Trib, Site B0, nr Newtown, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	1245	1028	89203	7.5	600	4.4	10.3	92	4.2	4.4
DEC 22...	1200	1028	89203	3.6	636	.7	13.9	102	4.1	4.5
FEB 09...	1245	1028	89203	.68	596	--	12.5	95	4.1	4.4
MAR 23...	1430	1028	89203	3.5	531	--	12.4	94	4.5	4.4
MAY 04...	1440	1028	89203	.56	511	.7	11.9	101	4.3	4.5
JUN 22...	1115	1028	89203	.55	516	3.0	9.3	92	4.3	4.4
JUL 18...	1445	1028	89203	2.2	616	--	8.3	90	4.0	4.3
SEP 01...	1515	1028	89203	.23	488	--	8.4	90	4.3	4.4

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water, unfltrd recoverable, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	71	10.3	1.10	1.1	1.00	1.0	.50	.5	5.00	5.0
DEC 22...	68	2.8	1.10	1.0	1.20	1.1	.50	.4	4.50	3.8
FEB 09...	67	3.8	1.10	1.0	1.00	1.1	.40	.4	4.20	4.2
MAR 23...	74	3.7	1.20	1.3	1.10	1.2	.50	.6	5.20	5.6
MAY 04...	71	8.1	1.10	1.2	1.10	1.2	.60	.5	4.50	4.5
JUN 22...	70	14.9	1.10	1.2	1.10	1.2	.20	.2	4.10	4.1
JUL 18...	80	19.0	1.20	1.0	.90	.8	.60	.6	6.90	6.0
SEP 01...	78	18.4	1.20	1.3	1.40	1.4	.60	.6	6.00	6.2

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157154960 -- Swatara Creek, ab NW Trib, Site B0, nr Newtown, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	.0	11.1	--	10.7	--	--	--	700	800	--
DEC 22...	.0	6.9	--	13.0	--	--	--	1000	900	--
FEB 09...	.0	8.4	--	11.6	--	--	--	800	800	--
MAR 23...	.0	8.6	<.01	11.0	.47	<.030	<.020	700	900	.19
MAY 04...	.0	7.5	<.01	11.4	<.01	<.030	<.020	700	700	.19
JUN 22...	.0	7.6	<.01	9.8	.40	<.030	<.020	700	800	.24
JUL 18...	.0	11.3	--	11.2	--	--	--	600	600	--
SEP 01...	.0	11.4	--	9.9	--	--	--	500	600	--

Date	Iron, water, unfltrd fltrd, µg/L (01046)	Iron, water, recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
NOV 02...	170	230	160	160	10.0	10.0	35.0	35.0
DEC 22...	170	180	160	150	10.0	10.0	40.0	40.0
FEB 09...	150	190	170	170	10.0	10.0	40.0	35.0
MAR 23...	150	250	150	150	10.0	10.0	50.0	55.0
MAY 04...	120	150	160	150	10.0	10.0	40.0	45.0
JUN 22...	140	230	170	180	10.0	10.0	40.0	55.0
JUL 18...	250	360	140	130	10.0	10.0	35.0	40.0
SEP 01...	200	340	220	230	10.0	10.0	35.0	30.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157154984 -- Swatara Cr, bl NW Trib, Site B3, near Newtown, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	1230	1028	89203	9.7	382	12	10.5	94	6.3	6.0
DEC 22...	1130	1028	89203	4.1	342	3.5	13.6	102	6.3	6.3
FEB 09...	1215	1028	89203	1.6	369	--	12.6	97	6.0	6.1
MAR 23...	1400	1028	89203	5.0	450	--	12.2	92	5.7	5.2
MAY 04...	1410	1028	89203	1.5	344	5.0	12.0	102	6.6	6.4
JUN 22...	1015	1028	89203	.82	255	7.5	9.5	93	6.7	6.5
JUL 18...	1400	1028	89203	4.5	394	--	8.7	93	5.5	5.7
SEP 01...	1415	1028	89203	.48	351	--	8.6	92	6.5	6.7

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	96	10.4	5.70	5.7	2.50	2.4	.70	.7	6.20	6.0
DEC 22...	98	3.5	6.40	5.7	3.10	2.8	.80	.8	6.50	5.6
FEB 09...	89	4.4	5.00	5.0	2.30	2.3	.70	.7	5.70	5.7
MAR 23...	75	3.9	3.30	3.7	1.80	2.2	.70	.8	5.60	6.1
MAY 04...	97	8.4	5.50	5.5	2.50	2.6	.90	.8	6.40	6.2
JUN 22...	110	14.5	7.60	8.2	3.00	3.3	.50	.6	6.40	6.6
JUL 18...	92	18.5	4.40	3.8	2.30	2.0	1.00	.9	7.50	6.5
SEP 01...	130	18.2	9.60	10.0	3.80	4.0	1.00	1.1	8.50	8.4

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157154984 -- Swatara Cr, bl NW Trib, Site B3, near Newtown, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	4	11.8	--	22.5	--	--	--	200	600	--
DEC 22...	4	9.1	--	29.5	--	--	--	<100	600	--
FEB 09...	3	9.7	--	23.5	--	--	--	<100	600	--
MAR 23...	1	8.4	<.01	15.7	.47	<.030	<.020	400	800	.19
MAY 04...	5	9.5	<.01	20.2	.42	<.030	<.020	<100	500	.18
JUN 22...	4	10.0	<.01	21.7	.42	<.030	<.020	<100	500	.21
JUL 18...	3	11.6	--	20.5	--	--	--	300	500	--
SEP 01...	8	13.5	--	29.4	--	--	--	<100	300	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)	
NOV 02...		250	500	280	270	20.0	15.0	45.0	45.0
DEC 22...		1360	1510	400	360	25.0	25.0	70.0	60.0
FEB 09...		700	960	320	330	20.0	20.0	50.0	55.0
MAR 23...		630	970	240	270	15.0	15.0	60.0	75.0
MAY 04...		400	800	290	280	20.0	20.0	50.0	55.0
JUN 22...		250	1020	300	320	20.0	20.0	45.0	180
JUL 18...		700	920	290	270	20.0	20.0	60.0	100
SEP 01...		60.0	520	280	300	20.0	20.0	35.0	35.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

403955076211801 -- Hegin's Mine Discharge Site C0-1, at Newtown, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	1200	1028	89203	3.7	686	.0	10.0	89	3.5	3.8
DEC 22...	1045	1028	89203	.22	702	.5	10.7	95	3.7	3.7
FEB 09...	1145	1028	89203	.09	666	--	10.1	89	3.4	3.7
MAR 23...	1325	1028	89203	.26	651	--	9.7	86	3.8	3.7
MAY 04...	1329	1028	89203	.09	604	4.2	10.9	97	3.6	3.7
JUN 21...	1445	1028	89203	.07	614	.9	9.2	82	3.6	3.7
JUL 18...	1330	1028	89203	.22	737	--	9.9	88	3.5	3.7
SEP 01...	1345	1028	89203	.09	503	--	10.0	89	3.5	3.7

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	447	10.2	7.70	7.9	27.5	28.2	1.50	1.5	5.60	5.5
DEC 22...	387	10.0	7.50	6.5	28.3	24.3	1.60	1.5	5.10	4.9
FEB 09...	393	10.0	6.40	6.5	24.5	24.8	1.50	1.5	5.50	5.5
MAR 23...	388	9.9	6.90	7.9	24.8	29.3	1.70	1.9	6.20	7.0
MAY 04...	384	10.0	6.40	6.3	22.9	22.9	1.70	1.5	5.50	5.4
JUN 21...	427	10.1	7.50	8.2	27.0	29.7	1.50	1.6	5.70	5.5
JUL 18...	448	10.3	8.00	7.0	29.9	25.5	1.80	1.5	5.20	4.7
SEP 01...	449	10.3	8.20	8.6	32.1	33.9	1.80	1.9	6.90	6.1

