Aultmans Run Watershed AMD Assessment & Implementation Plan

A Public-Private Partnership Effort

AWARE & Stream Restoration Inc.

Funded by Foundation for Pennsylvania Watersheds

Indiana County, Pennsylvania

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1.0 INTRODUCTION

Coal mining has been conducted in Pennsylvania, as well as much of the Appalachian Coal Basin, for almost 240 years. With Pennsylvania's coal reserves playing a major role in the Industrial Revolution of the mid-1800s, the United States became a modern developed nation and major world power. The historical utilization of coal to heat our homes and fuel our industries, however, resulted in a legacy of severe environmental impacts and public safety issues. The majority of these impacts are associated with mines operational prior to the federal Surface Mining Control and Reclamation Act **(SMCRA)** of 1977 and Pennsylvania's legislative efforts including the Surface Mining Conservation and Reclamation Act of 1945.

Small towns and villages of western Pennsylvania and Appalachia were developed due to the coal mining opportunities which supported the power plants and once-bustling steel industry for such cities as Pittsburgh (PA), Wheeling (WV), and Johnstown (PA). These communities are now often ghost towns with scarred landscapes, characterized by dangerous highwalls, barren coal refuse piles, and streams polluted by mine drainage. According to the Pennsylvania Integrated Water Quality Monitoring and Assessment Report, these pollutive discharges, commonly referred to as abandoned mine drainage **(AMD)**, are the largest source of stream degradation in the Commonwealth, with over 5,500 miles of streams and 365 acres of lakes impacted. Furthermore, 45 of 67 Pennsylvania's counties are impacted with over 250,000 acres of unreclaimed mine lands, 2.6 billion cubic yards of coal refuse, and about 7,800 abandoned underground mines. In many cases, entire watersheds have been completely decimated by AMD.

A concerned group of citizens from Indiana County formed the Aultman Watershed Association for Restoring the Environment **(AWARE)** in 2000 to restore the severely degraded Aultmans Run Watershed. Since their formation, several assessments and three restoration projects have been constructed in partnership with Stream Restoration Incorporated **(SRI)**, a non-profit organization focused on the restoration of streams impacted by abandoned coal mine drainage. Due to these projects, approximately 51 tons of metals are removed every year in the treatment systems improving nearly four miles of streams.

Work completed in the watershed was made possible due to the efforts of AWARE and their partners, including Indiana University of Pennsylvania **(IUP)**, Stream Restoration Inc., BioMost, Inc., PA Dept. of Environmental Protection **(PA DEP)**, Amerikohl Mining Inc., Robindale Energy Services, Quality Aggregates Inc., Kiski-Conmaugh Stream Team, Environmental Alliance for Senior Involvement, Keep Pennsylvania Beautiful, US Environmental Research Service, Young Township Supervisors, Central Blair Electric Company, Indiana County Commissioners, and Indiana County Conservation District.

The objectives of this plan are to provide an update of the initial assessment completed in 2003, to evaluate the remaining AMD discharges, and to develop conceptual approaches to address these discharges with the goal of removing Aultmans Run from

the PA Impaired Waters List. Upon completion of the AMD projects, other issues, such as sedimentation due to agriculture, will be considered and evaluated.

2.0 AULTMANS RUN WATERSHED DESCRIPTION & CHARACTERISTICS

Aultmans Run (HUC 050100071007) is a tributary to the Conemaugh River within the Ohio River Basin. The watershed is located entirely in Indiana County and within five townships: Armstrong, Center, Black Lick, Young, and Conemaugh. Streams within the Aultmans Run Watershed that have been recognized by the US Geological Survey Board of Geographic Names are Reeds Run, Neal Run, Coal Run, and Miller Run. The watershed is approximately 28 square miles in size with a total of 69 miles of streams. Aultmans Run flows in a southerly direction to the Conemaugh River Lake, a large flood control project maintained by the US Army Corps of Engineers. This impoundment has flooded a portion of the Aultmans Run valley and is known as Aultmans Run Bay.

2.1 Land Use

According to land use/land cover classifications developed by the Southwestern Pennsylvania Commission, the Aultmans Run Watershed is predominantly forest, covering 58% of the watershed. Agriculture is the next largest land use at 25%. The other land uses within the watershed are identified in Table 1.

Table 1: Land Use in the Aultmans Run Watershed

Land Use (Level I)	**Area** (sq. mi.)	**Percent** (%)
Forest	16.34	58
Agricultural	7.16	25
Urban Built-Up	2.27	8
Rangeland	2.16	8
Barren Land	0.26	1
Water	0.10	0
Totals	**28.29**	**100**

Strip-mined land was not identified within the classification system and can be found within any of the land uses depending on the age of the mine and the type of reclamation used. For example, pre-SMCRA surface mining, tends to form forests due to the uncompacted spoil piles that were left unreclaimed. Post-SMCRA surface mining, on the other hand, typically forms rangeland due to excessive ground compaction and aggressive ground covers recommended to meet federal and state regulations.

2.2 Geology

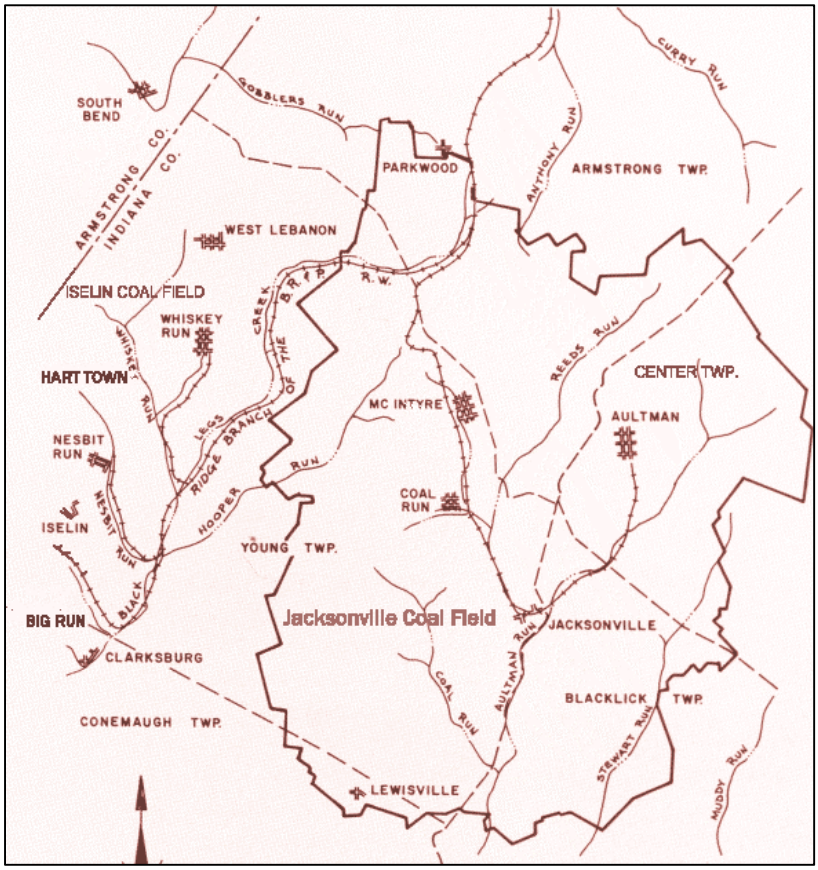
In the Aultmans Run Watershed, the bedrock consists of a sequence of sedimentary rocks (shale, siltstone, sandstone, and claystone along with some coal and limestone), which were formed during the Pennsylvanian Period. In the valleys along Aultmans Run and its tributaries, alluvial material (sand, silt, clay, gravel, etc.) is also present, having been deposited by flowing water more recently during the Quaternary Period.

The bedrock was folded during the mountain-forming process known as the Appalachian Orogeny. The most prominent fold in the Aultmans Run Watershed is the Jacksonville Anticline (arch-like structure), which has a broad, flat crest. The centerline (axial trace) of the crest is oriented northeast – southwest and the communities of McIntyre and Coal Run are located just northwest of the axial trace with Jacksonville located just southeast.

The youngest bedrock within the Aultmans Run Watershed is of the Conemaugh Group (Casselman and Glenshaw Formations). Coalbeds or fresh-water limestones, if present in the Conemaugh Group, are generally thin and non-persistent. Also present in the Aultmans Run Watershed is the Allegheny Group which was formed before the Conemaugh Group and contains the Freeport and Kittanning Formations. The Freeport Formation is historically significant in the development of the watershed due to the commercially-valuable coalbeds.

2.3 Local History & Mining

Much of the history of the watershed revolves around coal. The towns of McIntyre, Coal Run, and Aultman were all established by the Rochester and Pittsburgh Coal and Iron Company **(R&P)** to support underground mining operations. The company had established a presence in southern Indiana County around the turn of the 20th century with coal interests totaling more than 40,000 acres within the Jacksonville Coal Field.



Map of the Jacksonville Coal Field

Source: "Rochester & Pittsburgh Coal Company: The First Hundred Years" (Eileen Mountjoy Cooper)

According to local residents, these coal towns were rather progressive communities for the time period having their own water system, electric streetlights, company store, community hall, doctor's office, fire company, post office, and elementary school. In the town of Aultman, electricity was even provided at no cost by R&P using two, 25-cycle, generators from a power plant at Lucerne, PA. Because of a local labor shortage, many of the miners were immigrants from European nations, including Italy, Poland, Czechoslovakia, Yugoslavia, Russia, Romania, Lithuania, Austria, and Hungary. The railroads, also owned by R&P, connected the towns transporting the coal from the mines to major markets, such as Buffalo, Rochester, and Pittsburgh, and bringing in goods to the company store. Peak production occurred in the 1920's and most of the underground mine reserves were exhausted by the late 1940's. Surface mining then became the dominant mining method.

3.0 PROBLEM IDENTIFICATION

The Aultmans Run Watershed has 68.9 miles of streams according to the National Hydrography Dataset developed by the United States Geologic Survey, with the majority being polluted to some extent. Of these streams, the PA DEP has classified over 80% as impaired on the Integrated List of All Waters, formerly known as the 303(d) list. (Refer to Table 2 and Appendix A: Aultmans Run Watershed Map.) The watershed was last assessed by the PA DEP Southwest Regional Office in 2005 using a bioassessment evaluation process. The greatest impairment identified was abandoned mine drainage followed by agricultural impacts.

Table 2: Stream Impairments in the Aultmans Run Watershed

Impairment	**Length Impaired** (miles)
AMD- Metals	26.0
AMD - Metals; Crop Related Agriculture - Siltation	3.1
Agriculture – Siltation	7.3
Crop Related Agriculture – Siltation	19.2
Total	**55.6**

3.1 Abandoned Mine Drainage **(AMD)**

As discussed previously, historic mining within the watershed has left a legacy of large coal refuse piles, spoil piles, water-filled surface mine pits, dangerous highwalls, subsidence, and AMD. AMD is the most devastating to streams. The most noticeable effect is turning streams orange, white, or sometimes even black due to metal compounds precipitating directly within the stream. These metal compounds destroy habitat similar to other types of sedimentation and can decrease oxygen availability as they precipitate within the stream. In addition, many species of fish and macroinvertebrates are unable to tolerate low-pH streams. Dissolved metals, particularly aluminum, are also known to be toxic to aquatic life (PA DEP, 1998).

Nearly one-third (9 square miles) of the watershed has been mined underground while another 5.3 square miles have been surface mined according to records compiled by IUP IMAP and the PA DEP. The names of the documented underground and surface mines can be found in Table 3 and Table 4, respectively. All of the underground mines listed were operated by R&P Coal Company or their subsidiaries. Currently, there are seven active permits within the watershed and three of these permits involve the long-term treatment of AMD. The remaining discharges were caused by mining prior to the federal Surface Mining Control and Reclamation Act and are considered abandoned. A more detailed discussion of AMD can be found within the Water Assessment section of this report.

Table 3: Underground Mines Located in the Aultmans Run Watershed

Name	Last Operated
Aultman #3	Prior to 4/27/1966
Aultman #4	Prior to 4/27/1966
Aultman #5	Prior to 4/27/1966
Coal Run No. 1	Prior to 4/27/1966
Coal Run No. 6	Prior to 4/27/1966
Coy	Prior to 4/27/1966
Kent #1	Prior to 4/27/1966
Kent #2	10/10/1980 to 10/23/1992
Kent #3	Prior to 4/27/1966
Kent #5	Prior to 4/27/1966
Kent #6	4/27/1966 to 8/2/1977
Kent #7	Prior to 4/27/1966
Kent #8	Prior to 4/27/1966
Kent #9	Prior to 4/27/1966
Kent #53	Prior to 4/27/1966
Kent No. 2-A	Prior to 4/27/1966
Lucerne #1	4/27/1966 to 8/2/1977
Lucerne #3	4/27/1966 to 8/2/1977
Robinson Mine	Prior to 4/27/1966

Source: Institute for Mine Mapping, Archival Procedures, and Safety, Indiana University of Pennsylvania

Table 4: Selected Surface Mines Located in the Aultmans Run Watershed

ID	Mine	Permit #	Company	Issued	Type	Acres	Status
1	Kent #57	32890109	Kent Coal Mining Co.	10/15/90	Surface/Auger	32.62	Active
2	Kent #55	32860106	Kent Coal Mining Co.	07/13/87	Surface/Auger	295.24	Reclamation Completed
3	Kent #56	32803010	Keystone Coal Mining Corp.	08/06/84	Surface/Auger	95.19	Active
4	Lewisville Recovery Plant	32803712	Kent Coal Mining Co.	01/16/86	Bank/Refuse Disposal	411.71	Active
5	C & C # 1	3974SM31	C & C Coal Co.	12/18/74	Surface	57.83	Abandoned
6	Kent #52	3974SM9	Rochester & Pittsburgh Coal Co.	1974	Surface	376.53	Abandoned
7	Coal Run	3973SM7	M & M Mining, Inc.	01/30/74	Surface/Auger	37.40	Active
8	Jacksonville Surface Mine	32980108	Amerikohl Mining, Inc.	01/27/99	Surface/Auger	141.72	Reclamation Completed
9	Rt. 286	39A76SM10	C. & C. Coal Co.	03/31/77	Surface/Auger	189.54	Bond Forfeited
10	Coal Run Refuse Rec. I	32860201	Kent Coal Mining Co.	03/24/87	Bank/Refuse Reprocessing	29.69	Reclamation Completed
11	Lowman	3974SM14	Donald Ankeny	07/22/74	Surface/Auger	99.70	Abandoned
12	Kent	3974SM6	Blough Coal Co., Inc.	07/11/74	Surface/Auger	45.42	Abandoned
13	Henry	39A76SM6	James A. Weimer, Jr.	10/18/76	Surface/Auger	59.78	Abandoned
14	Kent #53	32803037	Kent Coal Mining Co.	06/27/84	Surface/Auger	938.77	Reclamation Completed
15	McIntyre	32910103	Big Mack Leasing Co., Inc.	04/17/92	Surface	133.77	Reclamation Completed
16	McIntyre # 2 Mine	32940110	Big Mack Leasing Co., Inc.	05/16/95	Surface/Auger	25.34	Active
17	Charles Shay Stp	32743711	Helvetia Coal Co.	10/03/85	Refuse Disposal	35.77	Active
18	Aultman II Mine	32010105	Amerikohl Mining, Inc.	09/04/03	Surface	141.15	Active
19	Lentz Mine	32020102	Big Mack Leasing Company, Inc.	01/22/03	Surface	46.10	Reclamation Completed
20	Johnston Mine	32020107	K. M. P. Associates, Inc.	11/16/04	Surface	55.83	Reclamation Completed
21	Coal Run Mine	32040103	Amerikohl Mining, Inc.	05/05/06	Surface	147.47	Reclamation Completed

Note: Selected mines contain relevant water quality data. Additional mines are depicted on Mine Permit Index Maps. Acreage calculated from GIS and may not represent the permitted acreage. Sites not listed within PA DEP database assumed abandoned if prior to 1977.

3.2 Abandoned Mine Lands **(AML)**

Abandoned mine lands also remain a serious issue within the watershed. Coal refuse piles, dangerous highwalls, open mine entries, and unreclaimed spoil piles continue to erode and increase the sediment load of the streams. The PA DEP has inventoried many of the abandoned mine lands in PA. The US Department of the Interior Office of Surface Mining Reclamation and Enforcement **(OSMRE)** has established levels of priority for reclaiming abandoned mine features, based on inherent hazards and other problems. Priority 1 and 2 sites are those posing a threat to the health, safety, and general welfare of the people. Priority 3 sites are those impacting the environment.

Table 5 contains a summary of the types and number of remaining reclamation sites. Tables 6 and 7 contain all of the abandoned mine lands inventoried within the Aultmans Run Watershed. According to this inventory, 11 sites have been reclaimed either through remining or as a project completed by the PA DEP, Bureau of Abandoned Mine Reclamation **(BAMR)**. Unfortunately, additional sites remain to be reclaimed.

Table 5: Remaining Abandoned Mine Land Problems in the Aultmans Run Watershed

Problem	# Remaining
Mine Entries/Shafts	20
Untreated Discharges	13
Erosion Prone Area	1
Dry Strip Mines	11
Flooded Strip Mines	2
Spoil Piles	9
Refuse Piles	2
Subsidence Prone Area	1

Table 6: Abandoned Mine Land Inventory Areas in the Aultmans Run Watershed

BAMR Site Name	BAMR ID	Status	OSM Priority	Problem	Height (ft)	Volume (CY)
Jacksonville/Kent P. O.	0023-01	Reclaimed	3	Spoil Pile	40	215000
Aultman South	1486-01	Abandoned	2	Spoil Pile	60	75000
	1486-02	Abandoned	3	Flooded Strip Mine, Highwall	25	40000
	1486-03	Abandoned	3	Spoil Pile	15	58000
	1486-05	Abandoned	2	Known Subsidence Prone Area	0	0
McIntyre	2461-06	Abandoned	3	Refuse Pile	0	94000
	2461-07	Abandoned	3	Refuse Pile	30	240306
	2461-08	Reclaimed	3	Refuse Pile	0	41000
Jacksonville Northeast	3817-01	Abandoned	2	Dry Strip Mine, Dangerous Highwall	65	172000
	3817-02	Abandoned	3	Spoil Pile	35	145000
	3817-03	Abandoned	3	Dry Strip Mine	35	47000
	3817-04	Abandoned	3	Spoil Pile	15	169000
Jacksonville South I	3818-01	Abandoned	3	Dry Strip Mine	25	20000
	3818-02	Abandoned	3	Spoil Pile	15	39000
Jacksonville South II	3819-02	Reclaimed	3	Refuse Pile	5	24000
Coal Run	3820-01	Abandoned	3	Dry Strip Mine	40	107000
	3820-02	Abandoned	3	Spoil Pile	30	161000
BM 1029	3821-01	Abandoned	3	Dry Strip Mine	45	133000
	3821-02	Abandoned	3	Spoil Pile	25	344000
	3821-03	Abandoned	2	Flooded Strip Mine, Dangerous Highwall	50	27000
Airshaft Southwest	3822-01	Abandoned	3	Dry Strip Mine	50	228000
	3822-02	Abandoned	3	Dry Strip Mine	25	85000
	3822-03	Abandoned	3	Spoil Pile	35	377000
Airshaft Southeast	3823-01	Reclaimed	2	Dry Strip Mine, Dangerous Highwall	80	0
	3823-02	Reclaimed	3	Spoil Pile	35	358000
Coal Run Northwest	3824-01	Abandoned	3	Dry Strip Mine	15	32000
McIntyre East	3825-01	Reclaimed	2	Refuse Pile, Clogged Stream Lands	70	2000000
	3825-02	Reclaimed	3	Refuse Pile	35	500000
Coal Run East	3829-01	Abandoned	3	Dry Strip Mine	15	97000
Coal Run South	4406-01	Abandoned	3	Dry Strip Mine	45	170000
	4406-02	Abandoned	3	Spoil Pile	25	377000
Upper Reeds Run	4407-01	Reclaimed	3	Refuse Pile	20	250000
	4407-02	Abandoned	3	Dry Strip Mine	20	108000

Table 7: Abandoned Mine Land Inventory Points in the Aultmans Run Watershed

BAMR Site Name	BAMR ID	Status	OSM Priority	Problem	Flow (gpm)
Jacksonville/ Kent P.O.	0023-02	Reclaimed	2	Untreated Discharge, Polluted Water: Human Consumption	0
	0023-03	Abandoned	3	Untreated Discharge	80
Coal Run/Clune P.O.	1485-01	Abandoned	3	Mine Entry	0
	1485-02	Abandoned	3	Mine Entry	0
	1485-03	Abandoned	3	Mine Entry	0
	1485-04	Abandoned	3	Mine Entry	0
	1485-05	Abandoned	3	Mine Entry	0
Aultman South	1486-04	Abandoned	3	Untreated Discharge	0
McIntyre	2461-02	Reclaimed	2	Abandoned Structure	0
Jacksonville Northwest	3816-01	Abandoned	3	Untreated Discharge	0
	3816-02	Abandoned	3	Mine Entry	0
	3816-03	Abandoned	3	Mine Entry	0
Jacksonville South II	3819-01	Abandoned	3	Open Shaft/Mine Entry	0
	3819-03	Abandoned	3	Erosion-Prone Area	0
	3819-04	Abandoned	3	Open Shaft/Mine Entry	0
Coal Run	3820-03	Abandoned	3	Untreated Discharge	0
	3820-04	Abandoned	3	Untreated Discharge	9
BM 1029	3821-04	Abandoned	3	Untreated Discharge	0
	3821-05	Abandoned	3	Untreated Discharge	22000
	3821-06	Abandoned	3	Mine Entry	0
Airshaft Southwest	3822-04	Abandoned	2	Untreated Discharge, Polluted Water: Human Consumption	0
Airshaft Southeast	3823-03	Abandoned	2	AMD ground saturation	25
	3823-04	Abandoned	2	Untreated Discharge, Polluted Water: Human Consumption	0
Coal Run Northwest	3824-02	Abandoned	3	Mine Entry	0
	3824-03	Abandoned	3	Mine Entry	0
McIntyre East	3825-03	Abandoned	2	Untreated Discharge	10
	3825-04	Abandoned	3	Untreated Discharge	10
	3825-05	Reclaimed	2	Erosion-Prone Area, Clogged Streams	0
McIntyre North	3827-01	Abandoned	2	Vertical Mine Shaft	0
	3827-02	Abandoned	2	Vertical Mine Shaft	0
	3827-03	Abandoned	2	Vertical Mine Shaft	0
	3827-04	Abandoned	2	Vertical Mine Shaft	0
Watts Hill Southeast	3828-01	Abandoned	2	Vertical Mine Shaft	0
	3828-02	Abandoned	2	Vertical Mine Shaft	0
Coal Run South	4406-03	Abandoned	3	Mine Entry	0
Upper Reeds Run	4407-03	Abandoned	3	Mine Entry	0
	4407-04	Abandoned	3	Untreated Discharge	0

3.3 Agriculture (Siltation)

Although not as devastating as AMD, agricultural siltation is the second greatest impact within the watershed. Siltation can affect the biota living within the stream by reducing water clarity and destroying stream bottom habitat. Agriculture is the second largest land use within the watershed, with row crops accounting for 65% of the total area of the agricultural land use type.

Table 8: Agriculture Land Use Types in the Aultmans Run Watershed

Land Use Level III Description	Area (sq. mi.)
Row Crops	4.6
Fallow Fields	1.4
Farmstead	0.27
Nurseries	0.23
Pasture	0.65

Agricultural impacts affect the headwaters of the main stem of Aultmans Run along with the main stem and two tributaries in the southern end of the watershed. These impacts correspond with the agricultural land use types for these areas. While much of the siltation is likely due to agriculture, some of the siltation on the main stem of Aultmans Run downstream of the town of Aultman is also likely due to past erosion from historic mining activities and the accumulation of metal compounds within the stream from mine discharges, including the SR286 Discharge. Currently, this segment is listed as only impacted by agriculture.

4.0 WATER QUALITY STANDARDS

4.1 Pennsylvania Water Quality Criteria

PA Title 25, Chapter 93 of the Pennsylvania Code lists Aultmans Run and its tributaries as a Trout Stocked Fishery **(TSF)**. A trout stocked fishery is defined as waters that maintain stocked trout from February 15th to July 31st and also support the maintenance and propagation of fish species and other flora and fauna that are indigenous to a warm water habitat. Tables 9 and 10 contain specific water quality criteria that apply to a TSF.

Table 9: Chapter 93 Water Quality Criteria

Parameter	Criterion
Alkalinity	Min. 20 mg/L as $CaCO_3$, except where natural conditions are less
Ammonia Nitrogen	Refer to requirements in Chapter 93.7.
Dissolved Oxygen	For the period February 15 to July 31, minimum daily average 6.0 mg/L; minimum 5.0 mg/L.
Iron	30-day average 1.5 mg/L as total recoverable
Osmotic Pressure	Max. 50 milliosmoles/kg
pH	From 6.0 to 9.0 inclusive
Total Residual Chlorine	Four-day average 0.011 mg/L; 1-hour average 0.019 mg/L

Table 10: Chapter 93 Temperature Criteria

Critical Use Period	Temperature (Fº)
January 1-31	40
February 1-29	40
March 1-31	46
April 1-15	52
April 16-30	58
May 1-15	64
May 16-31	68
June 1-15	70
June 16-30	72
July 1-31	74
August 1-15	80
August 16-30	87
September 1-15	84
September 16-30	78
October 1-15	72
October 16-31	66
November 1-15	58
November 16-31	50
December 1-31	42

4.2 Total Maximum Daily Load **(TMDL)**

In addition to the criteria established within Chapter 93, a TMDL has been prepared for the entire Kiski-Conemaugh River Basin for AMD affected streams. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. The TMDL established the criteria shown in Table 11.

Table 11: TMDL Endpoint

Parameter	Criterion
Aluminum	750 µg/L
Total Iron	1,500 µg/L
Dissolved Iron	300 µg/L
Manganese	1,000 µg/L
pH	6.0 to 9.0 s.u.

One monitoring point, ALT01, at the mouth of Aultmans Run was established as part of this TMDL. ALT01 was monitored by the PA DEP from August 2007 to June 2008. No other monitoring points were located within the Aultmans Run watershed. The TMDLs were developed using the Mining Data Analysis System **(MDAS)**, a model created by Tetra Tech, Inc. that uses water chemistry along with land use, hydrologic, pollutant, and meteorological data to simulate pollutant loadings within the watershed. The model was calibrated using the monitoring points established in the watershed.

To aid in the display of the source allocations, the Kiskiminetas River was divided into six regions. The Aultmans Run Watershed was included in the Conemaugh River Region (Region 4). Source allocations were developed for all modeled subwatersheds contributing to the metals-impaired streams. Table 12 shows the streams within the Aultmans Run Watershed receiving a TMDL and the type of TMDL presented.

Table 12: TMDLs Presented in the Aultmans Run Watershed

Impaired Stream Name	Subwatershed ID	Total Fe	Diss. Fe	Total Al	Total Mn	pH Surrogate Approach	Sediment Surrogate Approach
Aultmans Run	4007	X	X	X	X	X	X
Coal Run	4009	X	X	X	X	X	
Reeds Run	4011	X	X	X	X	X	

The TMDL is a sum of the source allocations, Waste Load Allocations **(WLAs)** and Load Allocations **(LAs)**, along with a Margin of Safety **(MOS)** to account for the uncertainty in the relationship between the pollutant load and the quality of the receiving stream. The MOS used for the Kiski-Conemaugh TMDL was 5%. LAs are associated with nonpoint sources of pollution while WLAs are associated with point sources. Appendix G of the Kiski-Conemaugh TMDL presents the LAs and WLAs. Table 13 is a subset of this spreadsheet for the impaired streams in the Aultmans Run Watershed.

Table 13: Metal Load Allocations for Impaired Streams in the Aultmans Run Watershed

Stream Name	Metal	Baseline LA (lb/day)	LA (lb/day)	Baseline WLA (lb/day)	WLA (lb/day)	MOS (lb/day)	TMDL (lb/day)	Red. (%)
Aultmans Run	Aluminum	74.4	28.3	65.9	28.0	3.0	59.3	60
	Iron	194.8	69.5	104.9	54.0	6.5	130.0	59
	Manganese	23.0	11.7	65.6	35.7	2.5	49.8	47
Coal Run	Aluminum	13.5	4.0	2.1	0.8	0.3	5.1	69
	Iron	34.9	9.5	3.4	1.6	0.6	11.6	71
	Manganese	4.5	1.8	2.1	1.1	0.2	3.0	56
Reeds Run	Aluminum	31.7	11.1	5.4	5.4	0.9	17.3	56
	Iron	82.6	26.9	8.8	8.8	1.9	37.5	61
	Manganese	9.8	4.6	5.5	5.5	0.5	10.7	34

Notes: LA – Load Allocation, WLA – Waste Load Allocation, MOS – Margin of Safety, TMDL – Total Maximum Daily Load, Red. - Reduction

The baseline conditions represent both existing nonpoint source loadings and point source loadings at permit limits, which allows for an evaluation of instream water quality under the highest expected loading conditions. During the TMDL development, critical conditions were found to occur during high- and low-flow events.

No abandoned mine discharges were included within the TMDL in the Aultmans Run Watershed since BAMR's Orphan Mine Discharge database was used. This database only includes known abandoned mine discharges with average flows larger than 100

gpm. The metal loadings found in the Aultmans Run Watershed were modeled from abandoned mine lands, which includes disturbed lands and highwalls in the watershed.

In addition, to being impaired by metals associated with AMD, Aultmans Run is impacted by sediment. A separate sediment load allocation has been developed utilizing two different methodologies, a reference watershed approach and the correlation of TSS with total iron loadings. (Refer to Table 14.) As the reductions required to attain the iron TMDL were more stringent than those needed to resolve impairment under the reference watershed approach, iron reductions were used as a surrogate for sediment reductions.

Table 14: Sediment Load Allocations for Impaired Streams in the Aultmans Run Watershed

Impaired Stream Name	**Allocated Sediment Load**	
	Iron TMDL (tons/yr)	**Reference Watershed Approach** (tons/yr)
Aultmans Run	264	269

5.0 WATERSHED ASSESSMENT

Several sources of data were used to assess the watershed. Extensive monitoring has been conducted within the watershed by a variety of organizations including AWARE, Kiski-Conemaugh Stream Team, PA Senior Environmental Corps, SRI, and the PA DEP. Regular monitoring of the Aultmans Run Watershed has occurred for projects constructed by AWARE and it's partnering organizations on three of the five subwatersheds including Neal Run, Reeds Run and Aultmans Run.

A significant amount of data has also been collected by coal companies as part of their permit applications to the PA DEP. Data have been extracted from both the paper copies of the permit applications and the Sample Information System managed by the PA DEP. Sample points selected from the mining permits were given a unique name. Hundreds of monitoring points were found within the watershed, with many locations having multiple sample names dependent upon the organization. If the sample point was collected at the same location as a previously established point by another organization, the sample point was renamed to the previously established point. The following prefixes have been added to each of the sample points as the same identifiers have been used for different locations:

- A2M – Aultman II Mine
- Jack – Jacksonville Mine
- K53 – Kent #53 Mine
- K56 – Kent #56 Mine
- K57 – Kent #57 Mine
- Lewis – Lewisville Recovery Plant
- Mc – Mcintyre Mine
- Mc2 – Mcintyre #2 Mine
- Hel – Helvetia #2 Mine
- John – Johnston Mine

Appendix C contains a consolidated list of sample points with alternative names along with the type of sample point, latitude and longitude, and description. Appendix A also contains a map of sample point locations.

5.1 Stream Water Quality

A total of 60, instream, monitoring points were found within the Aultmans Run Watershed. Due to the amount of existing water quality data available and funding constraints, a comprehensive stream monitoring program was not conducted.

5.1.1 Subwatersheds Not Meeting TMDL Water Quality Criteria

Aultmans Run, Coal Run, Reeds Run, and several other smaller tributaries are listed as being impaired by metals associated with abandoned mine drainage. The average values at sample point locations were used for comparison to TMDL criteria. When only one sample was collected for a given point, the single set of analyses was assumed to represent the average water quality at that location. (Please note that continued monitoring may reflect a significantly different average water quality.)

Aultmans Run: The main stem of Aultmans Run is listed as impaired for siltation due to agriculture from the headwaters downstream to the confluence with Reeds Run. Although not listed in this section of the watershed, much of the siltation may also be due to AMD. The first major source of impairment on the main stem of Aultmans Run is an abandoned mine discharge located outside the town of Aultman. This AMD, known as the SR286 Discharge due to the proximity to the public road, is a high-flow, alkaline, iron discharge that directly enters Aultmans Run. During the summer months, this discharge is sometimes the primary source of flow to Aultmans Run. From Reeds Run to the mouth of Aultmans Run Bay, the stream is listed as impaired by metals and siltation from AMD and agriculture, respectively. Reeds Run is heavily impacted by AMD and lowers the water quality of Aultmans Run. In addition, several other smaller discharges in this section of the watershed, AM0-D5 and AM11-D1, flow directly into Aultmans Run.

Table 15: Aultmans Run Water Monitoring Data (average values)

← Downstream	Sample Point	pH (s.u.)	Alkalinity (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	SO_4 (mg/L)
	A2M – MP13	7.4	42.5	-16.7	0.81	0.26	0.51	101
	A2M – MP14	7.4	32.5	-13.1	0.56	0.10	0.58	108
	John – 1	7.7	59.9	-15.8	0.43	0.24	0.47	147
	K56 – 2	6.9	29.0	0	1.72	1.47	1.79	298
	AUL04	6.7	32.5	2.9	1.77	0.96	2.11	384
	AUL03	7.0	42.5	-17.4	1.15	0.87	1.24	323
	K55 – SM14	6.9	39.8	1.74	1.55	1.21	1.56	422

Highlighted fields indicate that the sampling point does not meet the applicable water quality criteria listed in Table 11. Total metal values. (Refer to attached monitoring data in Appendix C.)

Reeds Run: Reeds Run is the largest subwatershed at 7.3 square miles, or 26% of the entire watershed. Reeds Run is also the most impacted tributary to Aultmans Run with the entire stream listed as impaired for metals due to AMD.

Tributaries within Reeds Run include Neal Run and unnamed tributaries that are locally known as "Willow Run" and "Golden Pheasant Run". The worst discharge in the watershed, D2, is located within the Neal Run subwatershed. This discharge degrades both Neal Run and Reeds Run to the confluence with Aultmans Run. "Willow Run" is impacted by RD2-D1; however, at the mouth of "Willow Run", water quality has improved possibly through natural attenuation within the stream and associated wetlands. Two other discharges directly flow into Reeds Run, RD0-D3 and RD3-D1. RD5-D1 is taken at the mouth of "Golden Pheasant Run", which is a small unnamed tributary that flows into Reeds Run near its confluence with Aultmans Run. The source of this small stream is several abandoned discharges located in its headwaters. Two treatment systems have been installed, but work remains to restore Reeds Run to a trout-stocked fishery. Nearly every point along the stream is impacted due to metals, resulting in non-attainment of the water quality standards. (Refer to Table 16.)

Table 16: Reeds Run Water Monitoring Data (average values)

← Downstream	Sample Point	pH (s.u.)	Alkalinity (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	SO_4 (mg/L)
	K53 - SW32	6.6	33.2	8.5	3.5	0.5	1.2	77
	K53 - SW33	5.2	11.1	496.0	109.7	6.3	39.6	584
	K53 - F	6.4	21.8	20.5	2.0	2.2	2.2	188
	Jack - MP27	5.9	10.5	8.5	1.8	1.5	1.7	280
	Jack - MP28	4.1	4.1	52.3	4.1	2.9	8.4	468

Highlighted fields indicate the sampling point does not meet the applicable water quality criteria listed in Table 11. K53-SW32 sample dated 8/12/99 excluded from averages due to the anomalous results. Total metal values. (Refer to attached monitoring data in Appendix C.)

Coal Run: Coal Run, a tributary to Aultmans Run, is located primarily to the south of PA State Route 286. This 2.4-square mile subwatershed has been heavily impacted by both surface and underground mining. The entire stream is listed as impaired by metals due to AMD. There are two major abandoned discharges and one post-mining discharge. COA01, located at the mouth of Coal Run, is impacted due to metals and does not meet water quality standards. (Refer to Table 17.)

Table 17: Coal Run Water Monitoring Data (average values)

← Downstream	Sample Point	pH (s.u.)	Alkalinity (mg/L)	Acidity (mg/L)	Iron (mg/L)	Manganese (mg/L)	Aluminum (mg/L)	SO_4 (mg/L)
	Jack – MP5	7.4	42.8	0	0.5	0.4	1.0	56
	COA02	6.9	38.8	-19.9	0.5	0.6	0.5	159
	COA01	6.5	27.0	-4.2	2.7	1.7	0.7	252

Highlighted fields indicate the sampling point does not meet the applicable water quality criteria listed in Table 11. Total metal values. (Refer to attached monitoring data in Appendix C.)

5.2 Mine Discharge Water Quality

A total of 30 abandoned mine discharges have been identified within the Aultmans Run Watershed. (Refer to Table 18.) Of these discharges, 23 are considered significant, based on water quality and flow rate. Other discharges may exist but remain unidentified. The number of sampling events, conducted between 1990 and 2013 for these discharges, varies from 1 to more than 100. (Refer to Appendix C for a complete listing of water sample locations and data.) Based on this data, the mine discharges have been ranked by total metal loadings as metals are the primary source of impairment to the watershed. (Refer to Table 19.) Additional sampling of the priority discharges was conducted to aid in development of passive treatment system conceptual designs.

Table 18: Water Monitoring Data for Selected Abandoned Mine Discharges in the Aultmans Run Watershed (average values)

Sample Point	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
A2M - MP25	33.5	5.1	342	6.9	14.0	0.2	0.3	1.8	101.5
A2M - MP45	184.3	5.1	355	4.2	21.3	0.3	0.3	2.1	115.0
A2M - MP5	6.3	5.1	480	6.3	26.8	0.5	0.3	17.2	159.7
A2M - MP6	42.1	4.7	585	6.6	28.8	0.4	2.6	3.1	216.1
A2M - MP7	0.4	4.3	567	1.3	29.7	0.5	0.7	1.5	191.9
A2M - MPD2	--	7.1	--	169.8	-154.0	6.6	1.1	0.5	126.3
A2M - MPD2A	--	7.3	--	170.2	-150.6	3.2	1.0	0.7	43.4
AM0-D13	14.1	3.2	1724	2.0	216.2	3.4	8.8	14.3	1110.7
AM0-D2	--	7.5	--	199.5	-173.4	2.4	0.6	0.6	166.3
AM11-D1	63.8	4.0	982	1.8	164.0	0.6	6.9	12.6	596.5
CL0-D2	5.9	3.6	1405	3.7	139.0	32.5	5.4	0.5	607.2
CL0-D8	8.3	3.2	1740	2.0	400.5	32.4	7.4	33.2	1451.3
D2	4.3	3.1	--	--	6605.0	1308.0	24.8	>500	8478.3
Jack - MP1	2.4	3.3	2563	1.7	575.5	13.5	12.9	65.4	1741.3
Jack - MP2	1.1	3.4	2492	0.5	426.5	7.5	17.2	52.8	1450.0
Jack - MP4	18.5	3.2	2745	6.3	487.7	79.1	15.9	33.8	1645.2
Jack - MP7	1.5	4.2	1179	1.3	71.4	1.4	6.2	6.5	784.3
Jack - MP8	5.2	4.2	1049	2.9	42.1	0.3	3.3	3.3	595.3
K56 – RW	6.1	6.4	--	168.8	-90.7	1.8	1.8	0.5	301.8
K57 - MD1	3.8	6.1	--	110.7	-49.6	5.2	4.6	0.7	521.6
Lewis – 26	--	3.0	--	--	214.0	7.8	11.4	17.4	994.0
Lewis – 57	--	3.5	--	--	152.0	2.7	16.4	13.3	1101.3
Lewis – 58	--	4.6	--	8.2	82.0	0.4	21.4	3.9	1087.1
Lewis - MS98	4.9	4.0	--	23.8	124.3	27.8	8.0	12.7	789.6
Mc - L8-MS2	164.5	7.0	1143	253.0	--	4.4	0.6	0.5	394.6
RD0-D1	410.6	4.0	481	11.1	475.7	144.6	5.0	25.9	546.0
RD0-D3	10.2	5.7	784	84.7	1.0	13.8	10.0	0.1	394.7
RD2-D1	8.1	5.0	1386	4.4	41.4	0.1	16.5	2.8	817.5
RD3-D1	7.6	3.8	1051	2.0	50.1	0.2	8.0	2.4	725.6
SR286 Discharge	229.4	6.3	486	86.6	-26.3	17.5	0.7	0.3	145.7

Note: Mc - L8-MS2 also known as Kolb Shaft (Kent #1) is potentially located outside the watershed. Specific Conductivity (SC).

Table 19: Individual Mine Discharges in the Aultmans Run Watershed Ranked by Total Metals Loadings

Rank	Sample Point	Loading (lb/day)					Contribution (%)				
		Acidity	Fe	Al	Mn	Total Metals	Acidity	Fe	Al	Mn	Total Metals
1	D2	579.2	237.0	81.8	3.8	322.6	57.4	66.3	68.2	15.7	64.3
2	RD0-D1	69.6	45.7	7.7	3.1	56.5	6.9	12.8	6.4	12.8	11.3
3	SR286 Discharge	0	51.2	0.5	1.9	53.5	0.0	14.3	0.4	7.9	10.7
4	Jack - MP4	81.5	10.7	6.7	2.4	19.8	8.1	3.0	5.6	9.9	3.9
5	AM11-D1	100.9	0.2	8.4	3.6	12.2	10.0	0.1	7.0	14.9	2.4
6	CL0-D8	35.4	3.4	3.2	0.7	7.4	3.5	1.0	2.7	2.9	1.5
7	Lewis-MS98	16.7	5.0	1.0	0.5	6.5	1.7	1.4	0.8	2.1	1.3
8	AM0-D13	28.5	0.5	2.1	1.4	3.9	2.8	0.1	1.8	5.8	0.8
9	A2M - MP45	30.3	0.3	2.8	0.4	3.4	3.0	0.1	2.3	1.7	0.7
10	RD2-D1	7.7	0.0	0.6	2.3	2.9	0.8	0.0	0.5	9.5	0.6
11	RD0-D3	0.1	1.6	0.0	1.1	2.7	0.0	0.4	0.0	4.5	0.5
12	Jack - MP1	12.8	0.3	1.3	0.4	2.0	1.3	0.1	1.1	1.7	0.4
13	A2M - MP6	11.0	0.1	1.1	0.5	1.7	1.1	0.0	0.9	2.1	0.3
14	CL0-D2	13.2	1.0	0.0	0.4	1.4	1.3	0.3	0.0	1.7	0.3
15	A2M - MP5	2.1	0.0	0.9	0.0	0.9	0.2	0.0	0.8	0.0	0.2
16	A2M - MP25	7.6	0.1	0.7	0.1	0.9	0.8	0.0	0.6	0.4	0.2
17	RD3-D1	4.4	0.0	0.2	0.7	0.9	0.4	0.0	0.2	2.9	0.2
18	Jack - MP2	4.2	0.1	0.5	0.2	0.8	0.4	0.0	0.5	0.8	0.2
19	K57 - MD1	0	0.2	0.1	0.2	0.5	0.0	0.1	0.0	0.8	0.1
20	Jack - MP8	2.6	0.0	0.2	0.2	0.4	0.3	0.0	0.2	0.8	0.1
21	K56 - RW	0	0.2	0.0	0.2	0.4	0.0	0.1	0.0	0.8	0.1
22	Jack - MP7	1.2	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.4	0.0
23	A2M - MP7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Totals	**1009.2**	**357.3**	**119.9**	**24.1**	**501.3**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Mc - L8-MS2 not included in the loading calculations and rankings due to the potential location being outside the watershed.

= Abandoned mine discharge partially treated with passive system.
= Abandoned mine discharge passively treated.
= Post-mining discharge treated by coal mine operator.

5.2.1 Post-Mining Discharges Treated by Coal Mine Operator

According to the Coal Mining Operations dataset created by the PA DEP, there are four post-mining discharges currently being treated in the watershed. (Refer to Table 20.) All of the sites are owned by Keystone Coal Mining Corp, which was a subsidiary of R&P and now Consol. The Kent 56 and Kent 57 sites are attributed to surface mining activities and are treated passively and chemically, respectively. Degraded drainage from the Lewisville Recovery site, attributed to coal refuse disposal, is currently being treated chemically. The water quality of these discharges are provided in Table 18.

Table 20: Coal Mine Operator-Treated Post-Mining Discharges in the Aultmans Run Watershed

Permit #	Mine Name	Company	Discharge Name	SIS Monitoring Point ID	Treatment Type
32903010	Kent 56	Keystone Coal Mining Corp	RW *(K56 – RW)*	61357	Passive
32890109	Kent 57	Keystone Coal Mining Corp	MD1 *(K57– MD1)*	55388	Active
32803712	Lewisville Recovery	Keystone Coal Mining Corp	MS98 *(Lewis - MS98)*	52628	Active
			NA*	NA*	Active

Note: Italicized discharge name corresponds to name assigned for this report.
*Discharge not found within SIS; however, treatment system is present with an effluent monitoring point of TP-J (SIS MP ID: 22880).

5.2.2 Abandoned Discharges

Due to the extensive pre-SMCRA coal mining both underground and surface, a substantial number of abandoned discharges are located within the watershed. A total of 20, significant, abandoned mine discharges have been identified. Numerous small seeps also exist in the watershed, which have not been recently monitored. Water quality varies from alkaline discharges to discharges with extremely high acidity and metal concentrations. The D2 discharge is the result of a large refuse pile and contains the worst water quality ever monitored by Stream Restoration Inc. The top three discharges account for 86% of the metal loadings and 64% of the acidity loading in the entire watershed. The top five discharges account for 93% of the metal loadings and 82% of the acidity loading in the watershed.

6.0 RESTORATION PLAN

This restoration plan addresses the largest source of impairment to the Aultmans Run Watershed, which are metals and sediment associated with mining. The goal of this plan is to decrease the iron, aluminum, and manganese concentrations within the streams to meet the applicable water quality criteria identified in the TMDL report and to return Aultmans Run to a viable fishery.

6.1 Previous Projects

To date, three mine drainage projects have been constructed within the Aultmans Run Watershed through a public-private partnership effort of AWARE and Stream Restoration Inc. The following sections contain summaries for each of these projects. For additional information, including project reports, water quality data, and schematics, please go to www.datashed.org.

6.1.1 SR286 Passive Treatment System

Completed in 2003, this project was the first discharge tackled in the watershed and is highly visible along PA State Route 286 outside the town of Aultman. A ½-acre aerobic wetland was constructed to treat a gravity drain discharge from an abandoned underground mine. Average flow rate is about 200 gpm and contains about 20 mg/L of iron. The effluent of the passive treatment system flows directly into Aultmans Run, and, during the dry season is the primary source of flow to the stream. For additional information, please review the project online by visiting the Datashed website at http://www2.datashed.org/sr-286-passive-treatment-system/.

6.1.2 Reeds Run AMD Remediation

This project involved the recovery of 72,647 tons of acid-producing coal refuse and the construction of a 1.35-acre wetland/open water habitat complex. Robindale Energy Services was responsible for the removal and delivery of the fuel-grade refuse to Seward Generating Station for the production of electricity. The remaining non-fuel grade refuse was blended with 6,967 tons of Mineral CSA, a PA DEP-approved co-product, for alkaline addition, and was placed on a layer of permeable material to limit the contact of the refuse with shallow subsurface flow. The majority of refuse removal occurred in 2010 while the wetland was constructed in the summer of 2011. Dramatic improvements in water quality have been documented in the stream with fish being observed in the stream probably for the first time in over 50 years. For additional information, please review the project online by visiting the Datashed website at http://www2.datashed.org/reeds-run/.

6.1.3 Neal Run Coal Refuse Removal

The source of the worst discharge in the entire Aultmans Run Watershed is a large coal refuse pile in McIntyre, PA. A coal cleaning plant was located in the town of McIntyre and operated by the R&P Coal Company. Refuse from this plant was dumped just outside of town. In 1997, the coal refuse pile, an OSM Priority 2 site, was reclaimed by PA DEP, BAMR as part of the McIntyre East Refuse Piles project [Contract No. OSM 32 (3825) 101.1].

The most recent restoration efforts included the recovery of 37,608 tons of acid-producing coal refuse for power generation and the construction of three oxidation and precipitation channels **(OPCs)**

to remove iron from the mine drainage by encouraging the formation and storage of iron solids at low pH. Non-fuel grade refuse material was mixed with over 7,753 tons of Mineral CSA to provide alkaline addition. Refuse from the site was removed by Robindale Energy Services and taken to the Seward Generating Station, a circulating fluidized-bed power plant capable of cleanly burning poorer quality coal refuse. Construction occurred in 2011 and 2012. The cost to completely treat this mine drainage was determined to be too expensive for the funding available; however, this project is an excellent "first step" in the remediation of Neal Run. Additional plans to address this discharge are listed in Section 6.2.1. For further information, please review the Datashed project page at http://www2.datashed.org/neal-run/.

6.2 Proposed Projects

AWARE and Stream Restoration Inc. would like to replicate the success of these existing projects. Water quality has improved within Aultmans Run; however, additional projects are necessary to remove Aultmans Run and its tributaries from the impaired waters list. Individual site recommendations have been compiled for the top five discharges and are summarized below. Appendix B contains conceptual designs for four of the five priority sites. Passive treatment systems are proposed to treat the priority discharges. Although these systems may not remove 100% of the pollutant load all of the time due to fluctuating flow rates and water quality, passive treatment is the best option due to the lower operation and maintenance costs and remoteness of some of the sites.

6.2.1 Neal Run Restoration Project – Phase II

As discussed in Section 6.1.3, coal refuse was removed downgradient of the large coal refuse pile that is producing the worst quality mine drainage in the watershed, and possibly western Pennsylvania. Several OPCs were constructed downgradient of this refuse pile to remove iron from the mine drainage by encouraging the formation and storage of iron solids at low pH. (Refer to the following aerial photo.) Table 21 contains water quality from a more recent sampling event at the project site.

Table 21: Neal Run Phase I PTS Water Monitoring Data - Collected 6/17/13

Sample Point	Flow (gpm)	pH (su)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
D2	10	2.84	0	7817	5640.0	36.9	379.0	11476
D6	<1	7.32	55.7	-35	0.3	<0.1	0.4	94
D7	10	2.64	0	6672	1192.0	38.0	400.0	11696
NLO-D3	10	2.63	0	4784	666.0	27.4	412.0	6800
OPC1 Effluent	10	2.56	0	4720	676.0	27.8	430.0	5919

Total metal concentrations; Flows estimated.

As noted in the table above, this site is an ideal location to remove, and to potentially recover, low pH iron. (Refer to photos.) Amazingly, OPC1 is removing nearly 80% of the iron between D2 and D7! Another 10% is being removed between D7 and NLO-D3. Even with the incredible treatment of the OPC, the water is such poor quality that additional treatment is necessary to restore Neal Run and Reeds Run. When

calculating loadings from the OPC1 effluent, the Neal Run Restoration Area is still the #1 priority.

Aerial photo (2011) of existing passive components at the Neal Run Restoration Area

The proposed conceptual design includes installation of the following:

1. East of McIntyre Road below D7, an Auto-Flushing, Vertical Flow Pond **(AFVFP)** containing 650 tons of crushed limestone to generate alkalinity for metal removal and a ¼-acre settling pond for the retention of precipitating metal compounds and to capture metal compounds flushed from the AVFP.
2. West of McIntyre Road, a Jennings-type Vertical Flow Pond **(JVFP)** containing 1,200 tons of treatment media consisting of a mixture of compost, crushed limestone, and woodchips.

The proposed passive treatment system will remove the majority of the remaining metals and neutralize the acidity within the discharge, vastly improving the water quality of Neal Run and Reeds Run. The potential to recover and use the metal-bearing material from the site is significant due to the large quantities of iron and aluminum and is considered in the final design. A grant proposal was submitted in the summer of 2015 to the PA Department of Community and Economic Development (DCED) Abandoned Mine Drainage Abatement and Treatment Program (AMDATP) and the PA DEP Growing Greener Program to complete Phase II.

This site is located on property owned now or formerly by Central Blair Electric Company. The landowner previously allowed the removal of coal refuse and construction of the OPC and is anticipated to allow the construction of the additional

treatment components. The site is easily accessible from Hill Street (T-971) located in the town of McIntyre.

6.2.2 "Golden Pheasant Run" Restoration Area

This project involves the treatment of several abandoned discharges located in the headwaters of "Golden Pheasant Run", a tributary to Reeds Run, including Jack-MP1, Jack-MP2, and Jack-MP4. These discharges were monitored extensively as PA Title 25, Chapter 87, Sub-chapter F points associated with the Jacksonville Mine operated by Amerikohl Mining, Inc. The mouth of "Golden Pheasant Run" at RD5-D1 was also sampled during the initial watershed assessment completed in 2003.

Table 22: Jack-MP1 Discharge Monitoring Data

Statistic (n=23)	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alk. (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
Average	2.3	3.3	2600	0.0	600.3	14.4	13.2	67.6	1759.9
Min	0.2	2.9	311	0.0	184.8	0.4	8.4	18.6	946.0
Max	12.0	4.0	4590	0.0	1590.0	74.7	16.3	163.1	3529.0
Median	1.5	3.4	2705	0.0	545.3	10.1	13.7	54.8	1667.9

Note: Specific Conductivity (SC); Total metal values.

Table 23: Jack-MP2 Discharge Monitoring Data

Statistic (n=27)	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alk. (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
Average	1.1	3.4	2492.4	0.5	426.5	7.5	17.2	52.8	1450.0
Min	0.1	2.9	1387.0	0.0	178.2	0.6	9.4	11.2	783.0
Max	4.0	4.6	3440.0	13.0	780.0	105.0	30.4	108.1	2353.0
Median	0.6	3.4	2460.5	0.0	396.6	3.0	14.6	50.4	1478.8

Note: Specific Conductivity (SC); Total metal values.

Table 24: Jack-MP4 Discharge Monitoring Data

Statistic (n=48)	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alk. (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
Average	18.5	3.9	2745.9	6.2	495.7	79.4	15.8	35.0	1654.4
Min	0.9	2.5	1515.0	0.0	8.2	1.6	2.4	1.7	646.3
Max	284.5	7.5	3940.0	81.4	2016.8	224.0	49.0	146.9	3225.0
Median	8.9	3.8	2631.0	0.4	368.2	69.7	15.4	17.4	1665.0

Note: Specific Conductivity (SC); Total metal values.

Jack-MP4 is the most significant of these discharges with a priority ranking of 4th, based on metal loadings. Jack-MP1 and Jack-MP2 are highly degraded discharges; however, their flow rates were typically less than 2 gpm. Jack-MP1 and Jack-MP2 are ranked 12th and 18th, respectively. Combined, these discharges contribute 8,250 lb/year of metals and nearly 36,000 lb/year of acidity to Aultmans Run. Water samples were taken during a high-flow event on 3/17/15. (Refer to Table 25.) The flow was estimated at Jack-MP4 as the weir was no longer in place. In addition to the discharges, considerable storm-water was entering the site from the culvert beneath SR-286, which contributed to a higher flow rate at Jack-MP4. Another discharge, GPR3, was found and also sampled on 3/17/15. This discharge is located approximately 100 feet southeast of the Jack-MP4 discharge and is net acidic with a high iron content.

Table 25: Golden Pheasant Run Discharges - Data Collected 3/17/15

Sample Point	Flow (gpm)	pH (s.u.)	Cond. (µS/cm)	Alk. (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
Jack-MP1	41.9	3.6	2081	0	89.2	0.3	4.7	13.3	1378.1
Jack-MP2	5.6	3.5	2067	0	111.4	0.6	6.2	18.2	1547.7
Jack-MP4	150.0	4.2	1817	0	68.6	2.1	5.2	9.1	943.5
GPR3	10	5.9	2082	59	52.4	70.2	5.3	0.1	1293.3

Note: Specific Conductivity (SC); Total metal values.

The proposed conceptual design includes installation of the following:

1. Auto-Flushing Vertical Flow Pond **(AFVFP)** containing 500 tons of crushed limestone downgradient of Jack-MP1
2. Jennings-type Vertical Flow Pond **(JVFP)** containing 175 tons of treatment media consisting of a mixture of crushed limestone, compost, and woodchips downgradient from Jack-MP2
3. 200-ton Anoxic Limestone Drain **(ALD)** to treat GPR3
4. 27,800-SF Oxidation/Settling Pond with a windowed, baffle curtain in conjunction with a 13,500-SF Aerobic Wetland. The pond/wetland component is designed to capture particulate metal compounds that have precipitated after flowing through the respective alkalinity-generating components.

The cost to install the four components including design, permitting, and construction is estimated to be **$275,000**. Considerable permitting costs are also possible as a portion of the treatment system will be constructed in an existing, degraded, wetland.

This site is located on PA Game Commission property . The property was formerly owned by the R&P Coal Company, which was acquired by Consol Energy in 1998. Title to the land was transferred to the PA Game Commission in return for oil and natural gas rights under property of the PA Game Commission in Greene County, PA. The property is now designated as part of State Game Lands #332. The current conceptual design of the passive system does not impact a small parcel now or formerly owned by Dennis Horrell (Parcel #43-010-112) located downstream of the discharge. The site is also bounded on the west by property of John Stilley, owner of Amerikohl Mining, Inc.

(Parcel #43-010-125 and 43-010-126). Proposed access to the site will require the permission of John Stilley.

6.2.3 Aultmans Run South Restoration Area

Three discharges, Lewis-MS98, AM11-D1, and AM0-D13, located in the southern portion of the watershed, flow directly into Aultmans Run. This area has been mined both by underground and surface mining methods by R&P Coal Company and its subsidiaries. The Lewis-MS98 discharge is actively being treated by the Keystone Coal Mining Corp. There are, however, two significant abandoned discharges in this area, AM11-D1 and AM0-D13, as well as other discharges for which flow data was not available.

AM11-D1 – AM11-D1, also known as "Foot Run", is the 5th ranked discharge in the watershed. AWARE guided a site investigation of the AM11-D1 discharge on 12/19/02. Samples were collected near Aultman Road (T-660) at a weir installed to measure flow (AM11-D1) downgradient of the discharges, which originate at the toe of the abandoned surface mine and includes AM11-D1C. Several samples were collected during this investigation. (Refer to Table 26.)

Table 26: "Foot Run" (AM11-D1) & Seep Data - Collected 12/19/02

Sample Point	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
AM11-D1	76.3	4.34	790	ND	41	0.2	2.5	5.6	463
AM11-D1C	13.2	5.6	1484	9	11	3.3	10.4	1.5	940

Note: Specific Conductivity (SC); Total metal values.

Several other seeps were found in the headwaters of "Foot Run", which along with other sources, increased the flow rate substantially. The additional seeps also increased the aluminum concentration from 1.5 mg/L to 5.6 mg/L. Note that the sulfates and specific conductivity were reduced by roughly half, indicating dilution.

Monitoring conducted at AM11-D1 during the initial assessment reveals a highly variable flow and metal concentration. AM11-D1 typically had a low iron concentration with manganese and aluminum concentrations ranging from 2.6 to 19.2 and 4.6 to 31.4 mg/L, respectively. All of the samples remained acidic with low pH values. AM11-D1 is located within a channel and thus conveys storm-water runoff in addition to the discharges.

Table 27: "Foot Run" (AM11-D1) Discharge Monitoring Data

Statistic (n=12)	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
Average	63.8	4.1	982	0	164	0.6	6.9	12.6	597
Min	3.0	3.4	716	0	43	0.2	2.6	4.6	352
Max	280.0	4.8	1510	0	735	2.1	19.2	31.4	953
Median	44.9	4.1	953	0	95	0.3	5.0	9.8	535

Note: Specific Conductivity (SC); Total metal values.

A second investigation into the "Foot Run" subwatershed occurred on 3/17/15 and 3/24/15. AM11-D1 was sampled on 3/17/15 (high flow event) and 3/24/15. Flow rates were measured at the weir, which had been slightly pushed forward, and confirmed with a bucket and stopwatch. The highest flows ever recorded at AM11-D1 occurred on 3/17/15 with a measurement of 314 gpm. Additional discharges were sampled on 3/24/15 as noted in Table 28. Several other discharges were noted including AM11-D1C previously collected on 12/19/02. The worst of these discharges was AM11-D1A. All of the discharges originate upstream of the weir.

AM11-D1 water samples were taken at the weir.

AM11-D1A is the worst of the upstream discharges.

Table 28: "Foot Run" Discharges Monitoring Data - Collected 3/17/15; 3/24/15

Sample Point	Date	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
AM11-D1	3/17/15	313.6	4.07	574	0	32.80	0.38	1.51	4.76	305.1
AM11-D1	3/24/15	150.0	3.95	672	0	48.40	0.22	2.23	7.83	390.3
AM11-D1A	3/24/15	8.9	3.15	1656	0	281.40	1.5	11.38	50.11	1014.2
AM11-D1B	3/24/15	5.0	6.33	1211	13.31	-2.20	0.2	0.16	0.57	630.5
AM11-D1C	3/24/15	3.6	4.44	976	0	22.80	0.2	2.59	3.21	559.1
AM11-D1D	3/24/15	23.4	4.25	640	0	37.80	0.0	1.86	6.69	347.7

Note: Specific Conductivity (SC); Total metal values.

The proposed conceptual design includes installation of the following:

1. At the confluence of discharges, AMD11-D1C and AM11-D1D, a Jennings-type Vertical Pond **(JVFP)** containing 1400tons of treatment media consisting of a mixture of crushed limestone, compost, and woodchips followed by a 17,000-SF Aerobic Wetland with inlet and outlet pools.
2. 200-ton Anoxic Limestone Drain **(ALD)** to treat the AM11-D1B discharge and to provide excess alkalinity to "Foot Run".

3. Auto-Flushing Vertical Flow Pond **(AFVFP)** containing 325 tons of crushed limestone to treat AMD11-D1A, followed by a 6,000-SF Settling Pond/Flush Pond.
4. Jennings-type Vertical Flow Pond **(JVFP)** containing 700 tons of treatment media consisting of a mixture of crushed limestone, compost, and woodchips followed by a 5,900-SF Aerobic Wetland.

The cost to install the seven components including design and permitting is estimated to be **$350,000.**

Additional sampling of the discharges at the source should be conducted prior to the final sizing and design of the passive treatment system. Upgradient diversion ditches will help eliminate the impact of surface runoff to the treatment system.

AM0-D13 – The AM0-D13 discharge is the 8th ranked discharge in the watershed. AM0-D13 is an acidic discharge contributing 1,400 lb/year of metals and 10,400 lb/year of acidity to "Mule Run". AM0-D13 is located in a break of the surface mine spoil piles in the headwaters of "Mule Run", a small watercourse that directly enters Aultmans Run about 250' upstream from the Aultman Road bridge.

Table 29: AM0-D13 Discharge Monitoring Data (average)

Statistic (n=12)	Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
Average	14.1	3.2	1724	ND	216	3.4	8.8	14.3	1111
Min	0.5	3.1	1137	ND	120	0.9	5.0	6.2	597
Max	45.0	3.4	2330	ND	652	7.0	12.4	23.4	1416
Median	8.1	3.2	1664	ND	194	2.9	8.9	14.1	1199

Note: Specific Conductivity (SC); Total metal values.

