



William's Run Monitoring Program

14 Stations have been established on South Sandy Creek (SS), Williams Run (WR) and an unnamed tributary (UNT) of South Sandy Creek. These stations are intended to measure the contributions from known mine drainage discharges and the effects these discharges have on the streams. A "D" at the end of the sample name indicates that it is a discharge. All others are in-stream samples.

Point Name	Description
SS10	South Sandy Creek at the bridge on the road between Pearl and Raymilton. Below all known inputs of AMD including William's Run and the UNT. Measure chemistry only.
SS15	South Sandy Creek below the bridge on Hell's Kitchen Road. Below UNT. Measure chemistry only.
SS16	South Sandy below the tributary on the township road to Henderson Station. Above all known inputs of AMD. Measure chemistry only.
UNT01	Mouth of the UNT into South Sandy Creek. Measure chemistry only.
UNT05	Unnamed tributary below the township road between Woods Corners and Kilgore. Sample should be taken downstream of the orange seep. If possible, flow can be measured above the orange seep at the road culvert using the bucket and stopwatch method.
UNT06D	Polluted discharge to UNT near the township road between Woods Corners and Kilgore. Measure flow rate using the bucket and stopwatch method at the installed pipe.
UNT10D	Headwaters of the UNT near the old tipple site. Will usually be dry. Measure chemistry only.
WR01	Mouth of Williams Run. Measure chemistry only.
WR10D	Discharge from ponds in woods across from house in Woods Corners. No flow measuring device installed yet, but one will be installed soon.
WR11D	Influent to the treatment system, measured upstream of the road. Measure flow rate using the installed flume.
WR12	Effluent from the treatment system. Measure chemistry only.
WR15	Williams Run below the steel culverts on abandoned mining road. Measure flow rate using the installed flume.
WR16D	Mine discharge flowing down the abandoned mining road. Measure flow rate using the bucket and stopwatch method at the installed pipe.
WR17D	Mine discharge that used to flow to an abandoned treatment system. Measure flow rate using the bucket and stopwatch method at the installed pipe.