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

403955076211801 -- Hegins Mine Discharge Site C0-1, at Newtown, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd water, recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	.0	6.5	--	174	--	--	--	4000	4100	--
DEC 22...	.0	5.5	--	155	--	--	--	3300	2900	--
FEB 09...	.0	6.9	--	151	--	--	--	3000	3100	--
MAR 23...	.0	6.0	<.01	156	.44	<.030	<.020	3200	3900	.21
MAY 04...	.0	5.5	<.01	143	.43	<.030	<.020	2900	2800	.21
JUN 21...	.0	5.3	<.01	151	.39	<.030	<.020	3700	3900	.33
JUL 18...	.0	4.8	--	186	--	--	--	4000	3500	--
SEP 01...	.0	5.2	--	182	--	--	--	3700	3900	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)	
NOV 02...		160	160	1140	1150	120	120	290	295
DEC 22...		160	140	1060	940	110	95.0	280	245
FEB 09...		120	130	1020	1040	100	100	265	265
MAR 23...		150	190	1010	1100	100	115	300	345
MAY 04...		120	120	960	900	95.0	95.0	265	275
JUN 21...		140	160	1210	1260	120	125	330	360
JUL 18...		130	120	1190	1040	120	105	320	275
SEP 01...		130	130	1000	1000	125	130	340	350

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

403955076211802 -- Hegins Mine Discharge, Treated, at Newtown, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	1145	1028	89203	3.7	561	.0	10.7	95	4.4	4.4
DEC 22...	1030	1028	89203	.22	637	1.1	11.5	100	4.2	4.3
FEB 09...	1130	1028	89203	.09	549	--	10.8	94	4.4	4.4
MAR 23...	1305	1028	89203	.26	552	--	10.4	91	4.5	4.3
MAY 04...	1254	1028	89203	.09	512	<1.0	11.3	101	4.4	4.3
JUN 21...	1400	1028	89203	.07	499	<1.0	9.8	90	4.4	4.4
JUL 18...	1315	1028	89203	.22	678	--	10.1	93	4.1	4.3
SEP 01...	1330	1028	89203	.09	447	--	10.3	96	4.5	4.7

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	376	10.1	12.5	12.7	27.4	28.1	1.50	1.5	5.50	5.4
DEC 22...	333	9.2	11.9	10.4	28.9	25.1	1.70	1.5	5.40	4.4
FEB 09...	332	9.4	10.8	10.8	24.4	24.4	1.50	1.5	5.40	5.5
MAR 23...	349	9.3	10.8	12.3	25.3	29.6	1.70	1.9	6.20	6.9
MAY 04...	328	9.9	10.5	10.6	22.7	23.1	1.70	1.5	5.50	5.4
JUN 21...	357	11.3	12.8	13.2	28.3	29.0	1.60	1.6	5.70	5.5
JUL 18...	386	11.5	12.0	10.2	30.2	25.2	1.80	1.5	5.10	4.5
SEP 01...	380	12.0	14.5	15.3	31.6	33.4	1.80	1.8	6.40	6.1

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

403955076211802 -- Hegins Mine Discharge, Treated, at Newtown, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	.0	6.5	--	172	--	--	--	3700	3800	--
DEC 22...	.0	5.5	--	154	--	--	--	3200	2900	--
FEB 09...	.0	6.8	--	148	--	--	--	2800	2800	--
MAR 23...	.0	5.8	<.01	154	.44	<.030	<.020	3200	3900	.21
MAY 04...	.0	5.3	<.01	140	.43	<.030	<.020	2700	2600	.21
JUN 21...	.0	10.7	<.01	298	.86	2.41	<.020	3500	3500	.60
JUL 18...	.0	4.9	--	187	--	--	--	3900	3400	--
SEP 01...	1	5.3	--	185	--	--	--	2900	3100	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
NOV 02...	90.0	100	1100	1110	115	115	285	285
DEC 22...	110	100	1070	940	110	95.0	285	240
FEB 09...	70.0	70.0	990	1000	95.0	100	250	260
MAR 23...	100	130	1000	1090	100	115	295	355
MAY 04...	60.0	70.0	920	880	90.0	95.0	260	270
JUN 21...	70.0	80.0	1190	1210	120	120	325	350
JUL 18...	90.0	80.0	1160	1010	120	105	320	265
SEP 01...	40.0	40.0	1000	1000	115	120	315	325

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571593 -- Good Spring Creek bl Middle Creek at Tremont, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 05...	1115	1028	--	33	281	6.7	11.8	107	7.1	--
NOV 02...	0930	1028	89203	23	291	1.6	10.5	94	7.0	6.6
DEC 22...	0930	1028	89203	28	295	9.2	13.4	102	6.9	6.5
FEB 09...	0945	1028	89203	28	302	--	12.0	96	7.1	6.8
MAR 23...	1115	1028	89203	47	298	--	12.1	96	7.3	6.5
MAY 04...	1102	1028	89203	19	278	9.8	11.5	100	7.0	6.7
JUN 21...	1145	1028	89203	11	210	5.0	9.6	98	7.0	6.9
JUL 18...	1045	1028	89203	35	270	--	8.7	93	6.6	6.8
SEP 01...	1130	1028	89203	7.6	244	--	9.2	97	6.9	6.8

Date	Specif. conductance, wat unfltrd μ S/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recover-able, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recover-able, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recover-able, mg/L (00929)
OCT 05...	298	11.1	--	--	--	--	--	--	--	--
NOV 02...	309	10.3	22.3	22.1	16.7	16.8	1.70	1.7	7.70	7.7
DEC 22...	289	3.8	21.2	21.5	18.2	18.6	1.60	1.6	7.50	7.6
FEB 09...	305	5.8	20.0	19.8	16.4	16.2	1.80	1.8	8.40	8.1
MAR 23...	239	5.6	15.1	17.6	10.5	12.4	1.50	1.7	9.80	11.3
MAY 04...	312	9.5	21.3	21.1	16.9	17.2	1.70	1.6	8.30	8.0
JUN 21...	336	16.4	24.5	24.3	18.6	18.5	1.60	1.6	9.10	9.1
JUL 18...	198	19.0	12.8	11.3	8.10	6.9	2.80	2.5	9.00	8.1
SEP 01...	355	18.2	27.3	26.8	20.0	19.4	2.90	2.8	11.2	10.9

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571593 -- Good Spring Creek bl Middle Creek at Tremont, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover- able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 05...	--	--	--	--	--	--	--	--	--	--
NOV 02...	12	15.5	--	107	--	--	--	<100	200	--
DEC 22...	11	12.5	--	110	--	--	--	<100	500	--
FEB 09...	9	16.3	--	105	--	--	--	<100	500	--
MAR 23...	8	17.3	<.01	66.9	.58	<.030	<.020	<100	1100	.19
MAY 04...	14	12.9	<.01	107	.50	<.030	<.020	<100	400	.20
JUN 21...	14	10.7	<.01	57.3	2.11	<.030	<.020	<100	200	.21
JUL 18...	11	14.6	--	56.6	--	--	--	200	400	--
SEP 01...	12	17.5	--	121	--	--	--	<100	900	--

Date	Iron, water, unfltrd recover fltrd, µg/L (01046)	Iron, water, recover- able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover- able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover- able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover- able, µg/L (01092)
OCT 05...	--	--	--	--	--	--	--	--
NOV 02...	920	1130	970	920	35.0	35.0	90.0	60.0
DEC 22...	1410	2150	1070	1030	40.0	40.0	120	90.0
FEB 09...	1200	1970	960	950	35.0	35.0	70.0	80.0
MAR 23...	760	3850	640	720	25.0	30.0	65.0	90.0
MAY 04...	1080	1950	880	830	35.0	35.0	75.0	85.0
JUN 21...	730	1410	890	900	30.0	30.0	55.0	55.0
JUL 18...	620	1090	480	440	20.0	20.0	40.0	40.0
SEP 01...	130	2230	1000	1000	25.0	30.0	25.0	60.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571552 -- Swatara Creek at Tremont, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
NOV 02...	0915	1028	89203	8.6	367	2.1	10.3	93	7.2	6.5
DEC 22...	0915	1028	89203	10	378	6.7	14.6	103	6.5	6.2
FEB 09...	0930	1028	89203	10	368	--	12.7	97	7.2	7.1
MAR 23...	1045	1028	89203	19	348	--	12.6	96	7.2	6.7
MAY 04...	1030	1028	89203	9.4	369	2.5	11.8	100	6.6	6.6
JUN 21...	1100	1028	89203	4.5	353	3.3	10.4	105	6.7	6.5
JUL 18...	1000	1028	89203	26	428	--	8.4	91	5.5	6.1
SEP 01...	1030	1028	89203	2.9	369	--	8.4	91	6.9	6.9