Table 30: AM0-D13 Discharge Monitoring Data – Collected 3/24/15

Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
31.9	3.5	1381	ND	65.60	0.9	4.2	7.5	758.4

Note: Specific Conductivity (SC); Total metal values.

Flows at AM0-D13 were variable ranging from less than 1 gpm to 45 gpm. The concentrations of metals and acidity varied based on flow rates with the largest loadings occurring during high flow events. One acidity measurement from 2/8/02 appears to be spurious. Debris was removed from the weir during the 3/24/15 sampling event except for a large tree. Flow measurements were made using the bucket-and-stopwatch method. The metal concentrations from this sampling are not the lowest recorded results for this discharge; however, the acidity is roughly half the lowest acidity recorded in the 2001-2002 dataset.

The proposed conceptual design includes installation of the following:

1. Jennings-type Vertical Pond (JVFP) containing 1800 tons of treatment media consisting of a mixture of crushed limestone, compost, and woodchips.
2. 6,400-SF Aerobic Wetland with inlet pool.

The cost to install the two components including design and permitting is estimated to be **$225,000.**

The Aultmans Run South Restoration Area is located next to the Coal Run Restoration Area and is also on property of the PA Game Commission. In addition, an active mining permit is adjacent to the restoration area and coordination with the PA DEP will be required to treat these discharges.

6.2.4 Coal Run Restoration Area

This restoration area consists of one major discharge, CL0-D8, and a minor discharge, CL0-D2, located approximately ½-mile upstream from CL0-D8. Site recommendations have been developed for CL0-D8.

CL0-D8 originates from a highwall near the mouth of Coal Run. This seep is the 6th ranked discharge within the watershed contributing 12,900 lb/year of acidity and 2,700 lb/year of metals directly to Coal Run. According to available mapping provided by IUP IMAP, an underground mine is the likely source of the drainage.

Table 31: CL0-D8 Discharge Monitoring Data (average)

Statistic (n=12)	**Flow** (gpm)	**pH** (s.u.)	**SC** (µS/cm)	**Alkalinity** (mg/L)	**Acidity** (mg/L)	**Fe** (mg/L)	**Mn** (mg/L)	**Al** (mg/L)	**SO_4** (mg/L)
Average	8.3	3.2	1740	ND	401	32.4	7.4	33.2	1451
Min	1.3	2.7	26	ND	99	19.4	6.7	28.5	157
Max	20.9	3.7	2570	ND	923	50.5	8.4	37.8	1651
Median	6.6	3.2	1904	ND	355	29.8	7.4	33.4	1564

Note: Specific Conductivity (SC); Total metal values.

CL0-D8 discharge and weir in 2002 (left) and 2015 (right)

The weir used to measure flow rate was located very close to the source of the discharge. As a result, little to no surface runoff was included in the flow measurements. Additional sampling was conducted on 3/24/15, about one week after a high flow event. (Refer to results in Table 32.) Flow measurement was difficult due to the weir being broken; however, a pipe was set and flow rate was measured using the bucket-and-stopwatch method. The flow rate was lower compared to past measurements partially due to the diffuse nature of the discharge. The water quality remained similar to past monitoring for manganese and aluminum, but iron content was about a quarter of the previous results.

Table 32: CL0-D8 Discharge Monitoring Data - Collected 3/24/15

Flow (gpm)	pH (s.u.)	SC (µS/cm)	Alkalinity (mg/L)	Acidity (mg/L)	Fe (mg/L)	Mn (mg/L)	Al (mg/L)	SO_4 (mg/L)
2.5	3.15	2008	ND	209	7.5	5.1	30.2	1091

Note: Specific Conductivity (SC); Total metal values.

The proposed conceptual design includes installation of the following:

1. Jennings-type Vertical Flow Pond (JVFP) containing 580 tons of treatment media consisting of a mixture of crushed limestone, compost, and woodchips
2. 0.1-acre Aerobic Wetland (WL)

Due to the close proximity of the highwall, spoil piles, and Coal Run, the area to construct the passive treatment system is extremely limited. Given the lower priority status along with the lack of room to build the system, a conceptual design has not been developed for this site at this time. The cost for the passive treatment system including design and permitting is estimated to be over **$150,000.** In addition, an active permit is currently located near the restoration area and will require coordination with the PA DEP to treat the discharge.

6.3 Other Projects

In addition to the five priority discharges, 13 other discharges have been identified within this report and other smaller discharges not included in this report remain untreated in the watershed. These discharges, although degraded, do not have a severe affect upon the main stem of Aultmans Run. If all of the major discharges are treated, these smaller discharges may not need to be addressed in order for Aultmans Run to meet the water quality criteria. Additional sampling is recommended prior to designing and constructing any additional treatment systems.

As discussed in Section 3.2, abandoned mine lands also remain a serious issue in the watershed. One site in particular, BM 1029 contains a flooded strip mine in the southern portion of the watershed next to Aultman Road, which causes a potential dangerous condition for motorists. The flooded pit is considered an OSM Priority 2 site. The PA DEP Bureau of Abandoned Mine Reclamation has flown the site to develop topography for project design; however, the current status of the project is uncertain.

7.0 PRIORITIZATION, SCHEDULING, AND LOAD REDUCTIONS

The project sites have been prioritized based on metal load reductions and potential improvement to the streams. Sites located higher in the watershed were given preference. Table 33 summarizes the ranking, cost estimates, and load reductions of each site. Nearly $1.5 million are needed to permit, design, and construct all of the priority sites. Potential sources of funding can be found in Table 34.

Table 33: Cost Estimates and Load Reductions for Proposed Passive Treatment Systems

Priority	Project Name	Cost	Stream Miles Improved	Loading Reduction (lb/day)				
				Acidity	Fe	Al	Mn	Total Metals
1	Neal Run Restoration Area-Phase II (D2)	$484,200	10.0	653.0	83.4	66.1	3.6	153.1
2	Golden Pheasant Run PTS (Jack-MP1,2,& 4)	$275,000	1.5	81.5	10.7	6.7	2.4	19.8
3	"Foot Run" PTS (AM11-D1)	$350,000	1.5	100.9	0.2	8.4	3.6	12.2
4	"Mule Run" PTS (AM0-D13)	$225,000	1.0	28.5	0.5	2.1	1.4	3.9
5	Coal Run PTS (CL0-D8)	>$150,000	1.0	35.4	3.4	3.2	0.7	7.4
	Totals	**$1,484,200**	**11.5**	**899.3**	**98.2**	**86.5**	**11.7**	**196.4**

Note: As some improved stream miles overlap, stream segments are only considered once in the calculation of total stream miles improved. Neal Run loadings based on OPC1 Effluent data.

Many sections of Aultmans Run have a relatively level grade and, as a result, even as the water quality improves, the pre-existing metal precipitates in the substrate may not be flushed as readily as a high-gradient stream. According to the PA DEP List of Impaired Waters, Aultmans Run downstream of Coal Run is considered impacted due to agricultural siltation. While some sediment could be originating from agriculture, the majority of this siltation is most likely due to metal precipitates. Construction of the passive systems to collect metal sludge is expected to significantly assist in ameliorating the sediment problem in the stream.

Table 34: Potential Funding Sources for Implementation

Funding Source	Contact Information	Eligible Uses	Amount
AMD Abatement and Treatment Program (AMDATP) Marcellus Legacy Fund	PA Department of Community and Economic Development Office of Innovation and Investment – CFA Programs Division AMD Abatement and Treatment Program Commonwealth Keystone Building 400 North Street, 4th Floor Harrisburg, PA 17120-0225	AML reclamation projects, AMD remediation, repair of existing AMD remediation project sites, O&M, O&M trust fund, monitoring, AMD for oil and gas development, and new technologies or research methods to study or design new treatment measures to abate and/or reduce AMD	No known minimum, ≤$1,000,000/ project
PA DEP Growing Greener Program	PA DEP Grants Center RCSOB, 15th Floor 400 Market Street P.O. Box 8776 Harrisburg, PA 17105 717-705-5400 www.depweb.state.pa.us	Watershed restoration implementation (construction) projects, O&M, education/outreach projects, watershed organization, and watershed assessment	No known minimum or maximum
US EPA Section 319 Nonpoint Source Program	PA DEP Grants Center RCSOB, 15th Floor 400 Market Street P.O. Box 8776 Harrisburg, PA 17105 717-705-5400 www.depweb.state.pa.us	Projects addressing nonpoint sources including AMD restoration (construction projects); watersheds with approved TMDLs and restoration plans considered a priority	No known minimum or maximum
US OSM Appalachian Clean Streams Initiative	US OSM Harrisburg Field Office 415 Market Street, Suite 3 Harrisburg, PA 17101 717-782-2285	AMD restoration (construction projects) in the Appalachian Region	Up to around $100,000 with no defined maximum
Foundation for Pennsylvania Watersheds	John Dawes 9697 Loop Road Alexandria, PA 16611 814-669-4244 www.pennsylvaniawatersheds.org	Watershed restoration and preservation projects including AMD	No known min/max; funding typically ≤$20,000/ project
Common Grant Application	Grant Makers of Western Pennsylvania 650 Smithfield St., Suite 210 Pittsburgh, PA 15222 412-471-6488 www.gwpa.org	Variety of uses; application may be used for many different foundations, although each foundation should be contacted individually	Varies
The Heinz Endowment	The Heinz Endowments 30 Dominion Tower 625 Liberty Avenue Pittsburgh PA 15222-3115 http://www.heinz.org	Restore and protect watersheds, ecosystems and landscapes; decrease human impact (point and non-point) sources; encourage public awareness, empower grassroots organizations, and build partnerships to address environmental preservation and remediation	No known minimum or maximum
Richard King Mellon Foundation	Richard King Mellon Foundation BNY Mellon Center 500 Grant Street, Suite 4106 Pittsburgh, PA 15219-2502 (412) 392-2800 http://foundationcenter.org/grantmaker/rkmellon/index.html	Protection and preservation of natural resources	No known minimum or maximum

Table 35 provides a proposed schedule for implementing the restoration plan. Previously constructed treatment systems have not been included. Priorities may be rearranged based upon further evaluation of the discharges and watershed in order to restore Aultmans Run in the most efficient and economical manner possible. The priority list and proposed schedule are to serve as guides to developing and implementing projects and may be revised as needed. Load reductions, water quality criteria, and landowner access are to be used to prioritize future projects.

Table 35: Proposed Schedule for Implementing Restoration Plan

Passive System	Obtain Funding		Design & Construct	
	Start	End	Start	End
Neal Run - Phase II	6/2016	6/2017	6/2017	10/2018
Golden Pheasant Run	6/2017	6/2018	6/2018	10/2019
"Foot Run"	6/2018	6/2019	6/2019	10/2020
"Mule Run"	6/2019	6/2020	6/2020	10/2021
Coal Run	6/2020	6/2021	6/2021	10/2022

8.0 WATER QUALITY MILESTONES AND PROGRESS EVALUATION

After completion of the priority discharges, a rapid bioassessment of the stream is recommended in order to determine if the remaining discharges are impacting aquatic life. Water quality milestones will also be used to evaluate the progress and degree of success in implementation of the restoration plan, as the primary purpose of the plan is to improve the water quality of Aultmans Run and its tributaries with the ultimate goal of returning the streams to a viable fishery. Water monitoring shall be conducted by AWARE and their partners, which includes, but is not limited to, the PA DEP, Stream Restoration Inc., Kiski-Conemaugh Stream Team, and volunteers. When funding is available, water samples will be collected and analyzed by a laboratory for standard mining parameters including pH, alkalinity, acidity, total iron, total manganese, total aluminum, sulfates, and suspended solids. When funding is not available for laboratory analyses, field kits may be used to measure pH, alkalinity, and iron. Flow rate is also to be measured. At a minimum, monitoring should be conducted twice a year although quarterly is preferred at stream sampling points listed in Section 5.1.1: Subwatersheds Not Meeting TMDL Water Quality Criteria, at the influent and effluent for each passive treatment system, as well as the receiving stream above and below the confluence with the final system effluent.

Annually, AWARE will review available monitoring data and discuss the progress of plan implementation. This will most likely be conducted at a monthly public meeting during the 1st quarter of the year. With each new passive treatment system installed, the degree of improvement to the impacted tributary and/or main stem of Aultmans Run will be reported. These improvements are expected to be reflected by increases in pH and alkalinity and decreases in acidity, iron, manganese, and aluminum. Implementation of the restoration plan, as feasible, shall continue until applicable water quality criteria have been met.

9.0 PUBLIC PARTICIPATION

Public participation in the restoration plans and project implementation has always been encouraged by AWARE and Stream Restoration Inc. Progress relating to plan development has been discussed at the AWARE monthly meetings (open to the public) as well as outreach events. As this plan outlines the restoration of an entire watershed, the major stakeholders includes the project team and everyone who lives, works, and recreates within the watershed, especially the landowners who have property directly impacted by abandoned mine lands. AWARE, Stream Restoration Inc., and PA DEP will be leading the effort to implement the plan. In order to inform the public about the progress of implementing the plan, various education/outreach activities will be utilized including the internet, watershed newsletter, newspaper articles, monthly AWARE meetings, and public outreach events such as the Pennsylvania Abandoned Mine Reclamation Conference. The plan will be uploaded to the online GIS and database management website Datashed (www.datashed.org).

10.0 REFERENCES CITED

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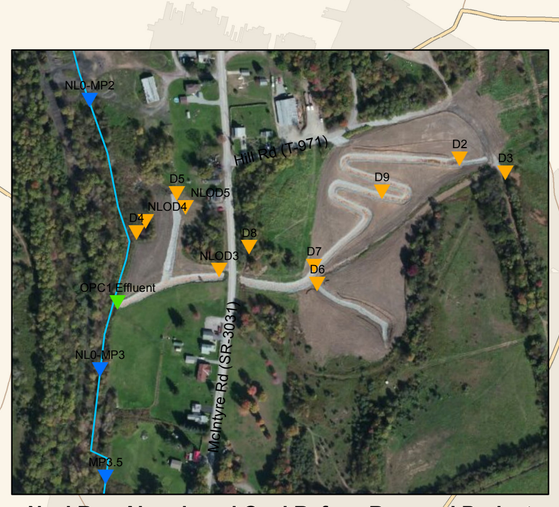
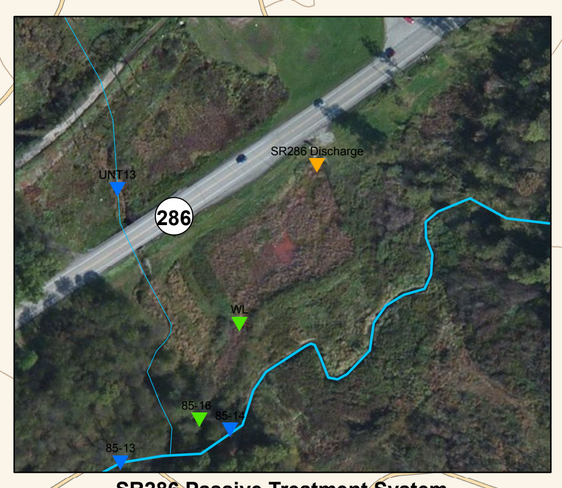
Appendix A
Aultmans Run Watershed Map



Neal Run Abandoned Coal Refuse Removal Project

Reeds Run AMD Remediation Project



SR286 Passive Treatment System

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

Small watershed boundary datasets created by Environmental Resources Research Institute.

National Hydrography Dataset (stream) created by USGS. Minor modifications by BioMost, Inc. to conform to aerial photography.

County, municpality, and road datasets created by PA Department of Transportation.

Funding for this project was provided by the Foundation for Pennsylvania Watersheds.

Legend

- Community
- Existing Project
- Proposed Projects
- Post-Mining Discharge
- Boat Launch
- Stream
- Lake/Pond
- Underground Mine
- Army COE Property
- Aultmans Run Watershed

Permitted Surface Mines

- Abandoned
- Active
- Bond Forfeited
- Reclamation Completed

Roads

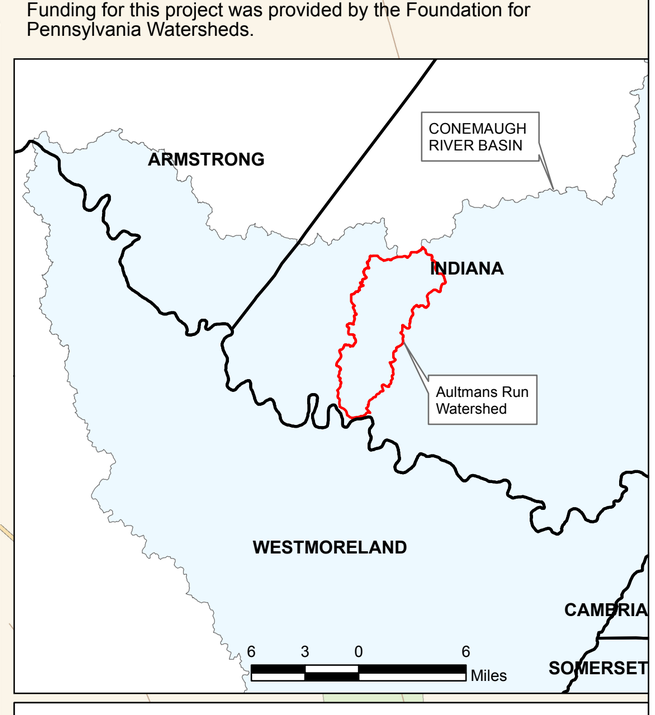
- State Road
- Township Road

Sample Points

- Discharge
- Treatment System
- Sediment Pond/Pond
- Stream

Non-Attaining Stream Designations

- AMD - Metals
- AMD- Metals ; Crop Related Agric - Siltation
- Agriculture - Siltation
- Crop Related Agric - Siltation



AULTMANS RUN WATERSHED MAP

AULTMANS RUN RESTORATION PLAN

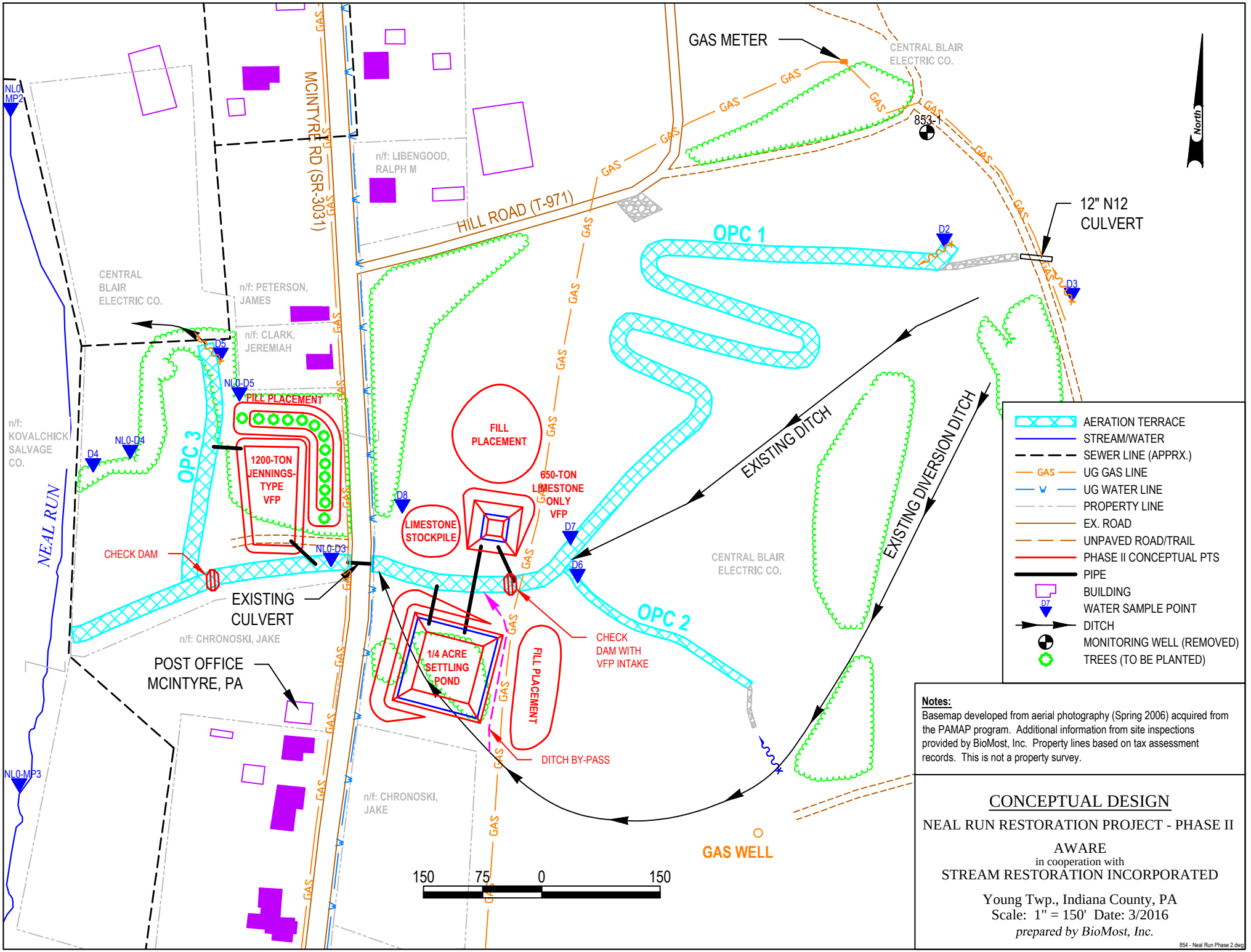
AWARE
&
STREAM RESTORATION INCORPORATED
Blacklick, Center, Conemaugh, and Young Townships
Indiana County, Pennsylvania

Scale: 1" = 1/4 Mile March 2016

BioMost, Inc. Mining and Reclamation Services
Mars, PA www.biomost.com

854102

Appendix B
Conceptual Designs



Notes:
Basemap developed from aerial photography (Spring 2006) acquired from the PAMAP program. Additional information from site inspections provided by BioMost, Inc. Property lines based on tax assessment records. This is not a property survey.

CONCEPTUAL DESIGN

NEAL RUN RESTORATION PROJECT - PHASE II

AWARE
in cooperation with
STREAM RESTORATION INCORPORATED

Young Twp., Indiana County, PA
Scale: 1" = 150' Date: 3/2016
prepared by BioMost, Inc.

854 - Neal Run Phase 2.dwg

n/f PA GAME COMMISSION

APPX
UNDERGROUND
MINE WORKINGS

North

PROPOSED
JENNINGS VERTICAL FLOW POND (JVFP)
[150 TONS LIMESTONE;
55 CY SPENT MUSHROOM COMPOST;
55 CY WOODCHIPS]

APPX
DISCHARGE
JACK-MP2

MP2

PROPOSED
AUTO FLUSHING VERTICAL FLOW POND (AFVFP)
[500 TONS LIMESTONE]

MP1

APPX
DISCHARGE
JACK-MP1

APPX
MONITORING
POINT
JACK-MP4

MP4

PROPOSED
OXIDATION / SETTLING POND
WITH WINDOWED BAFFLE CURTAIN
TOTAL SURFACE AREA 27,800 FT²

PROPOSED
AEROBIC WETLAND
SURFACE AREA 13,900 FT²

GPR3

PROPOSED
ANOXIC LIMESTONE DRAIN
[200 TONS LIMESTONE]

APPX
DISCHARGE
GPR3

DIVERSION DITCH

"GOLDEN PHEASANT RUN"

PROPOSED SYSTEM
EFFLUENT TO STREAM

SR-0286

SR-0286

GAS

1230 1220 1210 1200 1190 1180 1170 1240 1250

100 50 0 100

LEGEND

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- CONCEPTUAL PTS COMPONENT
- EX. TREELINE
- EX. ROAD
- SITE ACCESS
- APPX PARCEL BOUNDARY
- EX. STREAM
- GAS — EX. GASLINE
- D7 — EX. MONITORING POINT
- DEGRADED WETLAND (APPX)

Notes:
Basemap developed from aerial photography and LiDAR (Spring 2006) acquired from the PAMAP program. Additional information from site inspections provided by BioMost, Inc. Property lines based on tax assessment records. This is not a property survey.

GOLDEN PHEASANT RUN PTS
CONCEPTUAL DESIGN

AULTMANS RUN WATERSHED
AMD ASSESSMENT
AWARE
in cooperation with
STREAM RESTORATION INCORPORATED
Young Twp., Indiana County, PA
Scale: 1" = 100' Date: 3/2016
prepared by BioMost, Inc.

0854-2.dwg/Golden Pheasant Run

APPX DISCHARGE AM11-D1C

AM11-D1C

PROPOSED JENNINGS VERTICAL FLOW POND (JVFP) [800 TONS LIMESTONE; 300 CY SPENT MUSHROOM COMPOST; 300 CY WOODCHIPS]

"FOOT RUN"

PROPOSED WETLAND (WITH INLET/OUTLET POOLS) [TOTAL SURFACE AREA 17,000 FT²]

AM11-D1D

APPX DISCHARGE AM11-D1D

PROPOSED FOREBAY [SURFACE AREA 9,000FT²]

n/f PA GAME COMMISSION

PROPOSED ANOXIC LIMESTONE DRAIN [200 TONS LIMESTONE]

T-660

AM11-D1B

APPX DISCHARGE AM11-D1B

APPX MONITORING POINT AM11-D1

AM11-D1

PROPOSED AEROBIC WETLAND [SURFACE AREA 5,900 FT²]

"FOOT RUN"

APPX UNDERGROUND MINE WORKINGS

AM11-D1A

APPX DISCHARGE AM11-D1A

PROPOSED SYSTEM EFFLUENT CHANNEL

AULTMAN RUN

DIRECT ALL AM11-D1A FLOW TO LOWER EXISTING POND (CLEANOUT POND AS NEEDED)

PROPOSED AUTO FLUSHING VERTICAL FLOW POND (AFVFP) [325 TONS LIMESTONE]

PROPOSED FLUSH POND [SURFACE AREA 6,000FT²]

PROPOSED JENNINGS VERTICAL FLOW POND (JVFP) [400 TONS LIMESTONE; 150 CY SPENT MUSHROOM COMPOST; 150 CY WOODCHIPS]

AULTMAN RUN

200 100 0 200

North

LEGEND

- INDEX CONTOUR
- INTERMEDIATE CONTOUR
- CONCEPTUAL PTS COMPONENT
- EX. TREELINE
- EX. ROAD
- SITE ACCESS
- APPX PARCEL BOUNDARY
- EX. STREAM
- D1 EX. MONITORING POINT

Notes:

Basemap developed from aerial photography and LiDAR (Spring 2006) acquired from the PAMAP program. Additional information from site inspections provided by BioMost, Inc. Property lines based on tax assessment records. This is not a property survey.

FOOT RUN PASSIVE TREATMENT SYSTEM CONCEPTUAL DESIGN

AULTMANS RUN WATERSHED AMD ASSESSMENT

AWARE

in cooperation with

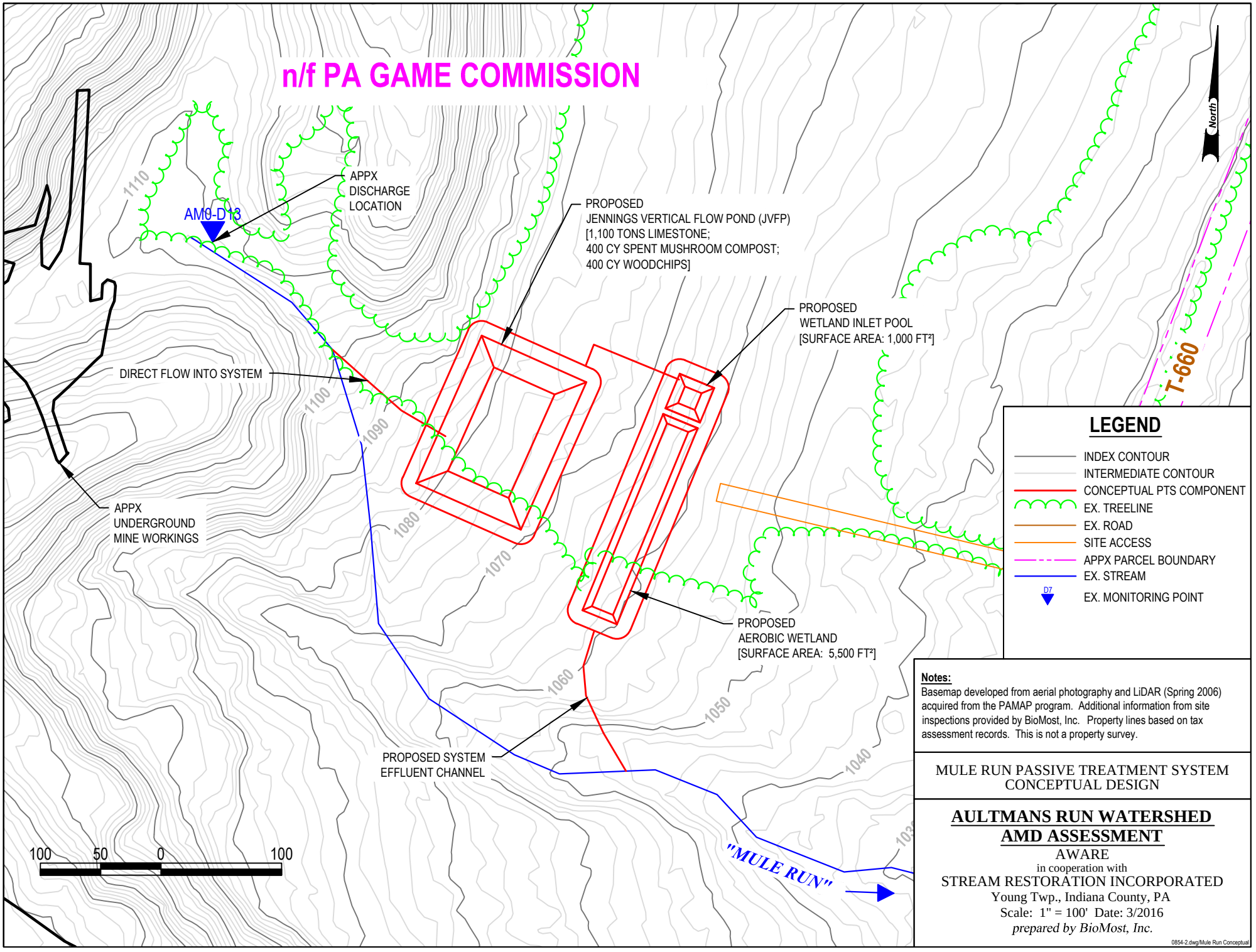
STREAM RESTORATION INCORPORATED

Young Twp., Indiana County, PA

Scale: 1" = 100' Date: 3/2016

prepared by BioMost, Inc.

0854-2.dwg/Foot Run Conceptual


n/f PA GAME COMMISSION
AM9-D13
APPX
DISCHARGE
LOCATION
PROPOSED
JENNINGS VERTICAL FLOW POND (JVFP)
[1,100 TONS LIMESTONE;
400 CY SPENT MUSHROOM COMPOST;
400 CY WOODCHIPS]
PROPOSED
WETLAND INLET POOL
[SURFACE AREA: 1,000 FT²]
DIRECT FLOW INTO SYSTEM
APPX
UNDERGROUND
MINE WORKINGS
PROPOSED
AEROBIC WETLAND
[SURFACE AREA: 5,500 FT²]
PROPOSED SYSTEM
EFFLUENT CHANNEL
"MULE RUN"
T-660
1110
1100
1090
1080
1070
1060
1050
1040
North
100 50 0 100
LEGEND
INDEX CONTOUR
INTERMEDIATE CONTOUR
CONCEPTUAL PTS COMPONENT
EX. TREELINE
EX. ROAD
SITE ACCESS
APPX PARCEL BOUNDARY
EX. STREAM
D7
EX. MONITORING POINT
Notes:
Basemap developed from aerial photography and LiDAR (Spring 2006) acquired from the PAMAP program. Additional information from site inspections provided by BioMost, Inc. Property lines based on tax assessment records. This is not a property survey.
MULE RUN PASSIVE TREATMENT SYSTEM
CONCEPTUAL DESIGN
AULTMANS RUN WATERSHED
AMD ASSESSMENT
AWARE
in cooperation with
STREAM RESTORATION INCORPORATED
Young Twp., Indiana County, PA
Scale: 1" = 100' Date: 3/2016
prepared by BioMost, Inc.
0854-2.dwg/Mule Run Conceptual

Appendix C
Water Quality Data

Sample Point	Latitude	Longitude	Point Type	Location
85-16	40.906453	-79.928111	PTS	Effluent of SR286 PTS prior to entering Aultmans Run. Also known as KCOATS by the Kiski-Conemaugh Stream Team and OUT286 by the PADEP.
A2M - MP13	40.555833	-79.26	Stream	Aultman II Mine (32010105) - Aultman Run Above Aultman II Mine. Also known as 85-14 by SRI.
A2M - MP14	40.549444	-79.268056	Stream	Aultman II Mine (32010105) - Aultmans Run below Aultman II Mine
A2M - MP16	40.554722	-79.265556	Discharge	Aultman II Mine (32010105) - COMBINATION OF DISCHARGES
A2M - MP24	40.561597	-79.260928	Stream	Aultman II Mine (32010105) - Unnamed Trib "C" to Aultmans Run, upstream. 200' NE of permit boundary.
A2M - MP25	40.560833	-79.261944	Discharge	Aultman II Mine (32010105) - Sub F Discharge
A2M - MP45	40.561111	-79.261944	Discharge	Aultman II Mine (32010105) - Sub F Discharge
A2M - MP5	40.559167	-79.266389	Discharge	Aultman II Mine (32010105) - Sub F Discharge
A2M - MP6	40.558056	-79.266389	Discharge	Aultman II Mine (32010105) - Sub F Discharge
A2M - MP7	40.5575	-79.266389	Discharge	Aultman II Mine (32010105) - Sub F Discharge. AMD seep 100' south of Sediment Pond 6 (SP-6).
A2M - MPD2	40.555	-79.264444	Discharge	Aultman II Mine (32010105) - Toe of slope discharge: reclaimed Sed Pond 2.
A2M - MPD2A	40.554444	-79.263889	Discharge	Aultman II Mine (32010105) - Drainage from D2 before stream.
AM0-D13	40.524633	-79.29004	Discharge	Discharge flowing from abandoned strip pit. Labeled as AM0-D5 in the field on the weir. Forms large sloped wetland.
AM0-D2	40.549167	-79.2675	Discharge	Aultman II Mine (32010105) - PIT DRAIN/DEEP MINE DISCHARGE
AM11-D1	40.529457	-79.285591	Discharge	"Foot Run" formed from a collection of discharges. Also known as UNT06 by the PADEP.
AUL02	40.514444	-79.204167	Stream	Lewisville Rec (32803712) - AULTMANS RUN, DOWN. Same as MP34 on Lewisville Rec (32803712) permit.
AUL03	40.516667	-79.285278	Stream	Kent Strip No 55 (32860106) - Aultmans Run upstream of Coal Run
AUL04	40.5325	-79.284444	Stream	Kent No 57 (32890109) - AULTMAN RUN ABOVE. Same as Kent No 55 (32860106) - AULTMANS RUN ABOVE.
CL0-D2	40.518636	-79.294313	Discharge	as 851-6.
CL0-D8	40.514654	-79.290408	Discharge	Discharge near the mouth of Coal Run. Also known by SRI as 851-7.
COA01	40.514444	-79.288611	Stream	Lewisville Rec (32803712) - COAL RUN, DOWN
COA02	40.534167	-79.304722	Discharge	Jacksonville Surface Mine (32980108) - Unnamed Trib A to Coal Run, downstream, 2400' SW of site. Same as MP16 on Lewisville Rec mine (32803712).
CUT01A	40.531111	-79.306944	Stream	Lewisville Rec (32803712) - Unnamed trib to Coal Run.
CUT01B	40.533056	-79.313333	Stream	Helvetia No. 2 CRDA (32743711) - Mouth of CUT01B
CUT01C	40.533611	-79.313056	Stream	Helvetia No. 2 CRDA (32743711) - Mouth of CUT01C
D2	40.567528	-79.29326	Discharge	French drain outlet at beginning of PTS. Emanates from large refuse pile in Mcintyre, PA.
F	40.562086	-79.288332	Stream	Reeds Run upstream of Willow Road and downstream of Willow Run. Same as L11 in Lentz Mine (32020102).
Hel - 1	40.538611	-79.316944	Stream	Helvetia No. 2 CRDA (32743711) - CUT01C headwaters
Hel - 2	40.533889	-79.321111	Stream	Helvetia No. 2 CRDA (32743711) - CUT01B headwaters
Jack - MP1	40.541389	-79.298056	Discharge	Jacksonville Surface Mine (32980108) - Discharge in headwaters of "Golden Pheasant Run".
Jack - MP2	40.541944	-79.296389	Discharge	Jacksonville Surface Mine (32980108) - Discharge in headwaters of "Golden Pheasant Run".
Jack - MP20	40.552499	-79.298435	Stream	Jacksonville Surface Mine (32980108) - Headwaters of Unnamed "Trib A" to Reeds Run, 1200' north of Jacksonville permit.
Jack - MP27	40.547979	-79.289786	Stream	Jacksonville Surface Mine (32980108) - Reeds Run upstream of Jacksonville Permit, 2100' northeast of site.
Jack - MP4	40.541389	-79.295	Discharge	Jacksonville Surface Mine (32980108) - Weir on "Golden Pheasant Run", also known as Unnamed Trib B in Jacksonville Mining Permit or RUNT01 in PADEP BMR Stream Assessment.
Jack - MP5	40.541667	-79.306111	Stream	Jacksonville Surface Mine (32980108) - Coal Run above SR-286
Jack - MP7	40.546111	-79.296389	Discharge	Jacksonville Surface Mine (32980108) - Weir, old highwall discharge. 250 east of Jacksonville Mine. Sub-F Discharge.
Jack - MP8	40.544444	-79.294167	Discharge	Jacksonville Surface Mine (32980108) - Weir, head of pond, east side of gas line road. Sub-F Discharge.
John - 1	40.543333	-79.277222	Stream	Johnston Mine (32020107) - Aultmans Run upstream of UNT08.
John - 11	40.538889	-79.280556	Stream	Johnston Mine (32020107) - Aultmans Run at confluence with Reeds Run.
John - 3	40.54241	-79.273009	Stream	Johnston Mine (32020107) - Unnamed tributary No. 1, upstream, north-northeast of permit.
John - 9	40.538611	-79.271111	Stream	Johnston Mine (32020107) - Headwaters sample of UNT07.

Sample Point	Latitude	Longitude	Point Type	Location
K53 - F	40.562778	-79.288611	Stream	Kent No. 53 Mine (32803037) & Lentz Mine (32020102) - Reeds Run upstream of Willow Rd.
K53 - SW29	40.579444	-79.276944	Discharge	Kent No 53 (32803037) - Discharge that flowed into Kent-2A bog area.
K53 - SW30	40.576389	-79.276111	Pond	Kent No 53 (32803037) - Effluent from pond at end of Kent-2A bog area.
K53 - SW32	40.579722	-79.275556	Stream	Kent No 53 (32803037) - Reeds Run above Kent 2-A taken at township road. Also known as RD0-MP1 by AWARE.
K53 - SW33	40.575556	-79.275556	Stream	Kent No 53 (32803037) - Reeds Run below Kent 2-A taken below beaver dam. Also known as 851-5 by SRI and R05 by PADEP.
K55 - SM11	40.520278	-79.279167	Stream	Kent Strip No 55 (32860106) - Headwaters of UNT05
K55 - SM12	40.533889	-79.286667	Stream	Kent Strip No 55 (32860106) - Mouth of unnamed tributary.
K55 - SM14	40.51	-79.291111	Stream	Kent Strip No 55 (32860106) - Aultmans Run Downstream
K56 - 11	40.53444	-79.281667	Stream	Kent No. 56 - Tributary below Kent No. 56 Mine. Upstream of UNT07A.
K56 - 2	40.536389	-79.283333	Stream	Johnston Mine (32020107) - AULTMAN RUN ABOVE
K56 - 2	40.536389	-79.283333	Stream	Kent No 56 (32803010) - AULTMAN RUN ABOVE
K56 - 4	40.527778	-79.284722	Stream	Kent No 56 (32803010) - AULTMAN RUN BELOW
K56 - 4	40.527778	-79.284722	Stream	Kent No 57 (32890109) - AULTMAN RUN BELOW
K56 - GW28D	40.549722	-79.280556	Treatment Facility	Kent No 56 (32803010) - PASSIVE TREATMENT EFFLUENT
K56 - RW	40.532778	-79.28	Discharge	Kent No 56 (32803010) - SEEP EAST SIDE POND A (RAW)
K57 - MD1	40.538889	-79.281944	Discharge	Kent No 57 (32890109) - Raw Discharge
K57 - TP2	40.528889	-79.283611	Treatment Facility	Kent No 57 (32890109) - TREATED EFFLUENT SAME AS NPDES 001
Lewis - 23	40.531944	-79.283889	Stream	Lewisville Rec (32803712) - AULTMANS RUN, UP; Downstream UNT07
Lewis - 26	40.525	-79.2875	Discharge	Lewisville Rec (32803712) -
Lewis - 57	40.529722	-79.288611	Discharge	Lewisville Rec (32803712) - Seep near Foot Run.
Lewis - 58	40.529444	-79.288056	Discharge	Lewisville Rec (32803712) - Seep near Foot Run.
Lewis - MS98	40.528056	-79.287778	Discharge	Lewisville Rec (32803712) - Discharge probably related to AM0-D5.
Lewis - SP L	40.526667	-79.286944	Discharge	Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE
Lewis - SP L	40.526667	-79.286944	Sediment Pond	Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE
Lewis - SPL	40.526667	-79.286944	Sediment Pond	Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE
Lewis - TP-J	40.526111	-79.300278	Sediment Pond	Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE
Lewis - TP-L	40.526667	-79.286944	Sediment Pond	Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE
Mc - L8-MS2	40.5775	-79.335	Discharge	Mcintyre Mine (32910103) - Kolb shaft, Kent #1 mine discharge. Coordinates taken from SIS show this discharge is outside the watershed although the permit is within the watershed.
Mc - SW1	40.571944	-79.298889	Stream	Mcintyre Mine (32910103) - Neal Run downstream of Church St.
Mc - SW1	40.571944	-79.298889	Stream	Mcintyre Mine (32910103) - Neal Run downstream of Church St.
Mc - SW-1	40.571944	-79.298889	Stream	Mcintyre Mine (32910103) - Neal Run downstream of Church St.
Mc - SW14	40.578333	-79.300278	Stream	Mcintyre Mine (32910103) - Unnamed trib to Neal Run.
Mc - SW25	40.577778	-79.289444	Stream	Mcintyre Mine (32910103) - Willow Run headwaters.
Mc - SW26	40.574167	-79.290278	Stream	Mcintyre Mine (32910103) - Willow Run downstream of RD2-D1
Mc - SW5	40.579722	-79.301111	Stream	Mcintyre Mine (32910103) - Neal Run headwaters.
Mc2 - MP35	40.570833	-79.298611	Stream	Mcintyre No 2 Mine (32940110) - NEAL RUN, DOWN
Mc2 - SW5	40.579444	-79.301111	Stream	Mcintyre No 2 Mine (32940110) - NEAL RUN, UP
NEAL02	40.5625	-79.297778	Stream	Lentz Mine (32020102) - Neal Run downstream of RUNT06?
NEAL03	40.555278	-79.291389	Stream	Lentz Mine (32020102) - Mouth of Neal Run
NL0-MP2	40.567998	-79.297617	Stream	Neal Run upstream of Neal Run Restoration Area. Also known as MP2 by the Kiski-Conemaugh Stream Team.
NL0-MP3	40.565585	-79.29744	Stream	Neal Run downstream of Neal Run Restoration Area. Also known as MP3 by the Kiski-Conemaugh Stream Team.
R01	40.57893	-79.275923	Stream	Reeds Run downstream Locust Rd and unnamed trib. Also known as 851-1 by SRI.
R02	40.577925	-79.275697	Stream	Reeds Run upstream seeps; middle weir. Also known as 851-2 by SRI.
R03	40.576965	-79.275414	Stream	Reeds Run at beginning of seep zone; downstream weir. Also known as 851-3 by SRI.
RD0-D1	40.576275	-79.275713	Stream	Reeds Run where AMD seep emanating within stream. Also known as R04 by the PADEP.
RD0-D3	40.555272	-79.290641	Discharge	Discharge near Challenger Speedway.

Sample Point	Latitude	Longitude	Point Type	Location
RD0-D3	40.555264	-79.290639	Discharge	Discharge flowing from culvert near intersection of McIntyre Road and Neal Road. Same as L-2 in Lentz Mine (32020102).
RD2-D1	40.574412	-79.290868	Discharge	Discharge flowing into "Willow Run"
RD3-D1	40.549981	-79.294229	Discharge	Discharge flowing into RUNT03.
RD5-D1	40.540047	-79.285173	Stream	"Golden Pheasant Run" near mouth. Also known as RUNT01 by the PADEP.
REE01	40.538821	-79.280812	Stream	Mouth of Reeds Run. Same as Johnston Mine MP12.
REE03	40.555278	-79.291111	Stream	Lentz Mine (32020102) - Reeds Run upstream of Coal Run.
SR286 Discharge	40.556649	-79.25881	Discharge	Large alkaline, iron discharge that flows directly into Aultmans Run. PTS has been constructed. Also known as KCOAB8 by the Kiski-Conemaugh Stream Team, AM0-D1 by AWARE, and RAW286 by the PADEP.
UNT05	40.518611	-79.284167	Stream	Kent Strip No 55 (32860106) - Mouth of UNT05
UNT07	40.533889	-79.282778	Stream	Kent No 56 (32803010) - Unnamed trib near mouth.
UNT07A	40.534167	-79.281944	Stream	Johnston Mine (32020107) - Tributary to UNT07. Also known as sample point 10 for Kent No. 56 Mine.
UNT08	40.542459	-79.277081	Stream	Johnston Mine - Mouth of unnamed trib north of permit (sample point 4). SMP samples taken further upstream than BMR assessment.
UNT11	40.549444	-79.267778	Stream	Aultman II Mine (32010105) - TRIB A BELOW
UNT11a	40.548333	-79.266944	Stream	Aultman II Mine (32010105) - TRIB A ABOVE
UNT12	40.554167	-79.264722	Stream	Aultman II Mine (32010105) - TRIB F BELOW
UNT13	40.556667	-79.260278	Stream	Aultman II Mine (32010105) - TRIB C BELOW
WL	40.555991	-79.259184	PTS	Outlet of wetland at SR286 PTS prior to entering ditch. Also known as WET/DITCH by the Kiski-Conemaugh Stream Team.

ultmans Run AMD Assessment Water Quality Report - A2M - MP5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	2.9	4.6	4.73	--	--	9	564	--	0.8	50.2	0.53	--	0.39	--	5.37	--	221	3
1999-12-16	--	8.7	4.4	4.3	--	--	10	484	--	0	35.8	0.3	--	0.31	--	4.36	--	154	8
2000-01-26	--	6	5	4.94	--	--	7	543	--	2.4	21.8	0.49	--	0.24	--	2.68	--	66	0
2000-02-25	--	11.1	5.7	5.46	--	--	12	394	--	2.6	7.4	0.1	--	0.19	--	0.73	--	125	0
2000-03-29	--	15.4	5.2	5.73	--	--	11	251	--	4	5.2	0.17	--	0.25	--	0.86	--	90	3
2000-04-24	--	16.5	5.5	6.65	--	--	12	362	--	5.8	4	0.06	--	0.14	--	0	--	114	0
2000-06-01	--	8.2	5.9	5.86	--	--	14	381	--	8.6	12.2	0.13	--	0.23	--	0.25	--	150	2
2000-06-27	--	2.6	4.9	5.94	--	--	14	433	--	5.8	5	0.04	--	0.21	--	0.51	--	146	2
2000-07-24	--	1.4	4.5	5.66	--	--	15	473	--	6.8	10.4	0.12	--	0.21	--	0.45	--	184	0
2000-08-22	--	3.2	4.1	4.82	--	--	13	536	--	2.2	32.4	0.08	--	0.25	--	2.81	--	211	0
2000-09-14	--	3.3	4.3	4.8	--	--	13	575	--	2	25.6	0.06	--	0.29	--	2.28	--	253	0
2000-10-11	--	3.5	4	4.84	--	--	13	828	--	1.2	33.6	0.09	--	0.29	--	2.56	--	250	0
2000-11-15	--	4.6	4.6	4.71	--	--	10	584	--	0.8	32.4	0.06	--	0.33	--	2.51	--	239	2
2000-12-13	--	5.1	4.8	4.65	--	--	12	508	--	1.6	52	0.19	--	0.34	--	2.53	--	211	0
2001-01-04	--	6.3	4.7	4.86	--	--	10	488	--	2.4	282	0.05	--	0.31	--	2.25	--	130	0
2001-02-13	--	10	5.4	5.57	--	--	11	321	--	7	5.8	0.06	--	0.16	--	0.42	--	108	0
2001-03-13	--	10.3	5.1	5.66	--	--	7	458	--	7.6	6	0.12	--	0.22	--	0.92	--	175	0
2001-04-10	--	14.4	5.5	5.94	--	--	10	398	--	9.4	11.2	0.12	--	0.16	--	0	--	176	6
2001-07-16	--	1.1	5.2	5.98	--	--	11	444	--	9	8	0	--	0.4	--	0	--	162	0
2001-08-11	--	5.6	4.9	5.37	--	--	11	529	--	8	18	0.03	--	0.3	--	0.1	--	158	0.4
2001-08-13	--	3.6 0.2	5.2 5.4	5.85 5.62	--	--	12 12	480 527	--	9 8	20 21	0 0	--	0.3 0.3	--	411 0	--	111 204	0 0.1
2007-05-09	--	1	--	6.1	--	--	--	--	--	12.2	14	1.06	--	0.11	--	0.53	--	31.3	3
2008-01-28	--		--	6	--	--	--	--	--	12.4	-8.2	2.33	--	0.14	--	0.54	--	188.4	6
2009-03-05	--		--	5.8	--	--	--	--	--	11	-0.4	3.55	--	0.19	--	2.11	--	63.3	14
2009-05-12	--		--	6.7	--	--	--	--	--	22.6	-9	3.14	--	1	--	0.5	--	231	20
Minimum:			4	4.3	--	--	7	251	--	0	-9	0	--	0.11	--	0	--	31.3	0
Maximum:		16.5	5.9	6.7	--	--	15	828	--	22.6	282	3.55	--	1	--	411	--	253	20
Average:		6.3	4.67	5.09	--	--	11.3	480	--	6.28	26.78	0.5	--	0.28	--	17.16	--	159.7	2.7
Range:		16.3	1.9	2.4	--	--	8	577	--	22.6	291	3.55	--	0.89	--	411	--	221.7	20
Median:		5.1	4.95	5.64	--	--	11.5	482	--	6.3	13.1	0.11	--	0.25	--	0.8	--	160	0.1
Loading (lb/day):									--	0.4	2.14	0.01	--	0.02	--	0.9	--		

Sample Point Description: Aultman Ii Mine (32010105) - SUB F DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - A2M - MP6

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-12-16	--	150	4.4	4.48	--	--	10	546	--	0	30.8	0.27	--	0.31	--	3.32	--	183	13
2000-01-26	--	15.1	5	4.82	--	--	7	612	--	1.2	43.8	0.11	--	0.32	--	2.09	--	206	0
2000-02-25	--	89.8	5.4	5.21	--	--	13	588	--	1.8	20	0.31	--	0.26	--	2.36	--	238	0
2000-03-29	--	73.2	5	5.06	--	--	12	450	--	1.8	21.2	0.34	--	0.28	--	1.89	--	167	2
2000-04-24	--	78	5.3	5.28	--	--	12	418	--	0	4.8	0.21	--	0.24	--	1.45	--	141	0
2000-06-27	--	20.2	4.2	4.6	--	--	12	566	--	0.5	41.4	0.34	--	0.51	--	5.34	--	231	0
2000-07-24	--	4.5	3.9	4.4	--	--	12	629	--	0	74	0.2	--	0.44	--	6.27	--	308	0
2000-08-01	--	46.2	5.2	4.93	--	--	12	467	--	3.8	24.4	0.28	--	0.27	--	2.05	--	170	0
2000-08-22	--	4.3	3.8	4.48	--	--	13	825	--	0	65	0.09	--	0.4	--	6.53	--	247	0
2000-09-14	--	4.7	4	4.41	--	--	13	649	--	0	54.6	0.06	--	0.46	--	5.98	--	263	0
2000-10-11	--	6.2	4.3	4.47	--	--	13	680	--	0	65	0.06	--	0.41	--	4.76	--	272	0
2000-11-15	--	7.2	4.6	4.5	--	--	10	530	--	0	38.2	0.05	--	0.41	--	3.51	--	252	0
2000-11-17	--	11	4	4.11	--	--	8	645	--	0.73	73	0.57	--	56	--	7.59	--	268	5
2000-12-13	--	4.8	5	4.72	--	--	11	565	--	2	36.4	0.15	--	0.36	--	2.95	--	250	0
2001-01-04	--	13.2	4.8	4.86	--	--	10	494	--	3.8	24.2	0.11	--	0.37	--	2.26	--	259	0
2001-02-13	--	151	5	4.89	--	--	11	507	--	2.6	20.6	0.22	--	0.27	--	1.8	--	217	2
2001-03-13	--	50.4	5	5.02	--	--	7	559	--	3.4	12.4	0.18	--	0.28	--	1.43	--	235	0
2001-04-10	--	176.2	5.4	5.03	--	--	10	481	--	6.8	9	0.35	--	0.22	--	0.82	--	179	3
2001-05-11	--	4.9	4.4	4.85	--	--	12	634	--	3	18	0.6	--	0.5	--	0.73	--	223	0.7
2001-06-13	--	31.5	4.5	4.69	--	--	12	620	--	2	32	0	--	0.5	--	2.61	--	213	0.3
2001-07-18	--	19	4.3	4.45	--	--	12	626	--	0	38	0.14	--	0.5	--	4.01	--	258	0.3
2001-08-13	--	2.9	4.3	4.46	--	--	14	769	--	0	54	0.11	--	0.7	--	5.87	--	343	0.3
2007-05-09	--	4	--	6.2	--	--	--	--	--	24	7	0.3	--	0.12	--	0.5	--	20.2	12
2008-01-28	--		--	6	--	--	--	--	--	13.4	-4.4	0.3	--	0.24	--	1.04	--	23.7	3
2008-11-04	--		--	7.55	--	--	--	--	--	95.2	-83.8	4.46	--	0.47	--	1.17	--	235	12
Minimum:			3.8	4.11	--	--	7	418	--	0	-83.8	0	--	0.12	--	0.5	--	20.2	0
Maximum:		176.2	5.4	7.55	--	--	14	825	--	95.2	74	4.46	--	56	--	7.59	--	343	13
Average:		42.1	4.38	4.67	--	--	11.2	585	--	6.64	28.78	0.39	--	2.59	--	3.13	--	216.1	2.1
Range:		173.3	1.6	3.44	--	--	7	407	--	95.2	157.8	4.46	--	55.88	--	7.09	--	322.8	13
Median:		15.1	4.55	4.82	--	--	12	577	--	1.8	30.8	0.21	--	0.37	--	2.36	--	235	0
Loading (lb/day):									--	1.3	11.03	0.13	--	0.47	--	1.11	--		

Sample Point Description: Aultman Ii Mine (32010105) - SUB F DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - A2M - MP7

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	--	4.2	4.47	--	--	9	879	--	0	52.2	0.32	--	0.98	--	4.07	--	299	2
1999-12-16	--	0	4.3	4.36	--	--	3	557	--	o	27.6	0.81	--	0.69	--	2.1	--	192	26
2000-01-26	--	0.3	4.7	4.57	--	--	8	632	--	0.6	24	0.3	--	0.8	--	0	--	115	31
2000-02-25	--	0.6	5.1	4.84	--	--	12	563	--	0.8	15.2	0.22	--	0.59	--	1.47	--	160	21
2000-03-29	--	0.6	4.4	4.59	--	--	10	411	--	1.6	22.8	0.08	--	0.55	--	0.27	--	146	2
2000-04-24	--	0.6	4.6	4.53	--	--	12	413	--	0.6	13.8	0.23	--	0.53	--	0	--	144	10
2000-06-01	--	0.5	4.6	4.39	--	--	15	424	--	0	26.6	0.19	--	0.57	--	1	--	87	2
2000-06-27	--	0.3	3.8	4.17	--	--	18	490	--	0	29	0.37	--	0.83	--	1.7	--	228	4
2000-07-24	--	0.2	3.6	4.11	--	--	14	589	--	0	40.2	0.28	--	0.76	--	1.79	--	236	3
2000-08-22	--	0.2	3.5	4.11	--	--	15	633	--	0	40.8	0.26	--	0.77	--	2.53	--	215	5
2000-09-14	--	0.2	3.6	4.02	--	--	16	637	--	0	32	0.36	--	0.93	--	1.91	--	237	2
2000-10-11	--	0.2	4.1	4.22	--	--	14	686	--	0	35.4	0.27	--	0.84	--	1.97	--	265	2
2000-11-15	--	0.2	4.3	4.12	--	--	9	531	--	0	26.4	0.18	--	0.77	--	1.58	--	251	2
2000-12-13	--	0.2	4.6	4.38	--	--	11	569	--	0	31.6	0.22	--	0.68	--	1.17	--	224	0
2001-01-04	--	0.2	4.3	4.45	--	--	11	498	--	0	29.4	0.08	--	0.68	--	1.42	--	250	0
2007-05-09	--	2	--	6.2	--	--	--	--	--	15.2	27.8	3.87	--	0.1	--	1.08	--	22.1	16
Minimum:		0	3.5	4.02	--	--	3	411	--	0	13.8	0.08	--	0.1	--	0	--	22.1	0
Maximum:		2	5.1	6.2	--	--	18	879	--	o	52.2	3.87	--	0.98	--	4.07	--	299	31
Average:		0.4	4.03	4.33	--	--	11.8	567	--	1.25	29.68	0.5	--	0.69	--	1.5	--	191.9	8
Range:		2	1.6	2.18	--	--	15	468	--	15.2	38.4	3.79	--	0.88	--	4.07	--	276.9	31
Median:		0.2	4.3	4.39	--	--	12	563	--	0	28.4	0.27	--	0.73	--	1.53	--	219.5	2.5
Loading (lb/day):									--	0.03	0.14	0.01	--	0	--	0.01	--		

Sample Point Description: Aultman Ii Mine (32010105) - SUB F DISCHARGE. AMD seep 100' south of Sediment Pond 6 (SP-6).