Date	Station	Flow (gpm)	pH (Field)	pH (Lab)	Cond. (Lab) uohms/cm	Alk (Lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Mn (mg/L)	Al (mg/L)	SO4 (mg/L)	TSS (mg/L)	Pounds Per Day Net Acid Iron	AI
7/26/01	SS16		5.6	6.7	170	52	0	1.0	0.2	0.1	29	4		
10/22/01	SS16		7.3	7.7	160	64	0	0.5	0.1	0.0	30	1		
11/10/2001	SS16		7.5	7.7	204	47	0	0.6	0.1	0.0	33	4		
12/15/2001	SS16		6.9	7.4	133	32	0	0.3	0.1	0.0	31	2		
7/26/01	SS15		5.2	6.7	163	48	0	0.8	0.1	0.1	29	6		
10/22/01	SS15		7.3	7.2	169	55	0	0.6	0.3	0.0	37	2		
11/10/2001	SS15		7.5	7.4	192	38	0	0.8	0.2	0.1	41	3		
12/15/2001	SS15		6.9	6.5	128	16	0	0.3	0.1	0.0	39	3		
7/26/01	SS10		7.1	6.5	164	37	0	0.4	0.1	0.2	48	2		
10/22/01	SS10		7.5	7.3	226	37	0	0.5	0.1	0.0	98	2		
11/10/2001	SS10		7.5	7.3	287	30	0	0.4	0.2	0.1	104	4		
12/15/2001	SS10		6.8	6.6	207	15	0	0.2	0.3	0.1	84	10		
7/26/01	UNT01		5.3	6.3	132	31	0	0.2	0.1	0.0	41	3		
10/22/01	UNT01		7.5	7.4	129	31	0	0.1	0.0	0.0	49	3		
11/10/2001	UNT01		7.4	7.4	163	24	0	0.1	0.1	0.0	53	3		
12/15/2001	UNT01		6.9	6.5	115	10	0	0.1	0.2	0.0	46	4		
7/26/01	UNT05		4.0	3.7	313	0	27	7.4	1.7	0.2	113	2		
9/10/01	UNT05		5.2	4.1	401	0	60	15.6	2.3	0.4	297	10		
10/22/01	UNT05		5.2	4.4	209	0	27	10.1	2.2	0.2	123	12		
11/10/2001	UNT05		3.6	3.8	4	0	47	7.0	2.7	1.9	179	10		
12/15/2001	UNT05		4.0	3.7	341	0	64	6.0	1.8	4.2	138	4		
7/26/01	UNT06D		6.3	5.2	619	5	97	56.5	2.8	0.1	399	5		
9/10/01	UNT06D	3.25	6.8	6.1	630	12	91	44.0	2.7	0.2	164	19	3	1.7
10/22/01	UNT06D	1.5	5.0	3.8	543	0	76	27.4	2.9	0.0	399	10	1	0.5
11/10/2001	UNT06D	2.4	5.7	3.7	737	0	74	28.3	3.1	0.0	430	10	2	0.8
12/15/2001	UNT06D	15	6.2	5.7	690	8	78	6.4	2.9	0.0	433	5	13	1.2
10/22/01	UNT10D		2.8	2.6	1,431	0	733	117.3	4.8	40.9	1,313	4		
11/10/2001	UNT10D		2.8	2.8	1,764	0	685	108.8	4.9	10.0	1,162	3		
12/15/2001	UNT10D		3.2	2.8	1,561	0	603	111.3	2.0	31.6	995	1		
10/22/01	WR01		7.0	6.6	354	14	0	0.2	0.1	0.1	220	1		
11/10/2001	WR01		7.5	7.1	514	15	0	0.2	0.2	0.0	242	3		
12/15/2001	WR01		6.6	6.2	362	8	0	0.3	0.7	0.3	160	1		
9/10/01	WR10D		3.7	3.2	1,245	0	338	8.1	11.6	33.7	1,800	4		
11/10/2001	WR10D		3.2	3.2	1,385	0	305	7.7	12.5	37.5	839	3		
12/15/2001	WR10D		3.6	3.2	1,300	0	267	7.1	11.6	31.7	890	7		
7/26/01	WR11D		2.6	2.6	2,330	0	415	18.2	13.7	10.3	1,145	2		
9/10/01	WR11D	1	3.2	2.6	2,444	0	436	15.2	12.7	13.8	7,506	7	5	0.2

10/22/01	WR11D	9	2.8	2.7	1,577	0	266	14.1	11.7	8.6	1,260	4	29	1.5	0.9
11/10/2001	WR11D	5	2.9	2.8	20	0	238	10.9	11.9	7.6	1,022	8	14	0.7	0.5
12/15/2001	WR11D	7	3.3	2.9	1,481	0	192	9.8	7.3	4.3	666	8	16	0.8	0.4
9/10/01	WR12	1		9.8	21,870	3,628	0	0.6	2.3	3.2	3,155	73	-44	0.0	0.0
10/22/01	WR12	9	10.1	10.0	23,460	6,126	0	1.3	0.6	2.1	26,577	37	-662	0.1	0.2
11/10/2001	WR12	5	10.0	10.0	16,900	4,909	0	2.2	0.7	1.9	24,201	60	-295	0.1	0.1
12/15/2001	WR12	7	10.0	9.8	20,050	3,657	0	4.9	1.3	3.3	11,823	32	-307	0.4	0.3
7/26/01	WR15		3.3	3.3	840	0	77	4.3	5.0	1.5	444	8			
9/10/01	WR15	40	3.8	3.3	758	0	82	4.0	5.1	1.8	388	7	40	1.9	0.9
10/22/01	WR15			3.4	691	0	67	6.5	6.1	1.4	527	3			
11/10/2001	WR15	110	3.6	3.6	844	0	55	4.7	5.6	2.1	498	10	73	6.2	2.8
12/15/2001	WR15	600	3.9	3.9	454	0	50	1.9	2.1	3.7	174	3	358	13.6	26.5
9/10/01	WR16D	10.5	4.5	3.8	322	0	48	1.7	3.0	2.7	138	5	6	0.2	0.3
10/22/01	WR16D	18		3.8	266	0	33	0.6	3.8	2.7	161	1	7	0.1	0.6
11/10/2001	WR16D	20	4.1	4.0	307	0	34	0.8	3.4	2.7	161	4	8	0.2	0.6
12/15/2001	WR16D	51	4.2	4.1	238	0	19	0.2	2.2	1.3	96	5	11	0.1	0.8
9/10/01	WR17D	10.5	4.3	3.8	361	0	34	0.8	4.0	3.2	46	2	4	0.1	0.4
10/22/01	WR17D	15	3.7	3.8	260	0	35	0.6	3.4	2.6	157	1	6	0.1	0.5
11/10/2001	WR17D	22.5	3.5	3.9	362	0	31	0.8	3.6	3.1	175	10	8	0.2	0.8
12/15/2001	WR17D	53	4.1	4.2	209	0	25	0.5	2.3	1.6	94	7	16	0.3	1.0