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
NOV 02...	158	10.7	15.7	12.2	7.90	6.8	.90	.9	4.30	3.9
DEC 22...	152	1.3	14.1	11.9	8.40	7.8	.90	1.0	4.40	4.1
FEB 09...	161	4.1	11.5	11.6	7.20	7.3	.90	.9	4.00	4.0
MAR 23...	120	4.1	7.80	9.0	4.60	5.5	.80	.9	3.70	4.2
MAY 04...	158	8.3	11.4	11.5	6.90	7.1	1.10	1.0	4.40	4.5
JUN 21...	220	15.0	17.2	17.9	9.40	9.9	1.40	1.6	7.30	7.3
JUL 18...	119	19.6	9.30	8.4	4.70	4.3	1.10	1.0	4.10	3.4
SEP 01...	251	19.4	21.0	20.7	11.2	10.9	2.20	2.1	9.00	8.7

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571552 -- Swatara Creek at Tremont, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
NOV 02...	7	7.2	--	51.2	--	--	--	300	<100	--
DEC 22...	5	18.8	--	53.8	--	--	--	200	500	--
FEB 09...	7	7.6	--	54.1	--	--	--	<100	500	--
MAR 23...	6	5.4	<.01	31.5	.60	<.030	<.020	<100	900	.19
MAY 04...	6	6.0	<.01	45.9	1.05	<.030	<.020	<100	200	.19
JUN 21...	8	95.4	.41	94.9	.85	<.030	<.020	<100	<100	.56
JUL 18...	4	5.4	--	37.8	--	--	--	200	500	--
SEP 01...	11	13.1	--	73.2	--	--	--	<100	<100	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
NOV 02...	1940	130	1310	470	30.0	25.0	510	50.0
DEC 22...	1650	550	1110	510	30.0	30.0	390	70.0
FEB 09...	300	540	620	660	30.0	30.0	70.0	85.0
MAR 23...	250	760	360	410	20.0	25.0	90.0	80.0
MAY 04...	170	310	390	380	25.0	25.0	65.0	70.0
JUN 21...	20.0	110	320	350	25.0	25.0	45.0	50.0
JUL 18...	230	630	480	450	25.0	25.0	70.0	60.0
SEP 01...	80.0	130	250	240	20.0	20.0	35.0	25.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571773 -- Lorberry Cr Div Wells Outflow nr Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1500	1028	--	1.6	399	12	10.9	101	5.5	--
DEC 21...	1400	1028	89203	.15	429	45	9.8	90	5.5	--
FEB 16...	1500	1028	89203	1.7	415	28	10.3	95	5.7	--
JUN 08...	1520	1028	89203	1.2	367	15	10.4	98	5.7	5.6
JUL 20...	1515	1028	89203	.86	347	--	10.0	94	5.8	6.2
AUG 30...	1745	1028	89203	.59	306	--	9.6	89	6.3	6.4

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium, water, unfltrd, mg/L (00915)	Calcium, water, unfltrd recoverable, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
OCT 28...	286	12.1	--	--	--	--	--	--	--	--
DEC 21...	242	11.3	--	--	--	--	--	--	--	--
FEB 16...	280	11.6	--	--	--	--	--	--	--	--
JUN 08...	299	12.4	16.5	16.2	24.1	23.0	1.20	1.1	3.20	2.9
JUL 20...	415	12.2	13.8	12.5	37.6	32.5	1.40	1.3	3.90	3.4
AUG 30...	297	12.2	12.0	11.6	25.5	24.3	1.20	1.2	3.50	3.4

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, mg/L (01106)	Aluminum, water, unfltrd recoverable, mg/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	--	--	--	--	--	--	--	--	--	--
DEC 21...	--	--	--	--	--	--	--	--	--	--
FEB 16...	--	--	--	--	--	--	--	--	--	--
JUN 08...	3	2.8	<.01	121	<.01	<.030	<.020	200	700	.20
JUL 20...	13	3.7	--	184	--	--	--	<100	800	--
AUG 30...	18	3.6	--	119	--	--	--	<100	500	--

Date	Iron, water, unfltrd, mg/L (01046)	Iron, water, unfltrd recoverable, mg/L (01045)	Manganese, water, unfltrd, mg/L (01056)	Manganese, water, unfltrd recoverable, mg/L (01055)	Nickel, water, unfltrd, mg/L (01065)	Nickel, water, unfltrd recoverable, mg/L (01067)	Zinc, water, unfltrd, mg/L (01090)	Zinc, water, unfltrd recoverable, mg/L (01092)
OCT 28...	--	--	--	--	--	--	--	--
DEC 21...	--	--	--	--	--	--	--	--
FEB 16...	--	--	--	--	--	--	--	--
JUN 08...	5750	6850	1760	1700	80.0	75.0	195	195
JUL 20...	6900	6580	1390	1250	65.0	60.0	120	180
AUG 30...	7830	7920	2000	1000	50.0	50.0	75.0	70.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571774 -- Lorberry Creek, Site E2-0, at Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1445	1028	89203	3.2	315	14	11.4	106	6.2	6.2
DEC 21...	1345	1028	89203	8.9	397	45	11.1	100	6.0	5.8
FEB 16...	1445	1028	89203	4.8	384	21	11.0	100	6.0	5.9
JUN 08...	1450	1028	89203	3.5	289	16	10.9	104	6.5	5.9
JUL 20...	1215	1028	89203	1.1	236	--	10.3	99	6.6	6.7
AUG 30...	1700	1028	89203	.67	202	--	9.9	94	6.8	6.5

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water, unfltrd recover-able, mg/L (00916)	Magnesium water, unfltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, unfltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recover-able, mg/L (00929)
OCT 28...	278	12.0	13.5	14.4	20.9	21.7	1.00	1.1	2.70	2.8
DEC 21...	227	10.7	10.2	8.9	20.5	17.6	1.20	1.0	3.80	3.3
FEB 16...	275	10.9	11.9	12.5	20.2	21.0	1.10	1.2	3.40	3.6
JUN 08...	292	12.9	15.8	15.2	22.7	22.1	1.10	1.1	3.20	2.7
JUL 20...	393	13.4	13.1	11.9	33.9	30.2	1.30	1.2	3.60	3.5
AUG 30...	283	13.2	12.4	12.1	23.8	23.1	1.20	1.2	3.40	3.3

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate water, unfltrd, mg/L as N (00618)	Nitrite water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, µg/L (01106)	Aluminum, water, unfltrd recover-able, µg/L (01105)	Bromine water, unfltrd, mg/L (71871)
OCT 28...	4	2.9	--	129	--	--	--	<100	800	--
DEC 21...	4	3.2	--	92.3	--	--	--	200	600	--
FEB 16...	3	4.7	--	117	--	--	--	<100	700	--
JUN 08...	4	2.9	<.01	118	<.01	<.030	<.020	<100	600	.19
JUL 20...	9	3.8	--	174	--	--	--	<100	700	--
AUG 30...	12	3.6	--	113	--	--	--	<100	400	--

Date	Iron, water, unfltrd recover-able, µg/L (01046)	Iron, water, unfltrd, µg/L (01045)	Manganese, water, unfltrd, µg/L (01056)	Manganese, water, unfltrd recover-able, µg/L (01055)	Nickel, water, unfltrd, µg/L (01065)	Nickel, water, unfltrd recover-able, µg/L (01067)	Zinc, water, unfltrd, µg/L (01090)	Zinc, water, unfltrd recover-able, µg/L (01092)
OCT 28...	3880	5220	1390	1440	70.0	75.0	165	175
DEC 21...	1810	3600	1400	1250	65.0	60.0	160	140
FEB 16...	2780	4090	1320	1370	65.0	70.0	170	180
JUN 08...	5020	6220	1640	1620	75.0	75.0	190	180
JUL 20...	5340	5310	1210	1110	55.0	55.0	105	100
AUG 30...	5930	6190	1000	1000	50.0	45.0	70.0	65.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571776 -- Stumps Run at Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1430	1028	89203	.68	391	.0	11.3	104	6.2	6.3
DEC 21...	1330	1028	89203	1.4	416	3.4	14.4	107	6.0	5.1
FEB 16...	1430	1028	89203	4.0	419	3.9	13.0	100	6.2	6.2
JUN 08...	1425	1028	89203	.24	394	.9	9.6	97	6.1	6.0
JUL 20...	1245	1028	89203	.19	447	--	8.8	94	5.8	6.4
AUG 30...	1715	1028	89203	.07	415	--	8.4	87	6.0	6.0