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - A2M - MP13

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	TLTG	5.6	7.02	--	--	9	388	--	36.2	3	0.88	--	0.66	--	0	--	111	2
1999-12-17	--	TLTG	5.7	7.2	--	--	4	159	--	13	2.4	0.32	--	0.08	--	0	--	35	3
2000-01-26	--	TLTG	6.4	7.43	--	--	4	348	--	27.2	5.4	0.89	--	0.31	--	0	--	68	7
2000-02-25	--	TLTG	6.5	7.26	--	--	13	215	--	14.8	4.4	0.35	--	0.09	--	0.33	--	30	13
2000-03-29	--	289	5.8	7.62	--	--	10	233	--	69.8	4.2	0.2	--	0.04	--	0.24	--	23	2
2000-04-24	--	TLTG	5.9	7.4	--	--	16	159	--	9.2	1.8	0.25	--	0.09	--	0.2	--	35	8
2007-05-09	--		--	7.7	--	--	--	--	--	37.4	-4.2	0.37	--	0.15	--	0.5	--	48.5	6
2008-01-28	--		--	7.5	--	--	--	--	--	36.6	-25	0.44	--	0.21	--	0.5	--	269.6	12
2009-05-12	--		--	7.5	--	--	--	--	--	38.2	-25.4	1.05	--	0.22	--	0.63	--	21	5
2009-11-09	--		--	7.5	--	--	--	--	--	60.8	-43	1.29	--	0.4	--	0.5	--	124.2	3
2010-06-15	--		--	7.7	--	--	--	--	--	60.6	-45.6	0.84	--	0.31	--	0.5	--	153.4	8
2010-12-29	--		--	7.4	--	--	--	--	--	63.8	-50.4	1.03	--	0.45	--	0.5	--	102.6	10
2011-04-04	--		--	7.5	--	--	--	--	--	48.6	-33.2	0.65	--	0.24	--	0.5	--	368.3	5
2011-10-05	--		--	7.3	--	--	--	--	--	36.2	-5	1.59	--	0.21	--	0.99	--	110.6	16
2013-09-03	--		--	7.5	--	--	--	--	--	85.8	-39.8	2.01	--	0.42	--	0.75	--	24	5
Minimum:			5.6	7.02	--	--	4	159	--	9.2	-50.4	0.2	--	0.04	--	0	--	21	2
Maximum:		TLTG	6.5	7.7	--	--	16	388	--	85.8	5.4	2.01	--	0.66	--	0.99	--	368.3	16
Average:		289	5.87	7.4	--	--	9.3	250	--	42.55	-16.69	0.81	--	0.26	--	0.41	--	101.6	7
Range:		0	0.9	0.68	--	--	12	229	--	76.6	55.8	1.81	--	0.62	--	0.99	--	347.3	14
Median:		289	5.85	7.5	--	--	9.5	224	--	37.4	-5	0.84	--	0.22	--	0.5	--	68	6
Loading (lb/day):									--	242.07	14.57	0.69	--	0.14	--	0.83	--		

Sample Point Description: Aultman Ii Mine (32010105) - Aultman Run Above Aultman II Mine

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - A2M - MP14

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	96	5.9	7.14	--	--	10	198	--	34.8	2.4	0.2	--	0.11	--	0	--	29	8
1999-12-16	--	7405	5.7	7.21	--	--	4	133	--	13.2	2.4	0.34	--	0.05	--	0	--	23	2
2000-01-26	--	110	6.2	7.38	--	--	3	207	--	21.8	4.4	0.27	--	0.06	--	0	--	23	3
2000-02-25	--	4299	6.5	7.28	--	--	12	172	--	15	1.82	0.13	--	0	--	0	--	21	7
2000-03-29	--	3541	5.9	7.38	--	--	10	130	--	17.6	3.8	0.61	--	0.04	--	0.27	--	22	3
2000-04-24	--	5386	6.1	7.36	--	--	16	122	--	15.4	3	0.14	--	0.02	--	0	--	21	2
2007-05-09	--		--	7.6	--	--	--	--	--	32.6	-11.2	0.34	--	0.05	--	0.5	--	266.7	5
2008-01-28	--		--	7.4	--	--	--	--	--	31.2	-23.6	0.46	--	0.1	--	0.5	--	93.4	6
2009-05-12	--		--	7.4	--	--	--	--	--	32.8	-20.4	0.3	--	0.08	--	0.5	--	294	14
2009-11-09	--		--	7.5	--	--	--	--	--	49.8	-32.4	1.81	--	0.22	--	0.9	--	128.7	68
2010-06-15	--		--	7.5	--	--	--	--	--	44	-30.2	0.67	--	0.14	--	0.5	--	101.6	8
2010-12-29	--		--	7.3	--	--	--	--	--	39	-28.6	0.48	--	0.11	--	0.5	--	121.6	6
2011-04-04	--		--	7.5	--	--	--	--	--	31.4	-5.6	0.3	--	0.05	--	0.5	--	106.1	3
2011-10-05	--		--	7.2	--	--	--	--	--	33.8	-3.4	1.26	--	0.17	--	0.83	--	132	4
2013-09-03	--		--	7.4	--	--	--	--	--	75.2	-59	1.14	--	0.17	--	0.78	--	236.6	5
Minimum:			5.7	7.14	--	--	3	122	--	13.2	-59	0.13	--	0	--	0	--	21	2
Maximum:		7405	6.5	7.6	--	--	16	207	--	75.2	4.4	1.81	--	0.22	--	0.9	--	294	68
Average:		3472.8	5.98	7.35	--	--	9.2	160	--	32.51	-13.11	0.56	--	0.09	--	0.39	--	108	9.6
Range:		7309	0.8	0.46	--	--	13	85	--	62	63.4	1.68	--	0.22	--	0.9	--	273	66
Median:		3920	6	7.38	--	--	10	153	--	32.6	-5.6	0.34	--	0.08	--	0.5	--	101.6	5
Loading (lb/day):									--	626.47	111.85	12.08	--	1.27	--	1.91	--		

Sample Point Description: Aultman Ii Mine (32010105) - Aultmans Run below Aultman II Mine

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - A2M - MP24

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	28	5	5.22	--	--	8	369	--	2.4	7.4	0.2	--	1.39	--	0.65	--	135	9
1999-12-17	--	1095	6	6.93	--	--	6	112	--	23.62	2.4	0.3	--	0.06	--	0	--	22	0
2000-01-26	--	220	6.6	7.62	--	--	4	268	--	41.6	4.6	0.23	--	0.14	--	0	--	33	2
2000-02-25	--	1041	6.3	7.4	--	--	9	149	--	15.6	2	0.12	--	0.06	--	0	--	26	3
2000-03-29	--	859	5.7	7.67	--	--	9	126	--	21.2	4	0.16	--	0.05	--	0	--	27	6
2000-04-24	--	901	6.1	7.37	--	--	17	115	--	14.4	2.8	0.1	--	0.04	--	0	--	25	12
Minimum:		28	5	5.22	--	--	4	112	--	2.4	2	0.1	--	0.04	--	0	--	22	0
Maximum:		1095	6.6	7.67	--	--	17	369	--	41.6	7.4	0.3	--	1.39	--	0.65	--	135	12
Average:		690.7	5.62	5.98	--	--	8.8	190	--	19.8	3.87	0.19	--	0.29	--	0.11	--	44.7	5.3
Range:		1067	1.6	2.45	--	--	13	257	--	39.2	5.4	0.2	--	1.35	--	0.65	--	113	12
Median:		880	6.05	7.39	--	--	8.5	138	--	18.4	3.4	0.18	--	0.06	--	0	--	26.5	4.5
Loading (lb/day):									--	165.02	23.78	1.47	--	0.56	--	0.04	--		

Sample Point Description: Aultman II Mine (32010105) - Unnamed Trib "C" to Aultmans Run, upstream. 200' NE of permit boundary.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - A2M - MP25

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	24	5	5.27	--	--	8	354	--	5.4	25.8	0.04	--	0.39	--	0.95	--	137	0
1999-12-17	--	88	5.3	4.93	--	--	4	345	--	1	16.4	0.2	--	0.31	--	2.14	--	117	0
2000-01-28	--	39.3	5.4	4.79	--	--	7	416	--	0.8	43.8	0.12	--	0.32	--	4.09	--	129	0
2000-02-25	--	40.3	5.3	5.2	--	--	12	357	--	2.4	18.8	0.12	--	0.22	--	1.48	--	113	0
2000-03-29	--	33.7	4.8	4.99	--	--	8	263	--	1.6	18.8	0.1	--	0.25	--	1.85	--	98	0
2000-04-24	--	37.5	5.2	5.04	--	--	11	270	--	1.4	12.8	0.1	--	0.25	--	1.72	--	103	0
2000-06-01	--	6.7	4.9	4.94	--	--	14	292	--	3.4	0:00	0.25	--	0.26	--	1.72	--	107	2
2000-06-27	--	36.3	4.8	5.45	--	--	12	294	--	2.4	6.2	0	--	0.26	--	1.68	--	111	2
2000-07-24	--	20.4	4.6	5.14	--	--	10	327	--	4.8	13.4	0.09	--	0.26	--	1.25	--	64	0
2000-08-22	--	36.4	4.3	4.97	--	--	13	373	--	4	15.2	0.04	--	0.3	--	1.82	--	126	4
2000-09-14	--	22.4	4.6	5.3	--	--	14	369	--	3.4	3.6	0	--	0.3	--	1.01	--	132	0
2000-10-11	--	19.8	5	4.97	--	--	12	416	--	3.5	23.8	0	--	0.36	--	1.67	--	148	0
2000-11-15	--	36.5	5.1	5.32	--	--	9	317	--	3.4	5.6	0.07	--	0.31	--	1.72	--	146	2
2000-12-13	--	39.2	5	4.5	--	--	10	413	--	0	52.2	0.17	--	0.46	--	2.64	--	172	--
2001-01-04	--	22.6	4.8	4.88	--	--	10	330	--	3.4	31	0.1	--	0.41	--	2.72	--	138	--
2007-05-09	--	25	--	5.7	--	--	--	--	--	14	10.4	0.3	--	0.2	--	1.3	--	49.5	3
2008-01-28	--		--	5.2	--	--	--	--	--	8.8	3.4	0.3	--	0.24	--	1.83	--	130.3	10
2009-05-12	--		--	5.6	--	--	--	--	--	11.6	1.4	0.3	--	0.22	--	1.34	--	95.4	8
2009-11-09	--		--	6.1	--	--	--	--	--	24.6	-7.6	0.77	--	0.13	--	3.39	--	21.9	38
2010-06-15	--		--	6.3	--	--	--	--	--	13	0.8	0.3	--	0.17	--	1.31	--	24.2	36
2010-12-29	--	25	--	6.2	--	--	--	--	--	24.4	-13.8	0.3	--	0.08	--	0.5	--	20	8
2011-10-05	--	50	--	5.8	--	--	--	--	--	15.4	12.4	0.3	--	0.21	--	1.31	--	50	16
Minimum:			4.3	4.5	--	--	4	263	--	0	-13.8	0	--	0.08	--	0.5	--	20	0
Maximum:		88	5.4	6.3	--	--	14	416	--	24.6	52.2	0.77	--	0.46	--	4.09	--	172	38
Average:		33.5	4.84	5.11	--	--	10.3	342	--	6.94	14.02	0.18	--	0.27	--	1.79	--	101.5	6.5
Range:		81.3	1.1	1.8	--	--	10	153	--	24.6	66	0.77	--	0.38	--	3.59	--	152	38
Median:		35	5	5.2	--	--	10	345	--	3.45	12.8	0.12	--	0.26	--	1.7	--	112	2
Loading (lb/day):									--	1.92	7.58	0.05	--	0.12	--	0.74	--		

Sample Point Description: Aultman Ii Mine (32010105) - SUB F DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - A2M - MP45

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-12-17	--	1219	5.3	4.86	--	--	6	343	--	1	17.6	0.14	--	0.31	--	1.88	--	118	0
2000-01-26	--	15.3	5.2	4.82	--	--	7	414	--	0.6	26.6	0.21	--	0.33	--	3.11	--	125	2
2000-02-25	--	379	5.3	5.17	--	--	12	351	--	2	18.6	0.14	--	0.2	--	2.38	--	114	2
2000-03-29	--	111.7	4.7	4.98	--	--	8	264	--	1	23.2	0.16	--	0.24	--	2.18	--	89	2
2000-04-24	--	110.2	5.2	5	--	--	11	270	--	0.8	14.6	0.06	--	0.25	--	1.26	--	91	0
2000-06-01	--	152.4	5.1	4.92	--	--	12	293	--	2.6	29	0.17	--	0.27	--	1.96	--	107	0
2000-06-27	--	N/F	5.4	6.48	--	--	14	773	--	4.4	2.8	0	--	0.22	--	0.5	--	83	0
2000-07-24	--	N/F	4.2	4.87	--	--	14	322	--	2.4	26.8	0.18	--	0.45	--	0.72	--	134	3
2000-08-22	--	N/F	4.2	4.09	--	--	15	343	--	3	20.8	0.07	--	1.12	--	1.2	--	101	3
2000-09-14	--	N/F	4.4	4.97	--	--	14	373	--	1.6	13.6	0.04	--	0.5	--	0.96	--	137	6
2000-10-11	--	N/F	4.8	4.23	--	--	14	414	--	0	45.2	1.86	--	0.54	--	0.92	--	142	10
2000-11-15	--	N/F	4.9	4.99	--	--	9	322	--	2.6	13.8	0.08	--	0.33	--	0.66	--	155	0
2000-12-13	--	110.4	5	4.74	--	--	10	402	--	2.6	42.6	0.16	--	0.44	--	2.52	--	160	0
2001-01-04	--	8.3	4.8	4.89	--	--	10	327	--	2.2	30.2	0	--	0.39	--	2.38	--	145	0
2001-02-13	--	126.5	4.9	4.75	--	--	10	313	--	1.2	26	0.24	--	0.27	--	2.75	--	120	2
2001-03-13	--	70.8	4.8	4.82	--	--	10	319	--	2	24.4	0.06	--	0.29	--	2.34	--	138	0
2001-04-10	--	263.4	5	5.12	--	--	10	254	--	2.4	11	0.17	--	0.21	--	1.48	--	107	2
2001-05-11	--	5.6	4.8	5.04	--	--	10	283	--	2.8	14	0.1	--	0.26	--	1.75	--	107	0
2001-06-13	--	17.5	4.7	5.03	--	--	11	364	--	4	34	0	--	0.5	--	0.52	--	112	0.1
2001-07-18	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-08-13	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2007-05-09	--	75	--	5.8	--	--	--	--	--	15	10	0.3	--	0.2	--	0.97	--	70.2	5
2008-01-28	--		--	5.2	--	--	--	--	--	8.8	15.8	0.3	--	0.25	--	2.02	--	197.2	58
2009-05-12	--		--	5.8	--	--	--	--	--	12.2	-1.8	0.3	--	0.2	--	1.75	--	75.6	22
2010-06-15	--		--	5.4	--	--	--	--	--	9.6	16.2	1.83	--	0.21	--	14.04	--	50.6	3
2011-10-05	--	100	--	5.8	--	--	--	--	--	15	35.6	0.3	--	0.2	--	0.96	--	81.7	62
Minimum:			4.2	4.09	--	--	6	254	--	0	-1.8	0	--	0.2	--	0.5	--	50.6	0
Maximum:		N/F	5.4	6.48	--	--	15	773	--	15	45.2	1.86	--	1.12	--	14.04	--	197.2	62
Average:		184.3	--	--	--	--	10.9	355	--	4.16	21.28	0.29	--	0.34	--	2.13	--	115	7.6
Range:		1213.4	1.2	2.39	--	--	9	519	--	15	47	1.86	--	0.92	--	13.54	--	146.6	62
Median:		110.2	4.9	4.99	--	--	10	327	--	2.5	19.7	0.16	--	0.27	--	1.75	--	113	2
Loading (lb/day):									--	5.22	44.31	0.34	--	0.61	--	4.25	--		

Sample Point Description: Aultman Ii Mine (32010105) - SUB F DISCHARGE. Deep mine discharge within northeast corner of Aultman II Mine permit.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - A2M - MPD2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-06-29	--		--	7.1	--	--	--	--	--	169.8	-154	6.61	--	1.13	--	0.5	--	126.3	3
Minimum:			--	7.1	--	--	--	--	--	169.8	-154	6.61	--	1.13	--	0.5	--	126.3	3
Maximum:			--	7.1	--	--	--	--	--	169.8	-154	6.61	--	1.13	--	0.5	--	126.3	3
Average:		data has not been set	--	7.1	--	--	--	--	--	169.8	-154	6.61	--	1.13	--	0.5	--	126.3	3
Range:		data has not been set	--	0	--	--	--	--	--	0	0	0	--	0	--	0	--	0	0
Median:		data has not been set	--	7.1	--	--	--	--	--	169.8	-154	6.61	--	1.13	--	0.5	--	126.3	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Aultman Ii Mine (32010105) - TOE OF SLOPE DISCHARGE: RECLAIMED SED POND 2

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - A2M - MPD2A

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-06-29	--		--	7.3	--	--	--	--	--	170.2	-150.6	3.19	--	0.95	--	0.66	--	43.4	22
Minimum:			--	7.3	--	--	--	--	--	170.2	-150.6	3.19	--	0.95	--	0.66	--	43.4	22
Maximum:			--	7.3	--	--	--	--	--	170.2	-150.6	3.19	--	0.95	--	0.66	--	43.4	22
Average:		data has not been set	--	7.3	--	--	--	--	--	170.2	-150.6	3.19	--	0.95	--	0.66	--	43.4	22
Range:		data has not been set	--	0	--	--	--	--	--	0	0	0	--	0	--	0	--	0	0
Median:		data has not been set	--	7.3	--	--	--	--	--	170.2	-150.6	3.19	--	0.95	--	0.66	--	43.4	22
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Aultman Ii Mine (32010105) - DRAINAGE FROM D2 BEFORE STREAM

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AM0-D2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-01-28	--		--	7.6	--	--	--	--	--	205	-193.2	2.46	--	0.13	--	0.5	--	165.3	3
2011-04-04	--		--	7.5	--	--	--	--	--	222.2	-203.2	2.42	--	0.33	--	0.5	--	147.3	3
2011-05-20	--		--	7.6	--	--	--	--	--	181.4	-165.4	1.36	--	0.72	--	0.5	--	40.1	3
2011-06-29	--		--	7.7	--	--	--	--	--	209.6	-194.6	0.51	--	0.15	--	0.5	--	239.9	32
2011-10-05	--		--	7.4	--	--	--	--	--	167.6	-138.2	6.01	--	1.73	--	1.36	--	174.4	12
2013-09-03	--		--	7.4	--	--	--	--	--	211.4	-145.8	1.9	--	0.4	--	0.5	--	231	10
Minimum:			--	7.4	--	--	--	--	--	167.6	-203.2	0.51	--	0.13	--	0.5	--	40.1	3
Maximum:			--	7.7	--	--	--	--	--	222.2	-138.2	6.01	--	1.73	--	1.36	--	239.9	32
Average:		data has not been set	--	7.52	--	--	--	--	--	199.53	-173.4	2.44	--	0.58	--	0.64	--	166.3	10.5
Range:		data has not been set	--	0.3	--	--	--	--	--	54.6	65	5.5	--	1.61	--	0.86	--	199.8	29
Median:		data has not been set	--	7.55	--	--	--	--	--	207.3	-179.3	2.16	--	0.36	--	0.5	--	169.9	6.5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Aultman Ii Mine (32010105) - PIT DRAIN/DEEP MINE DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AM0-D13

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	0.5	--	3.1	--	--	1.7	1999	--	2	203.6	5.03	--	12.35	--	23.39	--	1416	--
2002-02-08	--	8	--	3.1	--	--	3.8	1137	--	2	652.4	1.1	--	4.97	--	6.22	--	596.8	--
2002-03-08	--	6.9	--	3.13	--	--	10	2120	--	2	128.1	0.93	--	5.97	--	9.7	--	930.2	--
2002-04-05	--	29	--	3.4	--	--	9.5	1636	--	2	120.4	1.56	--	7.17	--	11.91	--	905.5	--
2002-05-03	--	45	--	3.2	--	--	14	1583	--	2	120.8	2.17	--	7.21	--	10.01	--	862.3	--
2002-05-31	--	35	--	3.2	--	--	18.2	1806	--	2	134.9	2.94	--	8.22	--	12.74	--	1056	--
2002-07-05	--	16.5	--	3.2	--	--	16	2000	--	2	152.7	3.78	--	9.48	--	16.33	--	1171	--
2002-08-02	--	8.1	--	3.1	--	--	21.4	1648	--	2	217.9	6.95	--	9.87	--	15.4	--	1267	--
2002-09-05	--	5	--	3.3	--	--	17	1295	--	2	275.1	5.03	--	6.81	--	11.55	--	1310	--
2002-10-04	--	1	--	3.2	--	--	16	1680	--	2	195.7	5.32	--	10.98	--	16.33	--	1292	--
2002-11-08	--	8.1	--	3.15	--	--	7	1450	--	2	200.7	2.92	--	10.58	--	17.72	--	1227	--
2002-12-06	--	6	--	3.2	--	--	1.9	2330	--	2	192.3	2.87	--	11.94	--	20.54	--	1295	--
Minimum:		0.5	--	3.1	--	--	1.7	1137	--	2	120.4	0.93	--	4.97	--	6.22	--	596.8	--
Maximum:		45	--	3.4	--	--	21.4	2330	--	2	652.4	6.95	--	12.35	--	23.39	--	1416	--
Average:		14.1	--	3.18	--	--	11.4	1724	--	2	216.22	3.38	--	8.8	--	14.32	--	1110.7	--
Range:		44.5	--	0.3	--	--	19.7	1193	--	0	532	6.02	--	7.38	--	17.17	--	819.2	--
Median:		8.1	--	3.2	--	--	12	1664	--	2	194	2.93	--	8.85	--	14.07	--	1199	--
Loading (lb/day):									--	0.34	28.49	0.45	--	1.35	--	2.11	--		

Sample Point Description: Discharge flowing from abandoned strip pit. Labeled as AM0-D5 in the field on the weir. Forms large sloped wetland.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AM11-D1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	105	--	3.9	--	--	2.2	1173	--	2	95.03	0.34	--	6.08	--	10.36	--	636.7	--
2002-02-08	--	53	--	4.8	--	--	10.2	912	--	2	734.6	0.19	--	2.81	--	5.28	--	486.9	--
2002-03-08	--	44.9	--	4.3	--	--	12.2	881	--	2	42.88	0.18	--	2.56	--	6.18	--	486.1	--
2002-04-05	--	280	--	4.04	--	--	8.8	956	--	2	94.28	0.24	--	4.65	--	14.34	--	517	--
2002-05-03	--	91.2	--	4.1	--	--	14.2	761	--	2	47.19	0.18	--	3	--	6.12	--	351.9	--
2002-05-31	--	65.6	--	3.9	--	--	19.4	962	--	2	128.9	0.33	--	5.38	--	13.83	--	553.6	--
2002-07-05	--	21	--	3.8	--	--	18	1510	--	2	140.6	0.82	--	10.11	--	17.85	--	646.6	--
2002-08-02	--	5	--	3.44	--	--	20	1209	--	2	232.8	2.1	--	15.58	--	26.69	--	894.4	--
2002-09-05	--	3	--	3.8	--	--	18	950	--	0	266.3	2.07	--	19.24	--	31.38	--	953.3	--
2002-10-04	--	22	--	4.7	--	--	16	798	--	2	49.39	0.52	--	5.72	--	4.56	--	515.7	--
2002-11-08	--	44.9	--	4.5	--	--	7.8	716	--	2	56.62	0.34	--	3.32	--	5.56	--	501.3	--
2002-12-06	--	30	--	4.3	--	--	1	959	--	2	79.71	0.42	--	4.08	--	9.21	--	614.5	--
Minimum:		3	--	3.44	--	--	1	716	--	0	42.88	0.18	--	2.56	--	4.56	--	351.9	--
Maximum:		280	--	4.8	--	--	20	1510	--	2	734.6	2.1	--	19.24	--	31.38	--	953.3	--
Average:		63.8	--	3.98	--	--	12.3	982	--	1.83	164.03	0.64	--	6.88	--	12.61	--	596.5	--
Range:		277	--	1.36	--	--	19	794	--	2	691.72	1.92	--	16.68	--	26.82	--	601.4	--
Median:		44.9	--	4.07	--	--	13.2	953	--	2	94.66	0.34	--	5.02	--	9.79	--	535.3	--
Loading (lb/day):									--	1.53	100.93	0.23	--	3.58	--	8.35	--		

Sample Point Description: "Foot Run" formed from a collection of discharges.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AUL02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1998-11-20	--	425	8	7.65	--	--	8	2903	--	131.9	N.D.	0.61	--	1.64	--	--	--	1649.6	2
1999-01-22	--	6800	6.7	6.31	--	--	6	339	--	15.9	N.D.	4.03	--	0.92	--	--	--	103.8	11
1999-05-06	--	2500	7.3	7.29	--	--	19	1046	--	34.3	N.D.	0.89	--	1.04	--	--	--	523	3
1999-08-12	--	500	8.1	7.96	--	--	20.6	601	--	153.5	N.D.	0.12	--	0.62	--	--	--	110.5	2
1999-10-21	--	1150	7.3	7.61	--	--	11.8	2356	--	59.8	N.D.	0.21	--	1.14	--	--	--	1055.6	3
2000-01-13	--	1700	--	7.33	--	--	--	837	--	43.8	N.D.	1.58	--	0.87	--	--	--	372.7	5
2000-04-19	--	2500	7.1	6.78	--	--	11.7	410	--	18	N.D.	1.21	--	0.74	--	--	--	153.3	7
2000-08-15	--	1400	7.3	7.36	--	--	21.2	690	--	34.5	N.D.	0.34	--	1.43	--	--	--	300.9	3
2000-10-12	--	1800	6.7	7.16	--	--	7.5	564	--	28.2	N.D.	0.89	--	1.38	--	--	--	224	9
2001-01-11	--	850	--	6.71	--	--	0.9	635	--	31.5	N.D.	1.52	--	1.48	--	--	--	290.5	13
2001-05-04	--	1000	7	6.97	--	--	21.7	533	--	24.4	N.D.	0.59	--	0.94	--	--	--	221.9	2
2001-07-20	--	650	7	7.04	--	--	23.2	728	--	35.5	N.D.	0.23	--	1.27	--	--	--	366.4	6
Minimum:		425	6.7	6.31	--	--	0.9	339	--	15.9	N.D.	0.12	--	0.62	--	--	--	103.8	2
Maximum:		6800	8.1	7.96	--	--	23.2	2903	--	153.5	N.D.	4.03	--	1.64	--	--	--	1649.6	13
Average:		1772.9	--	6.96	--	--	13.8	970	--	50.94	data has not been set	1.02	--	1.12	--	--	--	447.7	5.5
Range:		6375	1.4	1.65	--	--	22.3	2564	--	137.6	data has not been set	3.91	--	1.02	--	--	--	1545.8	11
Median:		1275	7.2	7.23	--	--	11.8	663	--	34.4	data has not been set	0.75	--	1.09	--	--	--	295.7	4
Loading (lb/day):									--	688.22	--	40.01	--	22.01	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - AULTMANS RUN, DOWN

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AUL02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-09-29	--	0	--	6.5	--	--	--	--	--	22	0	--	--	--	--	--	--	--	3
1996-07-09	--		--	6.6	--	--	--	--	--	22	0	1.46	--	1.75	--	2.33	--	280.5	16
1997-04-07	--		--	6.4	--	--	--	--	--	28	0	3.08	--	1.3	--	3.67	--	305.9	16
1998-02-02	--		--	6.4	--	--	--	--	--	24	0	2.65	--	0.94	--	2.51	--	287.1	10
1999-10-06	--		--	6.5	--	--	--	--	--	62	0	0.72	--	1.66	--	1.05	--	1388.7	3
2000-10-11	--		--	6.9	--	--	--	--	--	40	0	0.8	--	1.41	--	0.56	--	183.7	18
2001-09-10	--		--	6.8	--	--	--	--	--	50	0	0.34	--	1.82	--	0.5	--	278.1	3
2002-04-10	--		--	6.4	--	--	--	--	--	30	13.6	1.39	--	0.66	--	1.23	--	175.7	16
2003-04-01	--		--	6.4	--	--	--	--	--	24.8	14.2	1.87	--	0.89	--	2.16	--	181.6	12
2006-11-02	--		--	7.1	--	--	--	--	--	29.8	-16	1.21	--	0.55	--	0.94	--	102.4	6
2007-02-02	--		--	7	--	--	--	--	--	29.8	10.8	1.73	--	0.72	--	1.49	--	191.5	10
2008-03-14	--		--	7	--	--	--	--	--	25.8	-7.6	1.73	--	0.64	--	1.44	--	126.5	18
2009-04-08	--		--	7	--	--	--	--	--	29.2	-13	1.25	--	0.46	--	1.06	--	105.4	12
2010-03-29	--		--	7.2	--	--	--	--	--	31.4	-11	0.94	--	0.45	--	0.87	--	88.7	16
2011-04-12	--		--	7	--	--	--	--	--	28.2	-12.2	2.13	--	0.42	--	1.61	--	140.5	20
2011-12-15	--		--	7.1	--	--	--	--	--	44.6	-35.4	0.92	--	0.65	--	0.88	--	167.1	12
2012-05-10	--		--	7.5	--	--	--	--	--	36	-21.4	1.27	--	0.31	--	0.95	--	96	30
2012-07-16	--		--	7.8	--	--	--	--	--	70.2	-47.4	0.3	--	0.26	--	0.5	--	381.7	5
2013-01-10	--		--	7.4	--	--	--	--	--	44	-39	1.52	--	0.69	--	1.44	--	188.8	16
2013-10-04	--		--	7.7	--	--	--	--	--	87.6	-61.4	0.3	--	0.17	--	0.5	--	274.6	5
Minimum:			--	6.4	--	--	--	--	--	22	-61.4	0.3	--	0.17	--	0.5	--	88.7	3
Maximum:		0	--	7.8	--	--	--	--	--	87.6	14.2	3.08	--	1.82	--	3.67	--	1388.7	30
Average:		0	--	6.76	--	--	--	--	--	37.97	-11.29	1.35	--	0.83	--	1.35	--	260.2	12.4
Range:		0	--	1.4	--	--	--	--	--	65.6	75.6	2.78	--	1.65	--	3.17	--	1300	27
Median:		0	--	7	--	--	--	--	--	29.9	-3.8	1.27	--	0.66	--	1.06	--	183.7	12
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - AULTMANS RUN, DOWN

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AUL03

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-04-24	--	0	--	6.7	--	--	--	--	--	26	0	0.7	--	0.18	--	0.53	--	--	3
1995-07-11	--	0	--	7.1	--	--	--	--	--	50	0	0.3	--	0.05	--	0.5	--	--	18
1996-07-08	--		--	6.2	--	--	--	--	--	40	0	0.3	--	0.17	--	0.5	--	20	3
Minimum:			--	6.2	--	--	--	--	--	26	--	0.3	--	0.05	--	0.5	--	20	3
Maximum:		0	--	7.1	--	--	--	--	--	50	--	0.7	--	0.18	--	0.53	--	20	18
Average:		0	--	6.52	--	--	--	--	--	38.67	--	0.43	--	0.13	--	0.51	--	20	8
Range:		0	--	0.9	--	--	--	--	--	24	--	0.4	--	0.13	--	0.03	--	0	15
Median:		0	--	6.7	--	--	--	--	--	40	--	0.3	--	0.17	--	0.5	--	20	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent Strip No 55 (32860106) - Aultmans Run upstream of Coal Run

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - AUL04

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1992-11-20	--	400	7.7	7.41	--	--	10	2954	--	137	N.D.	1.72	--	1.65	--	--	--	1692	10
1996-03-13	--	0	--	6.2	--	--	--	--	--	14.2	6.2	1.87	--	0.57	--	1.7	--	108	3
1996-10-22	--		--	6.5	--	--	--	--	--	22	0	1.43	--	0.49	--	1.6	--	94	3
1997-03-24	--		--	6.1	--	--	--	--	--	16.6	13.4	4.27	--	1.11	--	4.35	--	291	10
1997-12-22	--		--	6.1	--	--	--	--	--	17.4	4	3.56	--	1.16	--	3.41	--	256.8	12
1998-03-16	--		--	6	--	--	--	--	--	16	6.6	3.35	--	0.74	--	2.72	--	214	16
1999-01-22	--	5000	6.7	6.34	--	--	6	326	--	14.2	N.D.	1.12	--	0.56	--	--	--	92.8	7
1999-02-04	--		--	6.6	--	--	--	--	--	32	0	2.35	--	0.88	--	2.11	--	258	24
1999-05-06	--	1500	6.9	6.91	--	--	18	1006	--	20.3	N.D.	1.51	--	0.95	--	--	--	458.9	5
1999-08-12	--	450	7.8	8.13	--	--	19	2631	--	134.8	N.D.	0.31	--	0.76	--	--	--	1387.3	2
1999-10-21	--	850	7	6.93	--	--	12.1	2614	--	33.4	N.D.	0.8	--	1.14	--	--	--	1764.9	12
2000-01-13	--	1000	6.8	7.02	--	--	3.9	317	--	36.3	N.D.	2.1	--	0.83	--	--	--	361.5	6
2000-04-19	--	1800	7.2	6.75	--	--	11.5	393	--	12.8	3.1	1.73	--	0.65	--	--	--	156.4	5
2000-07-10	--		--	6.3	--	--	--	--	--	20	24	0.68	--	2.11	--	2.54	--	328.9	3
2000-08-15	--	1150	7.4	7.04	--	--	20.6	647	--	24.9	N.D.	0.82	--	1.41	--	--	--	285.9	5
2000-10-12	--	1550	6.9	6.84	--	--	8.6	563	--	20.4	N.D.	1.64	--	1.32	--	--	--	242.1	4
2001-01-11	--	601	6.8	6.77	--	--	0.6	590	--	24.8	N.D.	1.83	--	1.36	--	--	--	271	11
2001-02-05	--		--	6.6	--	--	--	--	--	26	0	1.15	--	0.55	--	1.12	--	100	4
2001-05-04	--	700	7.1	6.79	--	--	20.8	508	--	17.5	N.D.	1.26	--	0.87	--	--	--	219.4	5
2002-03-13	--		--	6.9 6.5	--	--	--	--	--	48 30	0 0	0.89 0.96	--	0.53 0.98	--	0.87 0.57	--	148.5 161.2	3 3
2003-04-01	--		--	6.4	--	--	--	--	--	21.8	22.4	3.46	--	1.04	--	2.95	--	170.6	12
2003-11-21	--		--	6.5	--	--	--	--	--	18.8	0	1.26	--	0.78	--	1.34	--	56.2	4
2007-04-30	--		--	7.1	--	--	--	--	--	28.6	-12.6	2.15	--	0.51	--	1.8	--	107.7	20
2012-04-02	--		--	7.5	--	--	--	--	--	39	-26.8	1.23	--	0.58	--	1.18	--	135.1	22
Minimum:			6.7	6	--	--	0.6	317	--	12.8	-26.8	0.31	--	0.49	--	0.57	--	56.2	2
Maximum:		5000	7.8	8.13	--	--	20.8	2954	--	137	N.D.	4.27	--	2.11	--	4.35	--	1764.9	24
Average:		1250.1	7.01	6.53	--	--	11.9	1141	--	33.07	2.69	1.74	--	0.94	--	2.02	--	374.5	8.4
Range:		5000	1.1	2.13	--	--	20.2	2637	--	124.2	50.8	3.96	--	1.62	--	3.78	--	1708.7	22
Median:		925	7	6.75	--	--	11.5	590	--	22	0	1.51	--	0.87	--	1.75	--	219.4	5
Loading (lb/day):									--	427.69	66.96	21.88	--	14.5	--	--	--		

Sample Point Description: Kent No 57 (32890109) - AULTMAN RUN ABOVE. Same as Kent No 55 (32860106) - AULTMANS RUN ABOVE.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - COA01

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-12-28	--	0	--	6.4	--	--	--	--	--	50	0	--	--	--	--	--	--	--	10
1995-03-22	--	0	--	6.3	--	--	--	--	--	26	17.8	--	--	--	--	--	--	--	4
1996-06-10	--		--	6.5	--	--	--	--	--	26	0	4.2	--	2.15	--	1.54	--	299.4	3
1997-04-07	--		--	6.2	--	--	--	--	--	24	3.8	3.81	--	1.34	--	1.18	--	235	6
1998-02-02	--		--	6.4	--	--	--	--	--	26	0	3.89	--	1.21	--	0.88	--	235.9	4
1999-10-06	--		--	6.2	--	--	--	--	--	40	0	6.12	--	4.38	--	1.04	--	393.2	3
2000-10-11	--		--	6.2	--	--	--	--	--	15.6	3	2.69	--	2.68	--	0.5	--	274.2	6
2001-09-10	--		--	6.5	--	--	--	--	--	48	0	4.36	--	2.59	--	0.5	--	207	4
2002-04-10	--		--	6.2	--	--	--	--	--	30	28.4	2.79	--	0.96	--	0.61	--	214.8	18
2003-04-01	--		--	6.4	--	--	--	--	--	28	21.4	3.46	--	1.3	--	0.94	--	219.4	10
2006-11-02	--		--	7	--	--	--	--	--	40	-28.2	1.18	--	0.55	--	0.5	--	128.3	4
2007-02-02	--		--	7	--	--	--	--	--	24	0.4	1.11	--	0.53	--	0.5	--	140.8	4
2008-03-14	--		--	6.9	--	--	--	--	--	27.6	-6	1.43	--	0.75	--	0.7	--	153.2	14
2009-05-05	--		--	7.1	--	--	--	--	--	29	-13.6	1.32	--	0.52	--	0.5	--	101.8	5
2010-03-29	--		--	7.2	--	--	--	--	--	31.4	-11.8	1.53	--	0.64	--	0.5	--	123.6	5
2011-04-12	--		--	7	--	--	--	--	--	28.6	-14.4	1.62	--	0.62	--	0.89	--	164.4	30
2011-12-15	--		--	7	--	--	--	--	--	41.4	-33.2	1.26	--	0.61	--	0.5	--	154.1	6
2012-05-10	--		--	7.4	--	--	--	--	--	35.4	-24.2	1.11	--	0.35	--	0.56	--	115.8	14
2012-07-16	--		--	6.8	--	--	--	--	--	36.8	-20.4	2.98	--	1.23	--	0.5	--	279.7	8
2013-01-10	--		--	7.2	--	--	--	--	--	36.6	-30.8	1.85	--	0.64	--	0.5	--	164	5
2013-10-04	--		--	7	--	--	--	--	--	47.8	-24	1.71	--	0.86	--	0.5	--	211.2	5
Minimum:			--	6.2	--	--	--	--	--	15.6	-33.2	1.11	--	0.35	--	0.5	--	101.8	3
Maximum:		0	--	7.4	--	--	--	--	--	50	28.4	6.12	--	4.38	--	1.54	--	393.2	30
Average:		0	--	6.55	--	--	--	--	--	32.96	-6.28	2.55	--	1.26	--	0.7	--	200.8	8
Range:		0	--	1.2	--	--	--	--	--	34.4	61.6	5.01	--	4.03	--	1.04	--	291.4	27
Median:		0	--	6.8	--	--	--	--	--	30	0	1.85	--	0.86	--	0.5	--	207	5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - COAL RUN, DOWN

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - COA01

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1998-11-20	--	10	5.3	6	--	--	8	1021	--	19.4	3.5	4.3	--	4.45	--	--	--	580.4	11
1999-01-22	--	2505	6.1	6.27	--	--	4	330	--	12	3.3	3.39	--	0.74	--	--	--	94	12
1999-05-06	--	200	6.4	5.47	--	--	19	559	--	15.7	N.D.	2.81	--	1.42	--	--	--	248.7	4
1999-08-12	--	30	6.4	6.49	--	--	14	367	--	28.5	N.D.	3.85	--	3.75	--	--	--	473.5	8
1999-10-21	--	55	6.9	6.57	--	--	9.3	874	--	30.5	N.D.	3.03	--	4.14	--	1.25	--	444	7
2000-01-13	--	200	6.9	6.63	--	--	1.9	559	--	22.9	N.D.	3.69	--	1.43	--	--	--	232.1	7
2000-04-19	--	400	6.8	6.44	--	--	11.7	469	--	12.4	1	1.74	--	0.98	--	--	--	191.3	7
2000-08-15	--	25	6.7	5.96	--	--	18.3	676	--	5.8	5.9	2.05	--	2.99	--	--	--	370.8	4
2000-10-12	--	40	6.3	6.38	--	--	8	647	--	9.2	1.2	2.58	--	2.55	--	--	--	311.5	3
2001-01-11	--	100	6.5	6.28	--	--	0.6	728	--	11.8	2.6	5.11	--	2.77	--	--	--	421.3	11
2001-05-04	--	200	6.5	6.46	--	--	19.9	579	--	14.2	N.D.	1.32	--	1.29	--	--	--	285.2	3
2001-07-20	--	125	6.4	6.21	--	--	19.6	589	--	16.7	N.D.	2.18	--	1.94	--	--	--	341.4	3
Minimum:		10	5.3	5.47	--	--	0.6	330	--	5.8	1	1.32	--	0.74	--	1.25	--	94	3
Maximum:		2505	6.9	6.63	--	--	19.9	1021	--	30.5	N.D.	5.11	--	4.45	--	1.25	--	580.4	12
Average:		324.2	6.14	6.12	--	--	11.2	617	--	16.59	2.92	3	--	2.37	--	1.25	--	332.9	6.7
Range:		2495	1.6	1.16	--	--	19.3	691	--	24.7	4.9	3.79	--	3.71	--	0	--	486.4	9
Median:		112.5	6.45	6.33	--	--	10.5	584	--	14.95	2.95	2.92	--	2.25	--	1.25	--	326.5	7
Loading (lb/day):									--	52.09	18.31	12.02	--	4.15	--	0.83	--		

Sample Point Description: Lewisville Rec (32803712) - COAL RUN, DOWN

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - COA02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-12-28	--	0	--	6.5	--	--	--	--	--	40	0	--	--	--	--	--	--	--	4
1995-03-22	--	0	--	6.4	--	--	--	--	--	24	7	--	--	--	--	--	--	--	3
1998-01-21	--	--	--	6.84	--	--	--	419	--	17.79	N.D.	0.14	--	0.47	--	0.13	--	124.6	3
1998-11-20	--	5	6.9	6.51	--	--	8	666	--	44.7	N.D.	0.18	--	0.35	--	--	--	319.8	1
1999-01-22	--	200	6.4	6.34	--	--	3	258	--	12.5	N.D.	0.34	--	0.3	--	--	--	44.1	5
1999-02-16	--	30	6.7	6.79	--	--	1	441	--	17.98	N.D.	0.4	--	0.45	--	0.16	--	110.4	2
1999-04-29	--	35	6.7	6.74	--	--	12	444	--	18.3	N.D.	0.12	--	0.33	--	--	--	151.7	3
1999-06-11	--	0	6.9	6.87	--	--	21	619	--	27.08	N.D.	0.33	--	0.34	--	0.15	--	246.5	4
1999-08-06	--	2.5	6.9	7.21	--	--	19	613	--	37.7	N.D.	0.15	--	0.24	--	0.1	--	206.6	3
1999-08-12	--	5	7.3	7.49	--	--	16	665	--	59.3	N.D.	0.13	--	0.71	--	--	--	265.6	3
1999-10-21	--	8	7.4	6.73	--	--	10.4	690	--	38.5	N.D.	0.1	--	0.47	--	--	--	248.7	3
1999-12-02	--	15	6.9	6.84	--	--	5	481	--	27.98	N.D.	0.36	--	0.8	--	0	--	133.5	3
2000-01-14	--	40	7.1	6.92	--	--	0.8	522	--	29.2	N.D.	0.31	--	0.73	--	--	--	143.7	6
2000-03-08	--	20	6.8	6.64	--	--	11	426	--	22.05	N.D.	0.15	--	0.3	--	0.08	--	133.3	4
2000-04-19	--	75	7	6.94	--	--	12.4	414	--	21.8	N.D.	0.29	--	0.54	--	--	--	116.5	5
2000-06-07	--	20	6.7	6.92	--	--	15	446	--	28.76	N.D.	0.36	--	0.88	--	0.31	--	156.7	5
2000-08-15	--	15	7.3	7.15	--	--	19.1	570	--	46.2	N.D.	0.22	--	0.65	--	--	--	194.6	4
2000-09-07	--	9	6.8	6.76	--	--	15	597	--	44.67	N.D.	0.35	--	0.85	--	0.1	--	251.3	3
2000-10-30	--	20	6.3	6.94	--	--	10.1	478	--	51.3	N.D.	0.2	--	1.08	--	--	--	137.7	2
2000-12-06	--	19	6.8	6.72	--	--	3	319	--	34.4	N.D.	0.67	--	0.97	--	0.17	--	82.4	8
2001-01-11	--	25	6.9	6.67	--	--	0.9	528	--	37.3	N.D.	0.4	--	1.26	--	--	--	134.9	8
2001-02-05	--	50	6.7	6.73	--	--	3	291	--	19.18	N.D.	0.35	--	0.3	--	0.19	--	59.3	4
2001-05-01	--	50	6.8	7.07	--	--	18.5	551	--	28.8	N.D.	0.15	--	0.62	--	--	--	201.3	2
2001-07-27	--	20	6.3	6.68	--	--	16.8	581	--	44.4	N.D.	0.58	--	0.62	--	--	--	257.8	3
Minimum:		0	6.3	6.34	--	--	0.8	258	--	12.5	0	0.1	--	0.24	--	0	--	44.1	1
Maximum:		200	7.4	7.49	--	--	21	690	--	59.3	N.D.	0.67	--	1.26	--	0.31	--	319.8	8
Average:		28.8	--	6.74	--	--	10.5	501	--	32.25	3.5	0.29	--	0.6	--	0.14	--	169.1	3.8
Range:		200	1.1	1.15	--	--	20.2	432	--	46.8	7	0.57	--	1.02	--	0.31	--	275.7	7
Median:		20	6.8	6.78	--	--	11	502	--	29	3.5	0.3	--	0.58	--	0.14	--	147.7	3
Loading (lb/day):									--	9.5	--	0.12	--	0.21	--	0.04	--		

Sample Point Description: Lewisville Rec (32803712) - COAL RUN, UP

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - COA02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-06-10	--		--	6.8	--	--	--	--	--	44	0	0.3	--	1.05	--	0.5	--	183	3
1997-04-07	--		--	6.4	--	--	--	--	--	28	0	0.32	--	0.57	--	0.5	--	179	6
1998-05-07	--		--	--	--	--	--	--	--	--	--	0.45	--	0.55	--	0.5	--	--	--
1999-04-20	--		--	6.6	--	--	--	--	--	24	0	1	--	0.37	--	0.5	--	141.9	18
2000-10-11	--		--	6.9	--	--	--	--	--	60	0	0.42	--	1.3	--	0.5	--	140.3	14
2001-09-10	--		--	6.8	--	--	--	--	--	58	0	0.64	--	0.86	--	0.5	--	250	26
2002-04-10	--		--	6.5	--	--	--	--	--	44	0	4.01	--	0.73	--	2.22	--	123.8	128
2003-04-01	--		--	6.9	--	--	--	--	--	35.6	0	0.78	--	1.04	--	0.5	--	171.2	10
2006-11-02	--		--	7.2	--	--	--	--	--	45	-29.4	0.41	--	0.36	--	0.5	--	75.8	3
2007-02-02	--		--	7.5	--	--	--	--	--	47.2	-83.4	0.43	--	0.59	--	0.5	--	128.6	4
2008-03-14	--		--	7.3	--	--	--	--	--	42	-22.4	0.36	--	0.24	--	0.5	--	129.8	8
2009-05-05	--		--	7.4	--	--	--	--	--	41.4	-27.8	0.59	--	0.24	--	0.5	--	128.4	5
2010-03-29	--		--	7.4	--	--	--	--	--	40.4	-27.6	0.37	--	0.2	--	0.5	--	82.5	5
2011-04-12	--		--	7.3	--	--	--	--	--	42.2	-31.8	0.37	--	0.18	--	0.5	--	134.3	5
2011-12-15	--		--	7.3	--	--	--	--	--	57.8	-49.4	0.42	--	0.35	--	0.5	--	98.5	6
2012-05-10	--		--	7.7	--	--	--	--	--	50.2	-39.4	0.75	--	0.24	--	0.5	--	89.5	14
2013-01-10	--		--	7.7	--	--	--	--	--	71.6	-67.8	0.3	--	0.28	--	0.5	--	156.6	5
Minimum:			--	6.4	--	--	--	--	--	24	-83.4	0.3	--	0.18	--	0.5	--	75.8	3
Maximum:			--	7.7	--	--	--	--	--	71.6	0	4.01	--	1.3	--	2.22	--	250	128
Average:		data has not been set	--	6.93	--	--	--	--	--	45.71	-23.69	0.7	--	0.54	--	0.6	--	138.3	16.3
Range:		data has not been set	--	1.3	--	--	--	--	--	47.6	83.4	3.71	--	1.12	--	1.72	--	174.2	125
Median:		data has not been set	--	7.25	--	--	--	--	--	44	-25	0.42	--	0.37	--	0.5	--	132.1	6
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - COAL RUN, UP

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - COA02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-04-28	--		--	6.3	--	--	--	--	--	26	0	0.3	--	0.37	--	0.5	--	101.3	3
2001-09-10	--		--	6.8	--	--	--	--	--	58	0	1.3	--	1.06	--	0.5	--	230	16
2005-05-10	--		--	7.4	--	--	--	--	--	79	-46.4	0.3	--	1.16	--	0.5	--	256.5	3
Minimum:			--	6.3	--	--	--	--	--	26	-46.4	0.3	--	0.37	--	0.5	--	101.3	3
Maximum:			--	7.4	--	--	--	--	--	79	0	1.3	--	1.16	--	0.5	--	256.5	16
Average:		data has not been set	--	6.63	--	--	--	--	--	54.33	-15.47	0.63	--	0.86	--	0.5	--	195.9	7.3
Range:		data has not been set	--	1.1	--	--	--	--	--	53	46.4	1	--	0.79	--	0	--	155.2	13
Median:		data has not been set	--	6.8	--	--	--	--	--	58	0	0.3	--	1.06	--	0.5	--	230	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Seep NE corner of mine site.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - CL0-D2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2000-04-05	--	--	--	5.7	--	--	--	--	--	17.4	84	319	--	7.89	--	1.97	--	604	22
2000-07-13	--	--	--	3.8	--	--	--	--	--	0	76	2.97	--	4.31	--	3.29	--	537	14
2000-10-11	--	--	--	--	--	--	--	--	--	--	--	36.5	--	5.71	--	0.2	--	--	--
2001-02-12	--	--	--	6.5	--	--	--	--	--	17.8	0	3.68	--	1.13	--	0.2	--	249	2
2001-07-17	--	--	--	3	--	--	--	--	--	0	120.2	20.6	--	5.91	--	1.11	--	683	--
2002-01-04	--	5	--	3.4	--	--	0.9	1458	--	2	85.85	28.62	--	5.68	--	0.1	--	658.6	--
2002-02-08	--	12	--	3.3	--	--	4.6	1286	--	2	565.5	12.36	--	5.61	--	0.13	--	510.4	--
2002-03-08	--	8.1	--	3.3	--	--	15.7	1276	--	2	79.16	12.7	--	5.43	--	0.1	--	596.8	--
2002-04-05	--	5	--	3.5	--	--	10	1284	--	2	81.37	16.72	--	5.17	--	0.1	--	572.1	--
2002-05-03	--	8.1	--	3.3	--	--	14.2	1140	--	2	69.28	9.81	--	4.2	--	0.1	--	498.9	--
2002-05-31	--	4.7	--	3.2	--	--	23.4	1373	--	2	67.67	8.28	--	4.85	--	0.1	--	647.4	--
2002-07-05	--	4.8	--	3	--	--	23.4	1640	--	2	135.3	13.61	--	5.55	--	0.1	--	719.5	--
2002-08-02	--	3	--	2.9	--	--	24.5	1485	--	2	162.3	13.84	--	5.73	--	0.49	--	763.5	--
2002-09-05	--	3	--	3.2	--	--	26	1112	--	2	195	13.75	--	7.72	--	0.46	--	768.5	--
2002-10-04	--	5	--	3.3	--	--	8	1204	--	2	97.14	8.1	--	5.46	--	0.16	--	621.5	--
2002-11-08	--	8.1	--	3.26	--	--	7.5	1050	--	2	81.48	9.65	--	5.61	--	0.14	--	621.1	--
2002-12-06	--	3.8	--	2.98	--	--	8.5	2552	--	2	323.9	23.03	--	6.08	--	0.1	--	663.1	--
Minimum:		3	--	2.9	--	--	0.9	1050	--	0	0	2.97	--	1.13	--	0.1	--	249	2
Maximum:		12	--	6.5	--	--	26	2552	--	17.8	565.5	319	--	7.89	--	3.29	--	768.5	22
Average:		5.9	--	--	--	--	13.9	1405	--	3.7	139.01	32.54	--	5.41	--	0.52	--	607.2	12.7
Range:		9	--	3.6	--	--	25.1	1502	--	17.8	565.5	316.03	--	6.76	--	3.19	--	519.5	20
Median:		5	--	3.3	--	--	12.1	1285	--	2	84.93	13.61	--	5.61	--	0.14	--	621.3	14
Loading (lb/day):									--	0.14	13.24	0.95	--	0.39	--	0.01	--		

Sample Point Description: Discharge flowing into Coal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - CL0-D8

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	3	--	2.7	--	--	8	1900	--	2	334.8	28.98	--	6.69	--	33.19	--	1544	--
2002-02-08	--	1.3	--	3.1	--	--	9.5	26	--	2	921.6	42.83	--	7.36	--	28.51	--	1601	--
2002-03-08	--	8.1	--	3.2	--	--	13.3	2450	--	2	409.2	50.45	--	7.18	--	33.89	--	1498	--
2002-04-05	--	16	--	3.3	--	--	10.8	2500	--	2	343.2	45.13	--	7.36	--	33.52	--	1618	--
2002-05-03	--	20.9	--	3.1	--	--	12.8	2570	--	2	356.9	37.94	--	7.53	--	28.95	--	1596	--
2002-05-31	--	16.5	--	3.2	--	--	16.4	2034	--	2	266.7	26.64	--	7.23	--	31.23	--	1651	--
2002-07-05	--	8.1	--	3.2	--	--	19.2	2000	--	2	354.5	29.23	--	7.47	--	34.86	--	1556	--
2002-08-02	--	8.1	--	3.1	--	--	19.7	1731	--	2	354.5	25.37	--	7.14	--	31.75	--	156.8	--
2002-09-05	--	4	--	3.3	--	--	13	1420	--	2	396.8	30.29	--	7.29	--	35.77	--	1572	--
2002-10-04	--	5	--	3.3	--	--	12	1907	--	2	349.2	32.69	--	7.49	--	32.92	--	1576	--
2002-11-08	--	5	--	3.7	--	--	11	1756	--	2	619.4	19.38	--	7.46	--	36.48	--	1521	--
2002-12-06	--	3.8	--	3.3	--	--	0.9	590	--	2	99.15	19.5	--	8.44	--	37.83	--	1526	--
Minimum:		1.3	--	2.7	--	--	0.9	26	--	2	99.15	19.38	--	6.69	--	28.51	--	156.8	--
Maximum:		20.9	--	3.7	--	--	19.7	2570	--	2	921.6	50.45	--	8.44	--	37.83	--	1651	--
Average:		8.3	--	3.15	--	--	12.2	1740	--	2	400.5	32.37	--	7.39	--	33.24	--	1451.3	--
Range:		19.7	--	1	--	--	18.8	2544	--	0	822.45	31.07	--	1.75	--	9.32	--	1494.2	--
Median:		6.6	--	3.2	--	--	12.4	1904	--	2	354.5	29.76	--	7.36	--	33.36	--	1564	--
Loading (lb/day):									--	0.2	35.37	3.4	--	0.74	--	3.24	--		

Sample Point Description: Discharge near the mouth of Coal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - CUT01A

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-06-10	--		--	6.8	--	--	--	--	--	30	0	0.65	--	0.3	--	0.5	--	109.5	22.8
Minimum:			--	6.8	--	--	--	--	--	30	--	0.65	--	0.3	--	0.5	--	109.5	22.8
Maximum:			--	6.8	--	--	--	--	--	30	--	0.65	--	0.3	--	0.5	--	109.5	22.8
Average:		data has not been set	--	6.8	--	--	--	--	--	30	--	0.65	--	0.3	--	0.5	--	109.5	22.8
Range:		data has not been set	--	0	--	--	--	--	--	0	--	0	--	0	--	0	--	0	0
Median:		data has not been set	--	6.8	--	--	--	--	--	30	--	0.65	--	0.3	--	0.5	--	109.5	22.8
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - Unnamed trib to Coal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - CUT01B

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1998-04-02	--		--	6.4	--	--	--	--	--	22	0	0.39	--	0.16	--	0.5	--	70.7	3
1998-09-14	--		--	6.9	--	--	--	--	--	54	0	1.06	--	0.22	--	0.78	--	207	10
1999-02-09	--		--	6.4	--	--	--	--	--	18	0	0.3	--	0.13	--	0.5	--	46.2	3
2000-03-03	--		--	6.4	--	--	--	--	--	19.6	0	0.3	--	0.12	--	0.5	--	54.6	3
2001-02-05	--		--	6.6	--	--	--	--	--	24	0	0.43	--	0.22	--	0.5	--	40	8
2002-04-11	--		--	6.3	--	--	--	--	--	24	0	0.3	--	0.07	--	0.5	--	68.7	12
2003-10-01	--		--	7	--	--	--	--	--	33.2	0	0.61	--	0.25	--	0.5	--	64.4	3
2004-01-05	--		--	6	--	--	--	--	--	8.6	15.4	1.05	--	0.09	--	0.96	--	24	22
2006-10-05	--		--	7.4	--	--	--	--	--	34.6	-23.8	0.3	--	0.08	--	0.5	--	76.3	8
2007-04-19	--		--	7.1	--	--	--	--	--	18.8	-4.4	0.44	--	0.21	--	0.5	--	74.2	3
Minimum:			--	6	--	--	--	--	--	8.6	-23.8	0.3	--	0.07	--	0.5	--	24	3
Maximum:			--	7.4	--	--	--	--	--	54	15.4	1.06	--	0.25	--	0.96	--	207	22
Average:		data has not been set	--	6.48	--	--	--	--	--	25.68	-1.28	0.52	--	0.16	--	0.57	--	72.6	7.5
Range:		data has not been set	--	1.4	--	--	--	--	--	45.4	39.2	0.76	--	0.18	--	0.46	--	183	19
Median:		data has not been set	--	6.5	--	--	--	--	--	23	0	0.41	--	0.15	--	0.5	--	66.6	5.5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Helvetia No. 2 CRDA (32743711) - Mouth of CUT01B

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - CUT01C

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-10-03	--		--	6.4	--	--	--	--	--	42	0	0.51	--	0.65	--	0.5	--	261	4
1998-02-02	--		--	6.4	--	--	--	--	--	20	0	0.3	--	0.85	--	0.73	--	202	4
1999-02-09	--		--	6.5	--	--	--	--	--	24	0	0.3	--	0.42	--	0.5	--	78.1	3
2000-03-03	--		--	6.4	--	--	--	--	--	22	0	0.3	--	0.76	--	0.8	--	148.3	3
2001-02-05	--		--	6.6	--	--	--	--	--	26	0	0.61	--	0.88	--	0.8	--	131	14
2002-04-11	--		--	6.4	--	--	--	--	--	36	0	0.3	--	0.42	--	0.5	--	154.3	3
2003-10-01	--		--	7.2	--	--	--	--	--	52.2	0	0.31	--	1.13	--	0.5	--	128.6	3
2004-01-05	--		--	6.6	--	--	--	--	--	21.2	0	1.17	--	0.48	--	1.31	--	65	24
2006-10-05	--		--	7.4	--	--	--	--	--	51.8	-39.8	0.3	--	0.24	--	0.5	--	192.4	3
2007-04-19	--		--	7.3	--	--	--	--	--	35.4	-20.8	0.3	--	0.98	--	0.5	--	135	3
Minimum:			--	6.4	--	--	--	--	--	20	-39.8	0.3	--	0.24	--	0.5	--	65	3
Maximum:			--	7.4	--	--	--	--	--	52.2	0	1.17	--	1.13	--	1.31	--	261	24
Average:		data has not been set	--	6.59	--	--	--	--	--	33.06	-6.06	0.44	--	0.68	--	0.66	--	149.6	6.4
Range:		data has not been set	--	1	--	--	--	--	--	32.2	39.8	0.87	--	0.89	--	0.81	--	196	21
Median:		data has not been set	--	6.55	--	--	--	--	--	30.7	0	0.3	--	0.7	--	0.5	--	141.7	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Helvetia No. 2 CRDA (32743711) - Mouth of CUT01C

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - F

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-02-26	--	810	6.5	6.7	--	--	4	407	--	18	0	1.55	--	1.58	--	2.21	--	188	9.7
Minimum:		810	6.5	6.7	--	--	4	407	--	18	--	1.55	--	1.58	--	2.21	--	188	9.7
Maximum:		810	6.5	6.7	--	--	4	407	--	18	--	1.55	--	1.58	--	2.21	--	188	9.7
Average:		810	6.5	6.7	--	--	4	407	--	18	--	1.55	--	1.58	--	2.21	--	188	9.7
Range:		0	0	0	--	--	0	0	--	0	--	0	--	0	--	0	--	0	0
Median:		810	6.5	6.7	--	--	4	407	--	18	--	1.55	--	1.58	--	2.21	--	188	9.7
Loading (lb/day):									--	174.96	--	15.07	--	15.36	--	21.48	--		

Sample Point Description: Reeds Run upstream of Neal Road and downstream of Willow Run. Same as L11 in Lentz Mine (32020102).

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Hel - 1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-10-03	--		--	6.8	--	--	--	--	--	108	0	1.11	--	0.4	--	0.57	--	30.3	130
1998-02-02	--		--	6.6	--	--	--	--	--	32	0	0.94	--	0.14	--	0.69	--	45.6	116
1999-02-09	--		--	6.6	--	--	--	--	--	28	0	0.53	--	0.16	--	0.5	--	26.3	3
2000-03-03	--		--	6.6	--	--	--	--	--	40	0	0.3	--	0.16	--	0.5	--	28.5	3
2001-02-05	--		--	6.7	--	--	--	--	--	36	0	1.21	--	0.23	--	0.82	--	42	28
2002-04-11	--		--	6.6	--	--	--	--	--	52	0	0.95	--	0.33	--	0.5	--	46.6	10
2003-10-01	--		--	7.3	--	--	--	--	--	68.6	0	0.48	--	0.53	--	0.5	--	36.7	3
2004-01-05	--		--	6.8	--	--	--	--	--	23.8	0	1.09	--	0.1	--	1.07	--	30.3	18
2006-10-05	--		--	7.4	--	--	--	--	--	93.8	-81.2	0.51	--	0.69	--	0.5	--	20	6
2007-04-19	--		--	7.3	--	--	--	--	--	40.6	-26.4	0.41	--	0.18	--	0.5	--	20	3
Minimum:			--	6.6	--	--	--	--	--	23.8	-81.2	0.3	--	0.1	--	0.5	--	20	3
Maximum:			--	7.4	--	--	--	--	--	108	0	1.21	--	0.69	--	1.07	--	46.6	130
Average:		data has not been set	--	6.78	--	--	--	--	--	52.28	-10.76	0.75	--	0.29	--	0.62	--	32.6	32
Range:		data has not been set	--	0.8	--	--	--	--	--	84.2	81.2	0.91	--	0.58	--	0.57	--	26.6	127
Median:		data has not been set	--	6.75	--	--	--	--	--	40.3	0	0.73	--	0.2	--	0.5	--	30.3	8
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Helvetia No. 2 CRDA (32743711) - CUT01C headwaters

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

ultmans Run AMD Assessment Water Quality Report - Hel - 2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1998-04-02	--		--	6	--	--	--	--	--	12.2	0.6	0.4	--	0.09	--	0.5	--	23.6	3
1999-04-05	--		--	6	--	--	--	--	--	11.4	0	1	--	0.09	--	0.89	--	38.1	14
2000-03-03	--		--	6	--	--	--	--	--	10.6	0	0.3	--	0.05	--	0.5	--	25.9	3
2001-02-05	--		--	6.2	--	--	--	--	--	14	1.2	0.31	--	0.06	--	0.5	--	30	6
2002-04-11	--		--	6	--	--	--	--	--	13.8	16.6	0.5	--	0.07	--	0.5	--	37.5	14
2003-10-01	--		--	6.5	--	--	--	--	--	16.6	0	1.68	--	0.28	--	0.85	--	26.2	10
2004-01-05	--		--	6.6	--	--	--	--	--	15	0	1.56	--	0.35	--	1.15	--	42.5	32
2007-04-19	--		--	6.9	--	--	--	--	--	19.6	-6.2	1.24	--	0.25	--	0.5	--	73.6	3
Minimum:			--	6	--	--	--	--	--	10.6	-6.2	0.3	--	0.05	--	0.5	--	23.6	3
Maximum:			--	6.9	--	--	--	--	--	19.6	16.6	1.68	--	0.35	--	1.15	--	73.6	32
Average:		data has not been set	--	6.18	--	--	--	--	--	14.15	1.53	0.87	--	0.16	--	0.67	--	37.2	10.6
Range:		data has not been set	--	0.9	--	--	--	--	--	9	22.8	1.38	--	0.3	--	0.65	--	50	29
Median:		data has not been set	--	6.1	--	--	--	--	--	13.9	0	0.75	--	0.09	--	0.5	--	33.8	8
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Helvetia No. 2 CRDA (32743711) - CUT01B headwaters

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

ultmans Run AMD Assessment Water Quality Report - Jack - MP1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-10-21	--	0.6	3.1	2.42	--	--	14	4590	--	0	1590	74.7	--	15.1	--	--	--	3529	10.4
1997-11-18	--	4.8	3.6	2.51	--	--	4	3910	--	0	1020	25.7	--	14.7	--	--	--	2611	0.1
1997-12-08	--	2.5	3.5	3	--	--	7	3840	--	0	1142.4	34	--	16.2	--	163.1	--	2064	0
1997-12-29	--	0.8	3.4	3.02	--	--	6	397	--	0	1337.6	33.1	--	14.1	--	160.7	--	2429	2
1998-01-21	--	0.6	2.9	3.05	--	--	2	311	--	N.D.	843.4	23	--	14.2	--	112.75	--	2667	3
1998-02-09	--	1.2	3.5	3.06	--	--	4	3140	--	0	760	22.5	--	14.4	--	94	--	1849	0
1998-02-27	--	1.7	3.2	3.29	--	--	7	2660	--	0	455.6	13.1	--	11.8	--	72.3	--	1333	2
1998-03-18	--	1	2.9	3.14	--	--	8	2530	--	0	564.8	17	--	13.3	--	85.5	--	1634	2
1998-04-07	--	0.5	2.9	3.02	--	--	12	2750	--	0	625.6	17	--	13.6	--	76	--	1935	0
1998-04-27	--	3.6	4	3.13	--	--	10	1693	--	0	277.6	4.1	--	8.4	--	29.73	--	946	0
1998-05-20	--	0.5	3.6	3.11	--	--	15	2370	--	0	577.6	13.4	--	11.3	--	57.7	--	1397	5
1998-06-09	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-07-29	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-08-21	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-09-16	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-03-25	--		--	3.1	--	--	--	--	--	0	636	7.13	--	13.8	--	95.6	--	1389.6	3
2000-06-05	--		--	3.6	--	--	--	--	--	0	270	1.78	--	10.9	--	40.2	--	1010	3
2001-04-04	--	1	--	3.5	--	--	--	--	--	0	316	1.39	--	11.6	--	41.6	--	997.6	8
2002-01-25	--	2	--	3.4	--	--	--	--	--	0	648.8	3.24	--	16.3	--	81.3	--	1413.9	4
2003-03-28	--	1	--	3.2	--	--	--	--	--	0	415.6	1.09	--	13.9	--	45.4	--	1796.9	4
2003-06-03	--	2	--	3.3	--	--	--	2860	--	0	347.8	1.14	--	16.2	--	43.3	--	1701.7	2
2003-09-22	--	3	--	3.2	--	--	--	--	--	0	276	0.94	--	13.5	--	32.6	--	1442.5	3
2004-03-02	--	12	--	3.5	--	--	--	--	--	0	190.2	0.64	--	14.1	--	24.9	--	1867.8	20
2004-08-25	--	3.5	--	3.5	--	--	--	2850	--	0	200.8	0.83	--	12.9	--	24.6	--	1730	20
2005-05-10	--	4	--	3.5	--	--	--	--	--	0	184.8	0.37	--	9.26	--	18.6	--	1565	4
2006-09-22	--	1	--	6.1	--	--	--	1976	--	36.2	-20.8	0.03	--	4.6	--	7.03	--	999	36
Minimum:			2.9	2.42	--	--	2	311	--	0	-20.8	0.03	--	4.6	--	7.03	--	946	0
Maximum:		DRY	4	6.1	--	--	15	4590	--	N.D.	1590	74.7	--	16.3	--	163.1	--	3529	36
Average:		2.4	--	--	--	--	8.1	2563	--	1.72	575.45	13.46	--	12.92	--	65.35	--	1741.3	6
Range:		11.5	1.1	3.68	--	--	13	4279	--	36.2	1610.8	74.67	--	11.7	--	156.07	--	2583	36
Median:		1.5	3.4	3.17	--	--	7	2705	--	0	510.2	5.62	--	13.7	--	51.55	--	1667.9	3
Loading (lb/day):									--	0.02	12.83	0.25	--	0.37	--	1.33	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Discharge in headwaters of "Golden Pheasant Run".