AVERAGE VALUES

Station	Flow (gpm)	pH		Cond. (Lab) uohms/cm	Alk (Lab) (mg/L)	Acidity (mg/L)	Iron (mg/L)	Mn (mg/L)	Al (mg/L)	SO4 (mg/L)	TSS (mg/L)	Pounds Per Day		
		(Field)	(Lab)									Net Acid	Iron	
SS10		7.2	6.9	221	30	0	0.4	0.1	0.1	83	5			
SS15		6.7	6.9	163	39	0	0.6	0.2	0.1	37	4			
SS16		6.8	7.4	167	49	0	0.6	0.1	0.1	31	3			
UNT01		6.8	6.9	135	24	0	0.1	0.1	0.0	47	3			
UNT05		4.4	3.9	254	0	45	9.2	2.1	1.4	170	8			
UNT06D	6	6.0	4.9	644	5	83	32.5	2.9	0.1	365	10	5	1.0	0.0
UNT10D		2.9	2.7	1,585	0	674	112.4	3.9	27.5	1,157	3			
WR01		7.0	6.6	410	12	0	0.2	0.3	0.1	208	2			
WR10D		3.5	3.2	1,310	0	303	7.6	11.9	34.3	1,176	5			
WR11D	6	3.0	2.7	1,570	0	309	13.6	11.5	8.9	2,320	6	16	0.8	0.5
WR12		10.0	9.9	20,570	4,580	0	2.3	1.2	2.6	16,439	51	-327	0.2	0.2
WR15	250	3.7	3.5	717	0	66	4.3	4.8	2.1	406	6	157	7.2	10.0
WR16D	25	4.3	4.0	283	0	34	0.8	3.1	2.3	139	4	8	0.2	0.6
WR17D	25	3.9	3.9	298	0	31	0.7	3.3	2.6	118	5	9	0.2	0.7

WILLIAMS RUN POND SLUDGE TEST RESULTS
WOODS CORNERS TREATMENT AREA, HELL'S KITCHEN ROAD
IRWIN TWP., VENANGO COUNTY, PA

Date	12/5/02	12/5/02	1/28/03	1/28/03	11/6/03	Residential
Reference	DEP	DEP	DEP	DEP	U: Free-Col n-Residential	Standard
Sample ID	2635-220	2635-222	2635-228	2635-229	3:0013217-1	Standard
Moisture	73.5		66.7	76.9		
Solids	26.5		33.3	23.1	50	
pH	10.7		9.68	10.3		
Acid Digest	0.0 Each		0.0 Each	0.0 Each		
Acidity			0	0		
Alkalinity	480.4					
Aluminum*	31,887		36,486	27056	190000	
Ammonia	0.08		0.42	0.21		
Antimony*	<3.77		10.1	<8.66	<2	27
Arsenic*	<7.55				8	53
Barium*	251				67	8200
Beryllium*	19.6				2	320
Boron*	<75.5				8	6.7
Cadmium*	2.64		1.95	<2.16	<1	38
Calcium	103,585		87,688	121645		
Carbon	25.9		56.8 ©	73.5 (e)	9910 mg/kg	
Chloride	2.95					
Chromium*	21.3		25.2	23.2	9	190000; 94
Cobalt*	281				50	22
Copper*	16.8		21.8	6.93	10	36000
Fluoride Lea	<0.20					8200
H2O Leach						
Iron*	123,019		0 Each	0 Each		
Lead*	15.3		97,598	107792	190000	
Magnesium	26,415		13.8	8.22	11	450
Manganese*	12,434		26,276	30,736		
MBAS	4.35 (a)		10,586	13939	2650	190000
Mercury*	0.221		2	2 (d)		
Molybdenum	<7.55		0.281	0.37	0.2	10
Nickel*	370		<6.01	<8.66	64	650
			260	351		