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium, water, unfltrd, mg/L (00915)	Calcium, water, unfltrd recoverable, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
OCT 28...	39	11.5	5.10	5.2	2.30	2.5	.50	.5	.50	.7
DEC 21...	48	2.9	3.90	3.4	2.90	2.3	.60	.5	.50	.7
FEB 16...	41	4.4	3.10	3.0	2.00	2.0	.50	.5	.60	.7
JUN 08...	32	15.9	2.50	2.3	1.60	1.5	.30	.2	<.10	<.1
JUL 20...	46	18.5	3.80	3.4	2.30	2.0	.60	.5	.70	.6
AUG 30...	33	16.6	3.40	3.5	2.00	2.1	.40	.4	.60	.6

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, µg/L (01106)	Aluminum, water, unfltrd recoverable, µg/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	4	.7	--	13.6	--	--	--	<100	<100	--
DEC 21...	5	.6	--	16.3	--	--	--	<100	<100	--
FEB 16...	4	1.3	--	14.1	--	--	--	<100	<100	--
JUN 08...	5	.9	<.01	8.5	.41	<.030	<.020	<100	<100	.17
JUL 20...	6	.7	--	14.5	--	--	--	<100	<100	--
AUG 30...	5	.8	--	8.1	--	--	--	<100	<100	--

Date	Iron, water, unfltrd, µg/L (01046)	Iron, water, unfltrd recoverable, µg/L (01045)	Manganese, water, unfltrd, µg/L (01056)	Manganese, water, unfltrd recoverable, µg/L (01055)	Nickel, water, unfltrd, µg/L (01065)	Nickel, water, unfltrd recoverable, µg/L (01067)	Zinc, water, unfltrd, µg/L (01090)	Zinc, water, unfltrd recoverable, µg/L (01092)
OCT 28...	1730	1890	90.0	90.0	<5.00	<5.00	20.0	20.0
DEC 21...	100	210	50.0	50.0	10.0	<5.00	30.0	25.0
FEB 16...	40.0	90.0	50.0	50.0	10.0	<5.00	20.0	20.0
JUN 08...	110	80.0	<10.0	20.0	<5.00	<5.00	15.0	10.0
JUL 20...	30.0	90.0	<10.0	30.0	<5.00	<5.00	15.0	10.0
AUG 30...	860	960	50.0	70.0	<5.00	<5.00	25.0	25.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177610 -- Lorberry Creek Wetlands Inflow at Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1415	1028	89203	1.6	401	15	11.3	106	5.5	6.1
DEC 21...	1315	1028	89203	1.3	437	44	10.1	92	5.5	5.5
FEB 16...	1415	1028	89203	1.3	429	24	10.3	96	5.5	5.7
JUN 08...	1340	1028	89203	1.2	354	16	10.3	97	5.7	5.5
JUL 20...	1330	1028	89203	1.5	326	--	10.6	101	6.1	6.3
AUG 30...	1630	1028	89203	.59	290	--	10.1	94	6.4	6.4

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water, unfltrd recover-able, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recover-able, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recover-able, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recover-able, mg/L (00929)
OCT 28...	286	12.1	14.0	15.5	21.9	22.6	1.10	1.1	2.60	2.8
DEC 21...	239	11.2	9.70	10.0	19.2	19.2	1.10	1.1	3.60	3.4
FEB 16...	294	11.6	12.9	14.0	22.1	22.4	1.20	1.2	3.10	3.4
JUN 08...	298	12.6	15.4	15.6	22.3	21.9	1.10	1.1	3.20	2.8
JUL 20...	280	13.2	14.0	12.4	37.9	32.4	1.40	1.3	3.90	3.5
AUG 30...	298	12.3	12.0	11.6	25.4	24.6	1.30	1.2	3.60	3.2

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, �g/L (01106)	Aluminum, water, unfltrd recover-able, �g/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	5	2.9	--	132	--	--	--	300	800	--
DEC 21...	6	3.2	--	95.8	--	--	--	400	600	--
FEB 16...	5	4.0	--	127	--	--	--	400	800	--
JUN 08...	5	8.0	<.01	138	.45	<.030	<.020	200	600	.20
JUL 20...	12	3.7	--	189	--	--	--	<100	900	--
AUG 30...	17	3.7	--	119	--	--	--	<100	400	--

Date	Iron, water, unfltrd recover-able, �g/L (01046)	Iron, water, unfltrd, �g/L (01045)	Manganese, water, unfltrd, �g/L (01056)	Manganese, water, unfltrd recover-able, �g/L (01055)	Nickel, water, unfltrd, �g/L (01065)	Nickel, water, unfltrd recover-able, �g/L (01067)	Zinc, water, unfltrd, �g/L (01090)	Zinc, water, unfltrd recover-able, �g/L (01092)
OCT 28...	4060	5260	1460	1510	80.0	80.0	180	185
DEC 21...	1700	4060	1380	1380	65.0	65.0	150	150
FEB 16...	3180	4550	1480	1530	75.0	75.0	190	195
JUN 08...	5120	6540	1630	1630	75.0	75.0	185	185
JUL 20...	6830	6730	1400	1230	65.0	55.0	120	100
AUG 30...	7510	7530	2000	1000	55.0	50.0	75.0	70.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177614 -- Lorberry Cr Wetlands Cell 2 Outflow at Lorberry,PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1400	1028	89203	.41	423	1.4	11.8	117	5.5	5.5
DEC 21...	1240	1028	89203	3.6	419	5.5	12.8	104	5.7	5.4
FEB 16...	1345	1028	89203	.52	416	2.6	10.6	94	5.8	5.7
JUN 08...	1250	1028	89203	.89	384	.8	10.1	117	5.7	5.5
JUL 20...	1145	1028	89203	1.4	459	--	9.5	100	5.1	5.2
AUG 30...	1545	1028	89203	.52	432	--	9.2	93	5.6	5.6

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium, water, unfltrd, mg/L (00915)	Calcium, water, unfltrd recoverable, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
OCT 28...	274	15.1	14.6	14.9	21.6	22.0	1.00	1.1	2.90	3.0
DEC 21...	252	6.2	12.1	11.7	20.5	19.9	1.20	1.1	3.40	3.6
FEB 16...	267	9.8	12.4	12.3	20.6	20.8	1.10	1.1	3.20	3.2
JUN 08...	284	22.6	15.5	16.2	21.8	23.1	1.00	1.0	3.40	3.0
JUL 20...	413	17.9	17.3	15.3	37.4	32.3	1.40	1.3	4.00	3.5
AUG 30...	290	15.8	13.4	12.9	25.3	24.6	1.30	1.2	3.40	3.4

Date	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, µg/L (01106)	Aluminum, water, unfltrd recoverable, µg/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	2	2.9	--	129	--	--	--	<100	<100	--
DEC 21...	3	3.1	--	103	--	--	--	<100	200	--
FEB 16...	2	4.0	--	114	--	--	--	<100	200	--
JUN 08...	3	2.9	<.02	114	<.02	<.060	<.040	<100	<100	.20
JUL 20...	2	3.3	--	196	--	--	--	200	200	--
AUG 30...	3	3.6	--	125	--	--	--	<100	<100	--