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Jack - MP2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-10-29	--	0.3	3.4	2.89	--	--	8	3440	--	0	780	7.28	--	30.4	--	--	--	2353	0.3
1997-11-18	--	0.7	3.6	2.87	--	--	3	3110	--	0	710	6.23	--	20.6	--	--	--	2076	0.2
1997-12-08	--	0.5	3.5	3.45	--	--	5	--	--	0	660	6.6	--	27.3	--	108.1	--	1473	0
1997-12-29	--	0.4	3.6	3.54	--	--	6	2810	--	0	699.2	4.97	--	26.6	--	97.1	--	1763	0
1998-01-21	--	0.2	3.5	3.54	--	--	2	2441	--	N.D.	480.38	2.66	--	22.7	--	66.25	--	1644	8
1998-02-09	--	0.3	3.5	3.52	--	--	2	2580	--	0	503.6	3	--	23.6	--	71.7	--	1218	2
1998-02-27	--	0.6	3.5	3.75	--	--	8	2170	--	0	329.2	2.12	--	20.4	--	54.8	--	1086	0
1998-03-18	--	0.4	3.1	3.6	--	--	8	1906	--	0	374.4	2.45	--	20.7	--	68.6	--	1211	0
1998-04-07	--	0.1	3.2	3.38	--	--	12	2480	--	0	540	3	--	27.3	--	79.3	--	1749	0
1998-04-27	--	1.5	4	3.44	--	--	12	1387	--	0	238	1.27	--	11.2	--	30.15	--	783	2
1998-05-20	--	0.2	3.5	3.32	--	--	17	2280	--	0	597.6	6.1	--	18.8	--	58.5	--	1129	7
1998-06-09	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-06-30	--	0.2	3.4	3.16	--	--	17	2300	--	0	415.6	10.8	--	17.8	--	50.4	--	1182	7
1998-07-29	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-08-21	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-09-16	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-03-25	--		--	3.7	--	--	--	--	--	0	466	0.99	--	15.9	--	81.2	--	1268.6	6
2000-06-05	--	.5	--	4.6	--	--	--	--	--	13	274	105	--	16.2	--	11.2	--	1506	6
2000-08-16	--		--	3.4	--	--	--	--	--	0	366	4.64	--	12.2	--	46.9	--	1159.5	3
2001-10-15	--	0.3	--	3.3	--	--	--	--	--	0	616.6	5.06	--	13.4	--	64.2	--	1020	18
2002-06-27	--	1	--	3.2	--	--	--	--	--	0	539.4	5.92	--	12.1	--	54.3	--	884.6	3
2002-09-30	--		--	3.2	--	--	--	--	--	0	396.6	5.52	--	13.5	--	51.3	--	1703.4	8
2002-11-22	--		--	3.4	--	--	--	--	--	0	306.4	3.3	--	12.7	--	39.3	--	1039.1	3
2003-03-28	--	2	--	3.3	--	--	--	--	--	0	420.4	1.69	--	13.2	--	45.3	--	1649.1	6
2003-04-30	--	2	--	3.3	--	--	--	--	--	0	368.6	1.91	--	14	--	44.6	--	1684.7	18
2003-06-03	--	2	--	3.4	--	--	--	2440	--	0	285.6	1.88	--	14.6	--	41.4	--	1465.4	2
2003-09-22	--	1	--	3.3	--	--	--	--	--	0	302	2.89	--	13.4	--	37.4	--	1598.9	3
2004-03-02	--	2	--	3.5	--	--	--	--	--	0	229.4	1.13	--	14.2	--	33.8	--	1478.8	12
2004-08-25	--	2.7	--	3.5	--	--	--	2890	--	0	250	3.15	--	12.8	--	32	--	1726.1	64
2005-05-10	--	4	--	3.6	--	--	--	--	--	0	187.2	1.04	--	9.68	--	25.8	--	1548.9	3
2006-09-22	--	2	--	3.5	--	--	--	2660	--	0	178.2	0.57	--	9.4	--	26.1	--	1749.8	14
Minimum:			3.1	2.87	--	--	2	1387	--	0	178.2	0.57	--	9.4	--	11.2	--	783	0
Maximum:		DRY	4	4.6	--	--	17	3440	--	N.D.	780	105	--	30.4	--	108.1	--	2353	64
Average:		1.1	--	--	--	--	8.3	2492	--	0.5	426.46	7.45	--	17.21	--	52.79	--	1450	7.2
Range:		3.9	0.9	1.73	--	--	15	2053	--	13	601.8	104.43	--	21	--	96.9	--	1570	64
Median:		0.6	3.5	3.4	--	--	8	2461	--	0	396.6	3	--	14.6	--	50.4	--	1478.8	3
Loading (lb/day):									--	0	4.21	0.06	--	0.18	--	0.54	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Discharge in headwaters of "Golden Pheasant Run".

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Jack - MP4

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-10-29	--	0.9	3.5	2.49	--	--	12	3330	--	0	750	110.9	--	25.2	--	--	--	2289	0.1
1997-11-18	--	19.5	3.4	2.65	--	--	5	2780	--	0	560	55.2	--	14.7	--	--	--	1664	0.5
1997-12-08	--	18.1	3.5	3.17	--	--	7	2680	--	0	513.2	26.7	--	16	--	58.1	--	1376	5
1997-12-29	--	10.6	3.4	3.13	--	--	5	2840	--	0	637.6	40.5	--	18.1	--	59.5	--	1666	9
1998-01-21	--	16.2	3.2	3.27	--	--	2	2496	--	N.D.	513.6	59.7	--	15.4	--	52	--	1814	24
1998-02-09	--	19.3	3.5	3.06	--	--	2	3091	--	0	680	54.2	--	15	--	66.3	--	1225	4
1998-02-27	--	18.6	4.4	4.59	--	--	10	1752	--	0.8	137.4	10	--	4.7	--	29.71	--	662	46
1998-04-07	--	20	2.8	2.9	--	--	13	3350	--	0	1271.6	136	--	16	--	118.7	--	2924	11
1998-04-27	--	52.3	3.6	2.87	--	--	12	2180	--	0	632	54.5	--	8.5	--	58.4	--	1233	8
1998-05-20	--	23.7	3	2.82	--	--	15	3760	--	0	2016.8	224	--	15.8	--	146.9	--	3225	9
1998-06-09	--	9.2	3.3	2.67	--	--	15	3940	--	0	1568	27	--	18.6	--	130.2	--	2386	14
1998-06-30	--	7.7	3.4	2.75	--	--	18	3570	--	0	1029.6	77.6	--	20.5	--	66.2	--	1891	14
1998-07-29	--	4.7	3	2.78	--	--	19	3370	--	0	1030.8	10.4	--	23.9	--	74.2	--	1999	21
1998-08-21	--	6.1	3.1	2.77	--	--	13	3380	--	0	903.6	101	--	2.42	--	67.2	--	2300	6
1998-09-16	--	5.7	2.9	2.73	--	--	22	3910	--	0	848	66	--	21.3	--	54.8	--	2085	10
1998-10-02	--	--	7	7.54	--	--	20	1729	--	81.4	8.2	1.59	--	4.7	--	0	--	752	42
1998-10-24	--	2.7	2.9	2.91	--	--	12	3690	--	0	648.8	111	--	23.4	--	55.4	--	1934	11
1998-11-13	--	2.8	3	2.89	--	--	10	3730	--	0	633.2	163	--	49	--	62.3	--	2214	24
1999-03-25	--	6.1	--	3.5	--	--	--	--	--	0	336	60	--	15.3	--	32.5	--	1198.8	12
1999-09-28	--	12.4	--	3.2	--	--	--	--	--	0	534	156	--	19.6	--	30.3	--	2292.2	6
2000-01-11	--	8.9	--	3.8	--	--	--	--	--	0	386	92.3	--	15.8	--	24.5	--	1412.9	16
2000-04-06	--	11.8	4.1	4.02	--	--	12	1515	--	N.D.	215.18	37.5	--	7.9	--	13.15	--	1403.3	10
2000-05-08	--	3	3.4	3.39	--	--	21	2302	--	N.D.	367.36	81.6	--	14.3	--	15.75	--	1884.4	5
2000-06-05	--	6.1	--	3.2	--	--	--	--	--	0	360	5.79	--	10.2	--	45.1	--	1188	3
2000-06-07	--	8.1	4.6	4.55	--	--	21	2184	--	0.93	258.1	90.5	--	15.8	--	10.4	--	1703.6	13
2000-07-14	--	8.9	3.6	3.57	--	--	23	2631	--	N.D.	424.56	125.25	--	12.25	--	9.8	--	2087.6	12
2000-08-14	--	3.4	5	5.02	--	--	26	2428	--	4.95	291.72	110.75	--	20.45	--	7.19	--	2228.1	10
2000-08-16	--	15	--	4.8	--	--	--	--	--	13	358	135	--	21.3	--	10.6	--	1662.4	38
2000-09-07	--	1.5	4.7	4.73	--	--	17	2600	--	3.51	367.4	135.5	--	22.5	--	12.85	--	2392.9	10
2000-10-12	--	2	4.8	4.55	--	--	15	2185	--	2.9	347.62	148.5	--	20.75	--	13	--	2156.1	3
2000-10-16	--	6	--	4.2	--	--	--	--	--	6.8	412	125	--	21	--	14.1	--	1699.9	36
2000-11-21	--	1.2	5	4.72	--	--	4	2473	--	4.16	369	132.75	--	21.3	--	13.5	--	2301.1	17
2000-12-06	--	1.2	4.6	4.65	--	--	3	2290	--	3.03	388.68	152.25	--	18.75	--	13.3	--	1892.2	5
2001-01-04	--	2	4.7	4.61	--	--	3	2340	--	2.1	300.64	100.25	--	16.7	--	14.2	--	1890.1	13
2001-02-05	--	5	4.7	4.73	--	--	3	1856	--	3.69	302.33	69.25	--	12.6	--	9.75	--	1068.6	6
2001-03-08	--	4	4.8	4.65	--	--	4	1970	--	2.74	253.37	53.75	--	10.9	--	9.4	--	1226.3	17
2001-04-04	--	10	--	4.7	--	--	--	--	--	12.2	290	110	--	15.1	--	11.5	--	1209.7	18
2001-10-15	--	4	--	3.6	--	--	--	--	--	0	371.4	106	--	18.6	--	9.61	--	1378	16
2002-01-25	--		--	4.7	--	--	--	--	--	10.8	205.2	50.5	--	10.4	--	9.85	--	732.3	10
2002-06-27	--	50.3	--	6	--	--	--	--	--	48	193.8	70.1	--	13.4	--	1.68	--	1027	20
2002-09-30	--		--	5.8	--	--	--	--	--	36	128	54.6	--	14.9	--	2.7	--	1137.5	14
2002-11-22	--	21.7	--	4.9	--	--	--	--	--	11.6	169	67.8	--	12.1	--	6.87	--	1025.3	12
2003-03-28	--	21.7	--	4.3	--	--	--	--	--	6.8	243.2	31.8	--	10.3	--	15.7	--	1167.2	3
2003-04-30	--	34.2	--	4	--	--	--	--	--	3.4	232	36.2	--	11.6	--	18.2	--	1197.7	8
2003-09-22	--	34.2	--	3.8	--	--	--	--	--	0	203.6	27.9	--	13	--	17.4	--	1168.9	3
2004-03-02	--	284.5	--	4.5	--	--	--	--	--	9.8	78.4	4.86	--	5.61	--	10.8	--	646.3	14
2005-05-10	--	10	--	4	--	--	--	--	--	2	150.8	14.9	--	10	--	17.6	--	1306.8	4
Minimum:			2.8	2.49	--	--	2	1515	--	0	8.2	1.59	--	2.42	--	0	--	646.3	0.1
Maximum:		284.5	7	7.54	--	--	26	3940	--	N.D.	2016.8	224	--	49	--	146.9	--	3225	46
Average:		18.5	3.39	3.23	--	--	12.1	2745	--	6.29	487.65	79.06	--	15.86	--	33.8	--	1645.2	13
Range:		283.6	4.2	5.05	--	--	24	2425	--	81.4	2008.6	222.41	--	46.58	--	146.9	--	2578.7	45.9
Median:		8.9	3.5	3.8	--	--	12	2616	--	0.8	367.4	69.25	--	15.4	--	15.75	--	1664	11
Loading (lb/day):									--	1.86	81.45	10.69	--	2.44	--	6.7	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Discharge in headwaters of "Golden Pheasant Run". Sample taken at weir.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Jack - MP5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1998-06-19	--	25	6.79	6.69	--	--	10	116	--	25.67	N.D.	0.78	--	0.15	--	--	--	35.7	32
1998-09-17	--	6	7.1	7.03	--	--	20	278	--	56.08	N.D.	0.9	--	0.32	--	--	--	39.1	23
1999-01-11	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-02-16	--	20	7.11	6.99	--	--	1	162	--	18.4	N.D.	0.09	--	0.03	--	0.18	--	20.5	1
1999-04-28	--		--	6.5	--	--	--	--	--	24	0	0.3	--	0.05	--	0.5	--	42.1	3
1999-06-11	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-08-05	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-12-02	--	12	6.8	7.14	--	--	3	249	--	35.91	N.D.	0.09	--	0	--	0.13	--	30.4	3
2000-03-08	--	19	6.6	6.65	--	--	11	155	--	20.1	N.D.	0.23	--	0.03	--	0.51	--	30.6	8
2000-06-07	--	19	6.9	7.05	--	--	16	153	--	22.43	N.D.	0.44	--	0.04	--	1.1	--	54.2	3
2000-09-07	--	3	7.3	7.38	--	--	15	586	--	159.51	N.D.	1.17	--	2.84	--	0.15	--	67.7	6
2000-10-16	--		--	7	--	--	--	--	--	70	0	0.3	--	0.11	--	0.5	--	38.4	4
2000-12-05	--	12	6.6	6.69	--	--	2	327	--	35.07	N.D.	0.67	--	0.98	--	0.15	--	76.3	11
2001-02-05	--	46	6.3	5.84	--	--	3	254	--	18.06	N.D.	0.3	--	0.24	--	0.19	--	54.1	4
2001-02-16	--		--	6.6	--	--	--	--	--	28	0	0.72	--	0.05	--	0.99	--	31.6	20
Minimum:			6.3	5.84	--	--	1	116	--	18.06	0	0.09	--	0	--	0.13	--	20.5	1
Maximum:		DRY	7.3	7.38	--	--	20	586	--	159.51	N.D.	1.17	--	2.84	--	1.1	--	76.3	32
Average:		18	--	--	--	--	9	253	--	42.77	0	0.5	--	0.4	--	0.44	--	43.4	9.8
Range:		43	1	1.54	--	--	19	470	--	141.45	0	1.08	--	2.84	--	0.97	--	55.8	31
Median:		19	6.8	6.84	--	--	10	249	--	26.84	0	0.37	--	0.08	--	0.35	--	38.8	5
Loading (lb/day):									--	5.75	--	0.09	--	0.05	--	0.08	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Coal Run above SR-286

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Jack - MP7

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1991-10-24	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1997-11-06	--	7.6	3.8	3.78	--	--	10	2120	--	0	98.4	0.59	--	11.9	--	--	--	1657	23
1997-12-08	--	1.3	3.9	3.79	--	--	8	1898	--	0	92.4	0.32	--	10.6	--	10.74	--	1183	0
1997-12-29	--	1.3	3.9	3.87	--	--	5	1989	--	0	146.8	0.67	--	10	--	11.54	--	1326	0
1998-01-21	--	1.4	3.7	3.86	--	--	2	1886	--	N.D.	90.3	0.18	--	10.8	--	10.6	--	1519	3
1998-02-27	--	1.4	4.4	4.54	--	--	7	1280	--	0.4	41.8	0.15	--	4.3	--	6.23	--	658	2
1998-03-18	--	2	4.1	4.5	--	--	6	1004	--	0	40	0.8	--	3.9	--	7.04	--	602	0
1998-04-07	--	1.8	3.6	3.79	--	--	7	1992	--	0	141	0.85	--	11.8	--	12.49	--	1548	--
1998-04-27	--	3.7	4.4	4.37	--	--	10	873	--	0	36.4	0.29	--	2.63	--	2.8	--	456	2
1998-07-29	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-08-21	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-09-21	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-10-02	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-03-25	--		--	4	--	--	--	--	--	3.2	44	0.3	--	5.14	--	5.48	--	556.2	3
1999-09-28	--	.1	--	3.7	--	--	--	--	--	0	90	9.23	--	12	--	10.8	--	1373.8	6
2000-01-11	--		--	4	--	--	--	--	--	3	50	1.14	--	5.12	--	4.38	--	491.5	12
2000-04-06	--	2.6	4.3	4.28	--	--	11	817	--	N.D.	50.55	0.16	--	3.56	--	5.16	--	595.2	6
2000-05-08	--	2	4.4	4.28	--	--	16	1058	--	N.D.	39.57	0.31	--	2.96	--	4.6	--	649.4	5
2000-06-05	--	.5	--	4	--	--	--	--	--	3.6	62	0.3	--	6.65	--	8.14	--	843	3
2000-06-07	--	2.7	4.4	4.2	--	--	17	881	--	N.D.	33.01	0.28	--	3.01	--	3.97	--	538.3	5
2000-07-11	--	0.6	1.1	4.17	--	--	20	908	--	N.D.	35.67	0.24	--	2.43	--	2.82	--	550.9	5
2000-08-14	--	3.2	4	4.13	--	--	20	766	--	N.D.	25.5	0.64	--	2.54	--	2.19	--	465.8	1
2000-08-16	--	.5	--	3.9	--	--	--	--	--	0	84	0.3	--	9.59	--	8.59	--	1059.2	3
2000-09-07	--	DIPPED	4.2	4.22	--	--	16	720	--	N.D.	26.11	0.29	--	2.56	--	2.22	--	431.9	3
2000-10-12	--	2	4.7	4.53	--	--	13	669	--	0.35	18.77	0.6	--	2.4	--	1.97	--	377.2	3
2000-10-16	--	.5	--	3.9	--	--	--	--	--	0	86	0.33	--	10.6	--	9.8	--	1135.7	10
2000-11-21	--	0.7	5	4.84	--	--	5	665	--	2.13	15.91	0.65	--	2.52	--	1.13	--	384.6	10
2000-12-06	--	0.1	5.3	5.25	--	--	4	629	--	3.83	15.99	1.44	--	2.44	--	1.06	--	365.1	6
2001-01-04	--	0.2	5.1	5.09	--	--	3	600	--	3.18	16.44	2.96	--	2.24	--	1.7	--	290.9	5
2001-02-05	--	2	5.8	5.84	--	--	5	197	--	4.02	8.77	0.3	--	0.36	--	0.43	--	82.7	5
2001-03-08	--	1.1	5.8	5.88	--	--	4	650	--	12.88	33.25	9.9	--	1.95	--	0.27	--	368.7	5
2001-04-04	--	1	--	3.9	--	--	--	--	--	0	74	0.3	--	7.78	--	8.85	--	709.1	8
2001-10-15	--	1.1	--	4	--	--	--	--	--	2.2	68.4	0.3	--	2.96	--	2.62	--	581	3
2002-01-25	--	0.3	--	3.9	--	--	--	--	--	0	116	15.3	--	6.41	--	6.69	--	634.6	36
2002-06-27	--	1	--	3.9	--	--	--	--	--	0	177.6	0.3	--	9.21	--	13.3	--	945.6	3
2002-09-30	--		--	3.8	--	--	--	--	--	0	105	0.45	--	8.11	--	7.65	--	820.2	3
2002-11-22	--	.5	--	3.9	--	--	--	--	--	0	76.2	0.3	--	4.48	--	4.61	--	603.1	3
2003-03-28	--	.5	--	4	--	--	--	--	--	1.2	95.6	0.3	--	5.03	--	5.15	--	458.1	3
2003-04-30	--	.5	--	4	--	--	--	--	--	3.2	88.4	0.3	--	6.54	--	6.95	--	631.2	4
2003-06-03	--	1.5	--	4	--	--	--	1275	--	0	86	0.14	--	7.49	--	7.8	--	708.5	2
2003-09-22	--	1	--	3.7	--	--	--	--	--	0	110.6	0.3	--	9.49	--	9.13	--	846.8	3
2004-03-02	--	2	--	3.9	--	--	--	--	--	0.6	96.8	0.3	--	0.98	--	11.3	--	807.3	8
2004-08-25	--	1.5	--	3.8	--	--	--	1873	--	0	111	0.22	--	10.8	--	9.55	--	1166.4	10
2005-05-10	--	1	--	3.8	--	--	--	--	--	0	105.6	0.3	--	12.6	--	13.3	--	1297.3	3
2018-06-09	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2018-06-30	--	1.4	3.9	3.7	--	--	18	2360	--	0	123.6	2.16	--	12.8	--	11.94	--	1652	3
Minimum:			1.1	3.7	--	--	2	197	--	0	8.77	0.14	--	0.36	--	0.27	--	82.7	0
Maximum:		DRY	5.8	5.88	--	--	20	2360	--	N.D.	177.6	15.3	--	12.8	--	13.3	--	1657	36
Average:		1.5	--	--	--	--	9.9	1179	--	1.33	71.44	1.35	--	6.22	--	6.54	--	784.3	5.6
Range:		7.5	4.7	2.18	--	--	18	2163	--	12.88	168.83	15.16	--	12.44	--	13.03	--	1574.3	36
Median:		1.2	4.3	4	--	--	8	908	--	0	75.1	0.3	--	5.13	--	6.69	--	642	3
Loading (lb/day):									--	0.01	1.24	0.01	--	0.11	--	0.1	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Weir, old highwall discharge. 250 east of Jacksonville Mine. Sub-F Discharge.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Jack - MP8

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1990-04-27	--	10.6	4.3	4.48	--	--	10	880	--	0	33	0	--	2.61	--	2.24	--	477	0
1997-11-06	--	12	3.9	3.99	--	--	15	1392	--	0	67.6	1.02	--	5	--	--	--	918	11
1997-12-08	--	4.1	4.5	4.18	--	--	9	1171	--	0	50.6	0.83	--	4.5	--	4.48	--	692	0
1997-12-29	--	4.4	4.3	4.28	--	--	4	1254	--	0	60.6	0.13	--	3.7	--	4.1	--	744	0
1998-01-21	--	4.6	4.2	4.32	--	--	5	1198	--	N.D.	33.6	0.06	--	3.5	--	3.87	--	767	5
1998-02-27	--	5.6	4.5	4.54	--	--	7	1229	--	0.8	38.2	0.1	--	3.5	--	5.39	--	615	4
1998-04-07	--	4.5	4	4.14	--	--	8	1417	--	0	64.4	0.11	--	5.6	--	6.04	--	1032	2
1998-05-20	--	0.5	4.2	4.53	--	--	15	1200	--	0.8	53	0.14	--	3.5	--	3.64	--	654	10
1998-06-09	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-06-30	--	1.8	4	3.7	--	--	21	2360	--	0	113.2	0.57	--	12.4	--	11.53	--	2150	7
1998-07-29	--	DAMP	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-08-21	--	1.7	3.8	3.79	--	--	14	1598	--	0	94.2	1.07	--	0.58	--	6.46	--	1058	7
1998-09-16	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-10-02	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1998-10-24	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-03-25	--	6.1	--	4.5	--	--	--	--	--	8.8	16.4	0.3	--	2.34	--	1.82	--	421.3	6
1999-09-28	--	1.1	--	4.1	--	--	--	--	--	3.6	26	0.3	--	3.29	--	3.24	--	695.9	4
2000-01-11	--	8.9	--	4.3	--	--	--	--	--	6.4	12	0.3	--	1.58	--	0.89	--	238.3	12
2000-04-06	--	11.8	4.2	4.28	--	--	10	826	--	N.D.	28.22	0.05	--	2.44	--	2.3	--	520.6	4
2000-05-08	--	6.5	4.3	4.19	--	--	14	981	--	N.D.	32.8	0.07	--	2.97	--	3.59	--	637	1
2000-06-05	--	3.8	--	4.1	--	--	--	--	--	5.4	24	0.3	--	2.86	--	2.42	--	468	3
2000-06-07	--	3	4.4	4.33	--	--	17	843	--	N.D.	18.45	0.04	--	2.74	--	2.85	--	516.4	1
2000-07-14	--	1.9	4.1	4.14	--	--	18	968	--	N.D.	35.06	0.08	--	2.57	--	2.74	--	602.4	6
2000-08-14	--	4	4.1	4.12	--	--	18	790	--	N.D	22.85	0.09	--	2.41	--	1.94	--	482.4	6
2000-08-16	--	3.8	--	4.1	--	--	--	--	--	3.4	26	0.3	--	2.69	--	2.14	--	371.2	3
2000-09-07	--	0.1	4.2	4.15	--	--	17	781	--	M.D.	24.89	0.38	--	2.63	--	2.27	--	501.1	1
2000-10-12	--	2.5	4.2	4.13	--	--	15	854	--	N.D.	22.64	0.09	--	2.64	--	2.15	--	516.9	1
2000-10-16	--	2.2	--	4.1	--	--	--	--	--	3.8	26	0.3	--	2.66	--	2.16	--	483.9	6
2000-11-21	--	0.7	4.2	4.18	--	--	9	840	--	ND	21.42	0.1	--	2.58	--	1.94	--	486.8	7
2000-12-06	--	1.5	4	4.19	--	--	9	779	--	N.D.	21.12	0.04	--	2.38	--	1.73	--	189.5	5
2001-01-01	--	1.8	4.3	4.32	--	--	4	734	--	N.D.	15.43	0	--	2.14	--	1.45	--	404.8	1
2001-02-05	--	5.8	4.4	4.4	--	--	7	580	--	N.D.	15.1	0	--	1.72	--	1.06	--	327.3	3
2001-03-08	--	4.5	4.3	4.36	--	--	5	667	--	N.D.	20.4	0.05	--	1.99	--	1.47	--	368.7	7
2001-04-04	--	8.9	--	4.3	--	--	--	--	--	6.4	20	0.54	--	2.97	--	2.21	--	429.7	12
2001-10-15	--	0.3	--	3.7	--	--	--	--	--	0	118.4	0.59	--	10.6	--	9.92	--	1210	12
2002-01-25	--	2.2	--	4.3	--	--	--	--	--	5.2	40	0.31	--	1.46	--	0.9	--	220.5	4
2002-06-27	--	12.4	--	4	--	--	--	--	--	2.2	92.6	0.3	--	3.66	--	3.66	--	448.7	3
2002-09-30	--	0.4	--	4.1	--	--	--	--	--	3.6	62	0.3	--	2.7	--	2.13	--	439.2	3
2002-11-22	--	2.2	--	4.2	--	--	--	--	--	4.6	42.4	1.43	--	2.45	--	1.96	--	461.4	3
2003-03-28	--	8.9	--	4.3	--	--	--	--	--	4.4	46.4	0.3	--	2.21	--	1.99	--	358.2	3
2003-04-30	--	12.4	--	4.2	--	--	--	--	--	5.6	45.8	0.3	--	3.15	--	3.27	--	501	4
2003-09-22	--	8.9	--	3.9	--	--	--	--	--	0.2	52	0.3	--	2.97	--	2.57	--	535.4	3
2004-03-02	--	21.7	--	4.6	--	--	--	--	--	7.6	32	0.3	--	2.04	--	2.34	--	396.1	16
2005-05-10	--	3.8	--	4.2	--	--	--	--	--	4.8	67	0.3	--	5.64	--	6.63	--	869.3	3
2010-03-18	--	8.2	4.3	4.46	--	--	5	775	--	0	46.2	0.11	--	4.2	--	5.89	--	602	0
Minimum:		0.1	3.8	3.7	--	--	4	580	--	0	12	0	--	0.58	--	0.89	--	189.5	0
Maximum:		DRY	4.5	4.6	--	--	21	2360	--	ND	118.4	1.43	--	12.4	--	11.53	--	2150	16
Average:		5.2	--	--	--	--	11.1	1049	--	2.87	42.05	0.3	--	3.34	--	3.32	--	595.3	4.7
Range:		21.6	0.7	0.9	--	--	17	1780	--	8.8	106.4	1.43	--	11.82	--	10.65	--	1960.5	16
Median:		4	4.2	4.2	--	--	10	880	--	3.4	33.3	0.3	--	2.7	--	2.34	--	501.1	4
Loading (lb/day):									--	0.25	2.57	0.02	--	0.19	--	0.18	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Weir, head of pond, east side of gas line road. Sub-F Discharge.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

ıltmans Run AMD Assessment Water Quality Report - Jack - MP20

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1998-01-21	--	--	--	6.97	--	--	--	292	--	26.12	N.D.	0.07	--	0.16	--	0.19	--	98.6	6
1999-02-16	--	5	5.4	5.39	--	--	2	348	--	2.63	7.73	0.09	--	0.58	--	0.3	--	139.8	7
1999-06-11	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-08-06	--	DRY	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-12-02	--	3	6.8	6.81	--	--	3	298	--	19.37	N.D.	0	--	0.12	--	0.05	--	122.4	5
2000-03-08	--	5	5.4	6.55	--	--	9	254	--	17.21	N.D.	0.04	--	0.06	--	0.81	--	97.6	4
2000-06-07	--	5	6.8	7.12	--	--	16	287	--	29.92	N.D.	0.1	--	0.11	--	0.42	--	93.2	1
2000-09-07	--	0	7.2	7.23	--	--	16	251	--	47.33	N.D.	0.17	--	0.21	--	0.25	--	74.3	3
2000-12-06	--	5	6.4	6.54	--	--	1	231	--	21.15	N.D.	0.04	--	0.22	--	0.07	--	68.2	3
2001-02-05	--	11	6.8	6.83	--	--	3	255	--	19.64	N.D.	0.05	--	0.05	--	0.07	--	107.7	1
Minimum:		0	5.4	5.39	--	--	1	231	--	2.63	7.73	0	--	0.05	--	0.05	--	68.2	1
Maximum:		DRY	7.2	7.23	--	--	16	348	--	47.33	N.D.	0.17	--	0.58	--	0.81	--	139.8	7
Average:		4.9	--	--	--	--	7.1	277	--	22.92	7.73	0.07	--	0.19	--	0.27	--	100.2	3.8
Range:		11	1.8	1.84	--	--	15	117	--	44.7	0	0.17	--	0.53	--	0.76	--	71.6	6
Median:		5	6.8	6.82	--	--	3	271	--	20.4	7.73	0.06	--	0.14	--	0.22	--	98.1	3.5
Loading (lb/day):									--	1.26	0.46	0	--	0.01	--	0.02	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Headwaters of Unnamed "Trib A" to Reeds Run, 1200' north of Jacksonville permit.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Jack - MP27

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-02-16	--	500	5.2	5.27	--	--	1	469	--	3.11	18.18	4.91	--	1.29	--	4.92	--	194.9	8
1999-06-11	--	37	5.5	5.47	--	--	19	668	--	2.63	8.71	0.11	--	2.89	--	0.61	--	346.4	2
1999-08-06	--	--	6.8	6.45	--	--	20	799	--	6.48	2.46	0.08	--	0.73	--	0.17	--	386.4	4
1999-12-02	--	>100	6.8	6.66	--	--	4	431	--	11.03	6.51	3.68	--	1.88	--	1.57	--	166.8	3
2000-03-08	--	>100	6.4	6.33	--	--	11	4110	--	10.05	6.77	2.48	--	1.52	--	2.77	--	695.5	9
2000-06-07	--	>100	6.8	6.92	--	--	16	417	--	19.3	N.D.	1.7	--	1.39	--	1.95	--	171.7	4
2000-09-07	--	42	6.9	6.91	--	--	16	608	--	16.72	N.D.	0.05	--	1.32	--	0.16	--	105.5	2
2000-12-06	--	>100	6.4	6.41	--	--	1	433	--	11.81	N.D.	1.82	--	1.9	--	1.61	--	181.6	3
2001-02-05	--	>100	6.6	6.78	--	--	3	302	--	13.69	N.D.	1.04	--	0.87	--	1.42	--	270.5	2
Minimum:		37	5.2	5.27	--	--	1	302	--	2.63	2.46	0.05	--	0.73	--	0.16	--	105.5	2
Maximum:		>100	6.9	6.92	--	--	20	4110	--	19.3	N.D.	4.91	--	2.89	--	4.92	--	695.5	9
Average:		193	5.91	5.93	--	--	10.1	915	--	10.54	8.53	1.76	--	1.53	--	1.69	--	279.9	4.1
Range:		463	1.7	1.65	--	--	19	3808	--	16.67	15.72	4.86	--	2.16	--	4.76	--	590	7
Median:		42	6.6	6.45	--	--	11	469	--	11.03	6.77	1.7	--	1.39	--	1.57	--	194.9	3
Loading (lb/day):									--	9.42	56.47	9.84	--	3.23	--	9.96	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Reeds Run upstream of Jacksonville Permit, 2100' northeast of site.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Jack - MP28

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-02-16	--	250	5	4.78	--	--	2	585	--	1.99	24.66	3.83	--	1.77	--	5.46	--	262.4	6
1999-06-11	--	125	3.7	3.59	--	--	19	1170	--	--	103.95	3.89	--	4.67	--	14	--	942.8	6
1999-08-06	--	75	3.5	3.43	--	--	22	1815	--	--	213.41	5.88	--	7.65	--	24.95	--	1214.3	13
1999-12-02	--	>200	5	4.85	--	--	6	588	--	2.23	27.93	4.77	--	2.07	--	5.74	--	263.1	4
2000-03-08	--	>200	5	4.91	--	--	10	578	--	2.41	25.01	3.26	--	1.65	--	4.99	--	267.8	11
2000-06-07	--	>500	5	4.95	--	--	16	568	--	2.61	29.93	4.62	--	1.64	--	5.9	--	286.6	2
2000-09-07	--	>100	5.3	5.21	--	--	15	1005	--	4.37	19.38	3.51	--	3.8	--	4.74	--	563.8	8
2000-12-06	--	>200	5.7	5.72	--	--	3	568	--	4.99	20.99	4.77	--	2.16	--	6.51	--	259	2
2001-02-05	--	>200	6.6	6.43	--	--	4	391	--	10.16	5.51	2.24	--	0.94	--	3.12	--	153.5	8
Minimum:		75	3.5	3.43	--	--	2	391	--	1.99	5.51	2.24	--	0.94	--	3.12	--	153.5	2
Maximum:		>500	6.6	6.43	--	--	22	1815	--	10.16	213.41	5.88	--	7.65	--	24.95	--	1214.3	13
Average:		150	4.2	4.11	--	--	10.8	808	--	4.11	52.31	4.09	--	2.93	--	8.38	--	468.1	6.7
Range:		175	3.1	3	--	--	20	1424	--	8.17	207.9	3.64	--	6.71	--	21.83	--	1060.8	11
Median:		125	5	4.91	--	--	10	585	--	2.61	25.01	3.89	--	2.07	--	5.74	--	267.8	6
Loading (lb/day):									--	5.97	140.66	7.54	--	6.4	--	19.95	--		

Sample Point Description: Jacksonville Surface Mine (32980108) - Reeds Run downstream of Jacksonville Permit, 4200' east of site.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - John - 1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	7.5	7.38	--	--	17	522	--	58	1.6	0.53	--	0.4	--	0	--	150.9	2
2001-08-20	--	--	7.7	7.67	--	--	19	542	--	74.7	3.6	0.59	--	0.15	--	0	--	147.5	12
2001-09-17	--	--	7.9	7.69	--	--	16	651	--	73.3	3.7	0.21	--	0.23	--	0	--	199.6	0
2001-10-23	--	--	7.3	7.6	--	--	11	704	--	82.8	3.3	0.21	--	0.18	--	0	--	206.6	2
2001-11-16	--	--	7.5	7.8	--	--	12	719	--	77.3	7.1	0.25	--	0.31	--	0.21	--	224.2	0
2001-12-13	--	--	7.5	7.46	--	--	10	354	--	45.6	4.9	0.54	--	0.24	--	0	--	86.3	2
2004-09-22	--	20	--	7.8	--	--	--	--	--	63.6	-14.4	0.37	--	0.42	--	0.5	--	146.1	10
2005-03-01	--		--	9	--	--	--	--	--	65.6	-28.4	0.3	--	0.3	--	0.5	--	122.1	3
2005-04-11	--		--	7	--	--	--	--	--	32	12	0.4	--	0.14	--	0.5	--	50.9	6
2006-03-29	--	1000	--	8.25	--	--	--	--	--	37.4	0.4	0.38	--	0.17	--	0.5	--	95.2	4
2006-05-23	--		--	6.9	--	--	--	--	--	30.4	-19.6	0.3	--	0.06	--	0.5	--	47.6	3
2007-05-11	--		--	7.8	--	--	--	--	--	46	-11	0.3	--	0.15	--	0.5	--	84.3	16
2008-09-10	--		--	7.4	--	--	--	--	--	--	-66.4	0.57	--	0.34	--	0.5	--	167.6	5
2009-06-15	--		--	7.8	--	--	--	--	--	92.8	-79	0.94	--	0.36	--	0.5	--	336.8	20
2012-05-02	--		--	7.7	--	--	--	--	--	58.6	-54.4	0.66	--	0.22	--	0.5	--	146.2	16
Minimum:			7.3	6.9	--	--	10	354	--	30.4	-79	0.21	--	0.06	--	0	--	47.6	0
Maximum:		1000	7.9	9	--	--	19	719	--	92.8	12	0.94	--	0.42	--	0.5	--	336.8	20
Average:		510	7.53	7.48	--	--	14.2	582	--	59.86	-15.77	0.44	--	0.24	--	0.31	--	147.5	6.7
Range:		980	0.6	2.1	--	--	9	365	--	62.4	91	0.73	--	0.36	--	0.5	--	289.2	20
Median:		510	7.5	7.69	--	--	14	597	--	61.1	0.4	0.38	--	0.23	--	0.5	--	146.2	4
Loading (lb/day):									--	232.03	0.67	2.29	--	1.06	--	3.06	--		

Sample Point Description: Johnston Mine (32020107) - Aultmans Run upstream of UNT08.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - John - 3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	6.2	6.69	--	--	16	154	--	38.5	1.6	1.19	--	0.19	--	0.83	--	20.6	178
2001-08-20	--	--	6	7.3	--	--	17	169	--	43.7	2.4	1.72	--	0.31	--	1.13	--	30.3	32
2001-09-17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-10-23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-11-16	--	--	6.8	7.25	--	--	13	194	--	55.9	7.2	0.25	--	0.28	--	0.26	--	30.9	8
2001-12-13	--	--	7	6.89	--	--	11	148	--	16	4.4	0.21	--	0.03	--	0.23	--	38.6	14
2002-01-08	--	--	6.5	6.53	--	--	1	157	--	11.2	8.5	0.06	--	0	--	0.24	--	43.5	4
2002-02-05	--	--	6.5	6.21	--	--	1	137	--	6.4	2.1	0.08	--	0.03	--	0	--	44.5	8
Minimum:		--	6	6.21	--	--	1	137	--	6.4	1.6	0.06	--	0	--	0	--	20.6	4
Maximum:		--	7	7.3	--	--	17	194	--	55.9	8.5	1.72	--	0.31	--	1.13	--	44.5	178
Average:		--	--	--	--	--	9.8	160	--	28.62	4.37	0.59	--	0.14	--	0.45	--	34.7	40.7
Range:		--	1	1.09	--	--	16	57	--	49.5	6.9	1.66	--	0.31	--	1.13	--	23.9	174
Median:		--	6.5	6.79	--	--	12	156	--	27.25	3.4	0.23	--	0.11	--	0.25	--	34.8	11
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Johnston Mine (32020107) - Unnamed tributary No. 1, upstream, north-northeast of permit.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - John - 11

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	7.5	7.66	--	--	18	639	--	70.7	1.6	0.27	--	0.15	--	0	--	200.4	2
2001-08-20	--	--	7.5	7.81	--	--	19	579	--	74.3	2.1	0.55	--	0.1	--	0	--	164.1	4
2001-09-17	--	--	7.8	7.74	--	--	14	659	--	74.9	3.5	0.21	--	0.16	--	0	--	220.5	0
2001-10-23	--	--	7.5	7.44	--	--	10	701	--	80.8	2.9	0.26	--	0.13	--	0	--	203.8	0
2001-11-16	--	--	7.5	7.74	--	--	10	699	--	76.8	5.2	0.19	--	0.17	--	0	--	215.4	0
2001-12-13	--	--	7.5	7.36	--	--	9	381	--	46.1	6.1	0.5	--	0.24	--	0.28	--	99.2	2
2004-10-22	--		--	7.3	--	--	--	--	--	62.2	-33.2	0.4	--	0.18	--	0.5	--	107.4	3
2005-04-11	--		--	7.2	--	--	--	--	--	40.4	4.4	0.36	--	0.13	--	0.5	--	101.2	3
2006-03-29	--	1000	--	8.25	--	--	--	--	--	43.4	-3.4	0.31	--	0.16	--	0.5	--	89.5	12
2006-05-23	--		--	6.9	--	--	--	--	--	31.8	-19.6	0.31	--	0.11	--	0.5	--	57.2	3
2007-05-11	--		--	4.8	--	--	--	--	--	8	68.6	7.68	--	1.87	--	7.11	--	348.9	28
Minimum:			7.5	4.8	--	--	9	381	--	8	-33.2	0.19	--	0.1	--	0	--	57.2	0
Maximum:		1000	7.8	8.25	--	--	19	701	--	80.8	68.6	7.68	--	1.87	--	7.11	--	348.9	28
Average:		1000	7.54	5.83	--	--	13.3	610	--	55.4	3.47	1	--	0.31	--	0.85	--	164.3	5.2
Range:		0	0.3	3.45	--	--	10	320	--	72.8	101.8	7.49	--	1.77	--	7.11	--	291.7	28
Median:		1000	7.5	7.44	--	--	12	649	--	62.2	2.9	0.31	--	0.16	--	0.28	--	164.1	3
Loading (lb/day):									--	520.8	-40.8	3.71	--	1.91	--	6	--		

Sample Point Description: Johnston Mine (32020107) - Aultmans Run at confluence with Reeds Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - John - 9

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	7.2	7.08	--	--	20	128	--	38.8	1.9	0.46	--	0.06	--	0.22	--	12.7	4
2001-08-20	--	--	7.3	7.48	--	--	19	146	--	46.7	1.9	0.33	--	0	--	0.15	--	13	14
2001-09-17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-10-23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-11-16	--	--	6.8	6.74	--	--	13	117	--	28.8	6.4	0.12	--	0.1	--	0.19	--	19.8	30
2001-12-13	--	--	7	6.92	--	--	11	116	--	23.9	5.5	0.11	--	0	--	0.21	--	20.2	6
2002-01-08	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2002-02-05	--	--	6.5	6.4	--	--	0	90	--	10.3	1.7	0.07	--	0.03	--	0	--	20.2	6
2002-03-21	--	--	6.5	6.22	--	--	7	81	--	6.9	3.1	0.2	--	0.03	--	0.54	--	19.3	6
2004-10-22	--		--	6.9	--	--	--	--	--	31.2	-15.4	0.93	--	0.05	--	0.5	--	28.4	30
2009-06-15	--		--	7.6	--	--	--	--	--	35	-23.8	0.58	--	0.05	--	0.5	--	20	22
2012-05-02	--		--	7.4	--	--	--	--	--	22	-17.2	0.34	--	0.05	--	0.5	--	23.7	18
Minimum:			6.5	6.22	--	--	0	81	--	6.9	-23.8	0.07	--	0	--	0	--	12.7	4
Maximum:			7.3	7.6	--	--	20	146	--	46.7	6.4	0.93	--	0.1	--	0.54	--	28.4	30
Average:		data has not been set	--	--	--	--	11.7	113	--	27.07	-3.99	0.35	--	0.04	--	0.31	--	19.7	15.1
Range:		data has not been set	0.8	1.38	--	--	20	65	--	39.8	30.2	0.86	--	0.1	--	0.54	--	15.7	26
Median:		data has not been set	6.9	6.92	--	--	12	117	--	28.8	1.9	0.33	--	0.05	--	0.22	--	20	14
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Johnston Mine (32020107) - Headwaters sample of UNT07.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K53 - F

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1992-03-04	--	--	--	5.3	--	--	--	--	--	7	32	5.76	--	1.87	--	3.49	--	145	10
1992-05-08	--	--	--	4.6	--	--	--	--	--	6	30	7.03	--	2.83	--	5.38	--	214	25
1994-06-23	--	--	--	3.8	--	--	--	--	--	0	90	0.51	--	7.42	--	11.3	--	364	3
1994-09-21	--	--	--	4.2	--	--	--	--	--	5.4	38	0.42	--	5.92	--	7.37	--	358	3
1995-04-11	--	--	--	6.4	--	--	--	--	--	22	5.2	4.83	--	1.21	--	1.97	--	125	32
2003-07-14	--		--	7.1	--	--	--	--	--	26.4	0	0.59	--	1.12	--	0.73	--	100.2	3
2004-04-08	--		--	6.8	--	--	--	--	--	18.6	22.8	2.09	--	1.16	--	1.82	--	133.7	12
2004-04-27	--		--	7	--	--	--	--	--	22.8	33.6	1.85	--	1.08	--	1.15	--	134.6	3
2004-06-30	--		--	6.8	--	--	--	--	--	28	18	0.55	--	2.28	--	1.39	--	227.7	20
2004-07-22	--		--	6.8	--	--	--	--	--	25.6	18.6	0.3	--	3.11	--	0.5	--	331.7	8
2004-09-14	--		--	7.1	--	--	--	--	--	28.8	34.8	0.67	--	1.51	--	1.41	--	164.8	22
2004-10-08	--		--	6.4	--	--	--	--	--	29.4	11.6	0.86	--	3.55	--	1.39	--	240.1	12
2004-11-03	--		--	7.1	--	--	--	--	--	40.8	6.6	0.8	--	2.59	--	0.5	--	170.4	3
2004-12-01	--		--	7	--	--	--	--	--	25.8	26.4	3.47	--	0.6	--	1.4	--	54.7	32
2005-01-10	--		--	6.8	--	--	--	--	--	22.6	10.4	1.34	--	0.7	--	1.28	--	74.5	6
2005-02-07	--		--	6.8	--	--	--	--	--	28.2	22.8	3.97	--	1.23	--	1.41	--	157.1	18
2005-03-07	--		--	6.7	--	--	--	--	--	22.4	23.2	3.83	--	1	--	2.39	--	138.6	18
2005-04-11	--		--	6.7	--	--	--	--	--	22.8	20.2	2.3	--	1.31	--	1.79	--	171	8
2005-05-10	--		--	6.5	--	--	--	--	--	15.2	21	1.2	--	2.83	--	2.3	--	255.3	6
2005-06-09	--		--	6.6	--	--	--	--	--	22.6	31.2	0.65	--	1.81	--	0.5	--	161.3	6
2006-10-10	--		--	6.6	--	--	--	--	--	29	-6.4	0.3	--	1.7	--	0.5	--	251.6	3
2007-02-02	--		--	6.9	--	--	--	--	--	22	21.4	4.9	--	1.78	--	1.72	--	146.4	14
2009-11-02	--		--	6.9	--	--	--	--	--	19.8	-5.4	0.3	--	1.65	--	0.5	--	164.2	5
2010-04-16	--		--	7.4	--	--	--	--	--	31.2	-14.6	0.3	--	1.52	--	0.75	--	225	10
Minimum:			--	3.8	--	--	--	--	--	0	-14.6	0.3	--	0.6	--	0.5	--	54.7	3
Maximum:			--	7.4	--	--	--	--	--	40.8	90	7.03	--	7.42	--	11.3	--	364	32
Average:		data has not been set	--	4.97	--	--	--	--	--	21.77	20.48	2.03	--	2.16	--	2.21	--	187.9	11.8
Range:		data has not been set	--	3.6	--	--	--	--	--	40.8	104.6	6.73	--	6.82	--	10.8	--	309.3	29
Median:		data has not been set	--	6.8	--	--	--	--	--	22.7	21.2	1.03	--	1.67	--	1.41	--	164.5	9
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent No. 53 Mine (32803037) & Lentz Mine (32020102) - Reeds Run upstream of Willow Rd.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K53 - SW29

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-03-21	--	--	--	6.9	--	--	--	--	--	84	0	1.22	--	0.64	--	0.5	--	94	3
1999-10-01	--		--	7.2	--	--	--	--	--	114	0	0.3	--	0.06	--	0.5	--	169.2	3
2000-01-04	--		--	7	--	--	--	--	--	72	0	4.42	--	0.55	--	2.48	--	135	4
2000-03-03	--	20	--	7.4	--	--	--	--	--	92	0	0.3	--	0.07	--	0.5	--	150.5	3
2000-05-08	--		--	8	--	--	--	--	--	142	0	1.9	--	0.41	--	0.96	--	102	16
2000-07-06	--		--	7.4	--	--	--	--	--	122	0	5.52	--	0.86	--	2.88	--	65.3	48
2000-10-05	--		--	6.9	--	--	--	--	--	112	0	1.33	--	2.43	--	0.83	--	102.1	16
2000-11-13	--		--	7.8	--	--	--	--	--	114	0	0.6	--	0.22	--	0.5	--	124.2	8
Minimum:			--	6.9	--	--	--	--	--	72	--	0.3	--	0.06	--	0.5	--	65.3	3
Maximum:		20	--	8	--	--	--	--	--	142	--	5.52	--	2.43	--	2.88	--	169.2	48
Average:		20	--	7.19	--	--	--	--	--	106.5	--	1.95	--	0.65	--	1.14	--	117.8	12.6
Range:		0	--	1.1	--	--	--	--	--	70	--	5.22	--	2.37	--	2.38	--	103.9	45
Median:		20	--	7.3	--	--	--	--	--	113	--	1.28	--	0.48	--	0.67	--	113.2	6
Loading (lb/day):									--	22.08	--	0.07	--	0.02	--	0.12	--		

Sample Point Description: Kent No 53 (32803037) - Discharge that flowed into Kent-2A bog area.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - K53 - SW30

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-04-11	--	--	--	6.7	--	--	--	--	--	30	0	0.3	--	2.63	--	0.5	--	306	22
1995-07-13	--	--	--	6.5	--	--	--	--	--	34	0	0.3	--	0.08	--	0.5	--	246	3
1995-10-11	--	--	--	7.3	--	--	--	--	--	64	0	0.3	--	0.05	--	0.5	--	176	4
1996-04-18	--	--	--	7.2	--	--	--	--	--	106	0	0.39	--	0.43	--	0.5	--	185	3
1999-10-01	--	10	--	7.15	--	--	--	--	--	56	0	0.3	--	0.26	--	0.5	--	141.5	4
1999-12-07	--	20	--	6.75	--	--	--	--	--	66	0	0.81	--	0.48	--	0.5	--	165.4	4
2000-01-04	--	20	--	6.9	--	--	--	--	--	68	0	0.3	--	0.66	--	0.5	--	272	3
2000-02-01	--	3	--	7	--	--	--	--	--	96	0	0.3	--	0.33	--	0.5	--	383	3
2000-03-03	--	27	--	6.95	--	--	--	--	--	68	0	0.3	--	0.67	--	0.5	--	275.7	3
2000-05-08	--	12	--	7.45	--	--	--	--	--	50	0	0.3	--	0.07	--	0.5	--	255	4
2000-07-06	--	4	--	7.65	--	--	--	--	--	48	0	0.3	--	0.08	--	0.5	--	125.8	3
2000-08-04	--	200	--	7.1	--	--	--	--	--	56	0	0.3	--	0.25	--	0.5	--	122.3	3
2000-10-05	--	4	--	6.6	--	--	--	--	--	42	0	0.3	--	0.05	--	0.5	--	155.6	3
2000-11-13	--	6	--	7.7	--	--	--	--	--	64	0	0.3	--	0.06	--	0.5	--	233.2	3
2000-12-06	--	6	--	6.9	--	--	--	--	--	72	0	0.3	--	0.29	--	0.5	--	210.5	3
Minimum:		3	--	6.5	--	--	--	--	--	30	--	0.3	--	0.05	--	0.5	--	122.3	3
Maximum:		200	--	7.7	--	--	--	--	--	106	--	0.81	--	2.63	--	0.5	--	383	22
Average:		28.4	--	6.93	--	--	--	--	--	61.33	--	0.34	--	0.43	--	0.5	--	216.9	4.5
Range:		197	--	1.2	--	--	--	--	--	76	--	0.51	--	2.58	--	0	--	260.7	19
Median:		10	--	7	--	--	--	--	--	64	--	0.3	--	0.26	--	0.5	--	210.5	3
Loading (lb/day):									--	20.01	--	0.11	--	0.11	--	0.17	--		

Sample Point Description: Kent No 53 (32803037) - Effluent from pond at end of Kent-2A bog area.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K53 - SW-32

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-04-11	--	--	--	6.7	--	--	--	--	--	24	0	0.34	--	0.06	--	0.5	--	39	28
1995-07-13	--	--	--	6.6	--	--	--	--	--	106	0	1.51	--	0.46	--	1.01	--	39	152
1996-03-21	--	--	--	6.2	--	--	--	--	--	15.8	5.6	0.3	--	0.05	--	0.5	--	30	3
1997-03-12	--	--	--	6.2	--	--	--	--	--	22	5	0.3	--	0.05	--	0.5	--	32.1	3
1997-05-06	--	--	--	6.6	--	--	--	--	--	36	0	0.3	--	0.08	--	0.5	--	49	3
1998-01-05	--	--	--	6.2	--	--	--	--	--	20	17.2	9.44	--	0.66	--	1.36	--	77.9	3
1999-03-05	--	--	--	6.6	--	--	--	--	--	19	0	0.3	--	0.05	--	0.5	--	20	4
2000-05-08	--	--	--	6.8	--	--	--	--	--	36	0	0.3	--	0.05	--	0.5	--	37.2	6
2000-11-13	--	--	--	6.8	--	--	--	--	--	42	0	0.3	--	0.1	--	0.5	--	35.8	4
2000-12-06	--	--	--	6.4	--	--	--	--	--	36	0	0.3	--	0.07	--	0.5	--	32.8	3
Minimum:		--	--	6.2	--	--	--	--	--	15.8	0	0.3	--	0.05	--	0.5	--	20	3
Maximum:		--	--	6.8	--	--	--	--	--	106	17.2	9.44	--	0.66	--	1.36	--	77.9	152
Average:		--	--	6.45	--	--	--	--	--	35.68	2.78	1.34	--	0.16	--	0.64	--	39.3	20.9
Range:		--	--	0.6	--	--	--	--	--	90.2	17.2	9.14	--	0.61	--	0.86	--	57.9	149
Median:		--	--	6.6	--	--	--	--	--	30	0	0.3	--	0.07	--	0.5	--	36.5	3.5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent No 53 (32803037) - Reeds Run above Kent 2-A.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K53 - SW-33

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-04-11	--	--	--	6.3	--	--	--	--	--	22	14.6	11.1	--	0.72	--	1.76	--	71	26
1995-07-13	--	--	--	4.8	--	--	--	--	--	8.2	168	84	--	3.54	--	11.2	--	331	54
1996-03-21	--	--	--	6	--	--	--	--	--	15.6	14.4	2.87	--	0.24	--	0.64	--	41	6
1997-03-12	--		--	6.1	--	--	--	--	--	22	20	8.14	--	0.5	--	1.33	--	68.2	4
1997-05-06	--		--	5.8	--	--	--	--	--	16.4	70	30.6	--	1.46	--	4.85	--	151	20
1998-01-05	--		--	6.4	--	--	--	--	--	22	0	0.3	--	0.05	--	0.5	--	27.9	10
1999-05-10	--		--	6.2	--	--	--	--	--	22	12.8	12.7	--	0.81	--	1.84	--	126.9	12
2000-05-08	--		--	6.2	--	--	--	--	--	22	32	20.8	--	1.1	--	2.87	--	136	3
2000-11-13	--		--	6.3	--	--	--	--	--	32	34	24.8	--	1.48	--	3.04	--	100.4	24
2000-12-06	--		--	6.1	--	--	--	--	--	28	22	15.9	--	1.02	--	1.96	--	109.5	6
Minimum:			--	4.8	--	--	--	--	--	8.2	0	0.3	--	0.05	--	0.5	--	27.9	3
Maximum:			--	6.4	--	--	--	--	--	32	168	84	--	3.54	--	11.2	--	331	54
Average:		data has not been set	--	5.64	--	--	--	--	--	21.02	38.78	21.12	--	1.09	--	3	--	116.3	16.5
Range:		data has not been set	--	1.6	--	--	--	--	--	23.8	168	83.7	--	3.49	--	10.7	--	303.1	51
Median:		data has not been set	--	6.15	--	--	--	--	--	22	21	14.3	--	0.91	--	1.9	--	105	11
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent No 53 (32803037) - Reeds Run below Kent 2-A (and beaver dam).