Nitrate	mg/l	0.13		0.25	0.5		
Nitrite	mg/l			<0.04	<0.04		
Nitrogen Total	mg/l			1.24	1.54		
Oxygen	mg/l	122.9 (b)	175.8 (b)	128.2	126.6		
Phosphorus	mg/l			0.284	0.541		
Potassium	mg/kg	670		1922	351		26
Selenium*	mg/kg	<13.2		<10.5	<15.2		84
Silver*	mg/kg	20.4					
Sodium	mg/kg	54,528		31,532	56061		
Sulfate	mg/l	842	976	360	432		
Thallium*	mg/kg	cancelled					14
Tin*	mg/kg	<75.5				40	240
Titanium SOI	mg/kg	<3.77				<5	
Vanadium*	mg/kg	19.8				25	1500
Vol Solids	%			15	13		
Zinc*	mg/kg	1149		827	996	202	12000

* Regulated fill parameter

(a) The secondary standard does not validate the primary calibration. Acidity= 0.00 mg/l CaCO3

(b) Spike blank recovery was above acceptable range. Result may be biased high.

© Duplicate lab blank out of range.

(d) MBAS=2.0 ppm. The spike of this sample had a recovery of 131% indicating that there may be a positive interference present.

(e) Duplicate/lab blank out of range

**Flow Rates at Chuck Woods
Highwall Outflow**

Date	Weir Depth (inches)	Flow (gpm)	Notes
25-Feb-05		155	Jon S. & Valerie T.
11-Mar-05	2.6	144	Chuck Woods all others
16-Mar-05	2.5	136	
2-Apr-05	4.75	337+	Water running around weir
7-Apr-05	4.8	347.84	
19-Apr-05	3.1	186.09	
8-May-05	2.5	136	
2-Jul-05	0.7	20.81	
15-Jul-05	0.4	9.03	
1-Aug-05	0.25	4.5	

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Sandy Creek Watershed Project

WR-13		Williams Run 13										
Sample #	Date	1	2	3	4	5	6	7	8	9	10	11
Lab ID		9/5/2003	10/6/2003	10/27/2003	12/1/2003	1/5/2004	2/4/2004	3/8/2004	4/9/2004	5/6/2004	6/15/2004	7/14/2004
Analysis		19108	19621	20202	20951	21533	22159	22805	23289	23930	24958	25438
pH		2.95	3.08	3.12	3.17	3.28	3.30	3.29	3.27	3.21	2.71	3.11
Conductivity	µS/cm	402	365	1080	994	800	153	531	606	660	636	677
Total Alkalinity	mg/lb	48.0	58.0	45.0	46.0	32.0	39.0	38.0	28.0	40.0	47.0	50.0
Total Acidity	mg/L	363.5	315.0	292.0	330.0	222.0	333.0	331.0	303.0	279.5	301.0	274.0
Nitrates	ppm	2.4	2.7	2.3	2.5	2.3	2.9	1.9	2.4	1.8	1.8	2.4
Sulfates	ppm	650	800	575	625	600	725	400	475	500	475	575
TDS	ppm	266	241	714	659	528	101	351	399	436	420	447
TSS	mg/L	71	36	70	73	53	89	53	79	76	57	78
Hardness	ppm	379.7	410.3	361.3	355.7	285.9	372.4	317.8	414.2	435.2	419.5	424.8
Aluminum	ppm	29.32	31.80	27.07	26.21	22.45	28.96	24.55	31.58	30.93	28.57	26.62
Manganese	ppm	12.61	13.38	12.46	11.81	9.65	10.96	10.63	11.24	13.88	11.79	13.40
Iron	ppm	7.30	7.39	7.44	8.81	7.82	6.13	4.96	7.42	4.97	4.25	5.77