Date	Iron, water, unfltrd, µg/L (01046)	Iron, water, unfltrd recoverable, µg/L (01045)	Manganese, water, unfltrd, µg/L (01056)	Manganese, water, unfltrd recoverable, µg/L (01055)	Nickel, water, unfltrd, µg/L (01065)	Nickel, water, unfltrd recoverable, µg/L (01067)	Zinc, water, unfltrd, µg/L (01090)	Zinc, water, unfltrd recoverable, µg/L (01092)
OCT 28...	230	400	1360	1370	75.0	80.0	170	175
DEC 21...	250	600	1360	1350	80.0	75.0	215	210
FEB 16...	430	800	1310	1330	65.0	65.0	165	170
JUN 08...	270	630	1500	1590	70.0	75.0	165	175
JUL 20...	1300	1160	1490	1320	75.0	65.0	150	130
AUG 30...	1080	1140	2000	2000	60.0	55.0	95.0	105

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177618 -- Lorberry Cr Wetlands Cell 4 Outflow at Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1350	1028	89203	1.6	392	.0	11.4	114	5.9	5.8
DEC 21...	1230	1028	89203	3.2	386	.8	14.2	101	6.0	5.7
FEB 16...	1330	1028	89203	2.5	416	.4	11.0	96	5.8	6.2
JUN 08...	1210	1028	89203	2.1	373	<1.0	9.6	115	6.0	5.8
JUL 20...	1130	1028	89203	2.1	528	--	9.6	106	4.8	4.9
AUG 30...	1530	1028	89203	1.5	445	--	9.4	101	5.5	5.6

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water, unfltrd recover-able, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recover-able, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recover-able, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recover-able, mg/L (00929)
OCT 28...	267	15.4	14.2	14.6	21.1	21.4	1.00	1.0	2.90	2.9
DEC 21...	239	7.5	11.4	10.9	19.4	18.1	1.10	1.0	3.20	3.3
FEB 16...	256	9.1	11.7	11.4	20.2	19.7	1.10	1.1	3.00	3.4
JUN 08...	271	24.6	14.5	15.1	20.4	21.4	.90	1.0	3.30	2.8
JUL 20...	409	20.0	18.4	16.0	36.5	30.7	1.40	1.3	3.70	3.5
AUG 30...	293	18.4	14.9	14.2	25.6	24.6	1.30	1.2	3.50	3.3

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, µg/L (01106)	Aluminum, water, unfltrd recover-able, µg/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	2	2.9	--	125	--	--	--	<100	<100	--
DEC 21...	4	2.8	--	97.1	--	--	--	<100	<100	--
FEB 16...	4	3.9	--	108	--	--	--	<100	<100	--
JUN 08...	3	3.0	<.01	109	<.01	<.030	<.020	<100	<100	.22
JUL 20...	1	3.1	--	193	--	--	--	200	200	--
AUG 30...	3	3.1	--	129	--	--	--	<100	<100	--

Date	Iron, water, unfltrd, µg/L (01046)	Iron, water, unfltrd recover-able, µg/L (01045)	Manganese, water, unfltrd, µg/L (01056)	Manganese, water, unfltrd recover-able, µg/L (01055)	Nickel, water, unfltrd, µg/L (01065)	Nickel, water, unfltrd recover-able, µg/L (01067)	Zinc, water, unfltrd, µg/L (01090)	Zinc, water, unfltrd recover-able, µg/L (01092)
OCT 28...	100	120	820	820	70.0	75.0	160	170
DEC 21...	30.0	80.0	1160	1090	75.0	70.0	215	210
FEB 16...	30.0	110	1170	1120	60.0	60.0	155	155
JUN 08...	30.0	80.0	1260	1350	65.0	70.0	135	150
JUL 20...	140	150	1500	1320	75.0	65.0	170	165
AUG 30...	40.0	60.0	80.0	80.0	60.0	60.0	125	120

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177620 -- Lorberry Creek below Wetlands at Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1300	1028	89203	5.5	289	11	11.1	103	6.2	6.2
DEC 21...	1215	1028	89203	9.4	350	36	11.6	101	6.1	5.7
FEB 16...	1315	1028	89203	7.9	358	18	10.9	96	6.1	6.1
JUN 08...	1135	1028	89203	4.4	286	11	10.4	103	6.3	6.0
JUL 20...	1045	1028	89203	2.8	325	--	9.7	98	6.2	6.3
AUG 30...	1515	1028	89203	1.7	276	--	9.5	96	6.5	6.4

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium, water, unfltrd, mg/L (00915)	Calcium, water, unfltrd recoverable, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
OCT 28...	260	12.2	13.5	13.4	19.6	20.1	1.00	1.0	2.60	2.6
DEC 21...	220	9.2	9.30	8.8	18.0	16.5	1.00	1.0	3.20	2.9
FEB 16...	234	9.7	10.7	10.7	17.1	17.4	1.00	1.0	2.80	2.8
JUN 08...	272	15.1	13.8	14.9	19.4	21.2	.90	1.1	3.20	2.8
JUL 20...	363	15.9	15.0	12.8	31.8	27.2	1.30	1.2	3.60	3.2
AUG 30...	267	15.4	12.7	12.3	23.0	21.9	1.20	1.1	3.20	3.0

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, µg/L (01106)	Aluminum, water, unfltrd recoverable, µg/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	4	2.7	--	120	--	--	--	<100	700	--
DEC 21...	4	2.8	--	88.1	--	--	--	<100	600	--
FEB 16...	3	4.1	--	97.5	--	--	--	<100	600	--
JUN 08...	4	2.8	<.01	104	<.01	<.030	<.020	<100	500	.21
JUL 20...	6	3.1	--	163	--	--	--	<100	400	--
AUG 30...	8	3.2	--	112	--	--	--	<100	300	--

Date	Iron, water, unfltrd recoverable, µg/L (01046)	Iron, water, unfltrd, µg/L (01045)	Manganese, water, unfltrd recoverable, µg/L (01056)	Manganese, water, unfltrd, µg/L (01055)	Nickel, water, unfltrd recoverable, µg/L (01065)	Nickel, water, unfltrd, µg/L (01067)	Zinc, water, unfltrd, µg/L (01090)	Zinc, water, unfltrd recoverable, µg/L (01092)
OCT 28...	3620	4240	1240	1270	70.0	70.0	155	160
DEC 21...	1430	3580	1190	1150	60.0	55.0	145	135
FEB 16...	2260	3670	1090	1100	55.0	55.0	145	155
JUN 08...	3290	4670	1310	1520	65.0	70.0	160	175
JUL 20...	2660	2720	1200	1040	60.0	55.0	130	105
AUG 30...	2750	3310	1000	1000	50.0	50.0	90.0	85.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

403521076260601 -- Shadle Mine Shaft at Lorberry, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1245	1028	89203	.00	201	.0	.9	8	4.7	5.0
DEC 21...	1200	1028	89203	.01	214	.0	.9	8	5.3	4.6
FEB 16...	1245	1028	89203	.02	295	.0	.9	9	5.0	5.2
JUN 08...	1055	1028	89203	.01	106	.0	1.4	13	5.0	5.0
AUG 30...	1445	1028	89203	.02	247	--	.6	6	4.9	5.0

Date	Specif. conductance, wat unfltrd, µS/cm 25 degC (00095)	Temperature, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover-able, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recover-able, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recover-able, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recover-able, mg/L (00929)
OCT 28...	1490	12.3	210	201	47.4	49.6	4.70	4.9	1.60	1.8
DEC 21...	1670	12.1	215	217	47.4	48.7	4.90	5.0	1.90	1.8
FEB 16...	1390	12.0	185	193	37.9	38.6	5.00	5.0	1.70	1.7
JUN 08...	1370	12.1	176	182	37.3	38.8	5.30	5.6	.90	.6
AUG 30...	1400	12.3	179	186	42.0	42.8	6.40	6.4	1.40	1.4

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Aluminum, water, fltrd, µg/L (01106)	Aluminum, water, unfltrd recover-able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 28...	5	1.7	--	947	--	--	--	3300	3400	--
DEC 21...	.0	1.5	--	1020	--	--	--	1000	1100	--
FEB 16...	12	1.8	--	828	--	--	--	1100	1100	--
JUN 08...	14	2.8	<.01	763	<.01	<.030	<.020	1200	1300	.83
AUG 30...	11	1.9	--	842	--	--	--	2200	2200	--