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K55 - SM11

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-09-29	--	0	--	7	--	--	--	--	--	36	0	0.3	--	0.05	--	0.5	--	--	4
1995-01-12	--	0	--	6.5	--	--	--	--	--	18	0	0.3	--	0.05	--	0.5	--	--	3
1996-07-08	--		--	6	--	--	--	--	--	26	0	0.43	--	0.05	--	0.5	--	20	3
1997-05-16	--		--	6.6	--	--	--	--	--	22	0	0.3	--	0.05	--	0.5	--	20.5	3
Minimum:			--	6	--	--	--	--	--	18	--	0.3	--	0.05	--	0.5	--	20	3
Maximum:		0	--	7	--	--	--	--	--	36	--	0.43	--	0.05	--	0.5	--	20.5	4
Average:		0	--	6.38	--	--	--	--	--	25.5	--	0.33	--	0.05	--	0.5	--	20.3	3.3
Range:		0	--	1	--	--	--	--	--	18	--	0.13	--	0	--	0	--	0.5	1
Median:		0	--	6.55	--	--	--	--	--	24	--	0.3	--	0.05	--	0.5	--	20.3	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent Strip No 55 (32860106) - Headwaters of UNT05

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K55 - SM12

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-09-29	--	0	--	6.7	--	--	--	--	--	30	0	0.3	--	0.05	--	0.5	--	--	3
1995-05-09	--	0	--	6.8	--	--	--	--	--	26	0	0.3	--	0.05	--	0.5	--	--	3
1995-07-11	--	0	--	6.6	--	--	--	--	--	28	0	0.3	--	0.05	--	0.5	--	--	3
1997-05-16	--		--	6.8	--	--	--	--	--	24	0	0.9	--	1.06	--	1.89	--	21.2	3
Minimum:			--	6.6	--	--	--	--	--	24	--	0.3	--	0.05	--	0.5	--	21.2	3
Maximum:		0	--	6.8	--	--	--	--	--	30	--	0.9	--	1.06	--	1.89	--	21.2	3
Average:		0	--	6.72	--	--	--	--	--	27	--	0.45	--	0.3	--	0.85	--	21.2	3
Range:		0	--	0.2	--	--	--	--	--	6	--	0.6	--	1.01	--	1.39	--	0	0
Median:		0	--	6.75	--	--	--	--	--	27	--	0.3	--	0.05	--	0.5	--	21.2	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent Strip No 55 (32860106) - Mouth of unnamed tributary.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - K55 - SM14

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1992-11-20	--	450	7.7	7.43	--	--	9	2710	--	127.8	N.D.	0.65	--	1.83	--	--	--	1466.8	3
1995-04-24	--	0	--	6.6	--	--	--	--	--	28	0	1.89	--	1.44	--	1.64	--	--	6
1997-03-24	--		--	6.4	--	--	--	--	--	24	3.6	3.22	--	1.16	--	2.82	--	244	6
1998-03-16	--		--	6.2	--	--	--	--	--	24	0	2.97	--	1	--	2.26	--	251.2	12
1999-01-22	--	9600	6.5	6.34	--	--	5	342	--	14.5	N.D.	1.9	--	0.73	--	--	--	100.1	10
1999-02-04	--		--	6.7	--	--	--	--	--	34	0	2.31	--	0.92	--	1.91	--	272	12
1999-05-06	--	3000	7.4	7.26	--	--	20	968	--	33.8	N.D.	1.03	--	1.11	--	--	--	460	5
1999-08-03	--		--	6.6	--	--	--	--	--	56	0	1.03	--	2.38	--	0.87	--	1062.8	6
1999-08-05	--	400	7.2	7.72	--	--	21	2028	--	95.6	N.D.	0.48	--	1.1	--	--	--	848	3
1999-10-21	--	1200	7.3	7.46	--	--	11.9	2330	--	57.6	N.D.	0.33	--	1.34	--	--	--	1304.5	6
2000-01-13	--	2000	7.1	7.26	--	--	3.6	809	--	45.4	N.D.	1.68	--	0.94	--	--	--	342.8	4
2000-04-19	--	3000	7	6.8	--	--	11.8	435	--	19.1	N.D.	1.22	--	0.76	--	--	--	153.3	6
2000-07-10	--		--	6.6	--	--	--	--	--	36	0	0.42	--	2.1	--	0.5	--	344.4	3
2000-08-15	--	2000	7.4	7.36	--	--	21.3	668	--	38.3	N.D.	0.47	--	1.38	--	--	--	285.8	4
2000-10-12	--	2000	6.8	7.09	--	--	7.5	610	--	35.4	N.D.	0.9	--	1.48	--	--	--	216.4	4
2001-01-11	--	1000	6.7	6.76	--	--	0.8	662	--	37.8	N.D.	1.65	--	1.53	--	--	--	313	21
2001-02-05	--		--	6.6	--	--	--	--	--	30	0	1.24	--	0.7	--	0.85	--	111	12
2001-04-02	--		--	6.5	--	--	--	--	--	24	0	1.65	--	0.91	--	1.43	--	159.8	4
2001-05-04	--	1200	7.1	7.01	--	--	21.7	548	--	27.4	N.D.	3.61	--	0.98	--	--	--	243.9	1
2003-04-01	--		--	6.4	--	--	--	--	--	23.8	13.8	2.1	--	1.05	--	2	--	202.2	16
2003-11-21	--		--	6.9	--	--	--	--	--	24	0	1.86	--	0.49	--	1.32	--	63.7	40
Minimum:			6.5	6.2	--	--	0.8	342	--	14.5	0	0.33	--	0.49	--	0.5	--	63.7	1
Maximum:		9600	7.7	7.72	--	--	21.7	2710	--	127.8	N.D.	3.61	--	2.38	--	2.82	--	1466.8	40
Average:		2154.2	6.98	6.69	--	--	12.1	1101	--	39.83	1.74	1.55	--	1.21	--	1.56	--	422.3	8.8
Range:		9600	1.2	1.52	--	--	20.9	2368	--	113.3	13.8	3.28	--	1.89	--	2.32	--	1403.1	39
Median:		1600	7.1	6.76	--	--	11.8	668	--	33.8	0	1.65	--	1.1	--	1.54	--	261.6	6
Loading (lb/day):									--	841.8	--	41.4	--	28.14	--	--	--		

Sample Point Description: Kent Strip No 55 (32860106) - Aultmans Run Downstream

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K56 - 2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-06-11	--		--	6.1	--	--	--	--	--	26	0	2.19	--	1.27	--	3.43	--	448.9	3
2001-07-30	--	--	7	7.06	--	--	20	910	--	31.4	2.3	1.33	--	2.07	--	1.44	--	397.1	2
2001-08-20	--	--	7	7.21	--	--	19	861	--	22.8	3.3	0.46	--	1.74	--	1.08	--	373	4
2001-09-17	--	--	7	7.23	--	--	15	958	--	35.9	6.4	1.14	--	2.01	--	1.43	--	408.8	10
2001-10-23	--	--	7	6.97	--	--	11	1052	--	28.1	4.5	0.26	--	2.5	--	0.42	--	402	2
2001-11-16	--	--	6.7	6.93	--	--	11	1068	--	17.1	9.1	1.49	--	3.06	--	2.1	--	446.7	10
2001-12-13	--	--	7	6.82	--	--	9	568	--	16.1	8.9	2.04	--	1.27	--	3.9	--	208.7	22
2005-04-11	--		--	6.6	--	--	--	--	--	22	25.2	3.27	--	0.73	--	2.3	--	180.2	22
2006-03-29	--	2000	--	6.75	--	--	--	--	--	22	18.8	2.18	--	0.99	--	1.49	--	179	20
2006-05-23	--		--	6.7	--	--	--	--	--	24.8	-7.4	1.62	--	0.41	--	1.37	--	109.8	4
2007-05-11	--		--	6.7	--	--	--	--	--	21.4	20.6	3.1	--	0.9	--	2.21	--	192.9	24
2008-09-10	--		--	6.9	--	--	--	--	--	41.8	-17.6	3.23	--	1.9	--	1.9	--	368	16
2009-06-15	--		--	7.5	--	--	--	--	--	52.6	-36.2	1.09	--	1.16	--	1.13	--	288.9	24
2012-05-02	--		--	7.6	--	--	--	--	--	44.4	-38.4	0.76	--	0.55	--	0.81	--	169.4	14
Minimum:			6.7	6.1	--	--	9	568	--	16.1	-38.4	0.26	--	0.41	--	0.42	--	109.8	2
Maximum:		2000	7	7.6	--	--	20	1068	--	52.6	25.2	3.27	--	3.06	--	3.9	--	448.9	24
Average:		2000	6.93	6.77	--	--	14.2	903	--	29.03	-0.04	1.72	--	1.47	--	1.79	--	298.1	12.6
Range:		0	0.3	1.5	--	--	11	500	--	36.5	63.6	3.01	--	2.66	--	3.48	--	339.1	22
Median:		2000	7	6.92	--	--	13	934	--	25.4	3.9	1.56	--	1.27	--	1.47	--	328.5	12
Loading (lb/day):									--	528	451.2	52.32	--	23.83	--	35.76	--		

Sample Point Description: Kent No 56 (32803010) - AULTMAN RUN ABOVE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - K56 - 4

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-06-11	--		--	6.2	--	--	--	--	--	28	0	1.82	--	1.42	--	3.05	--	396.7	3
1997-12-22	--		--	6.2	--	--	--	--	--	22	3.4	3.26	--	1.15	--	3.22	--	234.9	3
1998-03-16	--		--	6.2	--	--	--	--	--	18.8	1.4	3.08	--	0.77	--	2.51	--	212.1	16
1999-08-03	--		--	6.9	--	--	--	--	--	68	0	0.3	--	0.92	--	0.6	--	1374	3
2000-10-04	--		--	7	--	--	--	--	--	40	0	0.3	--	0.91	--	0.81	--	291	14
2003-10-09	--		--	6.7	--	--	--	--	--	30.4	0	2.2	--	1.09	--	2.06	--	192.8	48
2007-04-30	--		--	6.9	--	--	--	--	--	22	-3.2	2.23	--	0.58	--	1.7	--	114.2	22
2012-04-02	--		--	7.5	--	--	--	--	--	38.4	-27.6	1.29	--	0.65	--	1.3	--	104.8	14
Minimum:			--	6.2	--	--	--	--	--	18.8	-27.6	0.3	--	0.58	--	0.6	--	104.8	3
Maximum:			--	7.5	--	--	--	--	--	68	3.4	3.26	--	1.42	--	3.22	--	1374	48
Average:		data has not been set	--	6.51	--	--	--	--	--	33.45	-3.25	1.81	--	0.94	--	1.91	--	365.1	15.4
Range:		data has not been set	--	1.3	--	--	--	--	--	49.2	31	2.96	--	0.84	--	2.63	--	1269.2	45
Median:		data has not been set	--	6.8	--	--	--	--	--	29.2	0	2.01	--	0.92	--	1.88	--	223.5	14
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent No 57 (32890109) - AULTMAN RUN BELOW

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

ultmans Run AMD Assessment Water Quality Report - K56 - 11

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-07-08	--		--	7.7	--	--	--	--	--	158	0	0.86	--	1.2	--	0.5	--	236.7	3
1997-03-24	--		--	7.6	--	--	--	--	--	132	0	0.62	--	0.72	--	0.5	--	252.5	3
1997-08-11	--		--	7.7	--	--	--	--	--	250	0	0.86	--	1.94	--	0.5	--	493.7	18
1997-12-22	--		--	7.1	--	--	--	--	--	156	0	0.97	--	1.5	--	0.5	--	252.3	3
1999-08-03	--		--	7.9	--	--	--	--	--	230	0	0.3	--	0.29	--	0.5	--	405.9	4
1999-10-01	--		--	7.7	--	--	--	--	--	206	0	0.37	--	0.85	--	0.5	--	375.9	3
1999-12-02	--		--	7	--	--	--	--	--	124	0	0.3	--	0.43	--	0.5	--	183.3	3
2000-01-04	--		--	7.2	--	--	--	--	--	98	0	0.47	--	0.47	--	0.5	--	135.5	3
2000-03-01	--		--	7	--	--	--	--	--	98	0	0.39	--	0.36	--	0.5	--	131	3
2000-04-11	--		--	7	--	--	--	--	--	88	0	0.3	--	0.21	--	0.5	--	133.6	3
2000-05-08	--		--	7.7	--	--	--	--	--	154	0	0.35	--	0.51	--	0.5	--	198	3
2000-07-10	--		--	7.6	--	--	--	--	--	186	0	0.37	--	0.28	--	0.5	--	308.8	3
2000-08-04	--		--	6.8	--	--	--	--	--	76	0	0.44	--	0.12	--	0.5	--	67.1	3
2000-10-04	--		--	7.8	--	--	--	--	--	170	0	0.3	--	0.05	--	0.5	--	278.5	3
2000-12-04	--		--	6.9	--	--	--	--	--	104	0	0.35	--	0.45	--	0.5	--	155.1	3
2001-02-05	--		--	7.2	--	--	--	--	--	90	0	0.38	--	0.36	--	0.5	--	127	3
2001-10-02	--		--	7.8	--	--	--	--	--	226	0	0.81	--	0.74	--	0.5	--	469	8
2002-04-08	--		--	7.6	--	--	--	--	--	126	0	0.3	--	0.37	--	0.5	--	193.7	3
2003-01-03	--		--	7.4	--	--	--	--	--	64.2	0	0.3	--	0.15	--	0.5	--	109	12
2003-04-01	--		--	7.3	--	--	--	--	--	108.4	0	0.3	--	0.36	--	0.5	--	183.2	3
2007-04-30	--		--	7.7	--	--	--	--	--	91.6	-75	0.57	--	0.27	--	0.5	--	131.8	8
Minimum:			--	6.8	--	--	--	--	--	64.2	-75	0.3	--	0.05	--	0.5	--	67.1	3
Maximum:			--	7.9	--	--	--	--	--	250	0	0.97	--	1.94	--	0.5	--	493.7	18
Average:		data has not been set	--	7.28	--	--	--	--	--	139.82	-3.57	0.47	--	0.55	--	0.5	--	229.6	4.7
Range:		data has not been set	--	1.1	--	--	--	--	--	185.8	75	0.67	--	1.89	--	0	--	426.6	15
Median:		data has not been set	--	7.6	--	--	--	--	--	126	0	0.37	--	0.37	--	0.5	--	193.7	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent No. 56 - Tributary below Kent No. 56 Mine. Upstream of UNT07A.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - K56 - GW28D

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-03-03	--	30	--	7.45	--	--	--	--	--	208	0	1.15	--	1.75	--	0.5	--	254	3
1999-04-02	--	50	--	7.4	--	--	--	--	--	218	0	1.06	--	1.93	--	0.5	--	343	6
1999-05-04	--	30	--	7.25	--	--	--	--	--	208	0	1.57	--	1.83	--	0.5	--	340.1	4
1999-06-01	--	49	--	7.55	--	--	--	--	--	222	0	1.41	--	2.25	--	0.5	--	403.5	4
1999-08-03	--	36	--	7.5	--	--	--	--	--	238	0	0.3	--	0.42	--	0.5	--	403.6	3
1999-10-01	--	36	--	7.45	--	--	--	--	--	224	0	0.33	--	1.03	--	0.5	--	373.4	3
1999-12-02	--	99	--	7.35	--	--	--	--	--	228	0	0.35	--	0.81	--	0.5	--	317.4	3
2000-01-04	--	139	--	7.2	--	--	--	--	--	196	0	0.55	--	1.26	--	0.5	--	286.8	3
2000-02-01	--		--	7.2	--	--	--	--	--	226	0	0.95	--	1.54	--	0.5	--	507.1	3
2000-03-01	--	139	--	7.3	--	--	--	--	--	208	0	0.61	--	1.14	--	0.5	--	328.8	3
2000-04-11	--	99	--	7.35	--	--	--	--	--	206	0	0.44	--	0.68	--	0.5	--	232.2	3
2000-05-08	--	64	--	7.5	--	--	--	--	--	216	0	0.3	--	1.17	--	0.5	--	264	3
2000-06-09	--	64	--	7.15	--	--	--	--	--	202	0	0.44	--	0.4	--	0.5	--	255.2	3
2000-07-10	--	184	--	7.5	--	--	--	--	--	186	0	0.3	--	0.2	--	0.5	--	317	3
2000-08-04	--	184	--	7.15	--	--	--	--	--	188	0	0.38	--	0.25	--	0.5	--	234.7	3
2000-09-08	--	49	--	7.4	--	--	--	--	--	226	0	0.3	--	0.5	--	0.5	--	397.1	3
2000-10-04	--	36	--	7.6	--	--	--	--	--	216	0	0.3	--	0.58	--	0.5	--	353.6	6
2000-11-02	--	49	--	7	--	--	--	--	--	236	0	0.33	--	0.8	--	0.5	--	350.3	3
2000-12-04	--	99	--	7.1	--	--	--	--	--	256	0	1.2	--	1.35	--	0.5	--	354.1	3
2001-02-05	--	139	--	7.5	--	--	--	--	--	206	0	0.78	--	1.08	--	0.5	--	272	3
2001-03-01	--	99	--	7.2	--	--	--	--	--	220	0	1.21	--	1.54	--	0.5	--	491.1	12
2001-04-02	--	99	--	7	--	--	--	--	--	202	0	0.88	--	1.53	--	0.5	--	280.6	3
2001-05-01	--	83	--	7.4	--	--	--	--	--	206	0	0.72	--	0.94	--	0.5	--	346.1	3
2001-06-04	--	233	--	7.4	--	--	--	--	--	210	0	2.55	--	0.9	--	0.71	--	281.4	3
2001-07-09	--	99	--	7	--	--	--	--	--	202	0	0.57	--	0.83	--	0.5	--	484.5	8
2001-09-06	--	25	--	7.6	--	--	--	--	--	228	0	0.3	--	0.51	--	0.5	--	597	3
2001-10-02	--	25	--	7.4	--	--	--	--	--	234	0	0.3	--	0.56	--	0.5	--	415	3
2001-12-03	--	64	--	7.1	--	--	--	--	--	210	0	0.92	--	1.99	--	0.5	--	507.3	16
2002-02-04	--	184	--	7.5	--	--	--	--	--	216	0	0.79	--	1.15	--	0.5	--	278.2	3
2002-03-13	--	64	--	7.3	--	--	--	--	--	208	0	0.66	--	1.26	--	0.5	--	388.3	14
2002-04-08	--	139	--	7.4	--	--	--	--	--	194	0	0.45	--	0.93	--	0.5	--	281.4	3
2002-05-02	--	233	--	7.6	--	--	--	--	--	170	0	0.43	--	0.46	--	0.5	--	317.2	3
2002-06-04	--	233	--	7.2	--	--	--	--	--	200	0	0.53	--	3.63	--	0.5	--	460	3
2002-07-05	--	99	--	7.8	--	--	--	--	--	220	0	0.3	--	1.99	--	0.5	--	255.9	4
2002-08-05	--	99	--	7.5	--	--	--	--	--	216	0	0.3	--	2.68	--	0.5	--	564.5	8
2002-09-16	--	99	--	7.6	--	--	--	--	--	224	0	1.15	--	1.79	--	0.5	--	539.6	12
2002-10-08	--	64	--	7.6	--	--	--	--	--	222	0	0.38	--	1.98	--	0.5	--	435.7	3
2002-11-06	--	139	--	7.6	--	--	--	--	--	202	0	0.54	--	0.94	--	0.5	--	351.6	3
2002-12-06	--	64	--	7.4	--	--	--	--	--	228	0	0.48	--	1.07	--	0.5	--	330	6
2003-01-03	--	381	--	7.5	--	--	--	--	--	189.8	0	0.3	--	0.5	--	0.5	--	250.1	8
2003-02-03	--	64	--	7.4	--	--	--	--	--	205	0	0.68	--	1.66	--	0.5	--	352.4	3
2003-04-01	--	140	--	7.3	--	--	--	--	--	190.8	0	0.67	--	0.95	--	0.5	--	278.9	3
2003-05-05	--	64	--	7.6	--	--	--	--	--	187.6	0	0.43	--	0.73	--	0.5	--	294.6	3
2003-06-03	--	233	--	7.5	--	--	--	--	--	198.2	0	0.39	--	0.61	--	0.5	--	244.6	8
2003-07-02	--	99	--	7.6	--	--	--	--	--	196	0	0.3	--	0.12	--	0.5	--	325.5	3
2003-08-06	--	139	--	7.6	--	--	--	--	--	217.4	0	0.3	--	0.38	--	0.5	--	271.4	4
2003-09-15	--	139	--	7.6	--	--	--	--	--	216.4	0	0.3	--	0.59	--	0.5	--	281.1	3
2003-10-09	--	139	--	7.5	--	--	--	--	--	215.4	0	0.3	--	0.43	--	0.5	--	278.8	6
2003-10-30	--	233	--	7.5	--	--	--	--	--	212	0	0.3	--	0.43	--	0.5	--	254	16
2003-12-11	--	489	--	7.3	--	--	--	--	--	132.4	0	0.4	--	0.45	--	0.5	--	176.3	3
2004-01-08	--	283	--	7.5	--	--	--	--	--	185.2	0	0.3	--	0.41	--	0.69	--	219.3	3
2004-03-02	--	332	--	7.6	--	--	--	--	--	155.6	-94.6	0.36	--	0.44	--	0.5	--	211.9	14
2004-03-31	--	99	--	7.7	--	--	--	--	--	188.6	-100	0.3	--	0.69	--	0.5	--	286.6	3
2004-05-03	--	99	--	7.6	--	--	--	--	--	188	-100	0.31	--	0.77	--	0.5	--	252.9	6
2004-06-03	--	64	--	7.7	--	--	--	--	--	181.4	-100	0.44	--	0.92	--	0.5	--	312.8	8
2004-07-01	--	64	--	7.6	--	--	--	--	--	201.6	-168.6	0.48	--	1.38	--	0.5	--	297	3
2004-08-02	--	99	--	7.6	--	--	--	--	--	210.8	-178.2	0.56	--	1.44	--	0.5	--	275.9	3
2004-09-01	--	99	--	7.5	--	--	--	--	--	234.8	-139.4	0.53	--	1.98	--	0.5	--	412.7	24
2004-10-04	--	64	--	7.6	--	--	--	--	--	224.8	-128.8	1.51	--	1.91	--	0.5	--	275	4
2004-11-01	--	64	--	7.6	--	--	--	--	--	228.8	46.2	1.59	--	1.51	--	0.5	--	342.3	4
2004-12-02	--	99	--	7.7	--	--	--	--	--	209.8	-87.2	1.82	--	0.81	--	0.5	--	216.2	3
2005-01-04	--	184	--	7.7	--	--	--	--	--	191.2	-147	0.35	--	0.48	--	0.5	--	264.2	4
2005-02-01	--		--	7.5	--	--	--	--	--	216.6	-93.4	0.87	--	1.43	--	0.5	--	256.5	3
2005-03-10	--	184	--	7.7	--	--	--	--	--	185.4	-140	1.72	--	0.65	--	0.5	--	235.9	3
2005-04-05	--	233	--	7.7	--	--	--	--	--	177.6	-125.8	0.5	--	0.59	--	0.5	--	241.8	3
2005-05-02	--	99	--	7.9	--	--	--	--	--	198	-157.2	0.75	--	0.98	--	0.5	--	266.8	3
2005-06-01	--	64	--	7.8	--	--	--	--	--	201.6	-94.4	1.34	--	1.3	--	0.5	--	398.6	4
2005-07-05	--	36	--	7.8	--	--	--	--	--	234.6	-164.4	6.53	--	3.58	--	0.51	--	398.4	8
2005-08-02	--	64	--	7.9	--	--	--	--	--	217.2	-140.4	0.3	--	1.49	--	0.5	--	348.2	3
2005-09-09	--	36	--	7.7	--	--	--	--	--	234.8	-140.8	0.34	--	1.35	--	0.5	--	369.8	3
2005-10-06	--	25	--	7.6	--	--	--	--	--	236.4	-151.6	0.4	--	1.28	--	0.5	--	324	3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-01-05	--		--	7.8	--	--	--	--	--	202.2	-172	0.3	--	0.38	--	0.5	--	218.7	3
2006-04-19	--	64	--	8	--	--	--	--	--	197.4	-154.4	0.49	--	0.58	--	0.5	--	284.1	3
2006-06-20	--		--	7.8	--	--	--	--	--	176	-165.6	0.35	--	0.3	--	0.5	--	248.5	3
2006-09-12	--		--	7.6	--	--	--	--	--	218.8	-204.6	1.21	--	1.18	--	0.5	--	264.2	12
2006-10-23	--		--	8	--	--	--	--	--	211.8	-171.2	0.34	--	0.53	--	0.5	--	221.8	3
2006-11-30	--		--	7.8	--	--	--	--	--	207.6	-184	0.3	--	0.55	--	0.5	--	229.1	3
2007-01-18	--		--	7.45	--	--	--	--	--	179.8	-147.4	0.3	--	0.43	--	0.5	--	201.3	3
2007-03-19	--		--	7.65	--	--	--	--	--	183.4	-161.2	0.36	--	0.48	--	0.5	--	199.4	3
2007-04-30	--		--	7.8	--	--	--	--	--	190	-169.4	1.18	--	0.9	--	0.5	--	238.2	12
2007-06-28	--		--	7.4	--	--	--	--	--	215.2	-95.4	1.54	--	2.43	--	0.5	--	290.8	10
2007-07-25	--		--	7.45	--	--	--	--	--	217.2	-104	3.15	--	2.11	--	0.5	--	286.8	20
2007-08-28	--		--	8.1	--	--	--	--	--	209.4	-146.6	0.3	--	0.38	--	1.65	--	218.9	60
2007-12-18	--		--	15	--	--	--	--	--	185.6	-174.2	0.3	--	0.47	--	0.5	--	182.8	3
2008-03-31	--		--	8.1	--	--	--	--	--	181.8	-151	1.1	--	1.06	--	0.5	--	220.8	8
2008-04-21	--		--	8.2	--	--	--	--	--	185.6	-173.6	0.87	--	0.89	--	0.5	--	254.6	6
2008-05-22	--		--	7.35	--	--	--	--	--	177	-132.6	6.65	--	2.57	--	0.78	--	199.9	6
2008-06-17	--		--	7.35	--	--	--	--	--	206.8	-169	23.35	--	8.95	--	1.72	--	258.6	5
2008-10-09	--		--	7.5	--	--	--	--	--	221.4	-194.2	0.55	--	1.44	--	0.5	--	295.7	6
2009-03-02	--		--	7.7	--	--	--	--	--	189	-167.4	0.44	--	0.78	--	0.5	--	267.5	5
2009-06-25	--		--	8.1	--	--	--	--	--	207.6	-191.6	2.41	--	2.03	--	0.5	--	79	8
2009-10-28	--		--	7.75	--	--	--	--	--	208.4	-189.2	1.28	--	0.84	--	0.5	--	198.5	5
2010-02-04	--		--	7.9	--	--	--	--	--	197.2	-189.8	0.49	--	1.18	--	0.5	--	230.4	14
2010-04-07	--		--	8.1	--	--	--	--	--	200.6	-176	0.31	--	0.56	--	0.5	--	211.4	5
2010-07-26	--		--	8.1	--	--	--	--	--	219.6	-193.8	1.66	--	1.41	--	0.5	--	229	16
2010-11-09	--		--	7.9	--	--	--	--	--	224.8	-212.8	2.48	--	1.19	--	0.5	--	270.9	16
2011-03-01	--		--	7.6	--	--	--	--	--	146	-133.4	0.3	--	0.25	--	0.5	--	148.9	8
2011-05-11	--		--	7.25	--	--	--	--	--	177.2	-169.4	2.46	--	1.62	--	0.5	--	242.1	5
2011-07-13	--		--	7.35	--	--	--	--	--	203	-177	1.55	--	3.13	--	0.5	--	392.1	16
2011-10-31	--		--	7.6	--	--	--	--	--	182.4	-172.2	0.6	--	0.66	--	0.5	--	198.9	5
2012-04-02	--		--	8	--	--	--	--	--	179.4	-163.8	0.8	--	0.83	--	0.5	--	175.1	10
2012-07-26	--		--	7.7	--	--	--	--	--	214.8	-212.2	5.13	--	3.4	--	0.5	--	268.7	10
2012-10-01	--		--	7.75	--	--	--	--	--	223.8	-179	1.22	--	1.63	--	0.5	--	352.4	5
2012-11-28	--		--	8	--	--	--	--	--	211	-208.8	1.07	--	1.43	--	0.5	--	299.3	6
2013-03-14	--		--	8.1	--	--	--	--	--	177.4	-164.4	0.32	--	0.41	--	0.5	--	282.4	5
2013-06-11	--		--	8	--	--	--	--	--	194.8	-174.4	0.57	--	1	--	0.5	--	227.9	5
2013-07-24	--		--	8.1	--	--	--	--	--	199.4	-148.4	0.45	--	0.6	--	0.5	--	195	5
2013-10-22	--		--	7.6	--	--	--	--	--	203.8	-168	0.49	--	0.61	--	0.5	--	217.9	5
Minimum:			--	7	--	--	--	--	--	132.4	-212.8	0.3	--	0.12	--	0.5	--	79	3
Maximum:		489	--	15	--	--	--	--	--	256	46.2	23.35	--	8.95	--	1.72	--	597	60
Average:		117.1	--	7.5	--	--	--	--	--	204.79	-80.26	1.1	--	1.19	--	0.53	--	298.2	6.3
Range:		464	--	8	--	--	--	--	--	123.6	259	23.05	--	8.83	--	1.22	--	518	57
Median:		99	--	7.6	--	--	--	--	--	207.2	-93.9	0.49	--	0.94	--	0.5	--	278.9	4
Loading (lb/day):									--	277.31	-43.05	0.9	--	1.33	--	0.72	--		

Sample Point Description: Kent No 56 (32803010) - PASSIVE TREATMENT EFFLUENT

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

ultmans Run AMD Assessment Water Quality Report - K56 - RW

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2000-07-10	--	3	--	5.9	--	--	--	--	--	140	0	2.52	--	3.69	--	0.5	--	439.4	3
2000-08-04	--	3	--	6	--	--	--	--	--	146	0	2.87	--	2.96	--	0.5	--	454.5	3
2000-10-04	--		--	6	--	--	--	--	--	144	0	5.13	--	3.01	--	0.5	--	487	12
2000-12-04	--	6	--	6.2	--	--	--	--	--	142	0	3.35	--	3	--	0.5	--	456.9	3
2001-02-05	--	6	--	6.2	--	--	--	--	--	124	0	2.85	--	3.98	--	0.5	--	424	3
2001-09-06	--	3	--	6	--	--	--	--	--	154	0	2.54	--	2.87	--	0.5	--	736	3
2002-04-08	--	3	--	5.9	--	--	--	--	--	118	0	2.16	--	2.88	--	0.5	--	456.4	3
2003-01-03	--	5	--	6.1	--	--	--	--	--	119.8	0	2.72	--	2.71	--	0.5	--	305.5	6
2003-04-01	--	6	--	6.1	--	--	--	--	--	130.2	0	2.54	--	3.17	--	0.5	--	443.7	3
2003-07-02	--	6	--	6.1	--	--	--	--	--	147.4	0	4.73	--	3.35	--	0.5	--	455.7	3
2004-03-31	--	6	--	6.2	--	--	--	--	--	141.4	-100	2.38	--	2.99	--	0.5	--	548.9	3
2007-08-28	--	20	--	7.2	--	--	--	--	--	200.8	-167.8	0.33	--	0.64	--	0.5	--	169.5	4
2008-03-31	--		--	7.2	--	--	--	--	--	184.8	-132.2	0.3	--	0.2	--	0.5	--	169.3	3
2008-04-21	--		--	6.9	--	--	--	--	--	190.4	-182	0.3	--	0.2	--	0.5	--	184.9	3
2008-10-09	--		--	8	--	--	--	--	--	186.2	-170.6	0.3	--	0.3	--	0.5	--	208.5	6
2009-03-02	--		--	7.1	--	--	--	--	--	188.2	-176.4	0.3	--	0.25	--	0.5	--	207.1	5
2009-06-25	--		--	7.6	--	--	--	--	--	197	-198.6	9.03	--	3.76	--	1.2	--	182.7	10
2010-04-07	--		--	7.6	--	--	--	--	--	191.4	-160.8	0.3	--	0.27	--	0.5	--	147.7	5
2011-05-11	--		--	7.3	--	--	--	--	--	182.2	160.6	0.3	--	0.18	--	0.5	--	141.8	5
2011-07-13	--		--	7.4	--	--	--	--	--	173.2	-162.2	0.3	--	0.29	--	0.5	--	250.8	8
2011-10-31	--		--	6.9	--	--	--	--	--	192.4	-178.8	0.3	--	0.44	--	0.5	--	179.2	5
2012-04-02	--		--	6.9	--	--	--	--	--	186.8	-171.6	0.3	--	0.14	--	0.5	--	116.5	6
2012-07-26	--		--	7.6	--	--	--	--	--	181	-167.2	0.38	--	1.54	--	0.5	--	166.8	6
2012-10-01	--		--	7.4	--	--	--	--	--	205.6	-157.6	0.42	--	0.78	--	0.5	--	161.2	5
2012-11-28	--		--	7	--	--	--	--	--	206.6	-200.2	0.3	--	0.68	--	0.5	--	197.4	6
2013-10-22	--		--	7	--	--	--	--	--	215	-193.2	1.01	--	1.41	--	0.5	--	155.8	5
Minimum:			--	5.9	--	--	--	--	--	118	-200.2	0.3	--	0.14	--	0.5	--	116.5	3
Maximum:		20	--	8	--	--	--	--	--	215	160.6	9.03	--	3.98	--	1.2	--	736	12
Average:		6.1	--	6.38	--	--	--	--	--	168.78	-90.72	1.84	--	1.76	--	0.53	--	301.8	4.9
Range:		17	--	2.1	--	--	--	--	--	97	360.8	8.73	--	3.84	--	0.7	--	619.5	9
Median:		6	--	6.9	--	--	--	--	--	181.6	-144.9	0.71	--	1.47	--	0.5	--	207.8	5
Loading (lb/day):									--	11.34	-4.32	0.16	--	0.18	--	0.04	--		

Sample Point Description: Kent No 56 (32803010) - SEEP EAST SIDE POND A (RAW)

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - K57 - TP2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-10-18	--	0	--	6.8	--	--	--	--	--	58	0	0.81	--	0.22	--	--	--	59	48
1999-12-02	--	8.9	--	8.9	--	--	--	--	--	376	0	0.3	--	0.52	--	0.5	--	207	3
2000-01-04	--	12	--	9.6	--	--	--	--	--	378	0	0.41	--	2.02	--	0.5	--	202.7	3
2000-02-01	--	1.1	--	9.9	--	--	--	--	--	842	0	0.71	--	0.1	--	0.5	--	345.2	12
2000-03-01	--	6.1	--	6.7	--	--	--	--	--	98	0	4.9	--	3.78	--	1.47	--	394.3	8
2000-04-11	--	3.8	--	7.95	--	--	--	--	--	398	0	1.69	--	4.24	--	0.5	--	755.6	3
2000-05-08	--	3.8	--	8.9	--	--	--	--	--	718	0	0.43	--	0.74	--	0.5	--	632	12
2000-06-09	--	20	--	8.4	--	--	--	--	--	500	0	0.62	--	2.85	--	0.5	--	730.6	8
2000-07-10	--	0.4	--	9.5	--	--	--	--	--	1034	0	0.4	--	0.38	--	0.5	--	597.4	3
2000-08-04	--	3.8	--	8.25	--	--	--	--	--	352	0	1.16	--	0.55	--	1.1	--	325.1	16
2000-09-08	--	9	--	9	--	--	--	--	--	466	0	0.3	--	0.18	--	0.5	--	446	3
2000-10-04	--	2.2	--	8.9	--	--	--	--	--	352	0	0.3	--	0.05	--	0.5	--	319.8	32
2000-11-02	--	2.2	--	9	--	--	--	--	--	492	0	0.3	--	0.65	--	0.5	--	310.2	4
2000-12-04	--	6.1	--	8.2	--	--	--	--	--	308	0	0.52	--	1.92	--	0.5	--	237.1	3
2001-02-05	--	12.4	--	8.7	--	--	--	--	--	406	0	0.61	--	1.42	--	0.5	--	410	28
2001-03-01	--	6.1	--	8.7	--	--	--	--	--	450	0	0.56	--	1.75	--	0.5	--	629.8	22
2001-04-02	--	6.1	--	8.7	--	--	--	--	--	440	0	0.3	--	0.81	--	0.5	--	693.7	46
2001-05-01	--	6	--	8.1	--	--	--	--	--	422	0	0.59	--	1.91	--	0.5	--	1202.8	3
2001-06-04	--	2	--	8.7	--	--	--	--	--	430	0	0.61	--	0.6	--	0.5	--	481.8	16
2001-07-09	--	2	--	8.5	--	--	--	--	--	456	0	0.3	--	0.42	--	0.5	--	782.3	10
2001-09-06	--	0.4	--	9	--	--	--	--	--	600	0	1.24	--	0.14	--	1.97	--	941	4
2001-10-02	--	0.1	--	9.1	--	--	--	--	--	630	0	0.86	--	0.05	--	0.62	--	601	16
2001-12-03	--	2	--	9.9	--	--	--	--	--	604	0	2.6	--	0.27	--	3.45	--	414.8	22
2002-02-04	--	6.1	--	8.5	--	--	--	--	--	362	0	0.37	--	1.61	--	0.5	--	526.2	3
2002-03-13	--	2.2	--	8.35	--	--	--	--	--	468	0	0.39	--	2.28	--	0.5	--	930.9	20
2002-04-08	--	6.1	--	7.9	--	--	--	--	--	392	0	0.62	--	6.19	--	0.5	--	1241.3	3
2002-05-02	--	8.9	--	8.5	--	--	--	--	--	328	0	1.47	--	2.48	--	0.99	--	505.4	22
2002-06-04	--	2.2	--	8.9	--	--	--	--	--	560	0	0.84	--	0.89	--	0.72	--	1022	26
2002-07-05	--	2.2	--	8.9	--	--	--	--	--	474	0	0.3	--	0.3	--	0.5	--	1741.3	30
2002-08-05	--	0.4	--	9.3	--	--	--	--	--	824	0	0.4	--	0.23	--	0.5	--	1191.4	12
2002-11-06	--	0.4	--	9.2	--	--	--	--	--	160	0	0.8	--	0.38	--	0.54	--	138	6
2002-12-06	--	1.1	--	9.3	--	--	--	--	--	384	0	0.3	--	0.46	--	0.5	--	302.6	3
2003-01-03	--	6.1	--	7.5	--	--	--	--	--	234	0	0.64	--	4.45	--	0.5	--	477.4	8
2003-02-03	--	0.4	--	8.3	--	--	--	--	--	432	0	0.3	--	2.43	--	0.5	--	838.7	3
2003-02-11	--	0.4	--	8.3	--	--	--	--	--	428.6	0	0.3	--	1.54	--	0.5	--	786.6	4
2003-03-04	--	2	--	8.3	--	--	--	--	--	378.6	0	0.4	--	2.46	--	0.5	--	658.8	3
2003-04-01	--	2	--	8.4	--	--	--	--	--	376	0	0.3	--	0.47	--	0.5	--	766.7	10
2003-05-05	--	6	--	8.3	--	--	--	--	--	420.2	0	0.52	--	0.41	--	0.5	--	772	3
2003-06-03	--	12.4	--	8.3	--	--	--	--	--	295.8	0	0.38	--	0.25	--	0.5	--	531.8	8
2003-07-02	--	2.2	--	8.2	--	--	--	--	--	318.2	0	0.3	--	0.78	--	0.5	--	758.9	14
2003-08-06	--	2	--	8.4	--	--	--	--	--	250.4	0	0.3	--	0.21	--	0.5	--	540.5	3
2003-09-15	--	2	--	8.4	--	--	--	--	--	226.4	0	0.3	--	0.12	--	0.5	--	548.9	8
2003-10-09	--		--	8	--	--	--	--	--	198.8	0	0.3	--	0.23	--	0.5	--	528	8
2003-10-30	--	2.2	--	7.9	--	--	--	--	--	238.6	0	0.3	--	0.57	--	0.5	--	469.1	42
2003-12-11	--	12.4	--	9.1	--	--	--	--	--	120.2	0	1.55	--	0.39	--	1.05	--	164.6	26
2004-01-08	--	6.1	--	8.5	--	--	--	--	--	401.4	0	0.3	--	1.26	--	0.5	--	650.4	8
2004-03-02	--	6.1	--	8.4	--	--	--	--	--	155.8	-98	1.72	--	0.93	--	1	--	281	18
2004-03-31	--	2.2	--	8.4	--	--	--	--	--	313.2	-100	0.58	--	1.19	--	0.5	--	897.5	3
2004-05-03	--	8.9	--	8.1	--	--	--	--	--	257.8	-100	0.3	--	0.35	--	0.5	--	565.3	12
2004-06-03	--	1	--	8.4	--	--	--	--	--	245.6	-100	0.3	--	0.12	--	0.5	--	531.4	6
2004-07-01	--	1	--	8.6	--	--	--	--	--	228.4	-187	0.3	--	0.07	--	0.5	--	357.6	4
2004-08-02	--	1	--	8.3	--	--	--	--	--	144.8	-106.2	0.48	--	0.27	--	0.5	--	227.5	14
2004-09-01	--	1	--	8.4	--	--	--	--	--	217.6	-188	18.7	--	7.95	--	0.52	--	392.6	3
2004-09-22	--	3	--	8.1	--	--	--	--	--	102.6	-72.6	0.6	--	0.09	--	0.66	--	140.3	12
2004-10-04	--	2	--	8.3	--	--	--	--	--	191.2	-158.6	0.3	--	0.05	--	0.5	--	313.7	3
2004-11-01	--	2	--	8	--	--	--	--	--	203.4	21.2	0.3	--	0.17	--	0.5	--	454.4	3
2004-12-02	--	2	--	8.6	--	--	--	--	--	211.2	-173	0.56	--	0.14	--	0.5	--	262.4	28
2005-01-04	--	3	--	7.2	--	--	--	--	--	68.8	-27.4	0.97	--	0.69	--	0.81	--	172.8	6
2005-03-10	--	3	--	8.8	--	--	--	--	--	284	214	0.43	--	0.79	--	0.5	--	454.1	4
2005-04-05	--	3	--	9	--	--	--	--	--	293.6	-256	2.94	--	2.85	--	0.5	--	394.6	4
2005-05-02	--	3	--	8.4	--	--	--	--	--	284.2	-244.2	0.56	--	0.34	--	0.5	--	512.1	12
2005-06-01	--	2	--	8.7	--	--	--	--	--	364.2	-285.4	0.43	--	0.26	--	0.5	--	544.9	34
2006-01-05	--	3	--	9.2	--	--	--	--	--	107.6	-88.2	0.42	--	0.13	--	0.54	--	82.2	3
2006-06-20	--	1	--	8.15	--	--	--	--	--	260.4	-247.6	0.32	--	0.09	--	0.5	--	288.8	4
2006-09-12	--		--	8.25	--	--	--	--	--	124.8	-110.2	0.3	--	0.05	--	0.5	--	339.6	4
2006-10-23	--		--	7.5	--	--	--	--	--	155.6	-128	0.3	--	0.05	--	0.5	--	222.2	3
2006-11-30	--		--	7.35	--	--	--	--	--	169.8	-158.4	0.65	--	0.93	--	0.52	--	172.5	138
2007-01-18	--		--	7.5	--	--	--	--	--	242.6	-201.6	0.67	--	2.17	--	0.5	--	347.4	4
2007-03-19	--		--	7.45	--	--	--	--	--	181.8	-160.2	0.43	--	0.9	--	0.5	--	389.8	6
2007-04-30	--		--	8.4	--	--	--	--	--	270.8	-258.6	0.3	--	0.13	--	0.5	--	468.3	8
2007-06-28	--		--	9	--	--	--	--	--	226	-195.6	0.3	--	0.05	--	0.5	--	436.5	40

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2007-07-25	--		--	8.05	--	--	--	--	--	205.2	-159.2	0.3	--	0.05	--	0.5	--	313.3	3
2007-08-28	--		--	8.05	--	--	--	--	--	118.6	-93.6	0.3	--	0.05	--	0.5	--	141.3	6
2007-10-10	--		--	7.6	--	--	--	--	--	128.8	-106.6	0.3	--	0.05	--	0.5	--	261.1	4
2007-12-18	--		--	7.4	--	--	--	--	--	110.8	-88.6	0.6	--	0.28	--	0.63	--	105.5	16
2008-03-31	--		--	8.2	--	--	--	--	--	285.6	-232.6	0.3	--	0.06	--	0.5	--	479.8	6
2008-04-21	--		--	7.7	--	--	--	--	--	250.6	-239.6	0.36	--	0.22	--	0.5	--	389.5	8
2008-05-22	--		--	7.6	--	--	--	--	--	166.6	-129.8	0.39	--	0.13	--	0.5	--	217.2	8
2008-06-17	--		--	7.5	--	--	--	--	--	248.6	-188	0.3	--	0.2	--	0.5	--	368.3	5
2008-10-09	--		--	8.4	--	--	--	--	--	172	-148.8	0.3	--	0.06	--	0.5	--	240.9	6
2009-02-11	--		--	7.9	--	--	--	--	--	52.4	-36.4	1.5	--	0.22	--	1.68	--	54.5	5
2009-04-09	--		--	8.7	--	--	--	--	--	347.2	-325.4	0.4	--	0.1	--	0.5	--	352.9	6
2009-06-25	--		--	8.5	--	--	--	--	--	344.6	-330	0.36	--	0.14	--	0.5	--	326.7	5
2009-07-14	--		--	8.6	--	--	--	--	--	357.6	-346	0.3	--	0.05	--	0.5	--	341.2	14
2009-10-28	--		--	8.1	--	--	--	--	--	108	-95.8	0.3	--	0.05	--	0.5	--	113.8	6
2010-02-04	--		--	8.7	--	--	--	--	--	365	-335.8	1.2	--	0.31	--	0.7	--	287	96
2010-04-07	--		--	8.4	--	--	--	--	--	266	-240.8	0.3	--	0.08	--	0.5	--	476.6	5
2010-11-09	--		--	7.6	--	--	--	--	--	227.6	-215.2	0.3	--	0.12	--	0.5	--	184.2	8
2011-03-01	--		--	8.3	--	--	--	--	--	73.2	-59.4	2.97	--	0.17	--	5.11	--	111.5	26
2011-05-11	--		--	7.65	--	--	--	--	--	221.4	-208.4	0.48	--	1.03	--	0.5	--	499.3	10
2011-07-13	--		--	8	--	--	--	--	--	234.2	-213.6	0.32	--	0.67	--	0.5	--	347.1	5
2011-10-31	--		--	7.35	--	--	--	--	--	117.4	-103	0.88	--	0.78	--	0.5	--	204	6
2012-04-02	--		--	7.7	--	--	--	--	--	179.8	-156.6	0.85	--	1.34	--	0.5	--	479.3	8
2012-07-26	--		--	7.5	--	--	--	--	--	143.2	-135.8	0.45	--	0.15	--	0.5	--	233.9	5
2012-10-01	--		--	7.5	--	--	--	--	--	120	-84.4	0.48	--	0.11	--	0.5	--	275.7	10
2012-11-28	--		--	7.55	--	--	--	--	--	283.8	-271	0.74	--	0.38	--	0.5	--	385.8	8
2013-03-14	--		--	8.1	--	--	--	--	--	267.4	-254	0.6	--	0.59	--	0.5	--	440.3	5
2013-06-11	--		--	7.9	--	--	--	--	--	308.2	-324.2	0.37	--	0.26	--	0.5	--	361.4	20
2013-07-24	--		--	8.1	--	--	--	--	--	242	-206.8	0.3	--	0.83	--	0.5	--	431.8	14
2013-10-22	--		--	8.1	--	--	--	--	--	264.4	-229.6	1.19	--	0.19	--	0.57	--	262.7	5
Minimum:			--	6.7	--	--	--	--	--	52.4	-346	0.3	--	0.05	--	0.5	--	54.5	3
Maximum:		20	--	9.9	--	--	--	--	--	1034	214	18.7	--	7.95	--	5.11	--	1741.3	138
Average:		4	--	7.89	--	--	--	--	--	305.97	-89.69	0.83	--	0.85	--	0.65	--	457.5	13
Range:		20	--	3.2	--	--	--	--	--	981.6	560	18.4	--	7.9	--	4.61	--	1686.8	135
Median:		2.2	--	8.3	--	--	--	--	--	269.1	-47.9	0.4	--	0.34	--	0.5	--	394.5	8
Loading (lb/day):									--	16.84	-1	0.04	--	0.07	--	0.03	--		

Sample Point Description: Kent No 57 (32890109) - TREATED EFFLUENT SAME AS NPDES 001

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - K57 - MD1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-12-02	--		--	6.2	--	--	--	--	--	82	0	4.93	--	3.96	--	0.5	--	311.4	3
2000-01-04	--	12	--	6.3	--	--	--	--	--	60	0	4.6	--	2.29	--	1.91	--	151.5	12
2000-03-01	--		--	5.8	--	--	--	--	--	54	0	8.56	--	5.27	--	2.2	--	486.2	8
2000-04-11	--		--	5.5	--	--	--	--	--	44	0	5.78	--	6.62	--	1.4	--	685	3
2000-06-09	--		--	5.9	--	--	--	--	--	88	0	8.73	--	8.08	--	0.66	--	704.8	3
2000-07-10	--		--	6.3	--	--	--	--	--	202	0	11.7	--	8.23	--	0.5	--	475.8	3
2000-10-04	--		--	6.5	--	--	--	--	--	208	0	4.43	--	5.77	--	0.5	--	361.6	3
2000-12-04	--	4	--	6.4	--	--	--	--	--	98	0	0.84	--	2.23	--	0.5	--	203.5	3
2001-02-05	--	12	--	6.3	--	--	--	--	--	88	0	3.5	--	4.74	--	0.5	--	369	8
2001-07-09	--	2	--	6.1	--	--	--	--	--	134	0	6.87	--	8.21	--	0.5	--	713.5	16
2001-09-06	--	0.4	--	6.6	--	--	--	--	--	252	0	4.52	--	7.03	--	0.5	--	699	3
2002-02-04	--	6	--	6	--	--	--	--	--	80	0	1.25	--	4.84	--	0.5	--	368.8	3
2002-04-08	--	6	--	5.1	--	--	--	--	--	26	64.6	8.19	--	11.1	--	3.56	--	1321.9	4
2002-07-05	--	2.2	--	5.9	--	--	--	--	--	66	4.8	9.2	--	8.16	--	0.5	--	639.6	4
2003-01-03	--	6	--	5.8	--	--	--	--	--	62.4	0	1.11	--	7.88	--	0.5	--	641.1	8
2003-04-01	--	2	--	6	--	--	--	--	--	75.8	0	2.78	--	6.52	--	0.5	--	811.5	6
2003-07-02	--	1.1	--	6.2	--	--	--	--	--	108.6	0	9.84	--	11.2	--	0.5	--	842.1	4
2004-03-31	--	1	--	6.2	--	--	--	--	--	107.2	-60.4	7.22	--	7.16	--	0.5	--	872.7	3
2005-04-05	--	1	--	6.2	--	--	--	--	--	115.8	-22.6	0.54	--	0.3	--	0.5	--	573.5	3
2007-04-30	--	2	--	6.4	--	--	--	--	--	130.8	-98	4.78	--	3.41	--	0.5	--	628.7	6
2008-03-31	--		--	6.7	--	--	--	--	--	124.2	-97.8	3.92	--	2.94	--	0.5	--	608	6
2008-04-21	--	2	--	7	--	--	--	--	--	134	-116.8	4.12	--	3.48	--	0.5	--	515.2	6
2009-02-11	--	2	--	6.7	--	--	--	--	--	113	-92.6	2.9	--	2.17	--	0.5	--	562.7	5
2009-04-09	--		--	6.8	--	--	--	--	--	127.8	-109.6	3.83	--	2.78	--	0.5	--	565.2	5
2010-02-04	--		--	6.7	--	--	--	--	--	168.8	-133	10.65	--	4.79	--	0.5	--	529.2	5
2010-04-07	--		--	7	--	--	--	--	--	126.6	-101.2	5.5	--	2.99	--	0.5	--	605.1	6
2010-11-09	--		--	7.1	--	--	--	--	--	187.2	-233.4	8.71	--	3.49	--	0.5	--	310.4	16
2011-03-01	--	3	--	6.6	--	--	--	--	--	132.8	-115.6	5.22	--	1.98	--	0.5	--	539	22
2011-05-11	--		--	6.4	--	--	--	--	--	68.6	-47.2	3.53	--	2.53	--	0.5	--	465.1	6
2011-07-13	--		--	6.4	--	--	--	--	--	146.8	-118.2	7.01	--	4.38	--	0.5	--	368.2	5
2011-10-31	--		--	6.2	--	--	--	--	--	68.4	-42.6	3.73	--	2.02	--	0.5	--	210	5
2012-04-02	--		--	6.4	--	--	--	--	--	75.2	-61.6	3.54	--	2.61	--	0.5	--	465.7	8
2012-07-26	--		--	6.5	--	--	--	--	--	142.4	-112.6	6.84	--	3.75	--	0.5	--	390.4	5
2012-10-01	--		--	6.6	--	--	--	--	--	140.6	-99.6	4.8	--	3.43	--	0.5	--	327.2	5
2012-11-28	--		--	6.6	--	--	--	--	--	107.8	-92.6	5.89	--	3.68	--	0.5	--	500.3	6
2013-03-14	--		--	6.4	--	--	--	--	--	71.6	-53	2.72	--	2.52	--	0.5	--	500.1	8
2013-06-11	--		--	7	--	--	--	--	--	126.8	-108.2	3.43	--	2.65	--	0.5	--	317.8	5
2013-07-24	--		--	6.5	--	--	--	--	--	88	-59.2	3.07	--	2.55	--	0.5	--	522.2	6
2013-10-22	--		--	6.3	--	--	--	--	--	82.6	-28.2	2.33	--	1.67	--	0.5	--	179.9	5
Minimum:			--	5.1	--	--	--	--	--	26	-233.4	0.54	--	0.3	--	0.5	--	151.5	3
Maximum:		12	--	7.1	--	--	--	--	--	252	64.6	11.7	--	11.2	--	3.56	--	1321.9	22
Average:		3.8	--	6.11	--	--	--	--	--	110.66	-49.61	5.16	--	4.6	--	0.69	--	521.6	6.2
Range:		11.6	--	2	--	--	--	--	--	226	298	11.16	--	10.9	--	3.06	--	1170.4	19
Median:		2	--	6.4	--	--	--	--	--	107.8	-42.6	4.6	--	3.68	--	0.5	--	515.2	5
Loading (lb/day):									--	3.77	-0.46	0.19	--	0.23	--	0.05	--		

Sample Point Description: Kent No 57 (32890109) - Raw Discharge

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Lewis - SP L

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-09-29	--	0	--	6.6	--	--	--	--	--	20	0	--	--	--	--	--	--	--	3
1994-12-28	--	0	--	6.3	--	--	--	--	--	19	6.2	--	--	--	--	--	--	--	3
1995-03-22	--	0	--	6.5	--	--	--	--	--	26	0	--	--	--	--	--	--	--	3
Minimum:		--	--	6.3	--	--	--	--	--	19	0	--	--	--	--	--	--	--	3
Maximum:		--	--	6.6	--	--	--	--	--	26	6.2	--	--	--	--	--	--	--	3
Average:		--	--	6.45	--	--	--	--	--	21.67	2.07	--	--	--	--	--	--	--	3
Range:		--	--	0.3	--	--	--	--	--	7	6.2	--	--	--	--	--	--	--	0
Median:		--	--	6.5	--	--	--	--	--	20	0	--	--	--	--	--	--	--	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Lewis - 23

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-04-07	--		--	6.2	--	--	--	--	--	20	5.6	3	--	1.05	--	3.82	--	283.3	20
1998-10-16	--		--	7.4	--	--	--	--	--	166	0	1.67	--	1.6	--	1.64	--	1461	3
1998-11-20	--	400	7.8	7.4	--	--	10	2926	--	135.2	N.D.	1.77	--	1.66	--	--	--	1903.1	13
1999-01-22	--	5100	6.7	6.32	--	--	6	326	--	14.2	N.D.	1.19	--	0.58	--	--	--	89.9	7
1999-05-06	--	2000	7.4	7.28	--	--	18	974	--	34	N.D.	1.25	--	0.85	--	--	--	440.4	7
1999-08-12	--	425	7.5	7.8	--	--	18.5	2643	--	131.6	N.D.	0.66	--	0.89	--	--	--	1316.3	2
1999-10-06	--		--	6.5	--	--	--	--	--	68	0	1.64	--	1.41	--	2.11	--	1462	3
1999-10-21	--	900	7	7.14	--	--	11.9	2610	--	41.6	N.D.	1.08	--	1.07	--	--	--	1192.5	8
2000-01-13	--	1200	7	7.71	--	--	3.9	851	--	48.3	N.D.	1.46	--	0.68	--	--	--	299.3	3
2000-04-19	--	2000	7.8	7.23	--	--	11.8	402	--	28.5	N.D.	1.23	--	0.52	--	--	--	127.8	3
2000-08-15	--	1200	7.8	7.54	--	--	20.4	629	--	49	N.D.	0.46	--	0.99	--	--	--	264.5	4
2000-10-11	--		--	6.6	--	--	--	--	--	28	0	2.14	--	1.3	--	1.9	--	227.7	20
2000-10-12	--	1650	7.2	7.1	--	--	8.3	551	--	24.9	N.D.	1.53	--	1.22	--	--	--	216.4	3
2001-01-11	--	700	6.9	7	--	--	0.9	593	--	42.9	N.D.	1.41	--	1.18	--	--	--	252.9	10
2001-05-04	--	800	7.4	7.42	--	--	21.3	621	--	41.9	N.D.	1	--	0.69	--	--	--	205.2	1
2001-07-20	--	550	7.2	6.47	--	--	23.2	804	--	22.3	N.D.	0.24	--	1.39	--	--	--	350.8	7
2003-04-01	--		--	6.3	--	--	--	--	--	20.6	22.4	2.28	--	0.93	--	2.64	--	186.9	8
2006-11-02	--		--	7	--	--	--	--	--	25.4	-12	1.72	--	0.58	--	1.33	--	107.9	4
2007-02-02	--		--	7	--	--	--	--	--	26.6	18.6	2.19	--	0.69	--	1.7	--	182	10
2008-03-14	--		--	7	--	--	--	--	--	24.4	-2	2.27	--	0.57	--	1.78	--	116	18
2009-04-08	--		--	7	--	--	--	--	--	25.8	-11.8	1.94	--	0.43	--	1.14	--	99.4	8
2010-03-29	--		--	7.3	--	--	--	--	--	29.2	-12	1.02	--	0.46	--	0.97	--	104.2	10
2011-04-12	--		--	6.9	--	--	--	--	--	25.6	-10.6	2.31	--	0.36	--	1.69	--	220.5	16
2011-12-15	--		--	7.1	--	--	--	--	--	43.8	-36.4	1.3	--	0.62	--	1.19	--	184.4	14
2012-05-10	--		--	7.5	--	--	--	--	--	33.8	-21	1.33	--	0.3	--	1.05	--	564.3	24
2013-01-10	--		--	7.4	--	--	--	--	--	42.2	-38.6	1.84	--	0.68	--	1.54	--	190.2	16
Minimum:			6.7	6.2	--	--	0.9	326	--	14.2	-38.6	0.24	--	0.3	--	0.97	--	89.9	1
Maximum:		5100	7.8	7.8	--	--	23.2	2926	--	166	N.D.	3	--	1.66	--	3.82	--	1903.1	24
Average:		1410.4	7.17	6.84	--	--	12.9	1161	--	45.92	-6.99	1.54	--	0.87	--	1.75	--	463.4	9.3
Range:		4700	1.1	1.6	--	--	22.3	2600	--	151.8	61	2.76	--	1.36	--	2.85	--	1813.2	23
Median:		1050	7.3	7.1	--	--	11.9	717	--	31.5	-6.3	1.5	--	0.77	--	1.66	--	224.1	8
Loading (lb/day):									--	578.53	--	19.74	--	13.86	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - AULTMANS RUN, UP; Downstream UNT07

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Lewis - 26

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-06-10	--		--	3	--	--	--	--	--	0	214	7.84	--	11.4	--	17.4	--	994	3
Minimum:			--	3	--	--	--	--	--	--	214	7.84	--	11.4	--	17.4	--	994	3
Maximum:			--	3	--	--	--	--	--	--	214	7.84	--	11.4	--	17.4	--	994	3
Average:		data has not been set	--	3	--	--	--	--	--	--	214	7.84	--	11.4	--	17.4	--	994	3
Range:		data has not been set	--	0	--	--	--	--	--	--	0	0	--	0	--	0	--	0	0
Median:		data has not been set	--	3	--	--	--	--	--	--	214	7.84	--	11.4	--	17.4	--	994	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) -

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Lewis - 57

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-06-10	--		--	3.5	--	--	--	--	--	0	152	2.68	--	16.4	--	13.3	--	1101.3	3
Minimum:			--	3.5	--	--	--	--	--	--	152	2.68	--	16.4	--	13.3	--	1101.3	3
Maximum:			--	3.5	--	--	--	--	--	--	152	2.68	--	16.4	--	13.3	--	1101.3	3
Average:		data has not been set	--	3.5	--	--	--	--	--	--	152	2.68	--	16.4	--	13.3	--	1101.3	3
Range:		data has not been set	--	0	--	--	--	--	--	--	0	0	--	0	--	0	--	0	0
Median:		data has not been set	--	3.5	--	--	--	--	--	--	152	2.68	--	16.4	--	13.3	--	1101.3	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - Seep near Foot Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Lewis - 58

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-06-10	--		--	4.6	--	--	--	--	--	8.2	82	0.42	--	21.4	--	3.86	--	1087.1	3
Minimum:			--	4.6	--	--	--	--	--	8.2	82	0.42	--	21.4	--	3.86	--	1087.1	3
Maximum:			--	4.6	--	--	--	--	--	8.2	82	0.42	--	21.4	--	3.86	--	1087.1	3
Average:		data has not been set	--	4.6	--	--	--	--	--	8.2	82	0.42	--	21.4	--	3.86	--	1087.1	3
Range:		data has not been set	--	0	--	--	--	--	--	0	0	0	--	0	--	0	--	0	0
Median:		data has not been set	--	4.6	--	--	--	--	--	8.2	82	0.42	--	21.4	--	3.86	--	1087.1	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Lewisville Rec (32803712) - Seep near Foot Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Lewis - MS98

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-03-15	--	10	--	4.8	--	--	--	--	--	10.4	28	0.3	--	9.07	--	2.59	--	653.1	6
1999-07-13	--	2	--	3.8	--	--	--	--	--	0	214	12.2	--	13.6	--	25.2	--	1159	8
1999-09-07	--	6	--	3.8	--	--	--	--	--	0	170	15.6	--	13.6	--	23.8	--	1017.4	3
2000-01-11	--		--	4.2	--	--	--	--	--	6.8	196	5.74	--	12.5	--	24.8	--	1126.8	14
2000-04-11	--		--	4.4	--	--	--	--	--	11.4	170	3.11	--	11.3	--	25	--	1045.4	3
2000-06-09	--		--	4	--	--	--	--	--	3.6	156	2.11	--	10.4	--	21.7	--	828.1	3
2000-08-08	--		--	3.9	--	--	--	--	--	0	150	13.4	--	9.51	--	22	--	1057.1	3
2000-10-11	--	4	--	4	--	--	--	--	--	3.2	150	6.17	--	11.3	--	21.5	--	893	3
2000-12-04	--	3	--	4.1	--	--	--	--	--	5.8	154	5.7	--	10.3	--	18.2	--	840	3
2001-02-05	--	4	--	4.3	--	--	--	--	--	8.6	132	6.28	--	11.8	--	20.3	--	891	8
2001-04-10	--	6	--	4.2	--	--	--	--	--	7	134	3.66	--	10	--	20.3	--	794	6
2001-07-16	--	2	--	3.8	--	--	--	--	--	0	163.8	3.61	--	10.5	--	22	--	845.8	3
2002-02-04	--	2	--	4.1	--	--	--	--	--	5.4	139.8	2.41	--	9.87	--	16.6	--	935.8	4
2003-04-01	--	3	--	4	--	--	--	--	--	2	112.8	0.3	--	6.83	--	12.5	--	636.3	6
2003-07-02	--	4	--	4.8	--	--	--	--	--	13.6	324.6	167	--	4.61	--	12	--	959.6	56
2003-10-01	--	10	--	3.6	--	--	--	--	--	0	654.8	268	--	8.25	--	23.6	--	1105.7	3
2005-04-05	--	8	--	3	--	--	--	--	--	0	652.6	227	--	5.53	--	16.6	--	1157.4	8
2006-11-02	--		--	6.9	--	--	--	--	--	62.8	-45	0.3	--	4.47	--	0.5	--	423.7	3
2007-02-02	--		--	7.4	--	--	--	--	--	54.6	-8.4	0.8	--	7.64	--	0.5	--	749.5	4
2008-01-14	--		--	7.3	--	--	--	--	--	53.2	-38.2	0.3	--	4.45	--	2.33	--	496.5	3
2008-03-14	--		--	6.2	--	--	--	--	--	23.2	10	0.85	--	6.09	--	3.01	--	614.7	32
2009-04-08	--		--	7.3	--	--	--	--	--	95	-72.4	0.53	--	4.18	--	0.5	--	582.4	6
2010-03-29	--		--	7.4	--	--	--	--	--	53.8	-29.6	1.17	--	4.59	--	0.6	--	523.2	10
2011-04-12	--		--	6.1	--	--	--	--	--	15.4	13.6	0.87	--	4.95	--	5	--	729	22
2011-12-15	--		--	7.2	--	--	--	--	--	77.2	-67.8	1.04	--	4.13	--	0.5	--	549.4	6
2012-05-10	--		--	7.8	--	--	--	--	--	87.2	-72	1.12	--	3.78	--	0.5	--	183.1	12
2013-04-11	--		--	7.1	--	--	--	--	--	42.2	-37.2	0.85	--	3.77	--	1.1	--	521.3	10
Minimum:			--	3	--	--	--	--	--	0	-72.4	0.3	--	3.77	--	0.5	--	183.1	3
Maximum:		10	--	7.8	--	--	--	--	--	95	654.8	268	--	13.6	--	25.2	--	1159	56
Average:		4.9	--	4.02	--	--	--	--	--	23.79	124.27	27.79	--	8.04	--	12.71	--	789.6	9.2
Range:		8	--	4.8	--	--	--	--	--	95	727.2	267.7	--	9.83	--	24.7	--	975.9	53
Median:		4	--	4.3	--	--	--	--	--	8.6	134	2.41	--	8.25	--	16.6	--	828.1	6
Loading (lb/day):									--	0.26	16.74	4.97	--	0.54	--	1.01	--		

Sample Point Description: Lewisville Rec (32803712) - Discharge probably related to AM0-D5.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Lewis - TP-J

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1997-02-19	--		--	5.95	--	--	--	--	--	15.2	14.4	1.87	--	4.85	--	1.04	--	524.6	28
1999-07-13	--		--	8.8	--	--	--	--	--	42	0	0.3	--	0.05	--	0.5	--	617.8	4
2000-06-09	--	1	--	7.25	--	--	--	--	--	26	0	0.38	--	0.47	--	0.5	--	441	3
2001-04-10	--	60	--	6.6	--	--	--	--	--	18.8	0	0.32	--	2.15	--	0.5	--	475.7	6
2006-09-15	--	100	--	7.2	--	--	--	--	--	29	-14	0.3	--	0.06	--	0.5	--	264.9	3
2007-04-17	--		--	9.6	--	--	--	--	--	31.2	-21	0.3	--	0.46	--	0.5	--	216.6	3
2007-12-13	--	50	--	8.8	--	--	--	--	--	27.2	-16.4	0.3	--	0.37	--	0.5	--	240.7	16
2008-03-14	--	30	--	7.25	--	--	--	--	--	18.8	0.2	0.32	--	1.48	--	0.5	--	248	10
2009-11-02	--	6	--	7.8	--	--	--	--	--	45.2	-28	0.3	--	0.12	--	0.5	--	210.5	5
2010-03-29	--		--	7.5	--	--	--	--	--	30.2	-17	0.3	--	0.6	--	0.5	--	224.8	5
2010-05-03	--	7.2	--	7.4	--	--	--	--	--	39.2	-14.8	0.3	--	0.21	--	0.5	--	191.7	14
Minimum:			--	5.95	--	--	--	--	--	15.2	-28	0.3	--	0.05	--	0.5	--	191.7	3
Maximum:		100	--	9.6	--	--	--	--	--	45.2	14.4	1.87	--	4.85	--	1.04	--	617.8	28
Average:		36.3	--	6.83	--	--	--	--	--	29.35	-8.78	0.45	--	0.98	--	0.55	--	332.4	8.8
Range:		99	--	3.65	--	--	--	--	--	30	42.4	1.57	--	4.8	--	0.54	--	426.1	25
Median:		30	--	7.4	--	--	--	--	--	29	-14	0.3	--	0.46	--	0.5	--	248	5
Loading (lb/day):									--	11.2	-4.27	0.13	--	0.34	--	0.22	--		