Date	Iron, water, unfltrd recover-able, µg/L (01046)	Iron, water, unfltrd recover-able, µg/L (01045)	Manganese, water, fltrd, µg/L (01056)	Manganese, water, unfltrd recover-able, µg/L (01055)	Nickel, water, unfltrd recover-able, µg/L (01065)	Nickel, water, unfltrd recover-able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover-able, µg/L (01092)
OCT 28...	163000	157000	5810	5950	115	120	160	170
DEC 21...	161000	162000	5420	5530	85.0	90.0	125	130
FEB 16...	128000	135000	4540	4590	85.0	85.0	110	115
JUN 08...	124000	127000	4480	4670	90.0	100	115	125
AUG 30...	111000	115000	5000	5000	120	120	140	145

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571777 -- Lorberry Cr ab Panther Head Disch nr Lorberry Jct, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1200	1028	89203	5.4	309	10	11.3	104	6.3	6.0
DEC 21...	1100	1028	89203	15	441	33	12.0	102	6.1	5.6
FEB 16...	1145	1028	89203	14	360	14	11.5	99	6.3	6.0
APR 20...	1500	1028	89203	13	308	31	10.5	102	5.0	4.7
JUN 07...	1625	1028	89203	3.8	215	8.3	10.2	105	6.9	6.4
AUG 30...	1315	1028	89203	1.8	295	--	9.3	93	6.5	6.3

Date	Specif. conductance, wat unfltrd, μ S/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium water, fltrd, mg/L (00925)	Magnesium water, unfltrd recoverable, mg/L (00927)	Potassium water, fltrd, mg/L (00935)	Potassium water, unfltrd recoverable, mg/L (00937)	Sodium water, fltrd, mg/L (00930)	Sodium water, unfltrd recoverable, mg/L (00929)
OCT 28...	251	11.4	13.5	13.7	18.3	18.5	1.00	1.0	2.50	2.6
DEC 21...	214	8.0	8.70	9.2	14.4	15.3	.90	.9	3.00	3.2
FEB 16...	216	9.1	10.3	10.6	14.7	15.0	.90	.9	2.90	2.7
APR 20...	223	13.9	10.3	12.1	15.1	18.2	1.10	1.2	2.70	2.9
JUN 07...	220	17.2	11.6	11.4	15.9	15.9	.90	.8	3.00	2.5
AUG 30...	275	15.5	15.4	15.9	22.1	22.3	1.20	1.2	3.10	3.1

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Sulfate, water, fltrd, mg/L (00945)	Nitrate, water, fltrd, mg/L as N (00618)	Nitrite, water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Aluminum, water, fltrd, μ g/L (01106)	Aluminum, water, unfltrd recoverable, μ g/L (01105)	Bromine water, unfltrd mg/L (71871)
OCT 28...	3	2.9	--	114	--	--	--	<100	700	--
DEC 21...	3	3.1	--	84.3	--	--	--	<100	500	--
FEB 16...	3	4.2	--	87.8	--	--	--	<100	500	--
APR 20...	.0	.9	<.01	83.2	<.01	<.030	<.020	400	700	.21
JUN 07...	6	3.0	<.01	77.4	.39	<.030	<.020	<100	300	.19
AUG 30...	5	3.0	--	118	--	--	--	<100	300	--

Date	Iron, water, fltrd, μ g/L (01046)	Iron, water, unfltrd recoverable, μ g/L (01045)	Manganese, water, fltrd, μ g/L (01056)	Manganese, water, unfltrd recoverable, μ g/L (01055)	Nickel, water, fltrd, μ g/L (01065)	Nickel, water, unfltrd recoverable, μ g/L (01067)	Zinc, water, fltrd, μ g/L (01090)	Zinc, water, unfltrd recoverable, μ g/L (01092)
OCT 28...	2800	4100	1160	1170	65.0	65.0	140	150
DEC 21...	1140	2930	1010	1040	50.0	55.0	120	130
FEB 16...	1620	2660	950	960	50.0	50.0	125	125
APR 20...	730	2610	1050	1150	60.0	70.0	190	225
JUN 07...	2350	3350	1100	1090	45.0	45.0	85.0	85.0
AUG 30...	2720	3300	1000	1000	50.0	50.0	225	120

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177780 -- Panther Head Disch to Lorberry Cr nr Lorberry Jct, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1215	1028	89203	<.01	617	.0	8.2	73	3.6	3.7
DEC 21...	1115	1028	89203	.04	560	.0	11.5	90	3.6	3.8
FEB 16...	1215	1028	89203	.13	542	.0	11.4	92	3.7	3.7
APR 20...	1535	1028	89203	.05	475	1.2	9.9	92	3.5	3.5
JUN 07...	1650	1028	89203	.01	570	<1.0	7.6	83	3.6	3.6
AUG 30...	1345	1028	89203	.00	489	--	5.4	61	4.0	3.9

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, unfltrd, mg/L (00915)	Calcium water, unfltrd recover-able, mg/L (00916)	Magnesium, water, unfltrd, mg/L (00925)	Magnesium, water, unfltrd recover-able, mg/L (00927)	Potassium, water, unfltrd, mg/L (00935)	Potassium, water, unfltrd recover-able, mg/L (00937)	Sodium, water, unfltrd, mg/L (00930)	Sodium, water, unfltrd recover-able, mg/L (00929)
OCT 28...	247	10.1	9.30	9.8	7.00	7.3	.70	.8	.90	.8
DEC 21...	316	4.9	7.90	8.2	7.90	8.1	.90	.9	1.40	1.2
FEB 16...	224	5.5	5.50	5.5	5.30	5.4	.70	.7	1.10	1.0
APR 20...	281	11.7	7.60	9.1	7.30	9.0	1.00	1.1	1.00	1.1
JUN 07...	140	19.3	7.40	7.4	6.50	6.6	.60	.6	1.30	.7
AUG 30...	231	21.6	13.4	13.9	10.9	11.4	1.10	1.1	1.60	1.6

Date	ANC, wat unfltrd end pt, lab, mg/L as CaCO3 (00417)	Chloride, water, unfltrd, mg/L (00940)	Fluoride, water, unfltrd, mg/L (00950)	Sulfate, water, unfltrd, mg/L (00945)	Nitrate, water, unfltrd, mg/L as N (00618)	Nitrite, water, unfltrd, mg/L as N (00613)	Orthophosphate, water, unfltrd, mg/L as P (00671)	Aluminum, water, unfltrd, mg/L (01106)	Aluminum, water, unfltrd recover-able, mg/L (01105)	Bromine, water, unfltrd, mg/L (71871)
OCT 28...	.0	1.1	--	89.1	--	--	--	3900	4200	--
DEC 21...	.0	.9	--	97.4	--	--	--	4200	4300	--
FEB 16...	.0	1.7	--	64.1	--	--	--	3000	3000	--
APR 20...	.0	1.0	<.01	84.1	<.01	<.030	<.020	3600	4500	.22
JUN 07...	.0	1.2	<.01	67.2	<.01	<.030	.660	3000	3100	.22
AUG 30...	.0	1.2	--	88.9	--	--	--	1200	1200	--

Date	Iron, water, unfltrd, mg/L (01046)	Iron, water, unfltrd recover-able, mg/L (01045)	Manganese, water, unfltrd, mg/L (01056)	Manganese, water, unfltrd recover-able, mg/L (01055)	Nickel, water, unfltrd, mg/L (01065)	Nickel, water, unfltrd recover-able, mg/L (01067)	Zinc, water, unfltrd, mg/L (01090)	Zinc, water, unfltrd recover-able, mg/L (01092)
OCT 28...	700	960	1090	1180	140	150	330	350
DEC 21...	560	590	1180	1200	145	150	375	385
FEB 16...	310	320	810	830	100	100	250	255
APR 20...	410	500	1070	1190	135	160	375	495
JUN 07...	690	710	1060	1070	120	120	335	330
AUG 30...	330	1310	1000	1000	80.0	85.0	140	140

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177790 -- Unnamed Trib to Lorberry Cr nr Lorberry Jct, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1230	1028	89203	5.7	488	.0	11.4	100	5.2	5.3
DEC 21...	1130	1028	89203	5.7	485	1.4	14.5	103	5.3	5.2
FEB 16...	1230	1028	89203	3.9	515	2.8	13.8	100	4.9	5.2
APR 20...	1615	1028	89203	4.0	308	5.6	10.4	95	5.0	5.0
JUN 07...	1735	1028	89203	2.3	456	7.0	10.2	100	5.3	5.3
JUL 20...	1030	1028	89203	2.1	596	--	8.5	91	4.1	5.3
AUG 30...	1400	1028	89203	1.1	463	--	8.4	87	5.5	5.5

Date	Specif. conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recover, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recover, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover, mg/L (00929)
OCT 28...	14	9.7	1.00	.9	.50	.6	.30	.3	.70	.6
DEC 21...	20	1.4	1.00	.9	.60	.6	.30	.3	.50	.5
FEB 16...	19	2.1	.80	.9	.60	.6	.30	.3	.80	.8
APR 20...	16	11.2	.90	.9	.50	.6	.40	.3	.60	.5
JUN 07...	14	14.7	.90	.9	.50	.5	<.10	<.1	.70	.2
JUL 20...	15	18.8	1.30	1.2	.80	.7	.40	.3	.90	.7
AUG 30...	16	17.3	1.40	1.5	.80	.8	.30	.3	.70	.7

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

0157177790 -- Unnamed Trib to Lorberry Cr nr Lorberry Jct, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover- able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 28...	2	1.0	--	2.8	--	--	--	200	200	--
DEC 21...	2	1.0	--	5.2	--	--	--	<100	<100	--
FEB 16...	2	1.7	--	4.3	--	--	--	<100	<100	--
APR 20...	1	1.1	<.01	4.3	.40	<.030	<.020	200	200	.17
JUN 07...	2	1.1	<.05	3.7	.40	<.100	<.100	200	300	.20
JUL 20...	2	1.0	--	1.6	--	--	--	300	300	--
AUG 30...	3	.9	--	2.9	--	--	--	200	300	--

Date	Iron, water, unfltrd recover- able, µg/L (01046)	Iron, water, unfltrd recover- able, µg/L (01045)	Mangan- ese, water, unfltrd recover- able, µg/L (01056)	Mangan- ese, water, unfltrd recover- able, µg/L (01055)	Nickel, water, unfltrd recover- able, µg/L (01065)	Nickel, water, unfltrd recover- able, µg/L (01067)	Zinc, water, unfltrd recover- able, µg/L (01090)	Zinc, water, unfltrd recover- able, µg/L (01092)
OCT 28...	210	270	40.0	40.0	<5.00	<5.00	15.0	15.0
DEC 21...	80.0	90.0	40.0	30.0	<5.00	<5.00	15.0	15.0
FEB 16...	80.0	100	40.0	40.0	<5.00	<5.00	15.0	10.0
APR 20...	160	230	30.0	30.0	<5.00	<5.00	25.0	15.0
JUN 07...	470	590	30.0	30.0	<5.00	<5.00	15.0	15.0
JUL 20...	780	820	50.0	50.0	<5.00	<5.00	20.0	20.0
AUG 30...	350	630	40.0	80.0	<5.00	<5.00	10.0	<5.00

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571780 -- Lorberry Creek at Lorberry Junction, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 05...	1500	1028	--	23	395	16	12.0	103	5.9	--
28...	1100	1028	89203	9.4	312	7.3	11.3	101	6.4	6.1
DEC 21...	0945	1028	89203	20	483	23	12.7	102	6.0	5.9
FEB 16...	1030	1028	89203	17	375	12	12.3	101	6.5	6.4
APR 20...	1320	1028	89203	16	243	20	11.2	107	5.5	5.3
JUN 07...	1400	1028	89203	5.3	287	10	10.5	106	6.6	6.3
JUL 19...	1215	1028	89203	5.8	338	--	9.6	99	6.0	5.8
AUG 30...	1100	1028	89203	2.4	417	--	9.2	94	6.2	6.1

Date	Specif. conductance, wat unfltrd, μ S/cm 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium unfltrd recover-able, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, unfltrd recover-able, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, unfltrd recover-able, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, unfltrd recover-able, mg/L (00929)
OCT 05...	195	12.2	--	--	--	--	--	--	--	--
28...	204	10.3	30.8	35.0	18.1	19.6	2.50	2.6	12.7	13.3
DEC 21...	171	5.7	7.50	9.9	11.1	12.6	.80	.9	3.00	3.2
FEB 16...	167	6.8	8.10	8.3	10.1	10.2	.80	.8	3.70	4.1
APR 20...	180	13.7	8.70	9.9	11.5	13.3	1.00	1.1	3.30	3.3
JUN 07...	169	16.1	9.00	9.0	10.3	10.4	.70	.7	4.40	3.2
JUL 19...	302	16.7	14.6	13.0	23.3	20.3	1.30	1.1	5.30	4.5
AUG 30...	249	16.3	15.0	15.8	18.0	18.7	1.30	1.3	5.70	5.4

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571780 -- Lorberry Creek at Lorberry Junction, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd water, recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 05...	--	--	--	--	--	--	--	--	--	--
28...	3	14.9	--	147	--	--	--	<100	700	--
DEC 21...	4	8.6	--	64.5	--	--	--	<100	600	--
FEB 16...	3	7.2	--	59.6	--	--	--	<100	400	--
APR 20...	2	3.4	<.01	66.8	.42	<.030	<.020	200	500	.19
JUN 07...	3	4.6	<.01	51.5	.43	<.030	<.020	<100	200	.18
JUL 19...	3	5.8	--	123	--	--	--	<100	400	--
AUG 30...	3	6.5	--	99.5	--	--	--	<100	200	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
OCT 05...	--	--	--	--	--	--	--	--
28...	680	3220	940	1790	45.0	45.0	65.0	515
DEC 21...	630	2870	720	1200	40.0	45.0	95.0	330
FEB 16...	730	1320	620	630	35.0	35.0	85.0	90.0
APR 20...	340	1560	740	820	45.0	55.0	140	160
JUN 07...	440	1140	650	680	30.0	30.0	60.0	70.0
JUL 19...	540	1510	860	800	50.0	45.0	115	110
AUG 30...	220	1140	1000	1000	40.0	45.0	100	105

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571758 -- Lower Rausch Creek near Lorberry Junction, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1130	1028	89203	6.2	232	5.5	11.4	102	6.9	6.8
DEC 21...	1030	1028	89203	11	380	15	13.3	104	6.8	6.2
FEB 16...	1100	1028	89203	17	254	7.0	11.8	99	7.1	7.0
APR 20...	1400	1028	89203	9.8	161	16	9.9	102	7.2	7.0
JUN 07...	1540	1028	89203	4.0	237	34	10.2	107	7.4	7.1
JUL 19...	1330	1028	89203	4.5	263	--	9.4	100	7.3	7.5
AUG 30...	1200	1028	89203	1.6	268	--	9.1	93	7.4	7.3

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
OCT 28...	354	10.5	30.7	31.8	18.1	18.7	2.40	2.5	12.6	12.3
DEC 21...	351	4.7	25.3	26.2	16.6	17.5	2.10	2.2	9.30	9.9
FEB 16...	313	7.5	21.1	21.7	12.3	12.6	2.30	2.4	14.1	14.4
APR 20...	381	16.6	28.6	32.4	17.2	19.8	3.00	3.4	11.4	12.9
JUN 07...	454	17.9	38.1	40.1	14.4	15.2	11.3	11.8	20.6	21.0
JUL 19...	419	18.3	32.4	28.9	15.1	13.3	5.60	4.9	24.2	21.4
AUG 30...	429	16.4	34.5	36.2	18.8	19.7	4.80	4.9	21.8	22.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571758 -- Lower Rausch Creek near Lorberry Junction, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 28...	15	14.8	--	149	--	--	--	<100	600	--
DEC 21...	11	11.8	--	129	--	--	--	<100	700	--
FEB 16...	12	24.3	--	93.1	--	--	--	<100	400	--
APR 20...	14	13.2	<.01	144	.44	<.030	<.020	<100	800	.21
JUN 07...	19	15.0	<.02	141	.85	<.060	<.040	<100	500	.37
JUL 19...	24	22.0	--	138	--	--	--	300	500	--
AUG 30...	23	20.7	--	152	--	--	--	<100	300	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
OCT 28...	1140	2000	980	1000	45.0	50.0	60.0	70.0
DEC 21...	1170	2260	1060	1110	45.0	50.0	80.0	95.0
FEB 16...	820	1270	760	800	30.0	30.0	50.0	70.0
APR 20...	250	1690	950	1040	40.0	50.0	60.0	90.0
JUN 07...	60.0	2010	810	880	25.0	30.0	25.0	45.0
JUL 19...	1010	2110	670	620	25.0	25.0	30.0	50.0
AUG 30...	50.0	1270	1000	1000	25.0	30.0	185	35.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571760 -- Lower Rausch Creek at Lorberry Junction, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1115	1028	89203	6.2	231	3.7	11.4	102	7.1	6.9
DEC 21...	1000	1028	89203	11	423	12	13.9	104	6.5	6.0
FEB 16...	1045	1028	89203	17	284	5.5	12.1	100	6.9	6.9
APR 20...	1300	1028	89203	9.8	126	20	9.9	100	7.0	7.0
JUN 07...	1430	1028	89203	4.0	309	18	9.0	107	7.5	7.3
JUL 19...	1300	1028	89203	4.5	288	--	8.7	101	7.3	7.5
AUG 30...	1130	1028	89203	1.6	368	--	8.7	94	7.4	7.4