Sample Point Description: Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Lewis - TP-L

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1996-07-09	--		--	7.2	--	--	--	--	--	26	0	0.3	--	0.7	--	0.5	--	986.9	3
1996-08-12	--		--	6.7	--	--	--	--	--	26	0	0.3	--	0.33	--	0.5	--	867.9	3
1996-09-05	--		--	6.7	--	--	--	--	--	26	0	0.3	--	0.52	--	0.5	--	1045	3
1996-10-08	--		--	7	--	--	--	--	--	30	0	0.3	--	0.65	--	0.5	--	875.1	3
1996-12-10	--		--	6.5	--	--	--	--	--	26	0	0.3	--	1.01	--	0.5	--	718.2	10
1997-01-21	--		--	6.4	--	--	--	--	--	22	3	0.3	--	1.32	--	0.5	--	839.2	6
1997-02-19	--	12	--	6.05	--	--	--	--	--	19	6.6	0.97	--	0.92	--	1.29	--	926	6
1997-03-12	--	3	--	6.3	--	--	--	--	--	20	10.2	0.3	--	0.54	--	0.5	--	741.5	3
1997-04-07	--	1	--	6.4	--	--	--	--	--	18	0	0.3	--	0.23	--	0.5	--	746.5	8
1997-05-19	--	3	--	6.7	--	--	--	--	--	20	0	0.3	--	0.14	--	0.5	--	627.1	3
1997-06-10	--		--	9.1	--	--	--	--	--	20	4.4	0.3	--	1.2	--	0.5	--	759	3
1997-07-08	--		--	6.55	--	--	--	--	--	18.4	0	0.3	--	0.11	--	0.5	--	756	3
1997-07-28	--	4	--	6.2	--	--	--	--	--	20	0	0.3	--	0.13	--	0.5	--	739.4	3
1997-08-06	--	8	--	6.55	--	--	--	--	--	19.8	3.2	0.3	--	0.12	--	0.5	--	949.3	3
1997-09-04	--	6	--	6.5	--	--	--	--	--	20	0	0.3	--	0.37	--	0.5	--	748.4	3
1997-10-03	--		--	6.1	--	--	--	--	--	18.6	0	0.3	--	0.46	--	0.5	--	806.1	3
1997-11-05	--	15	--	6.6	--	--	--	--	--	17.6	0	0.3	--	0.88	--	0.5	--	874	3
1998-01-08	--		--	5.5	--	--	--	--	--	11.2	5	0.75	--	2.86	--	1.3	--	503.5	4
1998-02-02	--	20	--	7.9	--	--	--	--	--	24	0	0.3	--	3.71	--	0.5	--	770.7	3
1998-03-02	--	20	--	6.7	--	--	--	--	--	22	0	0.3	--	2.34	--	0.5	--	740.9	3
1998-04-02	--	20	--	6.7	--	--	--	--	--	26	0	0.3	--	1.72	--	0.5	--	843	3
1998-05-07	--		--	6.75	--	--	--	--	--	15.6	0	0.3	--	1.78	--	0.5	--	739.7	3
1998-06-04	--		--	6	--	--	--	--	--	14.6	2.4	0.3	--	0.5	--	0.5	--	804	3
1998-07-07	--	3	--	6.6	--	--	--	--	--	22	0	0.3	--	0.17	--	0.5	--	758.3	3
1998-09-10	--	4	--	6.9	--	--	--	--	--	24	0	0.3	--	0.12	--	0.5	--	505.3	3
1998-10-16	--	.5	--	6.65	--	--	--	--	--	26	0	0.3	--	0.06	--	0.5	--	912.1	3
1998-11-17	--	6	--	6.7	--	--	--	--	--	30	0	0.3	--	0.42	--	0.5	--	912.1	3
1999-01-25	--	12	--	6.05	--	--	--	--	--	15.8	0	0.3	--	1.91	--	0.5	--	598	3
1999-03-15	--	15	--	6.6	--	--	--	--	--	20	0	0.3	--	1.37	--	0.5	--	582.6	3
1999-04-20	--		--	6.4	--	--	--	--	--	17.8	0	0.3	--	1.09	--	0.5	--	612.9	3
1999-06-10	--	6	--	6.3	--	--	--	--	--	14.4	0	0.3	--	0.67	--	0.5	--	967	4
1999-07-13	--	2	--	6.1	--	--	--	--	--	15.6	2	0.3	--	0.2	--	0.5	--	809.7	3
1999-09-07	--	6	--	6.65	--	--	--	--	--	19.6	0	0.3	--	0.09	--	0.5	--	854.7	4
1999-10-06	--	6	--	6.25	--	--	--	--	--	17.4	0	0.3	--	0.05	--	0.5	--	689.2	3
1999-12-20	--	12	--	6.15	--	--	--	--	--	15	0	0.3	--	0.61	--	0.5	--	725.3	3
2000-01-11	--		--	6.1	--	--	--	--	--	15.6	1.4	0.3	--	1.01	--	0.5	--	852.9	4
2000-06-09	--	4	--	6.8	--	--	--	--	--	16.2	0.2	0.3	--	0.28	--	0.5	--	630.9	3
2000-07-17	--	10	--	6.6	--	--	--	--	--	18.4	0	0.3	--	0.19	--	0.5	--	644	3
2000-08-08	--		--	6	--	--	--	--	--	22	0	0.3	--	0.11	--	0.5	--	644.9	3
2000-09-08	--	1	--	6.6	--	--	--	--	--	22	0	0.3	--	0.05	--	0.5	--	750	6
2000-10-11	--	2	--	6.8	--	--	--	--	--	20	0	0.3	--	0.05	--	0.5	--	704.8	8
2000-11-02	--	0.3	--	6.05	--	--	--	--	--	22	0	0.3	--	0.05	--	0.5	--	718.6	3
2000-12-04	--	5	--	6.15	--	--	--	--	--	20	0	0.3	--	0.34	--	0.5	--	626.6	3
2001-02-05	--		--	5.6	--	--	--	--	--	12.8	3.6	0.3	--	0.94	--	0.5	--	458	3
2001-05-01	--	8	--	6.85	--	--	--	--	--	19.4	0	0.3	--	1.47	--	0.5	--	561.2	3
2001-06-04	--	12	--	6.8	--	--	--	--	--	24	0	0.3	--	0.51	--	0.5	--	546.4	24
2001-07-16	--	1	--	6.6	--	--	--	--	--	30	0	0.3	--	2.08	--	0.5	--	568.9	3
2004-03-16	--	12	--	6.4	--	--	--	--	--	11.4	4.8	0.3	--	0.14	--	0.5	--	535.6	3
2004-06-04	--	5	--	6.4	--	--	--	--	--	12.6	12.6	0.3	--	0.12	--	0.5	--	506.6	6
2004-08-02	--	5	--	6.6	--	--	--	--	--	15	5.6	0.3	--	0.13	--	0.5	--	528.8	4
2004-09-01	--	4	--	6.6	--	--	--	--	--	12.8	0.4	0.3	--	0.1	--	0.5	--	556	3
2004-12-02	--		--	6.7	--	--	--	--	--	14.6	8	0.3	--	0.65	--	0.5	--	462.8	3
2005-04-05	--	15	--	6	--	--	--	--	--	9.8	13.8	0.3	--	2.48	--	0.5	--	596.9	4
2005-05-02	--	12	--	6.7	--	--	--	--	--	12.8	8.2	0.3	--	1.84	--	0.5	--	679.2	3
2005-06-01	--	6	--	6.5	--	--	--	--	--	14.4	5	0.3	--	0.66	--	0.5	--	677.4	3
2005-07-05	--	2	--	6.7	--	--	--	--	--	18.6	-3.8	0.3	--	0.17	--	0.5	--	695.2	3
2005-10-06	--	1	--	7.1	--	--	--	--	--	27.8	-11.6	0.3	--	0.05	--	0.5	--	633.5	4
2006-01-05	--	12	--	6.8	--	--	--	--	--	16.6	0.2	0.3	--	0.12	--	0.5	--	315.1	3
2006-06-20	--		--	7.05	--	--	--	--	--	31.2	-19	0.3	--	0.13	--	0.5	--	528.8	3
2006-09-15	--		--	8.8	--	--	--	--	--	29.6	-14.6	0.3	--	0.05	--	0.5	--	453.1	4
2006-11-02	--		--	7.4	--	--	--	--	--	30.4	-18.2	0.3	--	0.08	--	0.5	--	413.4	3
2007-01-08	--		--	7.2	--	--	--	--	--	27	-7.8	0.3	--	0.4	--	0.5	--	413.7	4
2007-02-02	--		--	7.4	--	--	--	--	--	24.8	-8	0.3	--	0.48	--	0.5	--	464.3	3
2007-04-17	--		--	7.1	--	--	--	--	--	14.6	-2.6	0.3	--	0.32	--	0.5	--	501.4	3
2007-06-08	--	3	--	8	--	--	--	--	--	19.6	-4.6	0.3	--	0.11	--	0.5	--	507.8	3
2007-10-02	--	2	--	7.6	--	--	--	--	--	22.6	-9.2	0.3	--	0.05	--	0.5	--	535.7	3
2007-11-02	--	3	--	7.2	--	--	--	--	--	30	-10.4	0.3	--	0.06	--	0.5	--	602	3
2007-12-13	--	30	--	7.2	--	--	--	--	--	26	-8.2	0.3	--	0.36	--	0.5	--	372.5	12
2008-01-14	--		--	7.55	--	--	--	--	--	26	-10.2	0.3	--	0.59	--	0.5	--	381.3	3
2008-02-08	--	26	--	6.75	--	--	--	--	--	17.8	-5	0.3	--	0.83	--	0.5	--	295	6
2008-03-14	--		--	7.05	--	--	--	--	--	18.8	1	0.3	--	0.4	--	0.5	--	359.4	14

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-04-10	--		--	6.8	--	--	--	--	--	14.4	9.6	0.3	--	0.33	--	0.5	--	381.8	4
2008-05-20	--		--	7	--	--	--	--	--	16	7	0.3	--	0.09	--	0.5	--	386.5	10
2008-07-15	--	3	--	7.6	--	--	--	--	--	18	-6.2	0.3	--	0.1	--	0.5	--	452.8	12
2008-08-04	--	2	--	7.45	--	--	--	--	--	20.2	-10	0.3	--	0.1	--	0.5	--	479.3	5
2008-12-04	--	3	--	7.1	--	--	--	--	--	18.6	0.4	0.3	--	0.05	--	0.5	--	454.3	5
2009-01-22	--	8	--	7.2	--	--	--	--	--	21.8	-1.4	0.3	--	0.41	--	0.5	--	442.7	5
2009-02-09	--	30	--	6.8	--	--	--	--	--	23.2	-7.4	0.3	--	0.63	--	0.5	--	487.4	6
2009-03-05	--	8	--	6.8	--	--	--	--	--	18.6	-4.6	0.3	--	0.58	--	0.5	--	453	5
2009-04-08	--	12	--	6.95	--	--	--	--	--	17.8	-6.8	0.3	--	0.09	--	0.5	--	455	5
2009-05-05	--	40	--	7.05	--	--	--	--	--	21.6	-5.8	0.3	--	0.11	--	0.5	--	433.6	5
2009-06-08	--	3	--	7.65	--	--	--	--	--	20.2	-10	0.3	--	0.05	--	0.5	--	522.8	5
2009-08-13	--	20	--	7.6	--	--	--	--	--	20.4	-12.8	0.3	--	0.06	--	0.5	--	465.7	6
2009-11-02	--	2	--	7.5	--	--	--	--	--	28	-10.4	0.3	--	0.05	--	0.5	--	408.3	5
2010-03-29	--	15	--	6.8	--	--	--	--	--	19.2	-3.4	0.3	--	0.15	--	0.5	--	339.7	8
2010-04-07	--	6	--	7	--	--	--	--	--	11.4	-3.2	0.3	--	0.13	--	0.5	--	362.9	5
2010-05-03	--	13.8	--	6.6	--	--	--	--	--	17.4	7.8	0.3	--	0.08	--	0.5	--	374.5	12
2010-07-13	--	5	--	7.1	--	--	--	--	--	22	-4.6	0.3	--	0.24	--	0.5	--	460.7	5
2010-08-09	--	2	--	7.1	--	--	--	--	--	22.6	-2.2	0.3	--	0.07	--	0.5	--	446.9	5
2011-04-12	--		--	6.8	--	--	--	--	--	16.2	-2.6	0.3	--	0.76	--	0.5	--	465.6	5
2011-05-09	--	6	--	6.55	--	--	--	--	--	14.4	-6.6	0.3	--	0.43	--	0.5	--	455.1	5
2011-06-07	--	3	--	6.8	--	--	--	--	--	17.6	-3.4	0.3	--	0.12	--	0.5	--	520.8	5
2011-08-16	--	2	--	7.1	--	--	--	--	--	27	-13.4	0.3	--	0.09	--	0.5	--	624.8	5
2012-03-14	--	5	--	7	--	--	--	--	--	17.6	-8	0.3	--	0.64	--	0.5	--	429.1	5
Minimum:			--	5.5	--	--	--	--	--	9.8	-19	0.3	--	0.05	--	0.5	--	295	3
Maximum:		40	--	9.1	--	--	--	--	--	31.2	13.8	0.97	--	3.71	--	1.3	--	1045	24
Average:		8.4	--	6.5	--	--	--	--	--	20.1	-1.38	0.31	--	0.55	--	0.52	--	610.2	4.6
Range:		39.8	--	3.6	--	--	--	--	--	21.4	32.8	0.67	--	3.66	--	0.8	--	750	21
Median:		6	--	6.7	--	--	--	--	--	19.7	0	0.3	--	0.32	--	0.5	--	589.8	3
Loading (lb/day):									--	1.98	-0.16	0.03	--	0.08	--	0.05	--		

Sample Point Description: Lewisville Rec (32803712) - TREATMENT BASIN - FINAL DISCHARGE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

ultmans Run AMD Assessment Water Quality Report - Mc - SW1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-06-23	--	0	--	7	--	--	--	--	--	36	0	0.33	--	0.31	--	0.5	--	56	3
1995-06-21	--	0	--	7	--	--	--	--	--	42	0	--	--	--	--	--	--	--	20
1996-02-21	--	0	--	6.3	--	--	--	--	--	18.4	0	--	--	--	--	--	--	--	3
1997-04-17	--		--	6.5	--	--	--	--	--	42	0	0.31	--	0.36	--	0.5	--	149.6	3
1997-05-15	--		--	6.6	--	--	--	--	--	42	0	0.3	--	0.09	--	0.5	--	80.5	4
1998-10-19	--		--	6.8	--	--	--	--	--	144	0	1.49	--	3.11	--	0.5	--	301.1	56
1999-01-20	--	75	7	7.1	--	--	7	206	--	18	0	0.04	--	0.03	--	--	--	35	3
1999-05-05	--	202	7.1	7.6	--	--	16	386	--	44	0	0.17	--	0.1	--	--	--	140	0.3
1999-07-19	--	3	6.7	6.7	--	--	19	430	--	66	0	0.18	--	0.56	--	--	--	118	0.3
1999-12-29	--	52	6.6	7.2	--	--	5	411	--	38	0	0.09	--	0.07	--	--	--	144	0.7
2000-01-25	--	75	6.7	7.2	--	--	2	433	--	40	0	0.13	--	0.08	--	--	--	141	2
2000-04-06	--	250+	--	6.9	--	--	9	168	--	22	0	0.69	--	0.05	--	--	--	44	12.7
2000-08-01	--	18	--	'7.2	--	--	17	323	--	48	0	0.82	--	0.25	--	--	--	112	24.7
2000-09-27	--		--	6.8	--	--	--	--	--	62	0	3.43	--	0.53	--	2.4	--	153.2	76
2000-10-13	--		--	6.9	--	--	--	--	--	56	0	0.3	--	0.15	--	0.5	--	97.5	3
2000-11-08	--	50	6.7	7.5	--	--	12	448	--	56	0	0.32	--	0.16	--	--	--	138	3.7
Minimum:			6.6	'7.2	--	--	2	168	--	18	--	0.04	--	0.03	--	0.5	--	35	0.3
Maximum:		50	7.1	7.6	--	--	19	448	--	144	--	3.43	--	3.11	--	2.4	--	301.1	76
Average:		47.5	--	--	--	--	10.9	351	--	48.4	--	0.61	--	0.42	--	0.82	--	122.1	13.5
Range:		202	0.5	1.3	--	--	17	280	--	126	--	3.39	--	3.08	--	1.9	--	266.1	75.7
Median:		34	6.7	6.9	--	--	10.5	399	--	42	--	0.3	--	0.15	--	0.5	--	128	3
Loading (lb/day):									--	32.7	--	0.14	--	0.08	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Neal Run downstream of Church St.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Mc - SW5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-06-23	--	0	--	7.3	--	--	--	--	--	46	0	--	--	--	--	--	--	--	6
1995-05-17	--	0	--	6.6	--	--	--	--	--	24	0	--	--	--	--	--	--	--	8
1996-02-21	--	0	--	6.4	--	--	--	--	--	18.2	0	--	--	--	--	--	--	--	4
1997-04-17	--		--	6.5	--	--	--	--	--	36	0	0.42	--	0.05	--	0.5	--	63.4	3
1997-05-15	--		--	6.6	--	--	--	--	--	34	0	0.36	--	0.05	--	0.5	--	31.4	3
1998-10-19	--		--	6.6	--	--	--	--	--	62	0	0.3	--	0.26	--	0.5	--	34.1	34
1999-01-20	--	22	7.2	7	--	--	6	181	--	16	0	0.04	--	0.03	--	--	--	21	2.3
1999-05-05	--	11	7	7.4	--	--	18	141	--	22	0	0.25	--	0.03	--	--	--	25	0.3
1999-05-13	--		--	6.6	--	--	--	--	--	32	0	0.59	--	0.06	--	0.5	--	20.3	4
1999-07-19	--	0	7	7.1	--	--	22	230	--	58	0	0.66	--	0.52	--	--	--	27	6
1999-12-29	--	12	7	7.1	--	--	6	160	--	24	0	0.09	--	0.03	--	--	--	24	0.3
2000-01-25	--	12	6.6	7.1	--	--	3	198	--	28	0	0.03	--	0.03	--	--	--	24	0.3
2000-04-06	--	125	--	6.9	--	--	10	113	--	18	0	0.69	--	0.05	--	--	--	24	10.3
2000-08-01	--	8	--	7.5	--	--	16	239	--	50	0	0.79	--	0.05	--	--	--	33	13
2000-09-27	--		--	7.2	--	--	--	--	--	54	0	0.3	--	0.05	--	0.5	--	26.7	3
2000-10-13	--		--	7	--	--	--	--	--	54	0	0.3	--	0.05	--	0.5	--	27.3	16
2000-11-08	--	40	6.6	7.6	--	--	13	233	--	46	0	0.05	--	0.04	--	--	--	26	0.7
Minimum:			6.6	6.4	--	--	3	113	--	16	--	0.03	--	0.03	--	0.5	--	20.3	0.3
Maximum:		125	7.2	7.6	--	--	22	239	--	62	--	0.79	--	0.52	--	0.5	--	63.4	34
Average:		20.9	--	6.83	--	--	11.8	187	--	36.6	--	0.35	--	0.09	--	0.5	--	29.1	6.7
Range:		125	0.6	1.2	--	--	19	126	--	46	--	0.76	--	0.49	--	0	--	43.1	33.7
Median:		11	7	7	--	--	11.5	190	--	34	--	0.3	--	0.05	--	0.5	--	26.4	4
Loading (lb/day):									--	9.79	--	0.17	--	0.02	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Neal Run headwaters.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Mc - SW14

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-06-23	--	0	--	7	--	--	--	--	--	20	0	--	--	--	--	--	--	--	28
1995-05-17	--	0	--	6.6	--	--	--	--	--	28	0	--	--	--	--	--	--	--	130
1996-02-21	--	0	--	6.4	--	--	--	--	--	17.4	0	--	--	--	--	--	--	--	11
1997-05-15	--		--	6.5	--	--	--	--	--	28	0	0.38	--	0.05	--	0.5	--	22.1	8
1998-10-19	--		--	6.6	--	--	--	--	--	44	0	0.7	--	0.07	--	0.5	--	78.2	42
1999-05-13	--		--	6.5	--	--	--	--	--	42	0	0.86	--	0.08	--	0.65	--	104	4
Minimum:			--	6.4	--	--	--	--	--	17.4	--	0.38	--	0.05	--	0.5	--	22.1	4
Maximum:		0	--	7	--	--	--	--	--	44	--	0.86	--	0.08	--	0.65	--	104	130
Average:		0	--	6.57	--	--	--	--	--	29.9	--	0.65	--	0.07	--	0.55	--	68.1	37.2
Range:		0	--	0.6	--	--	--	--	--	26.6	--	0.48	--	0.03	--	0.15	--	81.9	126
Median:		0	--	6.55	--	--	--	--	--	28	--	0.7	--	0.07	--	0.5	--	78.2	19.5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Unnamed trib to Neal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Mc - SW25

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-06-21	--	0	--	7.6	--	--	--	--	--	130	0	--	--	--	--	--	--	--	14
1996-02-21	--	0	--	6.6	--	--	--	--	--	28	0	--	--	--	--	--	--	--	7
1997-04-17	--		--	6.6	--	--	--	--	--	50	0	0.66	--	0.05	--	0.62	--	27.6	14
1997-05-15	--		--	6.8	--	--	--	--	--	72	0	0.3	--	0.05	--	0.5	--	36.5	12
1999-05-13	--		--	6.6	--	--	--	--	--	68	0	0.63	--	0.05	--	0.51	--	35.4	8
Minimum:			--	6.6	--	--	--	--	--	28	--	0.3	--	0.05	--	0.5	--	27.6	7
Maximum:		0	--	7.6	--	--	--	--	--	130	--	0.66	--	0.05	--	0.62	--	36.5	14
Average:		0	--	6.73	--	--	--	--	--	69.6	--	0.53	--	0.05	--	0.54	--	33.2	11
Range:		0	--	1	--	--	--	--	--	102	--	0.36	--	0	--	0.12	--	8.9	7
Median:		0	--	6.6	--	--	--	--	--	68	--	0.63	--	0.05	--	0.51	--	35.4	12
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Willow Run headwaters.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Mc - SW26

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-06-21	--	0	--	7.5	--	--	--	--	--	116	0	--	--	--	--	--	--	--	14
1996-02-21	--	0	--	6.6	--	--	--	--	--	34	0	--	--	--	--	--	--	--	10
1997-04-17	--		--	5.9	--	--	--	--	--	15.6	19.4	6.84	--	2.12	--	3.85	--	219.5	4
1997-05-12	--		--	6.9	--	--	--	--	--	106	0	0.47	--	0.64	--	0.5	--	54	3
1997-05-15	--		--	7.2	--	--	--	--	--	100	0	0.79	--	0.19	--	0.57	--	104	3
1998-08-19	--		--	7.1	--	--	--	--	--	188	0	11.5	--	3.91	--	0.5	--	44.2	32
1999-05-13	--		--	7.1	--	--	--	--	--	100	0	0.97	--	0.36	--	0.64	--	119	4
Minimum:			--	5.9	--	--	--	--	--	15.6	0	0.47	--	0.19	--	0.5	--	44.2	3
Maximum:		0	--	7.5	--	--	--	--	--	188	19.4	11.5	--	3.91	--	3.85	--	219.5	32
Average:		0	--	6.57	--	--	--	--	--	94.23	2.77	4.11	--	1.44	--	1.21	--	108.1	10
Range:		0	--	1.6	--	--	--	--	--	172.4	19.4	11.03	--	3.72	--	3.35	--	175.3	29
Median:		0	--	7.1	--	--	--	--	--	100	0	0.97	--	0.64	--	0.57	--	104	4
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Willow Run downstream of RD2-D1

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Mc - L8-MS2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-02-24	--	N/M	4	7.5	--	--	10	1170	--	260	0	4.05	--	0.47	--	--	--	448	7.3
1994-06-25	--	250	6.2	7.4	--	--	13	1110	--	236	0	4.32	--	0.63	--	--	--	489	4.7
1994-08-02	--	212	5.6	7.3	--	--	16	1080	--	234	0	3.51	--	0.66	--	--	--	468	7.3
1994-10-26	--	200	5.5	6.9	--	--	10	1100	--	270	0	4.34	--	0.69	--	--	--	390	4.3
1995-03-21	--	325	7.4	7.2	--	--	6	1220	--	244	0	5.15	--	0.71	--	--	--	360	1.7
1995-05-17	--	0 --	--	6.8 7.3	--	--	--	1180	--	246 254	0 0	5.3 4.65	--	0.74 0.61	--	0.5 --	--	372 410	3 5.7
1996-02-21	--	0	--	6.7	--	--	--	--	--	258	0	4.52	--	0.64	--	0.5	--	379	3
1997-05-15	--		--	6.8	--	--	--	--	--	254	0	3.86	--	0.57	--	0.5	--	339	8
1998-10-19	--		--	6.8	--	--	--	--	--	274	0	4.03	--	0.61	--	0.5	--	290.7	40
Minimum:			4	6.7	--	--	6	1080	--	234	--	3.51	--	0.47	--	0.5	--	290.7	1.7
Maximum:		N/M	7.4	7.5	--	--	16	1220	--	274	--	5.3	--	0.74	--	0.5	--	489	40
Average:		164.5	--	6.98	--	--	11	1143	--	253	--	4.37	--	0.63	--	0.5	--	394.6	8.5
Range:		325	3.4	0.8	--	--	10	140	--	40	--	1.79	--	0.27	--	0	--	198.3	38.3
Median:		206	5.6	7.05	--	--	10	1140	--	254	--	4.33	--	0.64	--	0.5	--	384.5	5.2
Loading (lb/day):									--	725.72	--	13.1	--	2	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Kolb shaft, Kent #1 mine discharge.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - Mc2 - MP35

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-01-06	--	0	--	6.8	--	--	--	--	--	42	0	0.3	--	0.15	--	0.5	--	62	3
1997-12-16	--		--	6.6	--	--	--	--	--	38	0	0.3	--	0.2	--	0.5	--	140.9	3
2000-02-22	--		--	6.6	--	--	--	--	--	30	0	0.44	--	0.09	--	0.5	--	61.1	3
2000-08-01	--	--	--	7.2	--	--	17	323	--	48	0	0.82	--	0.25	--	--	--	112	24.7
2000-11-08	--	--	6.7	7.5	--	--	12	448	--	56	0	0.32	--	0.16	--	--	--	138	3.7
2001-03-30	--	--	--	7.3	--	--	--	345	--	32	0	0.28	--	0.08	--	--	--	89	2.3
2001-06-25	--	--	6.4	7.2	--	--	16	281	--	44	0	0.57	--	0.13	--	--	--	74	6
2004-04-27	--		--	7.2	--	--	--	--	--	29.2	-2.2	0.42	--	0.11	--	0.5	--	89	10
2005-04-13	--		--	7.2	--	--	--	--	--	47.4	-26.8	0.3	--	0.06	--	0.5	--	118.4	6
2006-10-04	--		--	7.4	--	--	--	--	--	61.4	-45.8	0.36	--	0.26	--	0.5	--	137.1	3
2007-01-22	--		--	7.1	--	--	--	--	--	28.2	-18	1.74	--	0.32	--	0.75	--	78.4	3
2008-04-09	--		--	7.3	--	--	--	--	--	36.4	-22.8	0.32	--	0.1	--	0.5	--	60	3
2009-02-23	--		--	7.2	--	--	--	--	--	31.8	-21.4	0.3	--	0.07	--	0.5	--	67.4	5
2010-03-16	--		--	7.2	--	--	--	--	--	23.4	-11.6	0.6	--	0.05	--	0.5	--	91.2	16
2011-04-06	--		--	7.1	--	--	--	--	--	22.2	-12.6	0.54	--	0.05	--	0.52	--	25.7	14
2013-03-19	--		--	7.3	--	--	--	--	--	33.4	-29.2	0.48	--	0.06	--	0.5	--	45.6	5
Minimum:			6.4	6.6	--	--	12	281	--	22.2	-45.8	0.28	--	0.05	--	0.5	--	25.7	2.3
Maximum:		0	6.7	7.5	--	--	17	448	--	61.4	0	1.74	--	0.32	--	0.75	--	140.9	24.7
Average:		0	--	7.05	--	--	15	349	--	37.71	-11.9	0.5	--	0.13	--	0.52	--	86.9	6.9
Range:		0	0.3	0.9	--	--	5	167	--	39.2	45.8	1.46	--	0.27	--	0.25	--	115.2	22.4
Median:		0	6.55	7.2	--	--	16	334	--	34.9	-6.9	0.39	--	0.11	--	0.5	--	83.7	4.4
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mcintyre No 2 Mine (32940110) - NEAL RUN, DOWN

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - Mc2 - SW5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-01-06	--	0	--	6.7	--	--	--	--	--	36	0	0.3	--	0.05	--	0.5	--	32	3
1998-10-19	--		--	6.5	--	--	--	--	--	40	0	0.3	--	0.11	--	0.5	--	68.9	34
2000-02-22	--		--	6.6	--	--	--	--	--	28	0	0.3	--	0.05	--	0.5	--	34.9	4
2000-08-01	--	--	--	7.5	--	--	16	239	--	50	0	0.79	--	0.05	--	--	--	33	13
2000-11-08	--	--	6.6	7.6	--	--	13	233	--	46	0	0.05	--	0.04	--	--	--	26	0.7
2001-02-16	--		--	6.7	--	--	--	--	--	28	0	0.49	--	0.05	--	0.5	--	38.9	12
2001-03-30	--	--	--	7.2	--	--	--	260	--	30	0	0.44	--	0.07	--	--	--	53	1.3
2001-06-25	--	--	7.7	7.1	--	--	16	185	--	34	0	0.77	--	0.07	--	--	--	21	18.3
2002-02-20	--		--	6.6	--	--	--	--	--	28	0	0.3	--	0.05	--	0.5	--	48.3	3
2004-03-23	--		--	7.1	--	--	--	--	--	30.8	1.8	0.3	--	0.05	--	0.5	--	41.2	3
2004-04-27	--		--	7.3	--	--	--	--	--	26.8	0.4	0.45	--	0.05	--	0.5	--	61.5	18
2005-04-13	--		--	7	--	--	--	--	--	33.4	-13.6	0.3	--	0.05	--	0.5	--	73	8
2006-10-04	--		--	7.6	--	--	--	--	--	61.8	-39.4	0.3	--	0.05	--	0.5	--	94.3	3
2007-01-22	--		--	7.2	--	--	--	--	--	26.6	-17.2	0.3	--	0.05	--	0.5	--	42.8	3
2008-04-09	--		--	7.7	--	--	--	--	--	32.2	-17	0.3	--	0.05	--	0.5	--	20.4	3
2009-02-23	--		--	7.4	--	--	--	--	--	28.4	-16	0.3	--	0.05	--	0.5	--	21	5
2010-03-16	--		--	7.2	--	--	--	--	--	21.6	-10.6	0.55	--	0.06	--	0.54	--	46.9	14
2011-04-06	--		--	6.9	--	--	--	--	--	20.8	-10.4	0.53	--	0.05	--	0.5	--	23.8	16
2013-03-19	--		--	7.4	--	--	--	--	--	29.4	-23.4	0.37	--	0.05	--	0.5	--	25.8	8
Minimum:			6.6	6.5	--	--	13	185	--	20.8	-39.4	0.05	--	0.04	--	0.5	--	20.4	0.7
Maximum:		0	7.7	7.7	--	--	16	260	--	61.8	1.8	0.79	--	0.11	--	0.54	--	94.3	34
Average:		0	--	6.97	--	--	15	229	--	33.25	-7.65	0.39	--	0.06	--	0.5	--	42.5	9
Range:		0	1.1	1.2	--	--	3	75	--	41	41.2	0.74	--	0.07	--	0.04	--	73.9	33.3
Median:		0	7.15	7.2	--	--	16	236	--	30	0	0.3	--	0.05	--	0.5	--	38.9	5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mcintyre No 2 Mine (32940110) - NEAL RUN, UP

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - NEAL02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-02-26	--	530	4.9	4.6	--	--	5	583	--	6	56	9.15	--	1.06	--	N/A	--	306	24
2001-03-23	--	480	5	4.5	--	--	5	542	--	6	74	16.09	--	1.28	--	14.1	--	249	36.7
2001-04-19	--	1460	5	4.7	--	--	7	368	--	6	26	7.92	--	0.57	--	5.98	--	147	17.3
2001-05-24	--	270	4.7	3.8	--	--	13	1300	--	0	460	69.12	--	3.17	--	56.78	--	841	43
2001-06-30	--	120	4.5	3.2	--	--	15	1620	--	0	560	97.72	--	4.52	--	76.21	--	899	168.7
2001-07-25	--	120	4.7	3.5	--	--	19	1590	--	0	468	48.73	--	4.52	--	57.62	--	937	12.3
2003-10-07	--		--	4.4	--	--	--	--	--	10	229.6	35.9	--	2.17	--	33.6	--	428	44
2004-04-27	--		--	4.5	--	--	--	--	--	8.8	164	24	--	1.09	--	17.9	--	289.4	24
2005-02-07	--		--	4.2	--	--	--	--	--	10.4	522.2	74.1	--	2.04	--	53.1	--	755.8	36
2005-04-21	--		--	4.4	--	--	--	--	--	11	233.6	41.7	--	1.77	--	28.8	--	246.4	20
2007-02-02	--		--	4.5	--	--	--	--	--	9.6	217	20.4	--	0.88	--	15.8	--	319.9	22
2009-11-02	--		--	4.5	--	--	--	--	--	10	98.6	13.25	--	1.4	--	18.3	--	266.6	34
2010-04-16	--		--	4.3	--	--	--	--	--	0	186.8	33.46	--	1.09	--	25.25	--	391.8	36
Minimum:			4.5	3.2	--	--	5	368	--	0	26	7.92	--	0.57	--	5.98	--	147	12.3
Maximum:		1460	5	4.7	--	--	19	1620	--	11	560	97.72	--	4.52	--	N/A	--	937	168.7
Average:		496.7	4.76	3.95	--	--	10.7	1001	--	5.98	253.52	37.81	--	1.97	--	33.62	--	467.5	39.8
Range:		1340	0.5	1.5	--	--	14	1252	--	11	534	89.8	--	3.95	--	70.23	--	790	156.4
Median:		375	4.8	4.4	--	--	10	942	--	6	217	33.46	--	1.4	--	27.03	--	319.9	34
Loading (lb/day):									--	29.64	701.44	120.74	--	7.9	--	112.53	--		

Sample Point Description: Lentz Mine (32020102) - Neal Run downstream of RUNT06?

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - NEAL03

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-02-26	--	900	5.8	5	--	--	4	499	--	6	22	7.24	--	1	--	6.43	--	223	25.7
2001-03-23	--	1430	5	4.7	--	--	3	473	--	6	30	8.33	--	0.88	--	7.51	--	186	40
2001-04-19	--	1950	6	5.9	--	--	6	320	--	8	6	5.21	--	0.44	--	4.61	--	116	18
2001-05-24	--	340	4.7	4.1	--	--	13	1020	--	4	266	38.36	--	2.57	--	38.19	--	599	29
2001-06-30	--	200	4.5	3.4	--	--	15	1160	--	0	250	24.99	--	2.53	--	31.42	--	566	55.7
2001-07-25	--	150	4	3.5	--	--	20	1580	--	0	422	13.85	--	5.18	--	57.89	--	919	5
2003-07-14	--		--	4.6	--	--	--	--	--	8	107.6	16.2	--	1.27	--	14.3	--	256.7	34
2004-04-08	--		--	4.6	--	--	--	--	--	7.6	84.2	14.1	--	0.71	--	10.4	--	186.6	14
2004-04-27	--		--	4.6	--	--	--	--	--	8	104	14.6	--	0.78	--	11	--	221.2	34
2005-02-07	--		--	4.4	--	--	--	--	--	12.4	360.6	53	--	1.61	--	38.7	--	532.3	32
2005-04-21	--		--	4.6	--	--	--	--	--	9.2	122	22.1	--	1.16	--	16.1	--	258.6	30
2007-02-02	--		--	4.6	--	--	--	--	--	8.6	164.4	13	--	0.65	--	9.52	--	216.2	26
2009-11-02	--		--	4.5	--	--	--	--	--	9	95.6	10.78	--	1.45	--	18.07	--	284.4	20
2010-04-16	--		--	4.3	--	--	--	--	--	0	176.4	30.54	--	1.09	--	24.4	--	399.3	30
Minimum:			4	3.4	--	--	3	320	--	0	6	5.21	--	0.44	--	4.61	--	116	5
Maximum:		1950	6	5.9	--	--	20	1580	--	12.4	422	53	--	5.18	--	57.89	--	919	55.7
Average:		828.3	4.56	4.12	--	--	10.2	842	--	6.2	157.91	19.45	--	1.52	--	20.61	--	354.6	28.1
Range:		1800	2	2.5	--	--	17	1260	--	12.4	416	47.79	--	4.74	--	53.28	--	803	50.7
Median:		620	4.85	4.6	--	--	9.5	760	--	7.8	114.8	14.35	--	1.12	--	15.2	--	257.7	29.5
Loading (lb/day):									--	61.88	556.28	97.41	--	10.35	--	106.94	--		

Sample Point Description: Lentz Mine (32020102) - Mouth of Neal Run

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - REE01

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	4	3.55	--	--	19	1783	--	0	105.5	4.15	--	8.28	--	--	--	990.5	14
2001-08-20	--	--	4	4.05	--	--	20	1422	--	0	76.8	2.15	--	4.8	--	--	--	637.1	14
Minimum:		--	4	3.55	--	--	19	1422	--	--	76.8	2.15	--	4.8	--	--	--	637.1	14
Maximum:		--	4	4.05	--	--	20	1783	--	--	105.5	4.15	--	8.28	--	--	--	990.5	14
Average:		--	4	3.73	--	--	19.5	1603	--	--	91.15	3.15	--	6.54	--	--	--	813.8	14
Range:		--	0	0.5	--	--	1	361	--	--	28.7	2	--	3.48	--	--	--	353.4	0
Median:		--	4	3.8	--	--	19.5	1603	--	--	91.15	3.15	--	6.54	--	--	--	813.8	14
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mouth of Reeds Run. Same as Johnston Mine MP12.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - REE03

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-02-26	--	950	6.8	6.8	--	--	3	406	--	16	0	1.17	--	1.32	--	1.79	--	177	8.3
2001-03-23	--	680	6.8	6.8	--	--	2	385	--	18	0	2.23	--	1.54	--	2.22	--	140	15.7
2001-04-19	--	1070	6.8	6.7	--	--	6	275	--	16	0	1.36	--	0.84	--	2.33	--	96	11.3
2001-05-24	--	420	6.9	7.2	--	--	13	491	--	24	0	0.66	--	1.8	--	1.02	--	222	2
2001-06-30	--	150	6.8	6.9	--	--	15	665	--	24	0	1.12	--	1.89	--	0.24	--	282	0.7
2001-07-25	--	95	6.7	6.6	--	--	20	847	--	34	0	2.94	--	3.43	--	0.1	--	411	4
2003-07-14	--		--	7.2	--	--	--	--	--	29.2	0	15.6	--	1.22	--	5.76	--	116.1	6
2004-04-08	--		--	6.9	--	--	--	--	--	20.4	24.4	1.97	--	1.18	--	1.66	--	130.3	10
2004-04-27	--		--	7	--	--	--	--	--	26.2	34	1.64	--	1.25	--	1.03	--	148.1	20
2004-06-30	--		--	6.9	--	--	--	--	--	38.8	6	0.59	--	2.33	--	0.53	--	237.1	10
2004-07-22	--		--	7.2	--	--	--	--	--	41.4	-19.4	1.37	--	8.02	--	0.5	--	320	3
2004-09-14	--		--	7.2	--	--	--	--	--	39.4	8.4	0.3	--	1.52	--	0.52	--	166.2	3
2004-10-08	--		--	6.8	--	--	--	--	--	45.4	-7.2	0.3	--	3.04	--	0.5	--	226.2	3
2004-11-03	--		--	7.2	--	--	--	--	--	34.8	9.4	0.3	--	2.4	--	0.5	--	186.4	3
2004-12-01	--		--	7.1	--	--	--	--	--	27	29.4	4.14	--	0.64	--	1.84	--	55.4	44
2005-01-10	--		--	6.8	--	--	--	--	--	27.4	9.2	1.13	--	0.8	--	1.07	--	88.2	3
2005-02-07	--		--	6.9	--	--	--	--	--	32.8	14.2	3.63	--	1.35	--	1.25	--	155.1	28
2005-03-07	--		--	6.9	--	--	--	--	--	27.6	19.2	3.22	--	0.94	--	1.88	--	137.7	12
2005-04-11	--		--	6.8	--	--	--	--	--	29.2	13.6	1.96	--	1.46	--	1.48	--	163.2	8
2005-05-10	--		--	6.8	--	--	--	--	--	30	11.2	0.91	--	2.71	--	0.94	--	252.9	3
2005-06-09	--		--	6.9	--	--	--	--	--	30.4	18.4	0.3	--	1.73	--	0.5	--	182.6	3
2006-10-10	--		--	6.9	--	--	--	--	--	36.2	-20	0.3	--	1.32	--	0.5	--	248.3	3
2007-02-02	--		--	7	--	--	--	--	--	32.6	19.8	4.22	--	2.05	--	1.38	--	174.3	3
2009-11-02	--		--	7.2	--	--	--	--	--	27	-14	0.3	--	1.05	--	0.5	--	138.7	5
2010-04-16	--		--	7.5	--	--	--	--	--	44.8	-21.8	0.39	--	1.47	--	0.5	--	219.1	12
Minimum:			6.7	6.6	--	--	2	275	--	16	-21.8	0.3	--	0.64	--	0.1	--	55.4	0.7
Maximum:		1070	6.9	7.5	--	--	20	847	--	45.4	34	15.6	--	8.02	--	5.76	--	411	44
Average:		560.8	6.8	6.92	--	--	9.8	512	--	30.1	5.39	2.08	--	1.89	--	1.22	--	187	9
Range:		975	0.2	0.9	--	--	18	572	--	29.4	55.8	15.3	--	7.38	--	5.66	--	355.6	43.3
Median:		550	6.8	6.9	--	--	9.5	449	--	29.2	6	1.17	--	1.47	--	1.02	--	174.3	5
Loading (lb/day):									--	122.94	0	9.62	--	9.13	--	12.35	--		

Sample Point Description: Lentz Mine (32020102) - Reeds Run upstream of Coal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - RD0-D3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	12	--	5.9	--	--	7.8	826	--	85.43	1	16.42	--	8.7	--	0.1	--	337.5	--
2002-02-08	--	15	--	5.41	--	--	9.6	813	--	93.81	1	9.94	--	7.76	--	0.1	--	314.5	--
2002-03-08	--	10	--	5.9	--	--	9	848	--	95.81	1	11.35	--	8.74	--	0.1	--	325.2	--
2002-04-06	--	17.1	--	5.41	--	--	10.9	993	--	87.82	1	10.72	--	8.19	--	0.1	--	326	--
2002-05-03	--	15	--	5.67	--	--	13.2	390	--	87.03	1	13.03	--	9.85	--	0.1	--	389.8	--
2002-05-31	--	17	--	6	--	--	16.8	890	--	79.04	1	12.71	--	9.47	--	0.1	--	371.7	--
2002-07-09	--	6.5	--	5.58	--	--	18	943	--	75.85	1	17.32	--	11.57	--	0.1	--	452.3	--
2002-08-02	--	4.5	--	5.73	--	--	21.2	755	--	73.05	1	16.95	--	12.6	--	0.1	--	491.9	--
2002-09-05	--	3.3	--	5.56	--	--	21.1	716	--	81.44	1	16.44	--	12.7	--	0.49	--	498.9	--
2002-10-04	--	3	--	6.19	--	--	19.7	698	--	84.63	1	16.59	--	11.98	--	0.1	--	478.7	--
2002-11-08	--	10	--	5.8	--	--	15.1	757	--	74.25	1	12.22	--	9.27	--	0.1	--	391.4	--
2002-12-06	--	8.5	--	6.66	--	--	10.7	777	--	98	1	12.08	--	8.82	--	0.1	--	358.9	--
Minimum:		3	--	5.41	--	--	7.8	390	--	73.05	1	9.94	--	7.76	--	0.1	--	314.5	--
Maximum:		17.1	--	6.66	--	--	21.2	993	--	98	1	17.32	--	12.7	--	0.49	--	498.9	--
Average:		10.2	--	5.71	--	--	14.4	784	--	84.68	1	13.81	--	9.97	--	0.13	--	394.7	--
Range:		14.1	--	1.25	--	--	13.4	603	--	24.95	0	7.38	--	4.94	--	0.39	--	184.4	--
Median:		10	--	5.77	--	--	14.2	795	--	85.03	1	12.87	--	9.37	--	0.1	--	380.8	--
Loading (lb/day):									--	10.46	0.12	1.57	--	1.13	--	0.01	--		

Sample Point Description: Discharge near Challenger Speedway.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - RD2-D1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2000-04-05	--	--	--	5.1	--	--	--	--	--	4.4	3.6	0.23	--	4.23	--	0.77	--	302	2
2000-07-13	--	--	--	6.3	--	--	--	--	--	32	16.2	0.91	--	13.2	--	7.29	--	629	58
2000-10-11	--	--	--	5.6	--	--	--	--	--	24	0	0.03	--	5.32	--	0.76	--	399	2
2001-02-12	--	--	--	5.1	--	--	--	--	--	4.4	14.4	0.02	--	13.7	--	2.9	--	679	2
2001-04-30	--	--	--	4.7	--	--	--	--	--	2.6	116	0.06	--	36	--	2.78	--	1490	4
2001-07-17	--	--	--	5.5	--	--	--	--	--	22	0	0.09	--	15.3	--	1.43	--	726	2
2002-01-04	--	8	--	5.1	--	--	13.3	1335	--	10.31	3.9	0.07	--	8.82	--	2.65	--	568	--
2002-02-08	--	12.7	--	4.59	--	--	16	1076	--	7.19	13.46	0.09	--	9.27	--	2.57	--	642.1	--
2002-03-08	--	15	--	6	--	--	21.2	983	--	7.19	3.93	0.03	--	8.55	--	2.42	--	605.5	--
2002-04-06	--	5.2	--	4.8	--	--	14.9	2540	--	2.79	82.29	0.03	--	27.17	--	5.06	--	1309	--
2002-05-03	--	8.1	--	4.68	--	--	17.2	1793	--	2.79	71.81	0.05	--	20.75	--	2.29	--	1048	--
2002-05-31	--	6.9	--	5.65	--	--	25	1965	--	--	69.13	0.03	--	28.4	--	1.31	--	1181	--
2002-07-09	--	23.3	--	4.24	--	--	23.5	2070	--	2	153.6	0.05	--	35.47	--	9.53	--	1438	--
2002-08-02	--	3	--	4.6	--	--	26.5	1287	--	3.99	80.69	0.03	--	25.81	--	5.9	--	1052	--
2002-09-05	--	4	--	5.77	--	--	21.9	1057	--	7.98	85.96	0.06	--	25.16	--	5.21	--	1050	--
2002-10-04	--	4	--	4.77	--	--	22.8	759	--	6.99	27.39	0.03	--	17.82	--	4.35	--	836.8	--
2002-11-08	--	8.1	--	4.16	--	--	18.6	1436	--	2	55.44	0.07	--	14.14	--	5.9	--	917.9	--
2002-12-06	--	14.5	--	4.3	--	--	14	1617	--	3.19	81.35	0.07	--	17.61	--	6.67	--	798.1	--
Minimum:		3	--	4.16	--	--	13.3	759	--	2	0	0.02	--	4.23	--	0.76	--	302	2
Maximum:		23.3	--	6.3	--	--	26.5	2540	--	32	153.6	0.91	--	36	--	9.53	--	1490	58
Average:		9.4	--	4.73	--	--	19.6	1493	--	8.58	48.84	0.11	--	18.15	--	3.88	--	870.6	11.7
Range:		20.3	--	2.14	--	--	13.2	1781	--	30	153.6	0.89	--	31.77	--	8.77	--	1188	56
Median:		8.1	--	4.95	--	--	19.9	1386	--	4.4	41.42	0.06	--	16.46	--	2.84	--	817.5	2
Loading (lb/day):									--	0.55	7.65	0.01	--	2.27	--	0.57	--		

Sample Point Description: Discharge flowing into "Willow Run"

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - RD2-D1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-05-24	--	0	--	6.9	--	--	--	--	--	114	0	--	--	--	--	--	--	--	3
1995-06-21	--	0	--	7	--	--	--	--	--	122	0	--	--	--	--	--	--	--	40
1996-02-21	--	0	--	6.5	--	--	--	--	--	30	0	--	--	--	--	--	--	--	11
1997-05-15	--		--	7.1	--	--	--	--	--	102	0	0.85	--	0.47	--	0.5	--	57.6	10
1998-10-19	--		--	6.9	--	--	--	--	--	170	0	10.4	--	2.32	--	0.5	--	68.7	72
Minimum:			--	6.5	--	--	--	--	--	30	--	0.85	--	0.47	--	0.5	--	57.6	3
Maximum:		0	--	7.1	--	--	--	--	--	170	--	10.4	--	2.32	--	0.5	--	68.7	72
Average:		0	--	6.83	--	--	--	--	--	107.6	--	5.62	--	1.39	--	0.5	--	63.2	27.2
Range:		0	--	0.6	--	--	--	--	--	140	--	9.55	--	1.85	--	0	--	11.1	69
Median:		0	--	6.9	--	--	--	--	--	114	--	5.62	--	1.39	--	0.5	--	63.2	11
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Mcintyre Mine (32910103) - Possibly RD2-D1

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - RD3-D1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	10	--	3.8	--	--	8.8	1538	--	2	49.33	0.16	--	10.23	--	3.45	--	938.4	--
2002-02-08	--	5.7	--	3.92	--	--	10.7	677	--	2	34.42	0.11	--	7.41	--	1.95	--	672.1	--
2002-03-08	--	4.2	--	3.88	--	--	13.3	1186	--	2	28.41	0.07	--	7.67	--	2.42	--	699.7	--
2002-04-06	--	8.1	--	4.07	--	--	9.9	950	--	2	27.42	0	--	5.19	--	--	--	494.3	--
2002-05-03	--	14.5	--	4.25	--	--	13.9	741	--	2	24.62	0	--	4.06	--	0.77	--	414.9	--
2002-05-31	--	8.1	--	4	--	--	16.6	829	--	2	53.35	0.07	--	4.9	--	1.41	--	507.1	--
2002-07-09	--	16.5	--	3.92	--	--	16.6	1213	--	2	68.09	0.12	--	7.97	--	2.41	--	719.5	--
2002-08-02	--	3.8	--	3.8	--	--	18.5	987	--	2	94.66	0.25	--	8.98	--	2.86	--	855.3	--
2002-09-05	--	3	--	3.86	--	--	18.6	918	--	2	81.37	0.39	--	11.01	--	3.41	--	985.8	--
2002-10-04	--	3.8	--	3.84	--	--	17.4	1116	--	2	37.73	0.24	--	10.1	--	2.64	--	868.5	--
2002-11-08	--	6.9	--	4.3	--	--	15.4	1022	--	2	36.93	0.25	--	8.99	--	2.68	--	777.9	--
2002-12-06	--	6.9	--	3.34	--	--	7.3	1439	--	2	64.42	0.1	--	8.85	--	2.58	--	773.8	--
Minimum:		3	--	3.34	--	--	7.3	677	--	2	24.62	0	--	4.06	--	0.77	--	414.9	--
Maximum:		16.5	--	4.3	--	--	18.6	1538	--	2	94.66	0.39	--	11.01	--	3.45	--	985.8	--
Average:		7.6	--	3.84	--	--	13.9	1051	--	2	50.06	0.15	--	7.95	--	2.42	--	725.6	--
Range:		13.5	--	0.96	--	--	11.3	861	--	0	70.04	0.39	--	6.95	--	2.68	--	570.9	--
Median:		6.9	--	3.9	--	--	14.7	1005	--	2	43.53	0.12	--	8.41	--	2.58	--	746.7	--
Loading (lb/day):									--	0.18	4.39	0.01	--	0.68	--	0.2	--		

Sample Point Description: Discharge flowing into RUNT03.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - RD5-D1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2000-04-05	--	--	--	3.3	--	--	--	--	--	0	238	47.9	--	7.94	--	22.3	--	725	8
2000-07-13	--	--	--	3.1	--	--	--	--	--	0	392	26.9	--	12.9	--	24.4	--	1180	8
2000-10-11	--	--	--	3.3	--	--	--	--	--	0	252	26.5	--	13.4	--	23.6	--	1000	2
2001-02-12	--	--	--	3.5	--	--	--	--	--	0	162	19	--	9.22	--	19	--	840	12
2001-04-30	--	--	--	3.4	--	--	--	--	--	0	176	13.5	--	8.22	--	15	--	895	10
Minimum:		--	--	3.1	--	--	--	--	--	--	162	13.5	--	7.94	--	15	--	725	2
Maximum:		--	--	3.5	--	--	--	--	--	--	392	47.9	--	13.4	--	24.4	--	1180	12
Average:		--	--	3.3	--	--	--	--	--	--	244	26.76	--	10.34	--	20.86	--	928	8
Range:		--	--	0.4	--	--	--	--	--	--	230	34.4	--	5.46	--	9.4	--	455	10
Median:		--	--	3.3	--	--	--	--	--	--	238	26.5	--	9.22	--	22.3	--	895	8
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: "Golden Pheasant Run" near mouth.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - RD0-D3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-02-26	--	20	6.2	6.4	--	--	9	869	--	102	0	10.98	--	8.77	--	0.07	--	358	1.3
2001-03-23	--	15	5.8	6.5	--	--	8	806	--	100	0	12.08	--	9.25	--	0.07	--	319	5.3
Minimum:		15	5.8	6.4	--	--	8	806	--	100	--	10.98	--	8.77	--	0.07	--	319	1.3
Maximum:		20	6.2	6.5	--	--	9	869	--	102	--	12.08	--	9.25	--	0.07	--	358	5.3
Average:		17.5	5.96	6.45	--	--	8.5	838	--	101	--	11.53	--	9.01	--	0.07	--	338.5	3.3
Range:		5	0.4	0.1	--	--	1	63	--	2	--	1.1	--	0.48	--	0	--	39	4
Median:		17.5	6	6.45	--	--	8.5	838	--	101	--	11.53	--	9.01	--	0.07	--	338.5	3.3
Loading (lb/day):									--	21.24	--	2.4	--	1.88	--	0.01	--		

Sample Point Description: Discharge flowing from culvert near intersection of McIntyre Road and Neal Road. Same as L-2 in Lentz Mine (32020102).

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT05

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1994-09-29	--	0	--	6.4	--	--	--	--	--	148	0	0.47	--	1.18	--	0.5	--	--	12
1995-01-12	--	0	--	6.5	--	--	--	--	--	19.4	0	0.18	--	0.05	--	0.5	--	--	3
1996-07-08	--		--	6.3	--	--	--	--	--	44	0	0.38	--	0.18	--	0.5	--	28.5	3
1997-05-16	--		--	6.8	--	--	--	--	--	22	0	0.3	--	0.05	--	0.5	--	20	3
Minimum:			--	6.3	--	--	--	--	--	19.4	--	0.18	--	0.05	--	0.5	--	20	3
Maximum:		0	--	6.8	--	--	--	--	--	148	--	0.47	--	1.18	--	0.5	--	28.5	12
Average:		0	--	6.46	--	--	--	--	--	58.35	--	0.33	--	0.37	--	0.5	--	24.3	5.3
Range:		0	--	0.5	--	--	--	--	--	128.6	--	0.29	--	1.13	--	0	--	8.5	9
Median:		0	--	6.45	--	--	--	--	--	33	--	0.34	--	0.12	--	0.5	--	24.3	3
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Kent Strip No 55 (32860106) - Mouth of UNT05

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT07

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-03-03	--		--	7	--	--	--	--	--	66	0	0.3	--	0.39	--	0.5	--	100.5	3
1999-04-02	--		--	7.2	--	--	--	--	--	72	0	0.3	--	0.26	--	0.5	--	143	10
1999-05-04	--		--	8	--	--	--	--	--	132	0	0.3	--	0.24	--	0.5	--	250.8	4
1999-08-03	--		--	8.1	--	--	--	--	--	216	0	0.3	--	0.07	--	0.5	--	409.7	3
1999-10-01	--	638	--	7.7	--	--	--	--	--	156	0	0.3	--	0.23	--	0.5	--	291.5	3
1999-12-02	--	9118	--	6.7	--	--	--	--	--	60	0	0.3	--	0.18	--	0.5	--	129.6	6.4
2000-01-04	--	13677	--	7	--	--	--	--	--	56	0	0.42	--	0.23	--	0.5	--	91.4	3
2000-03-01	--		--	6.7	--	--	--	--	--	52	0	0.6	--	0.2	--	0.58	--	100	3
2000-05-08	--		--	7.6	--	--	--	--	--	86	0	0.3	--	0.13	--	0.5	--	130	6
2000-07-10	--	1076	--	7.9	--	--	--	--	--	170	0	0.3	--	0.1	--	0.5	--	269	3
2000-08-04	--	18236	--	6.5 6.6	--	--	--	--	--	36 48	0 0	0.3 0.79	--	0.05 0.13	--	0.5 0.64	--	26.5 49.4	3 3
2000-10-04	--	1076	--	7.7	--	--	--	--	--	116	0	0.3	--	0.08	--	0.5	--	228.8	6
2000-12-04	--	9118	--	6.7	--	--	--	--	--	52	0	0.3	--	0.19	--	0.5	--	61	3
2001-02-05	--	14046	--	6.9	--	--	--	--	--	48	0	0.3	--	0.19	--	0.5	--	65	4
2001-10-02	--		--	8.1	--	--	--	--	--	220	0	0.3	--	0.05	--	0.5	--	370	3
2003-01-03	--		--	7.2	--	--	--	--	--	31.6	0	0.31	--	0.11	--	0.5	--	80.2	10
2003-04-01	--		--	7.1	--	--	--	--	--	58.8	0	0.3	--	0.21	--	0.5	--	109.6	3
2006-09-12	--		--	7.8	--	--	--	--	--	85.8	-72.4	5.08	--	0.15	--	0.5	--	120.8	3
Minimum:			--	6.5	--	--	--	--	--	31.6	-72.4	0.3	--	0.05	--	0.5	--	26.5	3
Maximum:		18236	--	8.1	--	--	--	--	--	220	0	5.08	--	0.39	--	0.64	--	409.7	10
Average:		8373.1	--	7.02	--	--	--	--	--	92.75	-3.81	0.6	--	0.17	--	0.51	--	159.3	4.3
Range:		17598	--	1.6	--	--	--	--	--	188.4	72.4	4.78	--	0.34	--	0.14	--	383.2	7
Median:		9118	--	7.2	--	--	--	--	--	66	0	0.3	--	0.18	--	0.5	--	120.8	3
Loading (lb/day):									--	4917.6	0	27.95	--	16.11	--	41.78	--		

Sample Point Description: Kent No 56 (32803010) - Unnamed trib near mouth.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - UNT07A

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-08-20	--	--	6	7.15	--	--	18	275	--	33.9	3.1	1.65	--	0.21	--	0.95	--	93.1	106
2001-09-17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-10-23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-11-16	--	--	6.5	6.66	--	--	11	392	--	13.4	4.3	0	--	0.04	--	0.22	--	156.2	0
2001-12-13	--	--	7	6.58	--	--	9	233	--	10.9	2.9	0.04	--	0.05	--	0	--	83.8	0
2002-01-08	--	--	6.3	6.43	--	--	1	194	--	7.8	8.9	0	--	0.11	--	0.21	--	68.5	2
2002-02-05	--	--	6.5	6.32	--	--	1	123	--	8	2.3	0.07	--	0.09	--	0	--	33.1	6
2002-03-21	--	--	6.5	6.19	--	--	7	93	--	6.4	3.2	0.32	--	0.07	--	0.62	--	27.1	12
2004-10-22	--		--	6.6	--	--	--	--	--	21.4	-2.4	0.3	--	0.14	--	0.5	--	76.1	42
2005-04-11	--		--	6.6	--	--	--	--	--	14.8	4.4	0.39	--	0.14	--	0.5	--	52	10
2006-03-29	--	75	--	6.8	--	--	--	--	--	14.2	1.6	0.3	--	0.09	--	0.5	--	53	8
2006-05-23	--	300	--	6.65	--	--	--	--	--	17	-6	0.34	--	0.06	--	0.5	--	26.6	3
2009-06-15	--		--	7	--	--	--	--	--	18.8	-5.6	0.31	--	0.79	--	0.5	--	231.2	14
2012-05-02	--		--	6.9	--	--	--	--	--	19.6	-14.4	0.3	--	0.59	--	0.5	--	113.8	20
Minimum:			6	6.19	--	--	1	93	--	6.4	-14.4	0	--	0.04	--	0	--	26.6	0
Maximum:		300	7	7.15	--	--	18	392	--	33.9	8.9	1.65	--	0.79	--	0.95	--	231.2	106
Average:		187.5	--	--	--	--	7.8	218	--	15.52	0.19	0.33	--	0.2	--	0.42	--	84.5	18.6
Range:		225	1	0.96	--	--	17	299	--	27.5	23.3	1.65	--	0.75	--	0.95	--	204.6	106
Median:		187.5	6.5	6.63	--	--	8	214	--	14.5	2.6	0.3	--	0.1	--	0.5	--	72.3	9
Loading (lb/day):									--	36.99	-10.08	0.75	--	0.15	--	1.13	--		

Sample Point Description: Johnston Mine (32020107) - Tributary to UNT07. Also known as sample point 10 for Kent No. 56 Mine.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ultmans Run AMD Assessment Water Quality Report - UNT08

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-07-30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-08-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2001-09-17	--	--	7.5	7.82	--	--	17	1147	--	150.8	6.7	0.33	--	0.1	--	0.23	--	520.5	42
2001-10-23	--	--	6.5	6.65	--	--	11	573	--	36.8	5.2	2.92	--	1.78	--	0.13	--	240.1	4
2001-11-16	--	--	7	7.34	--	--	10	588	--	34	5.7	0	--	0.05	--	0.17	--	253.3	0
2001-12-13	--	--	7	7.41	--	--	11	381	--	36.9	4.7	0.09	--	0.04	--	0.14	--	139.2	0
2002-01-08	--	--	6.8	7.12	--	--	1	392	--	29.9	8.9	0.09	--	0.04	--	0.26	--	145.7	0
2002-02-05	--	--	6.5	6.58	--	--	0	235	--	21.4	2.4	0.13	--	0.07	--	0.11	--	75.5	12
2006-03-29	--	5	--	6.85	--	--	--	--	--	16.8	-2	0.42	--	0.05	--	0.5	--	36.2	12
2007-05-11	--		--	7.3	--	--	--	--	--	24	-2.2	0.83	--	0.05	--	0.73	--	30.8	20
Minimum:			6.5	6.58	--	--	0	235	--	16.8	-2.2	0	--	0.04	--	0.11	--	30.8	0
Maximum:		5	7.5	7.82	--	--	17	1147	--	150.8	8.9	2.92	--	1.78	--	0.73	--	520.5	42
Average:		5	--	--	--	--	8.3	553	--	43.83	3.68	0.6	--	0.27	--	0.28	--	180.2	11.3
Range:		0	1	1.24	--	--	17	912	--	134	11.1	2.92	--	1.74	--	0.62	--	489.7	42
Median:		5	6.9	7.21	--	--	10.5	483	--	31.95	4.95	0.23	--	0.05	--	0.2	--	142.5	8
Loading (lb/day):									--	1.01	-0.12	0.03	--	0	--	0.03	--		

Sample Point Description: Johnston Mine - Unnamed trib north of permit (sample point 4). SMP samples taken further upstream than BMR assessment.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT08

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-03-29	--	10	--	7	--	--	--	--	--	30.8	-12	0.3	--	0.05	--	0.5	--	81.4	3
2006-05-23	--	75	--	6.9	--	--	--	--	--	27.4	-17.2	0.44	--	0.05	--	0.5	--	46.4	3
2007-05-11	--		--	7.5	--	--	--	--	--	32.6	-1.8	0.7	--	0.08	--	0.5	--	96.3	22
Minimum:			--	6.9	--	--	--	--	--	27.4	-17.2	0.3	--	0.05	--	0.5	--	46.4	3
Maximum:		75	--	7.5	--	--	--	--	--	32.6	-1.8	0.7	--	0.08	--	0.5	--	96.3	22
Average:		42.5	--	7.07	--	--	--	--	--	30.27	-10.33	0.48	--	0.06	--	0.5	--	74.7	9.3
Range:		65	--	0.6	--	--	--	--	--	5.2	15.4	0.4	--	0.03	--	0	--	49.9	19
Median:		42.5	--	7	--	--	--	--	--	30.8	-12	0.44	--	0.05	--	0.5	--	81.4	3
Loading (lb/day):									--	14.18	-8.46	0.21	--	0.03	--	0.26	--		

Sample Point Description: Johnston Mine (32020107) - Mouth of unnamed trib to Aultmans Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT11

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-05-05	--		--	7.6	--	--	--	--	--	41	-25.4	0.3	--	0.05	--	0.5	--	109.9	4
2011-04-04	--		--	7.8	--	--	--	--	--	131.4	-118.2	0.81	--	0.18	--	0.5	--	134	44
Minimum:			--	7.6	--	--	--	--	--	41	-118.2	0.3	--	0.05	--	0.5	--	109.9	4
Maximum:			--	7.8	--	--	--	--	--	131.4	-25.4	0.81	--	0.18	--	0.5	--	134	44
Average:		data has not been set	--	7.69	--	--	--	--	--	86.2	-71.8	0.55	--	0.11	--	0.5	--	122	24
Range:		data has not been set	--	0.2	--	--	--	--	--	90.4	92.8	0.51	--	0.13	--	0	--	24.1	40
Median:		data has not been set	--	7.7	--	--	--	--	--	86.2	-71.8	0.55	--	0.11	--	0.5	--	122	24
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Aultman Ii Mine (32010105) - TRIB A BELOW

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT11a

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-19	--	36	5.7	7.77	--	--	10	287	--	65.2	3.6	0.05	--	0	--	0	--	26	4
1999-12-17	--	120	6.2	7.04	--	--	5	127	--	15.6	5	0.16	--	0.02	--	0	--	21	0
2000-01-26	--	36	6.2	7.64	--	--	4	279	--	28.2	4.2	0.07	--	0.04	--	0	--	22	0
2000-02-25	--	575	6.3	7.55	--	--	11	201	--	18	2.2	0.08	--	0	--	0	--	23	3
2000-03-29	--	256	5.6	7.5	--	--	8	147	--	21.8	6.8	0.09	--	0	--	0	--	23	2
2000-04-24	--	393	6	7.36	--	--	15	137	--	16.4	1.8	0.09	--	0.04	--	0	--	22	3
2008-05-05	--		--	7.6	--	--	--	--	--	38.6	-22.6	0.3	--	0.05	--	0.5	--	203.2	3
2011-04-04	--		--	7.7	--	--	--	--	--	35.8	-23	0.3	--	0.05	--	0.5	--	55.1	6
Minimum:			5.6	7.04	--	--	4	127	--	15.6	-23	0.05	--	0	--	0	--	21	0
Maximum:		575	6.3	7.77	--	--	15	287	--	65.2	6.8	0.3	--	0.05	--	0.5	--	203.2	6
Average:		236	5.92	7.46	--	--	8.8	196	--	29.95	-2.75	0.14	--	0.03	--	0.13	--	49.4	2.6
Range:		539	0.7	0.73	--	--	11	160	--	49.6	29.8	0.25	--	0.05	--	0.5	--	182.2	6
Median:		188	6.1	7.58	--	--	9	174	--	25	2.9	0.09	--	0.03	--	0	--	23	3
Loading (lb/day):									--	55.22	9.19	0.26	--	0.04	--	0	--		

Sample Point Description: Aultman Ii Mine (32010105) - TRIB A ABOVE

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT12

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	115	5.1	4.79	--	--	9	475	--	1.4	24.4	0.29	--	1.13	--	1.55	--	180	5
1999-12-17	--	623	5.2	5.21	--	--	5	307	--	1.6	7.2	0.2	--	0.45	--	0.31	--	99	5
2000-01-26	--	94	5.1	4.96	--	--	5	509	--	0.6	18.2	0.18	--	0.6	--	1.91	--	140	0
2000-02-25	--	589	5.8	5.81	--	--	10	384	--	2	6.2	0.15	--	0.35	--	0	--	115	6
2000-03-29	--	539	5.2	5.57	--	--	10	315	--	160	15.4	0.27	--	0.45	--	0.58	--	116	4
2000-04-24	--	316	5.9	6.49	--	--	16	268	--	1	2.4	0.18	--	0.39	--	0	--	88	5
2007-05-09	--		--	6.8	--	--	--	--	--	13.4	7.4	0.43	--	0.22	--	0.5	--	27.9	5
2008-05-05	--		--	6.6	--	--	--	--	--	10.8	4.4	0.3	--	0.3	--	0.5	--	21	40
2009-03-05	--		--	7.3	--	--	--	--	--	37	-25.6	0.76	--	0.22	--	0.5	--	97.8	12
2009-11-09	--		--	7.1	--	--	--	--	--	83.6	-70	2.72	--	1.62	--	0.5	--	20	5
2010-12-29	--		--	7.3	--	--	--	--	--	61.8	-50.4	1.2	--	0.64	--	0.5	--	49.5	18
2011-01-31	--		--	7.4	--	--	--	--	--	60.8	-44.4	0.73	--	0.56	--	0.5	--	109.6	4
2011-04-04	--		--	7.2	--	--	--	--	--	57	-42.4	0.46	--	0.29	--	0.5	--	109.4	5
2011-06-29	--		--	7.5	--	--	--	--	--	74.6	-56.4	1.92	--	0.73	--	0.95	--	127.8	8
2011-10-05	--		--	6.8	--	--	--	--	--	32.4	-4.8	0.73	--	0.34	--	0.5	--	37	5
2013-09-03	--		--	7.4	--	--	--	--	--	76.8	-55.8	0.96	--	0.54	--	0.5	--	236.8	46
Minimum:			5.1	4.79	--	--	5	268	--	0.6	-70	0.15	--	0.22	--	0	--	20	0
Maximum:		623	5.9	7.5	--	--	16	509	--	160	24.4	2.72	--	1.62	--	1.91	--	236.8	46
Average:		379.3	5.28	5.61	--	--	9.2	376	--	42.18	-16.51	0.72	--	0.55	--	0.61	--	98.4	10.8
Range:		529	0.8	2.71	--	--	11	241	--	159.4	94.4	2.57	--	1.4	--	1.91	--	216.8	46
Median:		427.5	5.2	6.8	--	--	9.5	350	--	34.7	-1.2	0.44	--	0.45	--	0.5	--	104.2	5
Loading (lb/day):									--	177.9	43.43	0.93	--	2.08	--	1.73	--		

Sample Point Description: Aultman Ii Mine (32010105) - TRIB F BELOW

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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ıltmans Run AMD Assessment Water Quality Report - UNT13

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2007-05-09	--		--	7.3	--	--	--	--	--	27	0.4	0.35	--	0.18	--	0.5	--	120.8	5
2009-05-12	--		--	7.3	--	--	--	--	--	24.6	-13.2	0.35	--	0.15	--	0.5	--	56.4	3
2009-07-14	--		--	7.3	--	--	--	--	--	34.6	-20.6	0.37	--	0.29	--	0.5	--	45.3	12
2009-11-09	--		--	7.4	--	--	--	--	--	58.6	-40.4	0.3	--	0.14	--	0.5	--	138	6
2010-06-15	--		--	7.4	--	--	--	--	--	34.2	-20	1.61	--	0.24	--	0.94	--	258.4	46
2010-12-29	--		--	7.3	--	--	--	--	--	40.2	-22.6	0.3	--	0.29	--	0.5	--	50.6	28
2011-10-05	--		--	7.2	--	--	--	--	--	26.8	4.6	0.48	--	0.15	--	0.55	--	109.5	10
2013-09-03	--		--	7.7	--	--	--	--	--	75.4	-46.2	0.91	--	0.35	--	0.84	--	49.6	8
Minimum:			--	7.2	--	--	--	--	--	24.6	-46.2	0.3	--	0.14	--	0.5	--	45.3	3
Maximum:			--	7.7	--	--	--	--	--	75.4	4.6	1.61	--	0.35	--	0.94	--	258.4	46
Average:		data has not been set	--	7.34	--	--	--	--	--	40.18	-19.75	0.58	--	0.22	--	0.6	--	103.6	14.8
Range:		data has not been set	--	0.5	--	--	--	--	--	50.8	50.8	1.31	--	0.21	--	0.44	--	213.1	43
Median:		data has not been set	--	7.3	--	--	--	--	--	34.4	-20.3	0.36	--	0.21	--	0.5	--	83	9
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Aultman Ii Mine (32010105) - TRIB C BELOW

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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t 286 Passive Treatment System Water Quality Report - 286 Discharge

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	120	6.00	6.27	--	--	11	473	--	48.00	29.60	17.10	--	0.89	--	0.00	--	160	41
1999-12-17	--	196	5.50	6.50	--	--	5	500	--	0.40	9.40	19.80	--	1.06	--	0.00	--	146	24
2000-04-05	--	--	--	6.30	--	--	--	--	--	88.00	0.00	16.70	--	0.75	--	0.00	--	250	8
2000-07-13	--		--	6.3	--	--	--	--	--	94	0	15.9	--	0.87	--	0.2	--	132	18
2000-10-11	--	--	--	6.30	--	--	--	--	--	74.00	0.00	24.70	--	0.90	--	0.22	--	167	14
2001-01-29	--	103	6.50	6.67	--	--	11.6	444	--	75.64	0.00	15.75	13.60	0.75	0.73	0.16	0.10	121.6	5
2001-02-12	--		--	6.4	--	--	--	--	--	86	0	21.1	--	0.78	--	0.2	--	135	12
2001-02-19	--	--	5.90	6.51	--	--	11	471	--	84.07	0.00	12.70	11.75	0.71	0.69	1.36	0.93	121	13
2001-07-17	--	--	--	6.10	--	--	--	--	--	86.00	--	17.90	--	0.74	--	0.20	--	126	--
2001-08-30	--	36	6.20	6.42	--	--	12.6	424	--	73.17	0.00	14.25	13.25	0.63	0.63	0.08	0.00	186.1	17
2002-01-04	--	247	--	6.10	--	--	10	750	--	43.20	--	26.81	--	0.81	--	0.38	--	167.5	--
2002-02-08	--	460	--	6.20	--	--	10.2	559	--	2.00	--	19.89	--	0.73	--	0.16	--	150.6	--
2002-03-08	--	336	--	5.90	--	--	12.4	446	--	80.44	--	19.61	--	0.66	--	0.29	--	131.3	--
2002-04-05	--	465	--	6.50	--	--	10	505	--	72.85	--	16.73	--	0.66	--	0.11	--	130.1	--
2002-05-03	--	336	--	5.60	--	--	15	481	--	72.26	--	13.82	--	0.61	--	0.10	--	125.9	--
2002-05-31	--	323	--	6.10	--	--	13.9	461	--	75.85	--	12.89	--	0.58	--	0.18	--	131.3	--
2002-07-05	--	325	--	6.83	--	--	11	472	--	73.45	--	14.67	--	0.62	--	0.11	--	117.3	--
2002-08-02	--	202	--	6.26	--	--	12	412	--	66.67	--	16.24	--	0.67	--	0.14	--	125.5	--
2002-09-05	--	107.7	--	5.96	--	--	17.1	452	--	87.82	--	19.58	--	0.71	--	0.23	--	140.8	--
2002-10-03	--	--	5.90	6.58	--	--	12	482	--	71.97	-53.80	19.41	18.67	0.72	0.72	0.24	0.07	206.8	6
2002-10-04	--	330	--	6.01	--	--	12	498	--	56.68	--	21.10	--	0.18	--	0.17	--	151.5	--
2002-10-17	--	--	6.10	6.55	--	--	12	527	--	66.12	-44.42	20.98	20.34	0.75	0.75	0.18	0.10	213.1	11
2002-10-26	--		--	6.5	--	--	--	--	--	82	0	26	--	0.73	--	0.28	--	119.9	16
2002-11-08	--	375	--	6.10	--	--	11.7	377	--	42.32	--	16.27	--	0.73	--	0.10	--	156.8	--
2002-12-06	--	350	--	6.20	--	--	9	528	--	68.86	--	35.73	--	0.91	--	0.26	--	158.1	--
2002-12-19	--	108	6.00	5.99	--	--	10	493	--	60.14	-33.43	19.10	18.83	0.75	0.75	0.15	0.08	176.8	2
2003-10-28	--		--	6.4	--	--	--	--	--	98.2	0	17.7	--	0.67	--	0.2	--	132.2	2
2004-04-02	--	167	6.15	6.68	--	--	11	476	85.00	79.05	-54.85	14.42	14.19	0.61	0.60	0.23	0.15	120	12
2004-05-01	--		--	6.5	--	--	--	--	--	93.4	-30.4	13.3	--	0.54	--	0.2	--	117	14
2004-06-10	--	131	6.20	6.27	--	--	12	455	91.00	79.63	-51.09	14.91	13.78	0.56	0.56	0.16	0.00	132.8	8
2004-07-29	--	97.2	6.20	6.48	--	--	12	477	98.00	72.76	-35.88	14.65	13.80	0.63	0.62	0.20	0.05	131.1	1
2004-07-31	--		--	6.2	--	--	--	--	--	81.4	-30.4	15.2	--	0.64	--	0.5	--	126.7	14
2004-10-18	--	118.6	6.10	6.46	--	--	11	472	95.00	84.86	-42.32	14.37	13.48	0.63	0.62	0.07	0.00	141.8	10
2004-10-30	--		--	6.6	--	--	--	--	--	87.6	99	16.4	--	0.56	--	0.62	--	137	24
2005-02-21	--	187	6.20	6.53	--	--	11	523	86.00	64.00	-22.08	17.97	17.59	0.64	0.63	0.25	0.00	193.6	8
2005-04-18	--	156	6.40	6.48	--	--	12	480	89.00	83.75	-42.12	15.82	15.23	0.70	0.56	0.06	0.00	182.5	4
2005-04-30	--		--	6.5	--	--	--	--	--	95	-29.6	12	--	0.52	--	0.5	--	133.1	4
2005-07-24	--		--	6.4	--	--	--	--	--	87.4	-23	19	--	0.6	--	0.5	--	164.5	18
2006-04-29	--		--	6.4	--	--	--	--	--	89.4	-32	16	--	0.62	--	0.5	--	136.8	8
2006-07-29	--		--	6.5	--	--	--	--	--	76.6	-59	15.7	--	0.66	--	0.5	--	143	28
2006-10-29	--		--	6.4	--	--	--	--	--	75.4	-56	14.5	--	0.54	--	0.5	--	128	6
2007-01-27	--		--	6.6	--	--	--	--	--	91.6	-37	14.7	--	0.56	--	0.5	--	125.7	3
2007-04-28	--		--	6.5	--	--	--	--	--	95.2	-67	11.64	--	0.56	--	0.5	--	104	10
2007-07-21	--		--	6.4	--	--	--	--	--	77.6	-17.4	18	--	0.59	--	0.81	--	172.7	28
2007-11-05	--		--	6.5	--	--	--	--	--	88.4	-15.8	20.5	--	0.69	--	0.5	--	139.4	16
2007-12-10	--		--	6.5	--	--	--	--	--	86	-44.8	22.1	--	0.7	--	0.5	--	167.6	4
2008-01-26	--		--	6.5	--	--	--	--	--	96.8	-64	14.93	--	0.6	--	0.5	--	132.5	3
2008-04-20	--		--	6.6	--	--	--	--	--	99.6	-70	12.04	--	0.59	--	0.5	--	126.2	16
2009-03-30	--	--	--	6.6	--	--	--	--	--	73	-44	14.60	--	0.64	--	0.20	--	151	10
2009-06-08	--	--	--	6.6	--	--	--	--	--	82	-53	14.00	--	0.61	--	0.18	--	123	5
2009-09-28	--	--	--	6.1	--	--	--	--	--	668	-28	20.60	--	0.73	--	0.13	--	151	8
2009-12-28	--	--	6.5	6.2	--	--	12.1	--	133	81	-35	19.70	--	0.73	--	0.14	--	152	12
2010-04-25	--	--	6.0	6.8	--	--	12.5	--	80	76	-52	15.4	--	0.73	--	0.15	--	120	10
2010-05-10	--		6.58	6.7	--	--	--	--	--	83	-47.2	18.15	--	0.73	--	0.5	--	136.1	6
Minimum:			5.50	5.60	--	--	5	377	80	0.40	-70	11.64	11.75	0.18	0.56	0.00	0.00	104	1
Maximum:		465	6.58	6.83	--	--	17.1	750	133	668	99	35.73	20.34	1.06	0.75	1.36	0.93	250	41
Average:		229.4	--	6.3	--	--	11.5	486	94.63	86.64	-26.28	17.46	15.38	0.68	0.66	0.29	0.12	145.7	11.7
Range:		429	1.08	1.23	--	--	12.1	373	53	667.6	169	24.09	8.59	0.88	0.19	1.36	0.93	146	40
Median:		196	6.15	6.44	--	--	11.9	477	90	80.04	-32	16.34	14	0.67	0.63	0.2	0.06	136.5	10
Loading (lb/day):									153.73	164.5	-36.3	51.19	22.25	1.86	0.92	0.45	0.07		

Sample Point Description: Aultman Run Borehole #8

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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t 286 Passive Treatment System Water Quality Report - WL

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2004-04-02	--	167	6.90	7.26	--	--	12	445	78.00	70.81	-57.42	8.97	5.89	0.71	0.69	0.20	0.12	123	5
2004-06-10	--	131	6.70	6.71	--	--	19	403	73.00	67.29	-52.07	4.89	2.17	0.76	0.72	0.27	0.00	89	9
2004-07-29	--	97.2	6.50	6.85	--	--	23	478	72.00	67.89	-50.50	3.14	1.72	0.56	0.55	0.00	0.00	142.5	1
2004-10-18	--	118.6	6.70	6.74	--	--	11	437	77.00	66.82	-46.22	8.75	6.40	0.64	0.63	0.00	0.00	129.1	5
2005-02-21	--	187	6.70	6.74	--	--	9	500	78.00	53.41	-34.75	12.47	11.60	0.69	0.68	0.19	0.16	181.1	16
2005-04-18	--	156	6.60	6.68	--	--	17	443	80.00	69.99	-56.36	7.94	7.10	0.66	0.56	0.00	0.00	152.6	6
2008-06-03	--		--	7	--	--	--	--	--	77.2	-47	1.49	--	0.47	--	0.5	--	142.9	5
2008-07-29	--		--	7.1	--	--	--	--	--	73.8	-60	1.14	--	0.48	--	0.5	--	153.3	5
2008-11-03	--		6.64	7	--	--	--	--	--	67.2	-55.8	2.38	--	0.53	--	0.5	--	239.9	5
2009-01-30	--		6.87	7.3	--	--	--	450	--	75.6	-60	3.47	--	0.57	--	0.5	--	145	6
2009-03-30	--	--	--	6.9	--	--	--	--	--	70	-47	2.01	--	0.41	--	0	--	157	0
2009-04-27	--		--	7.1	--	--	--	--	--	81	-64.8	6.14	--	0.51	--	0.5	--	121.9	5
2009-06-08	--	--	--	6.8	--	--	--	--	--	75	-49	2.28	--	0.50	--	0	--	129	0
2009-08-10	--		--	7.2	--	--	--	--	--	72.6	-63.2	2.33	--	1.13	--	0.5	--	153.1	6
2009-09-28	--	--	--	6.2	--	--	--	--	--	62	-26	1.39	--	0.59	--	0	--	147	0
2009-11-02	--		7.02	7.1	--	--	--	--	--	69.2	-53.4	3.74	--	0.72	--	0.5	--	132.6	5
2009-12-28	--	--	7.0	6.3	--	--	4.9	--	74	67	-38	8.40	--	0.76	--	0	--	152	9
2010-01-25	--		7.23	7.1	--	--	--	--	--	67.8	-54.2	5.16	--	0.68	--	0.5	--	114.3	5
2010-04-25	--	--	6.0	7.2	--	--	21.8	--	86	75	-58	15.6	--	0.77	--	0.26	--	118	10
2010-05-10	--		6.76	7.1	--	--	--	--	--	73.8	-60.2	2.94	--	0.6	--	0.5	--	143.8	5
2010-07-26	--		6.94	7.3	--	--	--	--	--	109.8	-90.6	4.77	--	1.18	--	0.5	--	160.3	24
2010-10-25	--		6.83	6.7	--	--	--	--	--	67.4	-47.4	26.41	--	0.8	--	0.5	--	165.7	54
2011-04-11	--		7.17	6.8	--	--	--	--	--	80.8	-65.2	0.7	--	0.05	--	0.54	--	151.1	6
2011-07-19	--		6.75	6.9	--	--	--	--	--	72.8	-54.8	5.26	--	0.89	--	0.5	--	176.6	6
2011-10-24	--		6.88	6.9	--	--	--	--	--	77.8	-55	7.96	--	0.66	--	0.5	--	183.6	6
2012-01-23	--		6.61	6.9	--	--	--	--	--	87.4	-85	6.14	--	0.64	--	0.5	--	137.8	12
2012-04-30	--		6.79	7.1	--	--	--	--	--	83.4	-79.6	6.84	--	0.57	--	0.5	--	174.7	6
2012-07-23	--		6.64	6.8	--	--	--	--	--	82.8	-60.8	15.11	--	0.83	--	0.5	--	124.3	36
2012-11-05	--	77	7.02	7.3	--	--	--	--	--	64.2	-55.2	9.58	--	0.69	--	0.5	--	145.7	12
2013-02-04	--		7.33	7	--	--	--	--	--	83.2	-70.2	6.84	--	0.55	--	0.5	--	128.8	10
2013-04-22	--		7.93	7.3	--	--	--	--	--	81	-65.6	4.38	--	0.47	--	0.5	--	111	12
2013-07-22	--		6.84	7	--	--	--	--	--	90	-73.4	5.93	--	0.56	--	0.5	--	132.1	5
2014-08-04	--		7.24	6.9	--	--	--	--	--	79.4	-63.6	2.88	--	0.42	--	0.5	--	139.1	5
Minimum:			6.0	6.2	--	--	4.9	403	72.00	53.41	-90.6	0.7	1.72	0.05	0.55	0.00	0.00	89	0
Maximum:		187	7.93	7.3	--	--	23	500	86	109.8	-26	26.41	11.60	1.18	0.72	0.54	0.16	239.9	54
Average:		133.4	--	6.86	--	--	14.7	451	77.25	74.65	-57.59	6.29	5.81	0.64	0.64	0.36	0.05	145.4	9.2
Range:		110	1.93	1.1	--	--	18.1	97	14	56.39	64.6	25.72	9.88	1.13	0.17	0.54	0.16	150.9	54
Median:		131	6.84	7	--	--	14.5	445	77.5	73.8	-56.36	5.16	6.15	0.64	0.66	0.5	0	143.8	6
Loading (lb/day):									131.56	104.58	-79.44	13.35	10.94	1.09	1.1	0.24	0.1		

Sample Point Description: OUTLET OF WETLAND INTO DITCH AT 286

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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t 286 Passive Treatment System Water Quality Report - 85-16

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-10-03	--	50	6.90	6.91	--	--	14	470	--	56.88	-50.60	12.91	10.37	0.69	0.68	0.11	0.00	198.1	4
2002-10-17	--	60	6.90	6.78	--	--	12	488	--	54.93	-46.03	14.80	13.89	0.75	0.73	0.08	0.04	193.1	10
2004-04-02	--	167	6.98	7.32	--	--	12	448	78.00	76.55	-64.55	6.87	4.42	0.67	0.66	0.20	0.15	157.8	2
2004-05-01	--		--	7	--	--	--	--	--	88.6	-45.8	16.5	--	1.09	--	0.32	--	112.4	18
2004-06-10	--	131	7.00	6.86	--	--	19	406	73.00	71.72	-58.50	4.34	1.55	0.76	0.69	0.23	0.00	105.2	10
2004-07-29	--	97.2	7.00	7.11	--	--	23	475	77.00	70.41	-55.97	0.86	0.68	0.73	0.54	0.23	0.00	127.4	5
2004-07-31	--		--	6.8	--	--	--	--	--	73.2	-34.8	5.13	--	0.7	--	0.5	--	122.1	132
2004-10-18	--	118.6	7.10	6.78	--	--	11	443	77.00	66.06	-42.32	8.21	5.29	0.64	0.62	0.06	0.05	121.2	11
2004-10-30	--		--	6.7	--	--	--	--	--	79.6	119.8	7.68	--	0.64	--	0.5	--	138	16
2005-02-21	--	187	6.90	6.84	--	--	9	494	65.00	51.60	-36.86	10.26	9.85	0.67	0.67	0.00	0.00	176.5	13
2005-04-18	--	156	7.00	6.81	--	--	19	438	77.00	69.89	-57.72	6.27	4.64	0.56	0.54	0.00	0.00	143.7	8
2005-04-30	--		--	6.8	--	--	--	--	--	79.2	-36.6	8.02	--	0.55	--	0.5	--	140.7	8
2005-07-24	--		--	6.6	--	--	--	--	--	71	-38.4	2.69	--	0.52	--	0.5	--	178.7	4
2006-04-29	--		--	6.7	--	--	--	--	--	67	-30.4	3.92	--	0.54	--	0.5	--	136.4	24
2006-07-29	--		--	7.3	--	--	--	--	--	79	-63	7.13	--	0.87	--	0.5	--	124.3	6
2006-10-29	--		--	7.2	--	--	--	--	--	69.4	-55.8	5.01	--	0.51	--	0.5	--	140.1	3
2007-01-27	--		--	6.9	--	--	--	--	--	71.2	-33.4	4.7	--	0.54	--	1.17	--	114.7	3
2007-04-28	--		--	7.1	--	--	--	--	--	81.2	-67.4	3.01	--	0.51	--	0.5	--	100.2	3
2007-07-21	--		--	7.1	--	--	--	--	--	66.6	-26	0.84	--	0.47	--	0.5	--	151.8	10
2007-11-05	--		--	7	--	--	--	--	--	61.4	-26.6	2.43	--	0.63	--	0.5	--	167.9	4
2007-12-10	--		--	7	--	--	--	--	--	58.6	-42.6	3.7	--	0.71	--	0.5	--	140.1	6
2008-01-26	--		--	7.1	--	--	--	--	--	76.2	-61.6	4.39	--	0.62	--	0.5	--	134.8	6
2008-04-20	--		--	7.1	--	--	--	--	--	81.6	-65	2.29	--	0.52	--	0.5	--	130.6	8
2009-03-30	--	--	--	6.9	--	--	--	--	--	69	-43	3.11	--	0.45	--	0.10	--	157	0
2009-06-08	--	--	--	7.0	--	--	--	--	--	75	-51	1.62	--	0.44	--	0	--	129	0
2009-09-28	--	--	--	6.3	--	--	--	--	--	63	-24	2.65	--	0.49	--	0.19	--	143	0
2009-12-28	--	--	7.2	6.3	--	--	4.2	--	74	73	-45	7.60	--	0.86	--	0.08	--	152	9
2010-04-25	--	--	6.0	7.5	--	--	21.4	--	68	74	-54	2.33	--	0.52	--	0.05	--	125	0
Minimum:			6.0	6.3	--	--	4.2	406	65.00	51.60	-67.4	0.84	0.68	0.44	0.54	0.00	0.00	100.2	0
Maximum:		187	7.2	7.5	--	--	23	494	78.00	88.6	119.8	16.5	13.89	1.09	0.73	1.17	0.15	198.1	132
Average:		120.8	--	6.83	--	--	14.5	458	73.63	70.57	-40.61	5.69	6.34	0.63	0.64	0.33	0.03	141.5	11.5
Range:		137	1.2	1.2	--	--	18.8	88	13	37	187.2	15.66	13.21	0.65	0.19	1.17	0.15	97.9	132
Median:		124.8	6.99	6.91	--	--	13	459	75.5	71.1	-45.4	4.54	4.97	0.62	0.67	0.41	0	139.1	6
Loading (lb/day):									126.73	95.32	-75.13	10.8	8.33	0.98	0.92	0.15	0.05		

Sample Point Description: EFFLUENT OF AULTMAN RUN TREATMENT SYSTEM

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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t 286 Passive Treatment System Water Quality Report - 85-13

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-08-30	--	--	7.30	6.91	--	--	19.6	353	--	67.81	0.00	1.37	--	0.30	--	0.22	--	85.2	10
2002-10-03	--	--	7.10	7.34	--	--	15	537	--	81.25	-68.40	6.48	0.80	0.48	0.45	0.23	0.09	164.5	6
2002-10-17	--	--	7.00	7.20	--	--	11	232	--	42.23	-37.79	0.65	0.28	0.10	0.09	0.27	0.04	48.3	4
2004-04-02	--	--	6.95	7.06	--	--	8	168	--	21.22	-13.86	0.38	0.13	0.09	0.06	0.27	0.17	42.9	4
2004-06-10	--	--	7.10	6.82	--	--	20	344	55.00	63.87	-49.34	2.37	0.00	0.54	0.23	0.36	0.00	93.3	17
2004-07-29	--	--	7.00	7.00	--	--	19	181	--	27.00	-15.80	0.36	0.13	0.10	0.02	0.11	0.06	30.7	2
2004-10-18	--	--	7.00	6.95	--	--	9	335	--	50.81	-39.00	2.71	1.54	0.37	0.37	0.11	0.00	84.1	7
2005-02-21	--	--	6.70	6.86	--	--	5	177	--	19.77	-10.94	0.46	0.19	0.07	0.05	0.29	0.07	36.8	10
2005-04-18	--	--	7.30	7.20	--	--	18	57	28.00	38.95	-29.64	0.80	0.37	0.09	0.08	0.00	0.00	18.2	7
2009-03-30	--	--	--	6.5	--	--	--	--	--	23	4	0.62	--	0.09	--	0.39	--	37	0
2009-06-08	--	--	--	7.1	--	--	--	--	--	53	-30	2.19	--	0.29	--	0	--	65	0
2009-09-28	--	--	--	6.3	--	--	--	--	--	55	-23	2.28	--	0.15	--	1.40	--	23	11
2009-12-28	--	--	7.7	6.1	--	--	3.7	--	20	25	1	0.74	--	0.08	--	0.26	--	24	0
2010-04-25	--	--	7.0	7.5	--	--	20.3	--	46	41	-21	0.92	--	0.14	--	0.14	--	31	0
Minimum:		--	6.70	6.1	--	--	3.7	57	20	19.77	-68.40	0.36	0.00	0.07	0.02	0.00	0.00	18.2	0
Maximum:		--	7.7	7.5	--	--	20.3	537	55.00	81.25	4	6.48	1.54	0.54	0.45	1.40	0.17	164.5	17
Average:		--	--	6.73	--	--	13.5	265	37.25	43.57	-23.84	1.6	0.43	0.21	0.17	0.29	0.05	56	5.6
Range:		--	1	1.4	--	--	16.6	480	35	61.48	72.4	6.12	1.54	0.47	0.43	1.4	0.17	146.3	17
Median:		--	7.00	6.98	--	--	15	232	37	41.62	-22	0.86	0.24	0.12	0.09	0.25	0.05	40	5
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Aultmans Run; Located ~50-100 feet downstream of SR286 Passive Treatment System

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

t 286 Passive Treatment System Water Quality Report - 85-14

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-11-17	--	96	5.90	7.14	--	--	10	198	--	34.80	2.40	0.20	--	0.11	--	0.00	--	29	8
1999-12-16	--	7405	5.70	7.21	--	--	4	133	--	13.20	2.40	0.34	--	0.05	--	0.00	--	23	2
2000-01-26	--	110	6.20	7.38	--	--	3	207	--	21.80	4.40	0.27	--	0.06	--	0.00	--	23	3
2000-02-25	--	4299	6.50	7.28	--	--	12	172	--	15.00	1.82	0.13	--	0.00	--	0.00	--	21	7
2000-03-29	--	3541	5.90	7.38	--	--	10	130	--	17.60	3.80	0.61	--	0.04	--	0.27	--	22	3
2000-04-24	--	5386	6.10	7.36	--	--	16	122	--	15.40	3.00	0.14	--	0.02	--	0.00	--	21	2
2001-08-30	--	--	7.30	6.90	--	--	23.7	215	--	52.38	0.00	0.50	--	0.22	--	0.18	--	40.7	5
2002-10-03	--	--	7.10	7.37	--	--	16	281	--	59.73	-54.40	0.60	0.36	1.17	0.71	0.39	0.09	70.2	3
2002-10-17	--	--	7.00	7.16	--	--	11	236	--	38.85	-35.18	0.38	0.17	0.09	0.08	0.27	0.00	49.8	7
2004-04-02	--	--	7.04	7.06	--	--	8	133	--	16.77	-8.91	0.28	0.02	0.09	0.03	0.23	0.13	30.5	3
2004-06-10	--	--	7.10	6.92	--	--	20	227	53.00	55.90	-39.39	1.02	0.07	0.24	0.17	0.41	0.00	34	13
2004-07-29	--	--	7.00	6.98	--	--	19	162	--	24.42	-9.56	0.37	0.02	0.08	0.06	0.12	0.02	22.5	1
2004-10-18	--	--	7.00	7.04	--	--	9	192	--	42.49	-29.25	0.50	0.29	0.15	0.14	0.08	0.00	38.2	23
2005-02-21	--	--	6.80	6.95	--	--	4	166	--	21.05	-10.75	0.29	0.08	0.04	0.00	0.11	0.00	30.1	7
2005-04-18	--	--	7.60	7.66	--	--	18	149	28.00	24.71	-18.72	0.00	0.00	0.00	0.00	0.00	0.00	34.2	2
2009-03-30	--	--	--	6.5	--	--	--	--	--	23	3	0.38	--	0.05	--	0.26	--	25	0
2009-06-08	--	--	--	7.0	--	--	--	--	--	49	-26	1.10	--	0.18	--	0.49	--	21	12
2009-09-28	--	--	--	6.3	--	--	--	--	--	52	-18	1.75	--	0.14	--	0.85	--	20	11
2009-12-28	--	--	7.7	6.1	--	--	3.7	--	28	23	1	0.49	--	0.06	--	0.26	--	22	13
2010-04-25	--	--	7.0	7.5	--	--	19.5	--	40	39	-20	0.57	--	0.09	--	0.15	--	20	0
Minimum:		96	5.70	6.1	--	--	3	122	28.00	13.20	-54.40	0.00	0.00	0.00	0.00	0.00	0.00	20	0
Maximum:		7405	7.7	7.66	--	--	23.7	281	53.00	59.73	4.40	1.75	0.36	1.17	0.71	0.85	0.13	70.2	23
Average:		3472.8	--	6.85	--	--	12.2	182	37.25	32.01	-12.42	0.5	0.13	0.14	0.15	0.2	0.03	29.9	6.3
Range:		7309	2	1.56	--	--	20.7	159	25	46.53	58.8	1.75	0.36	1.17	0.71	0.85	0.13	50.2	23
Median:		3920	7.0	7.1	--	--	11	172	34	24.57	-9.24	0.38	0.08	0.09	0.07	0.17	0	24	4
Loading (lb/day):									--	626.47	111.85	12.08	--	1.27	--	1.91	--		

Sample Point Description: Aultmans Run; Located ~100 upstream of the effluent of the SR286 Passive Treatment System

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - MS-29

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1988-04-05	--	12	--	3.3	--	--	--	--	--	0	203	3.4	--	20.8	--	--	--	710	3
1988-05-02	--	2	--	3.3	--	--	--	--	--	0	238	3.6	--	22	--	--	--	760	6
1988-06-16	--	0	--	3.3	--	--	--	--	--	0	258	1.3	--	29	--	--	--	920	3
1988-09-01	--	--	--	3	--	--	--	--	--	0	286	1.4	--	26.8	--	--	--	800	--
1988-10-04	--	0	--	3.6	--	--	--	--	--	0	278	1.2	--	33.2	--	--	--	850	8
1988-11-03	--	5	--	3.8	--	--	--	--	--	0	293	1	--	28.2	--	--	--	860	6
1988-12-08	--	3	--	3.3	--	--	--	--	--	0	404	10.9	--	28.6	--	--	--	580	3
1989-01-05	--	5	--	3.2	--	--	--	--	--	0	504	28.4	--	31	--	--	--	1180	3
1989-02-07	--	10	--	3	--	--	--	--	--	0	575	59.6	--	34.6	--	--	--	1250	15
1989-03-21	--	30	--	3.2	--	--	--	--	--	0	300	34.7	--	16.7	--	--	--	700	29
1989-04-04	--	30	--	3	--	--	--	--	--	0	263	22.9	--	12.5	--	--	--	580	7
1989-05-04	--	20	--	3.5	--	--	--	--	--	0	311	9	--	29.7	--	--	--	960	9
1989-06-19	--	50	--	2.8	--	--	--	--	--	0	404	12.2	--	26.6	--	--	--	790	3
1989-07-17	--	30	--	2.9	--	--	--	--	--	0	229	5.7	--	11.9	--	--	--	500	3
1989-08-17	--	15	--	3.3	--	--	--	--	--	0	146	1.8	--	15.8	--	--	--	550	7
1989-09-11	--	30	--	3	--	--	--	--	--	0	206	7.3	--	14.8	--	--	--	540	3
1989-10-02	--	25	--	3.2	--	--	--	--	--	0	191	13.1	--	13.9	--	--	--	530	8
1989-11-06	--	15	--	3.1	--	--	--	--	--	0	305	12.8	--	24.4	--	--	--	760	5
1990-01-08	--	50	--	6.8	--	--	--	--	--	27	-14	2	--	0.9	--	--	--	72	10
1990-05-07	--	18	--	2.8	--	--	--	--	--	0	377	37.1	--	19.7	--	--	--	770	3
1990-09-10	--	5	--	3.4	--	--	--	--	--	0	114	2	--	12	--	--	--	440	10
1990-10-11	--	200	--	3.3	--	--	--	--	--	0	112	10	--	7	--	--	--	295	13
1990-11-06	--	30	--	3.3	--	--	--	--	--	0	145	3	--	12.7	--	--	--	510	3
1990-12-04	--	25	--	3.2	--	--	--	--	--	0	270	37.8	--	16.2	--	--	--	660	11
1991-01-14	--	25	--	3.2	--	--	--	--	--	0	179	29.4	--	10.5	--	--	--	440	6
1991-03-05	--	30	--	3.1	--	--	--	--	--	0	233	33.6	--	11.7	--	--	--	470	4
1991-04-08	--	0	--	2.9	--	--	--	--	--	0	267	17.7	--	15.6	--	--	--	610	4
1991-05-09	--	0	--	3.1	--	--	--	--	--	0	197	9.5	--	13.6	--	--	--	540	3
1991-06-04	--	1	--	2.9	--	--	--	--	--	0	270	8.4	--	21.8	--	--	--	828	6
1991-07-02	--	2	--	3.2	--	--	--	--	--	0	124	3.9	--	13.8	--	--	--	550	22
1991-11-12	--	3	--	3.4	--	--	--	--	--	0	208	14.8	--	15.7	--	--	--	680	4
1991-12-09	--	5	--	4	--	--	--	--	--	4	41	0.8	--	6.2	--	--	--	280	3
1992-01-03	--	25	--	3.72	--	--	--	--	--	0	188.3	1.43	--	17.5	--	--	--	719	4
1992-02-04	--	20	3.43	--	--	--	--	--	--	0	251.7	8.65	--	18.2	--	--	--	720	1
1992-03-03	--	20	--	3.54	--	--	--	--	--	0	163.2	3.06	--	16.45	--	--	--	691	2
1992-04-03	--	25	--	3.46	--	--	--	--	--	0	98.4	3.88	--	10.5	--	--	--	420	3
1992-05-03	--	0	--	3.37	--	--	--	--	--	0	160.8	3.23	--	2095	--	--	--	924	2
1992-06-05	--	0	--	3.48	--	--	--	--	--	0	155.5	2.68	--	21.7	--	--	--	650	9
1992-07-13	--	75	--	3.38	--	--	--	--	--	0	127.6	3.22	--	24.3	--	--	--	570	5
1992-08-11	--	50	--	3.85	--	--	--	--	--	0	33.5	1.31	--	5.62	--	--	--	151	7
1992-09-10	--	30	--	3.51	--	--	--	--	--	0	86.1	2.4	--	13.3	--	--	--	299	10
1992-10-02	--	25	--	3.77	--	--	--	--	--	0	80.2	0.92	--	14	--	--	--	346	1
1992-11-09	--	5	--	3.78	--	--	--	--	--	0	80	1.04	--	14.35	--	--	--	392	1
1992-12-07	--	20	--	3.69	--	--	--	--	--	0	116.8	1.66	--	16.15	--	--	--	493	4
1993-01-04	--	90	--	3.5	--	--	--	--	--	0	167.2	4.7	--	9.35	--	--	--	378	7
1993-02-05	--	30	--	3.29	--	--	--	--	--	0	195.9	13.4	--	12.85	--	--	--	540	5
1993-03-08	--	20	--	3.86	--	--	--	--	--	0	64.2	3.26	--	30.7	--	--	--	50	6
1993-04-02	--	125	--	3.4	--	--	--	--	--	0	102	4.01	--	7.57	--	--	--	190	4
1993-05-14	--	20	--	3.32	--	--	--	--	--	0	135.8	8.62	--	10.65	--	--	--	372	14
1993-06-04	--	30	--	3.32	--	--	--	--	--	0	111.6	3.28	--	109	--	--	--	385	4
1993-07-03	--	--	--	7.1	--	--	--	--	--	103	0	1.4	--	0.27	--	1	--	206	8
1993-07-16	--	5	--	3.47	--	--	--	--	--	0	87.1	2.11	--	11.2	--	--	--	368	20
1993-08-06	--	5	--	3.58	--	--	--	--	--	0	71.2	1.35	--	10.6	--	--	--	382	1
1993-09-09	--	10	--	3.75	--	--	--	--	--	0	40.4	0.94	--	7.99	--	--	--	340	19
1993-10-04	--	10	--	3.84	--	--	--	--	--	0	40.6	0.51	--	7.39	--	--	--	301	6
1993-11-05	--	20	--	4.15	--	--	--	--	--	0	50.7	0.5	--	9.65	--	--	--	357	10
1993-12-23	--	30	--	3.66	--	--	--	--	--	0	89	1.65	--	11.75	--	8.25	--	410	6
1994-02-07	--	30	--	3.8	--	--	--	--	--	0	110	1.56	--	10.3	--	13.15	--	363	1
1994-03-07	--	25	--	3.55	--	--	--	--	--	0	76.4	2.97	--	5.06	--	5.82	--	266	4
1994-04-04	--	25	--	3.44	--	--	--	--	--	0	134.3	2.23	--	11.55	--	12.7	--	347	2
1994-05-09	--	25	--	3.28	--	--	--	--	--	0	100.6	3.01	--	6.55	--	6.94	--	305	4
1994-06-10	--	15	--	3.38	--	--	--	--	--	0	91.1	3.05	--	7.75	--	6.29	--	422	3
1994-07-11	--	25	--	3.44	--	--	--	--	--	0	65.7	4.89	--	6.93	--	3.55	--	346	3
1994-08-05	--	10 10	-- --	3.52 3.52	--	--	-- --	-- --	-- --	0 0	54.5 54.5	2.29 2.29	-- --	7.12 7.12	--	2.09 2.09	-- --	314 314	6 6
1994-09-02	--	10	--	3.76	--	--	--	--	--	0	19.9	1.79	--	4.41	--	0.75	--	215	7
1994-10-07	--	10	--	4.25	--	--	--	--	--	0	21.8	0.92	--	4.61	--	0.76	--	265	8
1994-11-04	--	10	--	4.32	--	--	--	--	--	0	11	0.81	--	4.12	--	0.65	--	256	2
1994-12-02	--	20	--	4.4	--	--	--	--	--	0	30.9	0.52	--	4.96	--	2.73	--	274	3
1995-01-09	--	15 15	4 --	4.06 4.06	--	--	4 --	940 --	-- --	0 0	49.8 49.8	2.07 2.07	-- --	8.51 8.51	--	-- 4.2	--	443 443	5 5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1995-02-06	--	15	4	4.07	--	--	2	836	--	0	38.4	1.26	--	7.53	--	--	--	400	2
		15	--	4.07			--	--	--	0	38.4	1.26	--	7.53	--	4.12	--	400	2
1995-03-10	--	25	4	4.07	--	--	8	725	--	0	41	0.36	--	5.23	--	--	--	364	4
		25	--	4.17			--	--	--	0	23.2	0.57	--	6.53	--	7.1	--	364	4
1995-03-15	--	--	--	7.6	--	--	--	--	--	78	0	1	--	0.66	--	0	--	199	--
1995-04-07	--	15	--	4.07	--	--	--	--	--	0	41	0.36	--	6.25	--	3.02	--	345	2
1995-04-11	--	--	--	7.9	--	--	--	--	--	90	0	0.65	--	0.34	--	--	--	180	14
1995-04-15	--	--	--	7.9	--	--	--	--	--	90	0	0.64	--	0.34	--	0	--	180	14
1995-05-05	--	30	4	3.39	--	--	10	734	--	0	28.1	0.84	--	5.23	--	--	--	337	4
		30	--	3.96			--	--	--	0	28.1	0.84	--	5.23	--	2.37	--	337	4
1995-06-02	--	10	5	4.92	--	--	18	364	--	1.6	14.3	3.28	--	6.43	--	--	--	309	8
		10	--	4.92			--	--	--	1.6	14.3	3.28	--	6.43	--	0.31	--	309	8
1995-07-13	--	--	--	7.3	--	--	--	--	--	164	0	1.64	--	0.23	--	0.99	--	160	--
		--	--	7.3			--	--	--	164	0	1.6	--	0.23	--	0.98	--	160	--
1995-07-17	--	1	6.5	7.3	--	--	2	542	--	38.8	0	0.19	--	0.39	--	--	--	211	8
		1	--	7.3			--	--	--	38.8	0	0.19	--	0.39	--	0.06	--	211	8
1995-08-07	--	3	6	7.35	--	--	20	465	--	103.1	0	0.59	--	0.45	--	--	--	72	4
		3	--	7.35			--	--	--	103.1	0	0.59	--	0.45	--	1.66	--	72	4
1995-10-11	--	--	--	7.7	--	--	--	--	--	164	0	0.54	--	0.47	--	--	--	106	--
		--	--	7.7			--	--	--	164	0	0.53	--	0.46	--	0	--	106	--
1995-11-09	--	10	7	7.28	--	--	2	1100	--	125.9	0	1.39	--	4.57	--	--	--	448	16
		10	--	7.28			--	--	--	125	0	1.39	--	4.57	--	0.15	--	448	16
1995-12-08	--	5	7	7.2	--	--	2	1029	--	145.3	0	2.53	--	2.91	--	--	--	448	14
		5	--	7.2			--	--	--	145.3	0	2.53	--	2.91	--	0.24	--	448	14
1996-01-05	--	5	6.5	7.04	--	--	2	874	--	115.6	0	2.62	--	2.82	--	--	--	308	20
		5	--	7.04			--	--	--	115.6	0	2.62	--	2.82	--	0.29	--	308	20
1996-03-02	--	--	--	6.9	--	--	--	--	--	84	0	1.2	--	0.64	--	0	--	94	--
1996-03-21	--	--	--	6.9	--	--	--	--	--	84	0	1.22	--	0.64	--	--	--	94	--
1996-04-26	--	1	7.4	7.52	--	--	6	693	--	111.6	0	0.32	--	0.31	--	--	--	204	3
		1	--	7.52			--	--	--	111.6	0	0.32	--	0.31	--	0	--	204	3
1996-07-15	--	--	--	6.8	--	--	--	--	--	96	0	0.56	--	1.96	--	--	--	192	--
		--	--	6.8			--	--	--	96	0	0.55	--	1.9	--	0	--	192	--
1996-08-09	--	5	--	8.18	--	--	--	632	--	108.9	0	0.33	--	0.43	--	--	--	156	2
		5	--	8.18			--	--	--	108.9	0	0.33	--	0.43	--	0.19	--	156	2
1996-09-16	--	--	--	6.5	--	--	--	--	--	40	0	5.63	--	2.26	--	2.01	--	365	--
		--	--	6.5			--	--	--	40	0	5.6	--	2.2	--	2	--	365	--
1996-10-08	--	3	6.5	7.6	--	--	--	595	--	52.3	0	0.46	--	1.09	--	--	--	244	4
		3	--	7.6			--	--	--	52.3	0	0.46	--	1.09	--	0.24	--	244	4
1996-10-11	--	2	--	7.64	--	--	--	604	--	63.2	0	3.52	--	1.21	--	--	--	228	5
		2	--	7.64			--	--	--	63.2	0	3.52	--	1.21	--	1.41	--	228	5
1996-10-17	--	--	--	7.2	--	--	--	--	--	72	0	0.99	--	0.76	--	0	--	212	--
1996-11-07	--	--	--	7.1	--	--	--	--	--	82	0	0	--	0.98	--	0	--	237	--
1996-12-06	--	--	--	6.7	--	--	--	--	--	64	0	0.75	--	0.95	--	0	--	176	10
1997-01-08	--	4	7.3	7.72	--	--	6	567	--	56.1	0	0.23	--	0.81	--	--	--	166	2
1997-02-21	--	10	--	7.75	--	--	--	447	--	68.2	0	0.23	--	0.81	--	--	--	166	2
1997-03-12	--	--	--	6.7	--	--	--	--	--	58	0	0	--	0.61	--	0	--	156	--
1997-03-27	--	5	--	7.96	--	--	--	456	--	58.5	0	0.12	--	0.17	--	--	--	120	1
1997-05-06	--	--	--	7.3	--	--	--	--	--	102	0	0	--	0.13	--	0	--	210	--
1997-06-03	--	1	6.9	7.9	--	--	--	475	--	94.6	0	0.93	--	0.75	--	--	--	112	3
1997-07-11	--	--	--	3.6	--	--	--	--	--	0	144	4.6	--	5.8	--	16.4	--	499	--
1997-08-06	--	--	--	7.3	--	--	--	--	--	184	0	0	--	0.69	--	0	--	97	4
1997-09-05	--	--	--	7	--	--	--	--	--	146	0	0.42	--	0.5	--	0	--	325	--
1997-10-03	--	--	--	7.3	--	--	--	--	--	126	0	0	--	0.2	--	0	--	220	--
1997-10-08	--	4	--	7.72	--	--	--	--	--	56.1	0	0.23	--	0.81	--	0.15	--	166	2
1997-11-05	--	--	--	7.9	--	--	--	--	--	106	0	0.3	--	0.27	--	0	--	210	--
1997-11-18	--	3	7.2	7.53	--	--	--	611	--	63.1	0	1.09	--	0.96	--	--	--	252	10
1997-12-13	--	--	--	6.9	--	--	--	--	--	74	0	0.4	--	0.9	--	0	--	234	--
1998-01-05	--	--	--	7.1	--	--	--	--	--	88	0	0.3	--	0.4	--	0	--	125	--
1998-02-06	--	--	--	7.1	--	--	--	--	--	80	0	0.8	--	0.3	--	0	--	159	--
1998-03-02	--	7	--	7.76	--	--	--	495	--	78.4	0	0.46	--	0.29	--	--	--	138	2
1998-03-10	--	--	--	7.4	--	--	--	--	--	86	0	1.6	--	0.6	--	0.6	--	119	--
1998-04-13	--	--	--	7.5	--	--	--	--	--	100	0	0.9	--	0.5	--	0	--	175	--
1998-04-20	--	7	--	8.05	--	--	--	353	--	77.2	0	0.29	--	0.22	--	--	--	82	6
1998-05-12	--	--	--	7.3	--	--	--	--	--	100	0	0	--	0.2	--	0	--	124	--
1998-06-10	--	--	--	7.3	--	--	--	--	--	150	0	0.8	--	36	--	0	--	165	--
1998-07-10	--	--	--	7.1	--	--	--	--	--	128	0	0	--	0.8	--	0	--	154	--
1998-10-16	--	--	--	7.3	--	--	--	--	--	160	0	1.4	--	0.6	--	0	--	113	--
1998-11-27	--	2	7.8	8.14	--	--	9	542	--	109.2	0	0.07	--	0.17	--	--	--	132	4
1998-12-08	--	--	--	7.2	--	--	--	--	--	126	0	0	--	0.3	--	0	--	190	--
1999-02-19	--	0.5	4.5	3.6	--	--	4	2223	--	0	305.3	3.12	--	13.95	--	--	--	1254.9	10
1999-03-05	--	--	--	7.3	--	--	--	--	--	76	0	0.5	--	0.25	--	0	--	130	--
1999-05-10	--	--	--	7.3	--	--	--	--	--	110	0	0	--	0.05	--	0	--	219	--
1999-06-24	--	0.3	8.6	8.14	--	--	28	451	--	112.7	0	0.09	--	0.02	--	--	--	98.4	3
1999-08-12	--	0.3	7.9	8.16	--	--	29.6	386	--	117.1	0	0.22	--	0.07	--	--	--	71.7	5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1999-10-01	--	--	--	7.2	--	--	--	--	--	114	0	0	--	0.06	--	--	--	169.2	--
1999-12-21	--	5	7.7	7.5	--	--	3.7	494	--	54.8	0	0.64	--	0.39	--	--	--	204.3	7
2000-01-04	--	--	--	7	--	--	--	--	--	72	0	4.42	--	0.55	--	2.48	--	135	4
2000-03-03	--	20	--	7.3	--	--	--	--	--	92	0	0	--	0.07	--	--	--	102	150.5
2000-03-10	--	2	8.2	7.92	--	--	8.9	489	--	103.3	0	0.06	--	0.05	--	--	--	126.6	2
2000-05-08	--	--	--	8	--	--	--	--	--	142	0	1.9	--	0.41	--	0.96	--	102	16
2000-06-22	--	2	7.8	7.83	--	--	23.8	327	--	110.1	0	0.11	--	0.42	--	--	--	60.5	6
2000-07-06	--	--	--	7.4	--	--	--	--	--	122	0	5.52	--	0.86	--	2.88	--	65.3	48
2000-09-25	--	1.5	7.4	7.77	--	--	13.9	413	--	108.1	0	0.16	--	1.56	--	--	--	82.4	1
2000-10-05	--	--	--	6.9	--	--	--	--	--	112	0	1.33	--	2.43	--	0.83	--	102.1	16
2000-10-30	--	1.5	7.8	7.53	--	--	9.4	462	--	102.8	0	0.04	--	0.14	--	--	--	109.1	1
2000-11-13	--	--	--	7.8	--	--	--	--	--	114	0	0.6	--	0.22	--	0	--	124.2	8
2001-01-26	--	1.5	7.7	7.96	--	--	0.4	505	--	129.8	0	0.04	--	0.03	--	--	--	149.3	6
2001-05-16	--	1.5	7.7	8.08	--	--	15.8	450	--	137.31	0	0.05	--	0.17	--	--	--	136	2
Minimum:		0	3.43	2.8	--	--	0.4	327	--	0	-14	0	--	0.02	--	0	--	50	1
Maximum:		200	8.6	8.18	--	--	29.6	2223	--	184	575	59.6	--	2095	--	16.4	--	1254.9	150.5
Average:		16.7	--	--	--	--	9.9	634	--	49.33	76.74	4.04	--	21.24	--	1.85	--	346.3	7.9
Range:		200	5.17	5.38	--	--	29.2	1896	--	184	589	59.6	--	2094.98	--	16.4	--	1204.9	149.5
Median:		10	7	5.71	--	--	8	524	--	4	11	1.33	--	4.57	--	0.27	--	295	5
Loading (lb/day):									--	1.46	29.68	1.66	--	2.9	--	1.38	--		

Sample Point Description: Kent No 53 (32803037) - Discharge that flowed into Kent-2A bog area.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

eds Run AMD Remediation Project Water Quality Report - MS-30

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1989-03-29	--	--	--	3.5	--	--	--	--	--	0	146	9.6	--	10.2	--	16.5	--	320	--
1990-07-17	--	--	--	3.5	--	--	--	--	--	0	66	0.7	--	12.5	--	9.1	--	317	--
1995-01-09	--	--	6.5	6.8	--	--	2	787	--	30.5	0	0.23	--	5.21	--	--	--	338	1
1995-03-10	--	--	7	7.44	--	--	2	727	--	43.3	0	0.2	--	3.66	--	--	--	243	4
1995-04-07	--	--	7	7.49	--	--	6	695	--	33	0	0.14	--	2.29	--	--	--	305	6
1995-05-05	--	--	7	7.07	--	--	12	644	--	18.9	1	0.14	--	1.38	--	--	--	285	7
1995-06-02	--	--	7	7.18	--	--	20	646	--	16.8	0	0.15	--	0.79	--	--	--	255	4
1995-07-13	--	--	--	6.5	--	--	--	--	--	34	0	0	--	0.08	--	--	--	246	--
1995-07-14	--	--	7	7.48	--	--	20	555	--	27.9	0	0.07	--	0.08	--	--	--	205	7
1995-08-07	--	--	7	7.66	--	--	20	563	--	42.3	0	0.06	--	0.08	--	--	--	173	2
1995-09-05	--	--	7	7.46	--	--	20	500	--	41.8	0	0.31	--	0.04	--	--	--	158	4
1995-10-02	--	--	7	7.35	--	--	18	554	--	48.3	0	0.11	--	0.03	--	--	--	178	11
1995-10-11	--	--	--	7.3	--	--	--	--	--	64	0	0	--	0.05	--	--	--	176	--
1995-11-09	--	--	7	7.58	--	--	2	780	--	71.9	0	0.18	--	0.34	--	--	--	267	3
1995-12-08	--	--	7.5	7.63	--	--	0	940	--	134.9	0	0.8	--	2	--	--	--	377	3
1996-01-05	--	15	7	7.1	--	--	2	806	--	107.5	0	2.09	--	3.05	--	--	--	266	8
1996-04-18	--	--	--	7.2	--	--	--	--	--	106	0	0.39	--	0.43	--	--	--	185	--
1996-07-15	--	--	--	6.9	--	--	--	--	--	74	0	0	--	0.07	--	--	--	272	--
1996-09-16	--	--	--	7.1	--	--	--	--	--	72	0	0	--	0.11	--	0	--	369	--
1996-11-07	--	--	--	7.2	--	--	--	--	--	70	0	0	--	0.13	--	0	--	348	--
1997-02-21	--	35	--	7.3	--	--	--	456	--	51.6	0	0.76	--	0.9	--	--	--	160	6
1997-03-12	--	--	--	6.8	--	--	--	--	--	64	0	0.3	--	0.48	--	0	--	198	--
1997-03-27	--	65	--	7.68	--	--	--	387	--	44.3	0	0.69	--	0.57	--	--	--	229	9
1997-04-01	--	40	--	7.81	--	--	--	595	--	50.8	0	0.86	--	0.57	--	--	--	207	10
1997-07-11	--	--	--	5.9	--	--	--	--	--	7.2	10.6	0.8	--	1.2	--	0.6	--	108	--
1997-08-06	--	--	--	6.6	--	--	--	--	--	66	0	0	--	0.2	--	0	--	150	--
1997-09-05	--	--	--	6.6	--	--	--	--	--	58	0	1	--	0.59	--	0.82	--	259	--
1997-10-03	--	7.5	--	6.9	--	--	--	--	--	62	0	2.3	--	0.07	--	0	--	259	--
1997-11-05	--	15	--	7.6	--	--	--	--	--	70	0	0.4	--	0.2	--	0	--	234	--
1997-12-03	--	12	--	6.9	--	--	--	--	--	66	0	0	--	0.5	--	0	--	288	--
1997-12-06	--	--	--	6.6	--	--	--	--	--	58	0	1.3	--	1	--	0	--	203	--
1998-01-05	--	--	--	6.9	--	--	--	--	--	66	0	0	--	1	--	0	--	302	--
1998-01-14	--	45	7	7.23	--	--	--	630	--	60.9	0	0.23	--	0.49	--	--	--	254	2
1998-02-05	--	85	--	7.41	--	--	--	650	--	54.4	0	0.21	--	0.58	--	--	--	271	6
1998-02-06	--	20	--	6.9	--	--	--	--	--	64	0	0	--	0.5	--	0	--	281	--
1998-03-02	--	75	--	7.07	--	--	--	614	--	48.3	0	0.24	--	0.62	--	--	--	237	5
1998-03-04	--	--	--	6.9	--	--	--	--	--	50	0	0.4	--	0.7	--	0	--	237	--
1998-04-02	--	60	--	7.32	--	--	--	628	--	56.4	0	0.18	--	0.35	--	--	--	234	5
1998-04-13	--	20	--	7	--	--	--	--	--	54	0	0.3	--	0.3	--	0	--	261	--
1998-05-01	--	60	--	7.62	--	--	--	917	--	52.4	0	0.28	--	0.23	--	--	--	127	4
1998-05-12	--	30	--	6.9	--	--	--	--	--	62	0	0	--	0.3	--	0	--	222	--
1998-06-10	--	45	--	6.6	--	--	--	--	--	38	0	0	--	0.07	--	--	--	177	--
1998-06-23	--	15	--	7.71	--	--	24	502	--	54.3	0	0.09	--	0.08	--	--	--	168	6
1998-07-10	--	12	--	6.9	--	--	--	--	--	60	0	0	--	0	--	--	--	157	--
1998-07-21	--	1.5	--	7.97	--	--	26	416	--	49.1	0	0.06	--	0.12	--	--	--	137	6
1998-08-06	--	0.5	--	7.64	--	--	--	411	--	39.9	0	0.07	--	0.07	--	--	--	124	3
1998-09-04	--	0.5	8	7.38	--	--	23	438	--	44.4	0	0.12	--	0.06	--	--	--	143	4
1998-10-16	--	2	--	7	--	--	--	--	--	70	0	0	--	0	--	--	--	157	--
1998-11-27	--	4	7.8	7.89	--	--	10	559	--	73.3	0	0.11	--	0.04	--	--	--	185.2	3
1998-12-08	--	4	--	7.2	--	--	--	--	--	86	0	0	--	0	--	--	--	189	--
1999-02-19	--	15	7.3	7.57	--	--	6	673	--	53.1	0	0.18	--	0.24	--	--	--	275.2	5
1999-03-05	--	30	--	7.1	--	--	--	--	--	56	0	0	--	0.59	--	--	--	204	--
1999-05-10	--	20	--	7	--	--	--	--	--	54	0	0	--	0.2	--	--	--	393	--
1999-06-18	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-08-12	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1999-10-01	--	10	--	6.8	--	--	--	--	--	56	0	0	--	0.26	--	--	--	141.5	4
1999-12-07	--	20	--	6.5	--	--	--	--	--	66	0	0.81	--	0.48	--	--	--	165.4	4
1999-12-22	--	45	7.3	7.62	--	--	3.1	628	--	52.2	0	0.17	--	0.54	--	--	--	305.2	5
2000-01-04	--	20	--	6.8	--	--	--	--	--	68	0	0	--	0.66	--	--	--	272	--
2000-02-01	--	3	--	7	--	--	--	--	--	96	0	0	--	0.33	--	--	--	383	--
2000-03-03	--	27	--	6.9	--	--	--	--	--	68	0	0	--	0.67	--	--	--	275.7	--
2000-03-10	--	17	8	7.63	--	--	11.4	655	--	93.6	0	0.16	--	0.3	--	--	--	286.8	5
2000-05-08	--	12	--	7.4	--	--	--	--	--	50	0	0	--	0.07	--	--	--	255	4
2000-06-22	--	74	8.1	7.98	--	--	26	418	--	54.6	0	0.23	--	0.1	--	--	--	158.4	4
2000-07-06	--	4	--	7.3	--	--	--	--	--	48	0	0	--	0.08	--	--	--	125.8	--
2000-08-04	--	200	--	6.7	--	--	--	--	--	56	0	0	--	0.25	--	--	--	122.3	--
2000-09-25	--	6.8	8.6	8.47	--	--	16	407	--	42.4	0	0.05	--	0.09	--	--	--	130.1	3
2000-10-05	--	4	--	6.6	--	--	--	--	--	42	0	0	--	0.05	--	--	--	155.6	--
2000-10-30	--	7	8.1	8.07	--	--	10.9	472	--	51.4	0	0.12	--	0.04	--	--	--	167.9	1
2000-11-13	--	6	--	--	--	--	--	8	--	64	0	0	--	0.06	--	--	--	233.2	--
2001-01-26	--	12	6.8	7.17	--	--	0.8	689	--	79.8	0	0.23	--	1.78	--	--	--	314	1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2001-05-16	--	2.5	9.2	7.97	--	--	17.9	518	--	29.85	0	0.04	--	0.03	--	--	--	253.8	12
2002-01-04	--	20	--	6.4	--	--	1.1	663	--	76.48	1	0.22	--	0.36	--	0.1	--	221	--
2002-03-08	--	12	--	7.17	--	--	15.5	592	--	53.89	1	0.25	--	0.37	--	0.17	--	256	--
2002-05-31	--	9	--	6.15	--	--	27.3	479	--	39.12	1	0.13	--	0.36	--	0.17	--	182.8	--
2002-09-06	--	--	--	6.1	--	--	27.9	295	--	62.67	1	0.93	--	0.2	--	0.79	--	180.7	--
Minimum:		0	6.5	3.5	--	--	0	8	--	0	0	0	--	0	--	0	--	108	1
Maximum:		200	9.2	8.47	--	--	27.9	940	--	134.9	146	9.6	--	12.5	--	16.5	--	393	12
Average:		25.4	--	--	--	--	13.2	576	--	55.83	3.08	0.4	--	0.84	--	1.35	--	228.4	4.9
Range:		200	2.7	4.97	--	--	27.9	932	--	134.9	146	9.6	--	12.5	--	16.5	--	285	11
Median:		15	7	7.17	--	--	13.8	594	--	54.5	0	0.14	--	0.3	--	0	--	233.6	4
Loading (lb/day):									--	17.91	0.01	0.08	--	0.13	--	0.01	--		