Date	Specific conductance, wat unf 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recover, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recover, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recover, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recover, mg/L (00929)
OCT 28...	370	10.0	11.5	11.7	14.1	14.3	.90	.9	2.80	2.9
DEC 21...	349	3.2	25.5	26.5	16.6	17.3	2.20	2.3	10.1	10.2
FEB 16...	314	6.8	20.9	21.3	11.9	12.2	2.30	2.4	14.8	14.9
APR 20...	383	16.0	27.2	33.3	16.2	19.8	2.80	3.5	12.0	14.7
JUN 07...	399	24.0	32.9	34.4	13.2	14.1	6.60	7.1	15.7	16.2
JUL 19...	395	22.6	30.4	26.6	14.9	13.0	4.50	4.0	20.8	18.5
AUG 30...	429	18.9	34.7	36.1	18.6	19.5	4.80	5.0	21.2	21.7

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571760 -- Lower Rausch Creek at Lorberry Junction, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, unfltrd water, recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 28...	19	3.8	--	87.7	--	--	--	<100	400	--
DEC 21...	12	12.2	--	127	--	--	--	<100	600	--
FEB 16...	14	25.8	--	91.2	--	--	--	<100	300	--
APR 20...	15	14.8	<.01	142	.45	<.030	<.020	<100	600	.21
JUN 07...	21	15.1	<.01	125	.47	<.030	<.020	<100	300	.23
JUL 19...	22	21.8	--	128	--	--	--	<100	200	--
AUG 30...	22	21.7	--	154	--	--	--	<100	200	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)	
OCT 28...		1240	2090	840	860	50.0	50.0	110	125
DEC 21...		940	1900	1050	1090	45.0	45.0	80.0	100
FEB 16...		670	1060	720	760	30.0	30.0	50.0	65.0
APR 20...		240	1430	880	1050	40.0	45.0	65.0	95.0
JUN 07...		30.0	870	670	740	20.0	25.0	25.0	35.0
JUL 19...		--	710	660	590	25.0	20.0	25.0	30.0
AUG 30...		30.0	600	1000	1000	25.0	25.0	30.0	20.0

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571798 -- Swatara Creek at Lorberry Junction, PA

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	Time	Agency collecting sample, code (00027)	Agency analyzing sample, code (00028)	Instantaneous discharge, cfs (00061)	Oxidation-reduction potential, mV (00090)	Turbidity, water, unfltrd field, NTU (61028)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	pH, water, unfltrd lab, std units (00403)
OCT 28...	1030	1028	89203	52	304	1.2	11.6	99	7.2	6.5
DEC 21...	0930	1028	89203	95	419	7.2	14.8	103	6.7	6.0
FEB 16...	1000	1028	89203	142	368	12	13.0	99	6.9	6.5
APR 20...	1030	1028	89203	79	169	9.9	10.9	103	6.7	6.7
JUN 07...	1305	1028	89203	67	309	130	9.9	104	7.0	6.7
JUL 19...	1145	1028	89203	45	299	--	9.1	100	6.7	7.0
AUG 30...	1030	1028	89203	15	409	--	8.9	96	7.0	6.9

Date	Specific conductance, wat unfltrd, 25 degC (00095)	Temperature, water, deg C (00010)	Calcium water, fltrd, mg/L (00915)	Calcium water unfltrd recoverable, mg/L (00916)	Magnesium, water, fltrd, mg/L (00925)	Magnesium, water, unfltrd recoverable, mg/L (00927)	Potassium, water, fltrd, mg/L (00935)	Potassium, water, unfltrd recoverable, mg/L (00937)	Sodium, water, fltrd, mg/L (00930)	Sodium, water, unfltrd recoverable, mg/L (00929)
OCT 28...	207	8.6	16.1	16.6	11.3	11.5	1.10	1.1	4.90	4.9
DEC 21...	194	.6	12.5	13.1	9.90	9.9	1.00	1.0	4.50	4.4
FEB 16...	151	4.0	9.30	9.5	6.40	6.6	1.10	1.1	5.40	5.5
APR 20...	203	13.1	13.3	15.1	10.4	12.0	1.20	1.3	4.90	5.3
JUN 07...	178	17.8	11.4	11.8	7.30	7.6	1.60	1.8	7.10	6.2
JUL 19...	185	20.1	12.9	11.3	8.20	7.1	1.80	1.6	7.40	6.7
AUG 30...	271	18.9	21.9	22.4	14.6	15.2	1.90	2.0	8.50	8.6

**ANALYSIS OF SAMPLES COLLECTED AT SPECIAL-STUDY SITES
SWATARA CREEK PROJECT--Continued**

01571798 -- Swatara Creek at Lorberry Junction, PA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005

Date	ANC, wat unf fixed end pt, lab, mg/L as CaCO3 (00417)	Chlor- ide, water, fltrd, mg/L (00940)	Fluor- ide, water, fltrd, mg/L (00950)	Sulfate water, fltrd, mg/L (00945)	Nitrate water, fltrd, mg/L as N (00618)	Nitrite water, fltrd, mg/L as N (00613)	Ortho- phos- phate, water, fltrd, mg/L as P (00671)	Alum- inum, water, fltrd, µg/L (01106)	Alum- inum, water, unfltrd recover -able, µg/L (01105)	Bromine water unfltrd mg/L (71871)
OCT 28...	8	10.1	--	74.8	--	--	--	<100	200	--
DEC 21...	10	7.7	--	62.7	--	--	--	<100	400	--
FEB 16...	6	11.2	--	42.7	--	--	--	<100	300	--
APR 20...	9	7.5	<.01	65.2	.47	<.030	<.020	<100	400	.19
JUN 07...	8	14.4	<.01	42.2	.72	<.030	<.020	<100	800	.19
JUL 19...	9	12.0	--	53.8	--	--	--	<100	200	--
AUG 30...	11	13.1	--	90.1	--	--	--	<100	<100	--

Date	Iron, water, fltrd, µg/L (01046)	Iron, water, unfltrd recover -able, µg/L (01045)	Mangan- ese, water, fltrd, µg/L (01056)	Mangan- ese, water, unfltrd recover -able, µg/L (01055)	Nickel, water, fltrd, µg/L (01065)	Nickel, water, unfltrd recover -able, µg/L (01067)	Zinc, water, fltrd, µg/L (01090)	Zinc, water, unfltrd recover -able, µg/L (01092)
OCT 28...	100	520	530	620	30.0	25.0	50.0	90.0
DEC 21...	460	1170	520	660	25.0	25.0	60.0	130
FEB 16...	330	630	400	420	20.0	20.0	45.0	50.0
APR 20...	130	860	430	480	25.0	25.0	55.0	70.0
JUN 07...	270	2140	370	450	15.0	20.0	30.0	45.0
JUL 19...	120	640	360	350	20.0	20.0	30.0	40.0
AUG 30...	40.0	210	160	200	15.0	15.0	40.0	25.0