Sample Point Description: Kent No 53 (32803037) - Effluent from pond at end of Kent-2A bog area. Sample point no longer exists since the pond has been removed.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - RD0-D1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	620	--	5.6	--	--	1.1	301	--	2.34	12.99	11.96	--	0.97	--	1.93	--	90.1	--
2002-02-08	--	441.6	--	5.74	--	--	6.8	200	--	11.78	3.2	4.45	--	0.43	--	0.69	--	53.5	--
2002-03-08	--	410	--	6.95	--	--	12.8	225	--	11.98	3.57	7.68	--	0.59	--	1.34	--	56.4	--
2002-04-06	--	986	--	5.9	--	--	10	210	--	9.98	7	6.61	--	0.46	--	1.13	--	51.5	--
2002-05-03	--	1731	--	6.32	--	--	12.8	180	--	14.37	1	4.98	--	0.37	--	0.9	--	51.9	--
2002-05-31	--	263	--	6.1	--	--	21.9	282	--	4.79	51.78	18.84	--	0.87	--	3.08	--	105.8	--
2002-07-09	--	25.6	--	3.97	--	--	22.4	737	--	2	328.3	116.9	--	4.23	--	19.33	--	456.1	--
2002-08-02	--	--	--	3.25	--	--	27	1186	--	2	1184	256.5	--	9.77	--	49.4	--	1041	--
2002-09-05	--	--	--	3.29	--	--	21.1	1690	--	2	5329	1649	--	51.09	--	293.6	--	5581	--
2002-10-04	--	34	--	3.37	--	--	22.9	337	--	2	183.4	55.26	--	2.27	--	10.08	--	288.5	--
2002-11-08	--	339	--	4.9	--	--	10.2	300	--	2	51.38	20.87	--	1.14	--	3.08	--	108.7	--
2002-12-06	--	387	--	5.6	--	--	1.6	125	--	8.58	30.19	12.54	--	0.89	--	2.18	--	81.5	--
2005-11-18	--	--	6.5	6.5	--	--	3.5	175	18	13.26	-4.16	3.14	2.72	0.39	0.36	0.72	0.09	53.3	16
2005-12-17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2006-02-25	--	--	5.2	5.77	--	--	3.6	234	9	5.74	24.48	14.26	13.41	0.9	0.9	2.42	0.47	93	5
2006-04-29	--	--	6	6.59	--	--	10.8	233	20	11.89	5.48	5.25	4.19	0.45	0.44	0.79	0.04	74.4	7
2006-05-26	--	--	6.33	6.01	--	--	15.3	209	26	8.16	10.3	9.91	9.59	0.57	0.56	1.14	0	74.8	19
2006-06-28	--	--	6.4	6.34	--	--	21	176	20	11.22	2.21	6.54	5.6	1.06	0.56	1.03	0	39.4	15
2006-07-27	--	--	3.4	3.18	--	--	507	569	0	0	60.9	21.32	16.31	2.31	2.3	2.2	2.2	193.7	1
2006-08-26	--	--	3	2.88	--	--	21	1196	0	0	249.99	36.45	30.94	5.29	4.93	20.25	19.77	419.3	10
2006-09-29	--	--	6.3	6.08	--	--	14.1	281	29	13.05	6.26	12.07	10.8	1.23	1.21	0.61	0.04	80.6	2
2006-10-27	--	--	5.8	5.92	--	--	10	228	27	10.74	5.88	7.15	6.86	0.72	0.67	1.47	0.05	75.8	7
2007-02-24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2007-03-31	--	--	6.2	5.98	--	--	8	209	12	7.96	15.05	10.19	10.13	0.51	0.51	1.37	0.15	76.5	12
2011-09-23	--	25	--	7.4	--	--	--	--	--	44	-21.8	1.91	--	2.05	--	0.87	--	159.4	26
2011-12-19	--	25	6.9	7.1	--	--	--	--	--	26.4	-17.8	0.3	--	0.05	--	0.5	--	31.8	5
2012-02-20	--	50	6.6	7.2	--	--	--	--	--	22.2	-10.4	0.55	--	0.22	--	0.5	--	33.2	5
Minimum:		25	3	2.88	--	--	1.1	125	0	0	-21.8	0.3	2.72	0.05	0.36	0.5	0	31.8	1
Maximum:		1731	6.9	7.4	--	--	507	1690	29	44	5329	1649	30.94	51.09	4.93	293.6	19.77	5581	26
Average:		410.6	--	--	--	--	35.7	422	16.1	9.94	300.49	91.78	11.06	3.55	1.24	16.82	2.28	374.8	10
Range:		1706	3.9	4.52	--	--	505.9	1565	29	44	5350.8	1648.7	28.22	51.04	4.57	293.1	19.77	5549.2	25
Median:		339	6.25	5.92	--	--	12.8	234	19	8.58	10.3	10.19	9.86	0.89	0.62	1.37	0.07	80.6	7
Loading (lb/day):									--	50.33	69.61	45.7	--	3.08	--	7.68	--		

Sample Point Description: AMD discharge; Same as BioMost, Inc sample point 851-4

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - R02

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-11-07	--	2	--	7.7	--	--	--	--	--	63.2	-45	0.44	--	0.54	--	0.5	--	209.8	5
2009-01-11	--	50	--	7.2	--	--	--	--	--	30	-13	0.74	--	0.14	--	0.5	--	50.1	5
2009-02-10	--	10	--	7.2	--	--	--	--	--	48	-33.4	0.66	--	0.33	--	0.5	--	87.5	5
Minimum:		2	--	7.2	--	--	--	--	--	30	-45	0.44	--	0.14	--	0.5	--	50.1	5
Maximum:		50	--	7.7	--	--	--	--	--	63.2	-13	0.74	--	0.54	--	0.5	--	209.8	5
Average:		20.7	--	7.31	--	--	--	--	--	47.07	-30.47	0.61	--	0.34	--	0.5	--	115.8	5
Range:		48	--	0.5	--	--	--	--	--	33.2	32	0.31	--	0.4	--	0	--	159.7	0
Median:		10	--	7.2	--	--	--	--	--	48	-33.4	0.66	--	0.33	--	0.5	--	87.5	5
Loading (lb/day):									--	8.43	-4.3	0.18	--	0.05	--	0.12	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - R03

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-11-07	--	2	--	7.9	--	--	--	--	--	110.2	-98	0.43	--	0.14	--	0.5	--	232.2	18
2008-12-12	--	2	--	8	--	--	--	--	--	94.2	-78	38.6	--	5.19	--	11.5	--	194.8	224
2009-02-10	--	5	--	8	--	--	--	--	--	84.2	-71	2.58	--	0.82	--	0.91	--	92	10
Minimum:		2	--	7.9	--	--	--	--	--	84.2	-98	0.43	--	0.14	--	0.5	--	92	10
Maximum:		5	--	8	--	--	--	--	--	110.2	-71	38.6	--	5.19	--	11.5	--	232.2	224
Average:		3	--	7.96	--	--	--	--	--	96.2	-82.33	13.87	--	2.05	--	4.3	--	173	84
Range:		3	--	0.1	--	--	--	--	--	26	27	38.17	--	5.05	--	11	--	140.2	214
Median:		2	--	8	--	--	--	--	--	94.2	-78	2.58	--	0.82	--	0.91	--	194.8	18
Loading (lb/day):									--	3.32	-2.83	0.36	--	0.06	--	0.11	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - R04

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-11-07	--	15	--	7.7	--	--	--	--	--	67.2	-52.6	0.3	--	0.16	--	0.5	--	142.2	5
2008-12-12	--	15	--	7.6	--	--	--	--	--	56.2	-43.4	0.3	--	0.53	--	0.5	--	183.9	14
2009-01-11	--	50	--	7.1	--	--	--	--	--	27.8	-10.4	0.72	--	0.19	--	0.5	--	45.7	5
2009-02-10	--	50	--	7.1	--	--	--	--	--	40	-22.2	1.26	--	0.55	--	0.5	--	93.6	5
Minimum:		15	--	7.1	--	--	--	--	--	27.8	-52.6	0.3	--	0.16	--	0.5	--	45.7	5
Maximum:		50	--	7.7	--	--	--	--	--	67.2	-10.4	1.26	--	0.55	--	0.5	--	183.9	14
Average:		32.5	--	7.29	--	--	--	--	--	47.8	-32.15	0.65	--	0.36	--	0.5	--	116.4	7.3
Range:		35	--	0.6	--	--	--	--	--	39.4	42.2	0.96	--	0.39	--	0	--	138.2	9
Median:		32.5	--	7.35	--	--	--	--	--	48.1	-32.8	0.51	--	0.36	--	0.5	--	117.9	5
Loading (lb/day):									--	15.72	-9.21	0.32	--	0.14	--	0.2	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - R05

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-11-07	--	2	--	3.6	--	--	--	--	--	0	35.8	18.04	--	5.37	--	3.25	--	357.6	6
2008-12-12	--	2	--	6.2	--	--	--	--	--	12.6	7.2	7.08	--	0.73	--	1.2	--	60.9	104
2009-01-11	--	1	--	6.8	--	--	--	--	--	17.8	3.4	2.73	--	0.39	--	0.64	--	45	16
Minimum:		1	--	3.6	--	--	--	--	--	0	3.4	2.73	--	0.39	--	0.64	--	45	6
Maximum:		2	--	6.8	--	--	--	--	--	17.8	35.8	18.04	--	5.37	--	3.25	--	357.6	104
Average:		1.7	--	4.08	--	--	--	--	--	10.13	15.47	9.28	--	2.16	--	1.7	--	154.5	42
Range:		1	--	3.2	--	--	--	--	--	17.8	32.4	15.3	--	4.98	--	2.6	--	312.6	98
Median:		2	--	6.2	--	--	--	--	--	12.6	7.2	7.08	--	0.73	--	1.2	--	60.9	16
Loading (lb/day):									--	0.17	0.36	0.21	--	0.05	--	0.04	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eeds Run AMD Remediation Project Water Quality Report - SW32

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1983-04-06	--	--	--	6.3	--	--	--	--	--	14	20	0.16	--	0.09	--	0.2	--	25	--
1985-02-26	--	--	--	6.4	--	--	--	--	--	17	6	0	--	0	--	--	--	72	--
1985-04-29	--	--	--	6.4	--	--	--	--	--	26	4	0	--	0	--	0.5	--	72	--
1985-08-22	--	--	--	6.4	--	--	--	--	--	38	2	0.5	--	0.23	--	--	--	72	--
1985-09-19	--	--	--	6.3	--	--	--	--	--	42	0	0.6	--	0.5	--	--	--	20	--
1985-10-09	--	--	--	6.6	--	--	--	--	--	38	0	0.5	--	0.49	--	--	--	1212	--
1986-01-31	--	--	--	6.8	--	--	--	--	--	22	0	0	--	0.05	--	--	--	41	--
1986-04-25	--	--	--	7	--	--	--	--	--	20	0	0	--	0.5	--	--	--	53	--
1986-07-30	--	--	--	6.2	--	--	--	--	--	38	0	0	--	0.31	--	--	--	99	--
1986-12-01	--	--	--	6.4	--	--	--	--	--	18	0	0	--	0	--	--	--	48	--
1987-01-20	--	--	--	6	--	--	--	--	--	19	10	0	--	0.5	--	--	--	20	--
1987-05-21	--	--	--	5.9	--	--	--	--	--	28	0	0.32	--	0	--	--	--	41	--
1987-07-29	--	--	--	6.3	--	--	--	--	--	66	0	0.44	--	0.31	--	--	--	102	--
1987-10-28	--	--	--	6.5	--	--	--	--	--	42	0	0.8	--	0.4	--	--	--	61	--
1988-01-18	--	--	--	6.5	--	--	--	--	--	24	0	0	--	0	--	--	--	54	--
1988-02-14	--	--	--	6.4	--	--	--	--	--	20	0	0.34	--	0.05	--	--	--	75	--
1988-04-11	--	--	--	6.2	--	--	--	--	--	24	62	0	--	0.06	--	--	--	51	--
1988-06-23	--	--	--	6.7	--	--	--	--	--	50	0	1.2	--	0.3	--	--	--	53	--
1988-09-07	--	--	--	6.5	--	--	--	--	--	48	0	0	--	0.5	--	--	--	81	--
1988-11-01	--	--	--	6.5	--	--	--	--	--	40	0	0.42	--	0.31	--	--	--	97	--
1989-09-18	--	--	--	7.1	--	--	--	--	--	30	0	0.37	--	0.14	--	--	--	80	--
1989-11-06	--	--	--	6.9	--	--	--	--	--	36	0	0.9	--	0.16	--	--	--	88	--
1990-01-10	--	--	--	6.8	--	--	--	--	--	18	0	0.3	--	0	--	--	--	41	--
1990-07-17	--	--	--	6.9	--	--	--	--	--	30	0	0.3	--	0.11	--	--	--	40	--
1990-10-24	--	--	--	7	--	--	--	--	--	26	0	0	--	0.11	--	--	--	20	2
1991-06-25	--	--	--	4.1	--	--	--	--	--	2	78	0.65	--	8.8	--	11.7	--	500	2
1991-10-08	--	--	--	6.8	--	--	--	--	--	52	0	0.35	--	0.28	--	--	--	44	2
1992-03-04	--	--	--	6.9	--	--	--	--	--	17	0	0	--	0.05	--	--	--	31	2
1992-09-08	--	--	--	6.5	--	--	--	--	--	46	0	0.6	--	0.5	--	--	--	47	16
1992-12-16	--	--	--	6.8	--	--	--	--	--	20	0	1.8	--	0.2	--	1.3	--	28	40
1993-07-30	--	--	--	6.7	--	--	--	--	--	44	0	0.87	--	0.44	--	--	--	76	--
1994-04-28	--	--	--	6.2	--	--	--	--	--	16	0	0.39	--	0	--	--	--	28	18
1994-06-23	--	--	--	7	--	--	--	--	--	40	0	0.44	--	0.24	--	--	--	10	3
1995-03-15	--	--	--	6.7	--	--	--	--	--	26	0	0.44	--	0.1	--	--	--	34	--
1995-04-11	--	--	--	6.7	--	--	--	--	--	24	0	0.34	--	0.06	--	0	--	39	--
1995-06-02	--	125	7	7.46	--	--	16	214	--	38.9	0	0.21	--	0.11	--	--	--	47	4
1995-07-03	--	--	--	6.6	--	--	--	--	--	106	0	1.5	--	0.4	--	1	--	39	--
1995-12-08	--	350	6.5	6.67	--	--	2	223	--	21.5	0	0.1	--	0.15	--	--	--	40	1
1996-03-21	--	--	--	6.2	--	--	--	--	--	15.8	5.6	0.25	--	0	--	0	--	30	2
1996-03-27	--	--	--	6.2	--	--	--	--	--	15.8	5.6	0	--	0	--	--	--	30	--
1996-04-03	--	25	--	7.54	--	--	5	259	--	41.2	0	0.23	--	0.16	--	--	--	47	2
1996-08-09	--	25	--	7.84	--	--	--	355	--	106.3	0	1.92	--	0.1	--	--	--	34	2
1996-10-08	--	20	--	7.62	--	--	--	343	--	91.4	0	0.76	--	1.11	--	--	--	48	2
1997-02-21	--	70	--	7.25	--	--	--	180	--	30.6	0	0.37	--	0.12	--	--	--	31	2
1997-03-12	--	--	--	6.2	--	--	--	--	--	22	5	0	--	0	--	0	--	32.1	--
1997-05-06	--	--	--	6.2	--	--	--	--	--	36	0	0	--	0	--	--	--	32.1	0
1997-06-03	--	60	--	7.69	--	--	--	246	--	53.3	0	0.54	--	0.41	--	--	--	33	5
1997-07-16	--	20	--	7.54	--	--	--	396	--	114.3	0	1.05	--	1.51	--	--	--	34	7
1997-11-18	--	75	6.9	7.45	--	--	--	242	--	44.7	0	0.47	--	0.41	--	--	--	31	9
1998-01-05	--	--	--	6.2	--	--	--	--	--	20	17.2	9.44	--	0.66	--	1.36	--	77.9	0
1998-03-02	--	135	--	7.02	--	--	--	206	--	37	0	0.29	--	0.23	--	--	--	45	5
1998-04-20	--	250	--	7.52	--	--	--	162	--	36	0	0.57	--	0.21	--	--	--	28	5
1998-09-04	--	2	6	6.51	--	--	16	215	--	36	0	0.4	--	0.18	--	--	--	43	3
1998-11-27	--	35	6.8	7.04	--	--	8	234	--	36.6	--	36.6	--	0.13	--	--	--	55	1
1999-02-19	--	75	6.1	6.22	--	--	4	250	--	9.2	27.6	13.85	--	0.84	--	--	--	77.3	6
1999-03-05	--	--	--	6.6	--	--	--	--	--	19	0	0	--	0	--	--	--	0	4
1999-06-18	--	35	5.1	5.57	--	--	14	477	--	4.6	112.1	49	--	1.9	--	--	--	228.8	5
1999-08-12	--	2.5	2.8	3.01	--	--	20.8	2700	--	--	2134.2	628.75	--	21.45	--	--	--	2215.3	17
1999-12-21	--	375	7.1	6.71	--	--	2.8	192	--	12.8	4.6	3.48	--	0.43	--	--	--	66.1	6
2000-03-10	--	200	6.7	6.29	--	--	7.9	240	--	12.9	34.6	7.62	--	0.69	--	--	--	77.5	5
2000-05-08	--	--	--	6.8	--	--	--	--	--	36	0	0	--	0.51	--	--	--	37.2	6
2000-06-22	--	275	6.4	6.63	--	--	20	209	--	20.3	6.9	7.63	--	0.45	--	--	--	72.8	7
2000-09-25	--	60	5.9	6.21	--	--	11.8	408	--	18.2	74.6	39.05	--	1.57	--	--	--	184.4	14
2000-10-30	--	160	6.5	6.26	--	--	8.1	344	--	15.5	51	26.75	--	1.46	--	--	--	145.8	12
2000-11-13	--	--	--	6.8	--	--	--	--	--	42	0	0	--	0.1	--	--	--	35.8	4
2001-01-26	--	150	6.2	6.68	--	--	0.2	212	--	15.3	--	7	--	0.6	--	--	--	74	6
2001-05-16	--	70	5.3	5.03	--	--	13.2	452	--	4.9	108.1	29.1	--	1.84	--	--	--	219.3	18
2002-01-04	--	620	6.6	--	--	--	1.7	180	--	14.4	0	0.17	--	0.06	--	0	--	37.5	--
2002-03-08	--	410	7.2	--	--	--	12.4	189	--	21.56	--	0.17	--	0.05	--	0.14	--	36.2	--
2002-05-31	--	203	6.37	--	--	--	22.1	180	--	32.73	--	1.12	--	0.11	--	1.01	--	40.8	--
2002-09-06	--	--	6.06	--	--	--	18.5	89	--	82.63	--	0.56	--	1.01	--	0.2	--	31.3	--

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-09-23	--	25	--	7.6	--	--	--	--	--	41.6	-24.6	0.3	--	0.07	--	0.5	--	26.7	6
2011-12-19	--	25	7.1	7.3	--	--	--	--	--	28.4	-24.2	0.3	--	0.05	--	0.5	--	24.2	28
2012-02-20	--	50	6.9	7.3	--	--	--	--	--	25.2	-11.6	0.3	--	0.05	--	0.5	--	23.8	5
Minimum:		2	2.8	3.01	--	--	0.2	89	--	2	-24.6	0	--	0	--	0	--	0	0
Maximum:		620	7.2	7.84	--	--	22.1	2700	--	114.3	2134.2	628.75	--	21.45	--	11.7	--	2215.3	40
Average:		135.4	--	--	--	--	10.8	348	--	33.17	39.26	11.93	--	0.74	--	1.18	--	106.3	7.1
Range:		618	4.4	4.83	--	--	21.9	2611	--	112.3	2158.8	628.75	--	21.45	--	11.7	--	2215.3	40
Median:		70	6.5	6.62	--	--	11.8	234	--	28	0	0.38	--	0.19	--	0.5	--	43.5	5
Loading (lb/day):									--	39.29	19.33	8.73	--	0.63	--	0.62	--		

Sample Point Description: Upstream of Reeds Run project at township road

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

eds Run AMD Remediation Project Water Quality Report - SW33

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
1983-04-06	--	--	--	3.7	--	--	--	--	--	0	212	60	--	1.3	--	11.2	--	200	--
1985-02-26	--	--	--	4	--	--	--	--	--	2	226	85.8	--	0.55	--	13.3	--	276	--
1985-04-29	--	--	--	3.2	--	--	--	--	--	0	1204	300	--	3.9	--	93.9	--	1152	--
1985-08-22	--	--	--	3.1	--	--	--	--	--	0	3760	300	--	11.4	--	273	--	4229	--
1985-09-19	--	--	--	3.1	--	--	--	--	--	0	5300	300	--	17.4	--	451	--	304	--
1986-01-31	--	--	--	3.4	--	--	--	--	--	0	724	213	--	2	--	54	--	732	--
1986-04-25	--	--	--	3.7	--	--	--	--	--	0	230	81.6	--	1.3	--	20.3	--	255	--
1986-07-30	--	--	--	3.1	--	--	--	--	--	0	1646	300	--	5.2	--	102	--	1164	--
1986-12-11	--	--	--	4.5	--	--	--	--	--	8	148	48.7	--	0.9	--	10.6	--	188	--
1987-01-20	--	--	--	4.8	--	--	--	--	--	8	76	23	--	0.5	--	5.2	--	77	--
1987-05-21	--	--	--	4.2	--	--	--	--	--	5	212	75	--	1.7	--	15	--	281	--
1987-07-29	--	--	--	3.1	--	--	--	--	--	0	3060	300	--	24.5	--	265	--	2940	--
1987-10-09	--	--	--	3.1	--	--	--	--	--	0	4140	300	--	14.5	--	393	--	3402	--
1987-10-28	--	--	--	5.5	--	--	--	--	--	13	72	31.8	--	2	--	6.6	--	176	--
1988-04-11	--	--	--	5.7	--	--	--	--	--	14	96	16.1	--	0.6	--	3	--	91	--
1988-06-23	--	--	--	3.1	--	--	--	--	--	0	776	246	--	8.4	--	51.9	--	690	--
1988-09-07	--	--	--	3.1	--	--	--	--	--	0	550	202	--	7.9	--	37.7	--	484	--
1988-11-01	--	--	--	4.4	--	--	--	--	--	10	412	144	--	5.5	--	26.2	--	449	--
1989-02-14	--	--	--	6.1	--	--	--	--	--	19	10	7.1	--	0.5	--	1.6	--	71	--
1989-09-18	--	--	--	5.8	--	--	--	--	--	10	80	35.9	--	1.5	--	5.1	--	109	--
1989-11-06	--	--	--	4.6	--	--	--	--	--	8	98	13	--	4.9	--	8.7	--	268	--
1990-01-10	--	--	--	5.9	--	--	--	--	--	10	32	10.7	--	0.58	--	2	--	51	--
1990-07-17	--	--	--	6.2	--	--	--	--	--	22	20	16.6	--	0.92	--	2.8	--	117	--
1991-06-25	--	--	--	7.4	--	--	--	--	--	58	0	0.7	--	0.48	--	0	--	67	--
1991-10-08	--	--	--	3.1	--	--	--	--	--	0	3820	300	--	57.5	--	210	--	3631	--
1992-03-04	--	--	--	6.9	--	--	--	--	--	15	28	12	--	0.76	--	1.9	--	73	--
1992-09-08	--	--	--	4.4	--	--	--	--	--	12	38	2.9	--	6.3	--	6.8	--	306	--
1992-12-16	--	--	--	6.6	--	--	--	--	--	22	0	9.3	--	0.78	--	3.9	--	41	--
1994-04-28	--	--	--	5.9	--	--	--	--	--	15	7.8	5.5	--	0.36	--	1.4	--	51	--
1994-06-23	--	--	--	3.8	--	--	--	--	--	0	90	0.5	--	7.4	--	11.3	--	364	--
1995-03-15	--	--	--	6.3	--	--	--	--	--	18	3.6	8.4	--	0.54	--	1.3	--	47	--
1995-04-11	--	--	--	6.3	--	--	--	--	--	22	14.6	11.1	--	0.71	--	1.7	--	71	--
1995-06-02	--	125	6	6.06	--	--	16	364	--	8	46.5	5.7	--	1.61	--	--	--	152	6
1995-07-13	--	--	--	4.8	--	--	--	--	--	8.2	168	84	--	3.5	--	11.2	--	331	--
1995-08-28	--	1	4	2.94	--	--	20	7154	--	0	7394.5	3462.5	--	101.25	--	--	--	14401	--
1995-12-08	--	350	6.5	6.07	--	--	2	317	--	7.3	28.3	15.1	--	1.18	--	--	--	97	15
1996-03-21	--	--	--	6	--	--	--	--	--	15.6	14.4	2.8	--	24	--	0.64	--	41	--
1996-04-03	--	30	--	6.37	--	--	5	224	--	8.4	14.8	8.25	--	0.6	--	--	--	82	4
1996-08-09	--	35	--	6.06	--	--	--	337	--	6.5	49.6	25.9	--	1.22	--	--	--	120	7
1996-10-08	--	35	--	6.37	--	--	--	336	--	12.5	38.2	24.55	--	1.22	--	--	--	139	18
1997-02-21	--	75	--	6.52	--	--	--	166	--	9	3.6	5.82	--	0.33	--	--	--	47	4
1997-03-12	--	--	--	6.1	--	--	--	--	--	22	20	8.14	--	0.5	--	1.33	--	1.3	4
1997-05-06	--	--	--	5.8	--	--	--	--	--	16.4	70	30.6	--	1.46	--	4.85	--	151	20
1997-06-03	--	75	--	6.58	--	--	--	238	--	14.5	3.6	5.82	--	0.53	--	--	--	67	8
1997-07-16	--	25	--	4.75	--	--	--	643	--	2.1	174.8	62.5	--	3.04	--	--	--	403	4
1997-11-18	--	120	6.5	6.7	--	--	--	237	--	14.5	0	5.7	--	0.52	--	--	--	67	10
1998-01-05	--	--	6.4	--	--	--	22	--	--	0	0	0	--	0	--	0	--	27.9	10
1998-03-02	--	225	--	6.39	--	--	--	200	--	12.7	0	4.81	--	0.42	--	--	--	57	4
1998-04-20	--	300	--	6.77	--	--	--	156	--	12.9	0	2.89	--	0.3	--	--	--	44	11
1998-09-04	--	3	4.5	3.36	--	--	16	1489	--	0	404.8	161.25	--	18.4	--	--	--	739	9
1998-11-27	--	40	4.7	3.48	--	--	7	750	--	--	143	47.7	--	3.73	--	--	--	546	10
1999-02-19	--	100	6.3	6.36	--	--	4	299	--	12.9	26.4	12.5	--	87	--	--	--	96	9
1999-05-10	--	--	--	6.2	--	--	--	--	--	22	32	20.8	--	1.1	--	2.87	--	136	--
1999-06-18	--	40	5.1	4.34	--	--	14	555	--	--	211.9	80.75	--	3.11	--	--	--	298.1	3
1999-08-12	--	3	2.6	2.91	--	--	25.5	2970	--	--	2363.9	731.25	--	6.19	--	--	--	2832	6
1999-12-22	--	400	7.4	6.63	--	--	2.7	255	--	13.7	5	5.4	--	0.59	--	--	--	97.4	9
2000-03-10	--	225	7	6.38	--	--	8.2	318	--	15	19.6	11.25	--	0.86	--	--	--	101.8	10
2000-06-22	--	350	6.7	6.38	--	--	20.7	272	--	21.5	14.1	10.9	--	0.59	--	--	--	106.1	7
2000-09-22	--	75	6.5	6.3	--	--	12.1	414	--	23.9	49.9	31.45	--	1.57	--	--	--	178.7	2
2000-10-30	--	150	6.8	6.41	--	--	8.2	364	--	19.2	34.5	23	--	1.41	--	--	--	157.2	10
2000-11-13	--	--	--	6.3	--	--	--	--	--	32	34	24.8	--	1.48	--	3.04	--	100.4	24
2001-01-26	--	175	6.3	6.43	--	--	0.2	271	--	17.6	5.9	8.61	--	0.88	--	--	--	107.2	5
2001-05-16	--	85	5.5	5.58	--	--	13.3	486	--	4	106.1	48.5	--	2.2	--	--	--	240.9	10
2005-11-18	--	--	6.5	6.45	--	--	4.5	175	14	11.58	0.4	2.93	2.69	0.5	0.5	0.51	0.09	57.4	3
2005-12-17	--	--	5.9	5.3	--	--	1.3	225	16	1.9	22.37	14.85	13.89	1.01	0.94	2.48	0.43	85.5	11
2006-02-25	--	--	6.02	5.77	--	--	5	238	8	6.22	28.66	15.88	15.02	0.9	0.85	2.29	0.11	95.3	8
2006-04-29	--	--	6.1	6.46	--	--	11.7	195	6	9.76	3.45	4.61	4.48	0.43	0.42	0.48	0.05	65.3	11
2006-05-26	--	--	5.9	6.03	--	--	15.3	205	6	9.09	12.12	9.41	4.41	0.78	0.53	0.86	0.17	77	12
2006-06-28	--	--	6.7	6.55	--	--	20.7	189	17	15.96	-6.23	4.78	3.68	0.54	0.53	0.53	0.05	48.1	4
2006-07-27	--	--	5.4	5.05	--	--	22.1	366	8	2.68	11.26	5.49	4.61	5.71	5.65	0.57	0.24	166.7	4
2006-08-26	--	--	3.7	3.43	--	--	20.9	711	0	0	46.89	16.03	9.2	12.52	12.2	3.17	3.16	264.2	5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-09-29	--	--	6.1	5.79	--	--	14.4	294	--	8.66	9.49	9.7	8.76	2.36	2.35	0.37	0.13	81.8	1
2006-10-27	--	--	5.6	5.91	--	--	9.7	222	6	9.52	4.7	6.7	6.22	0.96	0.86	0.37	0.04	65.7	5
2007-02-24	--	--	6.3	5.59	--	--	1.3	242	17.4	3.94	35.02	15.56	15.27	0.85	0.74	9.37	0.25	94.9	11
2007-03-31	--	--	6.1	6.15	--	--	9.2	239	18.3	13.7	8.71	8.01	7.35	0.91	0.87	0.35	0.22	89.8	4
2011-09-23	--	40	--	7.4	--	--	--	--	--	40.2	-21.2	2.04	--	0.47	--	0.84	--	49.8	18
2011-12-19	--	10	7	7	--	--	--	--	--	30.4	-20	2.55	--	0.69	--	0.5	--	51.1	6
2012-02-20	--	50	7	7.1	--	--	--	--	--	26.4	-13.2	1.61	--	0.43	--	0.5	--	47.1	5
Minimum:		1	2.6	2.91	--	--	0.2	156	0	0	-21.2	0	2.69	0	0.42	0	0.04	1.3	1
Maximum:		400	7.4	7.4	--	--	25.5	7154	18.3	58	7394.5	3462.5	15.27	101.25	12.2	451	3.16	14401	24
Average:		116.4	--	--	--	--	11.5	614	10.61	11.11	495.97	109.67	7.97	6.32	2.2	39.6	0.41	585.4	8.3
Range:		399	4.8	4.49	--	--	25.3	6998	18.3	58	7415.7	3462.5	12.58	101.25	11.78	451	3.12	14399.7	23
Median:		75	6.1	5.9	--	--	11.7	283	8	9.76	34.25	15.33	6.79	1.2	0.86	3.11	0.15	108.1	7.5
Loading (lb/day):									--	21.87	37.91	20.33	--	5.16	--	0.25	--		

Sample Point Description: Downstream below Reeds Run Project

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

eds Run AMD Remediation Project Water Quality Report - WETLD

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-09-23	--	15	6.3	7.6	--	--	--	--	--	38.6	-19.6	0.41	--	0.23	--	0.5	--	37.2	6
2011-12-19	--	20	6.6	6.9	--	--	--	--	--	39.4	-24.2	3.97	--	1.75	--	0.5	--	113.4	5
2012-02-20	--	30	6.7	6.9	--	--	--	--	--	33.4	-18.8	4.35	--	1.14	--	0.5	--	104.1	6
Minimum:		15	6.3	6.9	--	--	--	--	--	33.4	-24.2	0.41	--	0.23	--	0.5	--	37.2	5
Maximum:		30	6.7	7.6	--	--	--	--	--	39.4	-18.8	4.35	--	1.75	--	0.5	--	113.4	6
Average:		21.7	6.5	7.03	--	--	--	--	--	37.13	-20.87	2.91	--	1.04	--	0.5	--	84.9	5.7
Range:		15	0.4	0.7	--	--	--	--	--	6	5.4	3.95	--	1.52	--	0	--	76.2	1
Median:		20	6.6	6.9	--	--	--	--	--	38.6	-19.6	3.97	--	1.14	--	0.5	--	104.1	6
Loading (lb/day):									--	9.48	-5.37	0.86	--	0.29	--	0.13	--		

Sample Point Description: Effluent of wetland

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA.

eds Run AMD Remediation Project Water Quality Report - 851-1

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2005-11-18	--	377.2	7	6.97	--	--	4.5	160	22	21.2	-14.85	0.55	0.47	0.22	0.21	0.28	0.1	39.6	2
2005-12-17	--	--	6.31	7.14	--	--	2.1	316	19	40.67	-27.52	1.18	0.7	0.46	0.27	0.21	0.2	91.1	3
2006-02-25	--	--	5.98	6.48	--	--	3.9	175	18	19.79	-13.13	1.56	1.14	0.28	0.27	0.58	0.22	45	1
2006-04-29	--	--	6.3	7.15	--	--	15.5	155	13	19.38	-5.68	0.47	0.38	0.16	0.16	0.14	0.05	36.1	9
2006-05-26	--	--	6.99	6.62	--	--	15	168	35	23.03	-14.14	2.85	0.49	0.34	0.29	0.51	0.11	68.8	3
2006-06-28	--	--	6.9	6.98	--	--	19.9	156	27	27.05	-15.88	0.61	0.18	0.25	0.21	0.23	0	26.6	1
2006-07-27	--	--	6.4	6.84	--	--	21.7	240	56	53.4	-38.79	1.14	0.06	0.61	0.56	0.3	0.05	47.7	7
2006-08-26	--	--	6.5	6.95	--	--	19.3	280	43	35.31	-25.41	1.78	1	1.79	1.75	0.08	0	79	2
2006-09-29	--	--	6.7	6.77	--	--	13.9	213	35	38.15	-25.05	0.9	0.59	0.37	0.36	0.25	0.1	41.6	3
2006-10-27	--	--	6.1	6.37	--	--	10.4	176	31	24.21	-15.48	0.93	0.51	0.31	0.31	0.25	0.11	37.7	4
2007-02-24	--	--	6.3	6.25	--	--	1.2	157	42	15.29	-5.97	1.01	0.67	0.32	0.31	0.28	0.27	41.9	2
2007-03-31	--	4309	6.4	6.5	--	--	9.1	182	20	17.92	-9.7	1.52	0.53	0.25	0.18	0.41	0.15	40.2	5
Minimum:		377.2	5.98	6.25	--	--	1.2	155	13	15.29	-38.79	0.47	0.06	0.16	0.16	0.08	0	26.6	1
Maximum:		4309	7	7.15	--	--	21.7	316	56	53.4	-5.68	2.85	1.14	1.79	1.75	0.58	0.27	91.1	9
Average:		2343.1	6.38	6.65	--	--	11.4	198	30.08	27.95	-17.63	1.21	0.56	0.45	0.41	0.29	0.11	49.6	3.5
Range:		3931.8	1.02	0.9	--	--	20.5	161	43	38.11	33.11	2.38	1.08	1.63	1.59	0.5	0.27	64.5	8
Median:		2343.1	6.4	6.81	--	--	12.2	176	29	23.62	-15.17	1.08	0.52	0.32	0.28	0.27	0.11	41.8	3
Loading (lb/day):									566.87	511.28	-284.39	40.54	14.77	6.96	5.13	11.23	4.1		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

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4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - 851-2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2005-11-18	--	377.2	6.5	6.92	--	--	4.5	161	22	18.59	-9.5	0.48	0.4	0.28	0.27	0.17	0	37.8	3
2005-12-17	--	--	6.33	6.99	--	--	4.5	208	22	21.83	-9.9	0.99	0.51	0.44	0.22	0.18	0.12	54.5	3
2006-02-25	--	--	5.9	6.44	--	--	4.2	177	16	19.21	-12.54	1.62	1.23	0.42	0.38	0.35	0.24	47	5
2006-04-29	--	--	6.1	6.39	--	--	13.7	170	16	12.92	-1.02	4.97	3.49	0.31	0.27	0.78	0.11	48.1	8
2006-05-26	--	--	6.99	6.61	--	--	13.9	173	18	23.75	-13.13	1.07	0.26	0.28	0.23	0.31	0	70.6	3
2006-06-28	--	--	6.4	6.61	--	--	19.9	166	27	17.39	-9.65	3.87	3.33	0.38	0.34	0.79	0.05	41	1
2006-07-27	--	--	5.4	4.32	--	--	21.7	430	22	0	85.63	50.54	37.45	1.88	1.77	7.11	0.12	198.5	11
2006-08-26	--	--	6.1	6.87	--	--	19.3	302	20	28.09	-19.9	0.7	0.59	1.54	1.39	0.53	0.18	79.1	12
2006-09-29	--	--	6.6	7.26	--	--	13.9	214	36	37.89	-26.46	0.77	0.41	0.38	0.37	0.24	0.1	38.7	2
2006-10-27	--	186.5	6.1	6.34	--	--	10.5	172	30	24.21	-15.68	0.61	0.43	0.33	0.3	0.24	0.08	37.5	4
2007-02-24	--	--	6.2	6.25	--	--	1.1	152	48	17.93	-7.76	1.17	0.66	0.32	0.3	0.46	0.24	40.4	9
2007-03-31	--	--	6.2	6.54	--	--	8.9	168	20	19.03	-11.48	1.14	0.5	0.25	0.23	0.27	0	42	4
Minimum:		186.5	5.4	4.32	--	--	1.1	152	16	0	-26.46	0.48	0.26	0.25	0.22	0.17	0	37.5	1
Maximum:		377.2	6.99	7.26	--	--	21.7	430	48	37.89	85.63	50.54	37.45	1.88	1.77	7.11	0.24	198.5	12
Average:		281.8	6.06	5.37	--	--	11.3	208	24.75	20.07	-4.28	5.66	4.11	0.57	0.51	0.95	0.1	61.3	5.4
Range:		190.6	1.59	2.94	--	--	20.6	278	32	37.89	112.09	50.06	37.19	1.63	1.55	6.94	0.24	161	11
Median:		281.8	6.2	6.58	--	--	12.1	173	22	19.12	-10.69	1.11	0.55	0.36	0.3	0.33	0.11	44.5	4
Loading (lb/day):									83.36	69.16	-39.05	1.77	1.39	1	0.95	0.65	0.09		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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eds Run AMD Remediation Project Water Quality Report - 851-3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2005-11-18	--	377.2	6.3	6.88	--	--	4.5	162	22	20.19	-12.47	0.96	0.84	0.31	0.3	0.26	0	36.7	7
2005-12-17	--	--	5.9	6.75	--	--	1	212	19	22.09	-11.68	2.34	2.09	0.51	0.48	0.5	0.2	93.7	7
2006-02-25	--	--	5.64	5.94	--	--	3.7	206	12	8.85	12.94	9.25	6.49	0.76	0.63	1.54	0.3	74.9	12
2006-04-29	--	353.9	6.1	6.52	--	--	12.5	178	14	10.69	1.83	5.97	5.54	0.34	0.32	0.95	0	51.3	13
2006-05-26	--	--	6.6	6.01	--	--	15	207	26	7.81	8.48	10.53	9.74	0.54	0.51	1.62	0.05	79.7	26
2006-06-28	--	--	6.4	6.27	--	--	19	179	22	9.18	3.02	8.12	7.75	0.49	0.46	1.55	0	41.6	6
2006-07-27	--	--	5	3.5	--	--	21.2	529	0	0	93.06	57.36	52.99	2.18	2.16	4.66	0.36	219	9
2006-08-26	--	--	4	3.13	--	--	19.1	1607	0	0	676.5	275	275	6.79	6.44	31.14	30.76	822.9	4
2006-09-29	--	--	6.4	6.23	--	--	13.8	241	27	18.05	-1.82	9.03	7.58	0.7	0.64	1.09	0.12	76.3	12
2006-10-27	--	--	5.9	6.04	--	--	10.5	191	24	11.56	-0.2	5.63	4.94	0.5	0.49	1.03	0.11	51.2	2
2007-02-24	--	--	6.2	6.06	--	--	1.1	167	--	12.98	-0.4	3.39	3.3	0.36	0.35	1.08	0.27	49.2	4
2007-03-31	--	5386	6.2	6.25	--	--	8.7	180	16	13.55	-4.35	9.92	4.38	0.47	0.34	0.69	0.26	35.6	4
Minimum:		353.9	4	3.13	--	--	1	162	0	0	-12.47	0.96	0.84	0.31	0.3	0.26	0	35.6	2
Maximum:		5386	6.6	6.88	--	--	21.2	1607	27	22.09	676.5	275	275	6.79	6.44	31.14	30.76	822.9	26
Average:		2039	5.01	4.05	--	--	10.8	338	16.55	11.25	63.74	33.13	31.72	1.16	1.09	3.84	2.7	136	8.8
Range:		5032.1	2.6	3.75	--	--	20.2	1445	27	22.09	688.97	274.04	274.16	6.48	6.14	30.88	30.76	787.3	24
Median:		377.2	6.15	6.15	--	--	11.5	199	19	11.13	0.82	8.58	6.02	0.51	0.49	1.09	0.16	63.1	7
Loading (lb/day):									397.71	337.51	-109.94	223.62	103.47	11.07	8.23	16.6	5.6		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-09-23	--	3	3	3.1	--	--	--	--	--	0	6632	1390	--	26	--	>500	--	8644	26
2011-12-16	--	5	3.2	3	--	--	--	--	--	0	6906	>300	--	26.4	--	>500	--	9403	28
2012-02-20	--	5	3.15	3.15	--	--	15	--	--	0	6277	1226	--	22.1	--	>500	--	7388	40
2013-06-17	--	10	--	2.84	--	--	--	8912	--	0	7816.7	5640	4156	36.9	33.2	379	360	11476.3	0
2015-03-17	--	15	4	2.81	--	--	--	7214	--	0	5157.76	819	401	21.93	19.85	656	544	6466.6	9
Minimum:		3	3	2.81	--	--	15	7214	--	--	5157.76	819	401	21.93	19.85	379	360	6466.6	0
Maximum:		15	4	3.15	--	--	15	8912	--	--	7816.7	>300	4156	36.9	33.2	>500	544	11476.3	40
Average:		7.6	--	2.96	--	--	15	8063	--	--	6557.89	2268.75	2278.5	26.67	26.53	517.5	452	8675.6	20.6
Range:		12	1	0.34	--	--	0	1698	--	--	2658.94	4821	3755	14.97	13.35	277	184	5009.7	40
Median:		5	3.18	3	--	--	15	8063	--	--	6632	1308	2278.5	26	26.53	517.5	452	8644	26
Loading (lb/day):									--	--	579.23	236.96	285.45	2.44	3.78	81.78	70.56		

Sample Point Description: Discharge that surfaces below french drain installed between the old refuse pile and the new oxidation terrace. D2 is the worst discharge in the entire watershed.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-12-08	--	--	--	3	--	--	--	--	--	0	784	135	--	24.8	--	52	--	1354	16
2007-01-22	--	7	--	3.2	--	--	--	--	--	0	518	136	--	15.3	--	30.1	--	1323	6
2007-12-10	--	2	--	3.2	--	--	--	--	--	0	318	89.3	--	12	--	18.2	--	761	4
2008-02-29	--	2	--	3.2	--	--	--	--	--	0	602	167	--	21.6	--	43.3	--	1188	4
2008-03-28	--	--	--	3.2	--	--	--	--	--	0	442	112	--	14.1	--	28.9	--	972	8
2008-05-01	--	--	--	2.8	--	--	--	--	--	0	609	202	--	22.7	--	46.6	--	1208	122
2008-06-03	--	3	--	2.9	--	--	--	--	--	0	1229	>300	--	27.8	--	70.1	--	2193	24
2008-07-03	--	1	--	2.7	--	--	--	--	--	0	527	124.1	--	14.9	--	27.9	--	1152	44
2008-09-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2008-10-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2009-01-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2011-09-23	--	2	3	3	--	--	--	--	--	0	388	54.2	--	12.5	--	33.8	--	947	0
2011-12-16	--	2	3.3	3.1	--	--	--	--	--	0	527	105.8	--	16.2	--	42.8	--	1218	32
2012-02-20	--	5	3.5	3.3	--	--	4	--	--	0	357	81.8	--	11.3	--	26	--	982	12
2015-03-17	--	6.9	4.6	3.78	--	--	--	540	--	0	76.6	20.61	12.65	2.76	2.59	6.35	4.06	214.1	17
Minimum:		0	3	2.7	--	--	4	540	--	--	76.6	20.61	12.65	2.76	2.59	6.35	4.06	214.1	0
Maximum:		7	4.6	3.78	--	--	4	540	--	--	1229	>300	12.65	27.8	2.59	70.1	4.06	2193	122
Average:		2.8	--	--	--	--	4	540	--	--	531.47	111.62	12.65	16.33	2.59	35.5	4.06	1126	24.1
Range:		7	1.6	1.08	--	--	0	0	--	--	1152.4	181.39	0	25.04	0	63.75	0	1978.9	122
Median:		2	3.4	3.15	--	--	4	540	--	--	522.5	112	12.65	15.1	2.59	31.95	4.06	1170	14
Loading (lb/day):									--	--	18.43	3.69	1.05	0.54	0.21	1.2	0.34		

Sample Point Description: Low flow, degraded discharge below the reclaimed coal refuse disposal area within a ditch upgradient of an existing access road at the eastern edge of the project site.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D4

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-12-08	--	--	--	3	--	--	--	--	--	0	1773	68.4	--	16.4	--	260	--	2455	30
Minimum:		--	--	3	--	--	--	--	--	--	1773	68.4	--	16.4	--	260	--	2455	30
Maximum:		--	--	3	--	--	--	--	--	--	1773	68.4	--	16.4	--	260	--	2455	30
Average:		--	--	3	--	--	--	--	--	--	1773	68.4	--	16.4	--	260	--	2455	30
Range:		--	--	0	--	--	--	--	--	--	0	0	--	0	--	0	--	0	0
Median:		--	--	3	--	--	--	--	--	--	1773	68.4	--	16.4	--	260	--	2455	30
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Sample taken within degraded wetland next to Neal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-12-08	--	--	--	3.2	--	--	--	--	--	0	525	34.1	--	7.2	--	66.4	--	763	12
Minimum:		--	--	3.2	--	--	--	--	--	--	525	34.1	--	7.2	--	66.4	--	763	12
Maximum:		--	--	3.2	--	--	--	--	--	--	525	34.1	--	7.2	--	66.4	--	763	12
Average:		--	--	3.2	--	--	--	--	--	--	525	34.1	--	7.2	--	66.4	--	763	12
Range:		--	--	0	--	--	--	--	--	--	0	0	--	0	--	0	--	0	0
Median:		--	--	3.2	--	--	--	--	--	--	525	34.1	--	7.2	--	66.4	--	763	12
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

Sample Point Description: Sample taken approximately 50' to the north of NL0-D5. Discharge may mix with unimpacted emanating near sewer line.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D6 (pre-treatment)

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2007-12-10	--	1	--	2.7	--	--	--	--	--	0	831	7.6	--	1.5	--	2.8	--	176	10
2008-02-29	--	1	--	3	--	--	--	--	--	0	106	3.4	--	2.9	--	5.4	--	189	32
2008-03-28	--	--	--	3.1	--	--	--	--	--	0	75	2.8	--	1.3	--	1.7	--	98	46
2008-05-01	--	--	--	2.9	--	--	--	--	--	0	104	3.3	--	2.5	--	3.1	--	144	320
2008-06-03	--	3	--	2.8	--	--	--	--	--	0	1445	39.6	--	7.1	--	41.9	--	1867	68
2008-07-03	--	1	--	2.7	--	--	--	--	--	0	4616	>300	--	18.1	--	416.9	--	5607	42
2008-09-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2008-10-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2009-01-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum:		0	--	2.7	--	--	--	--	--	--	75	2.8	--	1.3	--	1.7	--	98	10
Maximum:		3	--	3.1	--	--	--	--	--	--	4616	>300	--	18.1	--	416.9	--	5607	320
Average:		1	--	--	--	--	--	--	--	--	1196.17	11.34	--	5.57	--	78.63	--	1346.8	86.3
Range:		3	--	0.4	--	--	--	--	--	--	4541	36.8	--	16.8	--	415.2	--	5509	310
Median:		1	--	2.85	--	--	--	--	--	--	468.5	3.4	--	2.7	--	4.25	--	182.5	44
Loading (lb/day):									--	--	29.66	0.52	--	0.13	--	1.65	--		

Sample Point Description: Pre-construction: Small degraded discharge approximately 200' upgradient from culvert beneath McIntyre Road.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D6

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-09-23	--	2	5.6	7.8	--	--	--	--	--	58	-40	0.5	--	1	--	0	--	288	12
2011-12-16	--	2	6.5	7.4	--	--	--	--	--	51	-34	1.7	--	1.7	--	0.7	--	98	44
2012-02-20	--	5	6.3	7.1	--	--	5	--	--	46	-35	0.8	--	1.5	--	0	--	137	0
2013-06-17	--	1	--	7.32	--	--	--	357	--	55.7	-35	0.3	0	0	0	0.42	0.4	94.4	0
2015-03-17	--	10	6.7	7.48	--	--	--	272	--	55.64	-38.4	0.46	0.41	0.26	0.2	0.47	0.22	63.1	9
Minimum:		1	5.6	7.1	--	--	5	272	--	46	-40	0.3	0	0	0	0	0.22	63.1	0
Maximum:		10	6.7	7.8	--	--	5	357	--	58	-34	1.7	0.41	1.7	0.2	0.7	0.4	288	44
Average:		4	--	7.36	--	--	5	315	--	53.27	-36.48	0.75	0.21	0.89	0.1	0.32	0.31	136.1	13
Range:		9	1.1	0.7	--	--	0	85	--	12	6	1.4	0.41	1.7	0.2	0.7	0.18	224.9	44
Median:		2	6.4	7.4	--	--	5	315	--	55.64	-35	0.5	0.21	1	0.1	0.42	0.31	98	9
Loading (lb/day):									--	2.54	-1.78	0.03	0.02	0.04	0.01	0.02	0.02		

Sample Point Description: Pre-construction: Small degraded discharge approximately 200' upgradient from culvert beneath McIntyre Road. Post-construction: Effluent of OPC2.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D7 (pre-treatment)

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2007-12-10	--	1	--	2.6	--	--	--	--	--	0	6336	>300	--	23.7	--	>500	--	6870	0
2008-02-29	--	1	--	2.7	--	--	--	--	--	0	5807	1190	--	22.2	--	667	--	7871	20
2008-03-28	--	--	--	2.7	--	--	--	--	--	0	1400	1080	--	18	--	621	--	6649	36
2008-05-01	--	--	--	2.6	--	--	--	--	--	0	6450	>300	--	28.1	--	>500	--	7654	36
2008-06-03	--	3	--	2.6	--	--	--	--	--	0	4253	>300	--	20.4	--	466.6	--	4750	16
2008-07-03	--	1	--	2.6	--	--	--	--	--	0	4068	>300	--	17.4	--	371.1	--	4984	42
2008-07-29	--	1	--	2.6	--	--	--	--	--	0	8355	>300	--	35.1	--	>500	--	10406	36
2008-09-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2008-10-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2009-01-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum:		0	--	2.6	--	--	--	--	--	--	1400	1080	--	17.4	--	371.1	--	4750	0
Maximum:		3	--	2.7	--	--	--	--	--	--	8355	>300	--	35.1	--	>500	--	10406	42
Average:		1	--	--	--	--	--	--	--	--	5238.43	1135	--	23.56	--	531.43	--	7026.3	26.6
Range:		3	--	0.1	--	--	--	--	--	--	6955	110	--	17.7	--	295.9	--	5656	42
Median:		1	--	2.6	--	--	--	--	--	--	5807	1135	--	22.2	--	543.8	--	6870	36
Loading (lb/day):									--	--	89.58	14.28	--	0.38	--	9.75	--		

Sample Point Description: Pre-construction: AMD about 300' upgradient of McIntyre Road and NLO-D3. Original discharge location of D2. As refuse was removed from the project area, the discharge was discovered to emanate at the D2 location.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D7

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-09-23	--	5	2.8	2.8	--	--	--	--	--	0	5055	804	--	24.9	--	>500	--	7247	58
2011-12-16	--	3	3.2	2.9	--	--	--	--	--	0	5334	>300	--	24.7	--	>500	--	6953	56
2012-02-20	--	10	3.2	2.9	--	--	5	--	--	0	4884	893	--	19.2	--	544	--	4367	78
2013-06-17	--	10	--	2.64	--	--	--	7636	--	0	6671.5	1192	792	38	18.68	400	389	11696.4	7
2015-03-17	--	15	4.5	2.82	--	--	--	4319	--	0	2330.9	354	312	12.1	11.75	273	263	3434.6	9
Minimum:		3	2.8	2.64	--	--	5	4319	--	--	2330.9	354	312	12.1	11.75	273	263	3434.6	7
Maximum:		15	4.5	2.9	--	--	5	7636	--	--	6671.5	>300	792	38	18.68	>500	389	11696.4	78
Average:		8.6	--	2.8	--	--	5	5978	--	--	4855.08	810.75	552	23.78	15.22	405.67	326	6739.6	41.6
Range:		12	1.7	0.26	--	--	0	3317	--	--	4340.6	838	480	25.9	6.93	271	126	8261.8	71
Median:		10	3.2	2.82	--	--	5	5978	--	--	5055	848.5	552	24.7	15.22	400	326	6953	56
Loading (lb/day):									--	--	460.31	90.54	75.6	2.29	2.18	54.14	47.01		

Sample Point Description: Pre-construction: AMD about 300' upgradient of McIntyre Road and NLO-D3. Original discharge location of D2. As refuse was removed from the project area, the discharge was discovered to emanate at the D2 location. Post-construction: OPC1 upstream of confluence with OPC2 effluent

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - D8

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2008-07-29	--	1	--	2.6	--	--	--	--	--	0	7884	300	--	33.17	--	500	--	9842.3	110
2008-11-07	--		--	2.7	--	--	--	--	--	0	7979.6	300	--	33.87	--	500	--	8802.9	40
Minimum:			--	2.6	--	--	--	--	--	--	7884	300	--	33.17	--	500	--	8802.9	40
Maximum:		1	--	2.7	--	--	--	--	--	--	7979.6	300	--	33.87	--	500	--	9842.3	110
Average:		1	--	2.65	--	--	--	--	--	--	7931.8	300	--	33.52	--	500	--	9322.6	75
Range:		0	--	0.1	--	--	--	--	--	--	95.6	0	--	0.7	--	0	--	1039.4	70
Median:		1	--	2.65	--	--	--	--	--	--	7931.8	300	--	33.52	--	500	--	9322.6	75
Loading (lb/day):									--	--	94.61	3.6	--	0.4	--	6	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - NL0-D3 (pre-treatment)

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2000-10-11	--	--	--	3	--	--	--	--	--	0	--	398	--	21	--	359	--	--	106
2001-02-12	--	--	--	2.9	--	--	--	--	--	0	--	527	--	26.4	--	448	--	1230	26
2001-07-17	--	--	--	--	--	--	--	--	--	0	--	2350	--	61.9	--	1670	--	2010	98
2002-01-04	--	10	--	2.8	--	--	4	--	--	0	5644	774.6	--	34.8	--	651.3	--	7273	--
2002-02-08	--	10.9	--	2.79	--	--	12	--	--	0	3661	484.1	--	22.9	--	422.6	--	4519	--
2002-03-08	--	7.9	--	2.83	--	--	18	--	--	0	3977	500.2	--	25	--	512.6	--	4886	--
2002-04-06	--	17.1	--	2.75	--	--	11	--	--	0	4678	577.4	--	21.4	--	483.8	--	4993	--
2002-05-03	--	15	--	2.74	--	--	17	--	--	0	6707	1037	--	26.2	--	729.9	--	7944	--
2002-05-31	--	8	--	2.8	--	--	27	--	--	0	900	1401	--	36.2	--	926.3	--	10817	--
2002-07-09	--	4	--	2.56	--	--	28	--	--	0	14722	2254	--	60	--	2030	--	17197	--
2002-08-02	--	2.2	--	2.57	--	--	33	--	--	0	16726	2201	--	67.6	--	2168	--	17905	--
2002-09-05	--	2	--	2.53	--	--	29	--	--	0	17441	2015	--	71.3	--	1702	--	18892	--
2002-10-04	--	4	--	2.55	--	--	27	--	--	0	9302	1225	--	51.7	--	1231	--	11953	--
2002-11-08	--	13	--	2.62	--	--	16	--	--	0	2980	553.1	--	24.3	--	489.3	--	5013	--
2002-12-06	--	8.5	--	2.35	--	--	5	--	--	0	4841	725.1	--	31.4	--	620	--	5746	--
2006-12-08	--	11	--	2.8	--	--	--	--	--	0	5265	>300	--	17.1	--	>500	--	5578	54
2007-01-22	--	28	--	2.9	--	--	--	--	--	0	2936	>300	--	11.9	--	268	--	3953	16
2007-12-10	--	11.5	--	2.7	--	--	--	--	--	0	3286	>300	--	14.7	--	346	--	4009	0
2008-02-29	--	18.6	--	2.8	--	--	--	--	--	0	4032	808	--	17.7	--	461	--	5377	14
2008-03-28	--	--	--	2.9	--	--	--	--	--	0	4063	829	--	16.1	--	472	--	4703	34
2008-05-01	--	--	--	2.9	--	--	--	--	--	0	5440	>300	--	23.1	--	>500	--	6117	30
2008-06-03	--	10	--	2.8	--	--	--	--	--	0	5000	>300	--	21.5	--	>500	--	5871	48
2008-07-03	--	4	--	2.7	--	--	--	--	--	0	4038	>300	--	17	--	390.2	--	4859	32
2008-07-29	--	1.5	--	2.7	--	--	--	--	--	0	6833	>300	--	30.9	--	>500	--	8408	28
2008-09-08	--	4	--	2.6	--	--	--	--	--	0	8653	>300	--	37.1	--	>500	--	11626	48
2008-10-08	--	4	--	2.7	--	--	--	--	--	0	8267	>300	--	35.2	--	>500	--	9879	46
2009-01-11	--	5	--	2.8	--	--	--	--	--	0	2235	>300	--	14.7	--	376.3	--	2977	10
2009-02-10	--	7	--	2.9	--	--	--	--	--	0	4457	>300	--	17.3	--	>500	--	5522	32
Minimum:		1.5	--	2.35	--	--	4	--	--	--	900	398	--	11.9	--	268	--	1230	0
Maximum:		28	--	3	--	--	33	--	--	--	17441	>300	--	71.3	--	>500	--	18892	106
Average:		9	--	--	--	--	18.9	--	--	--	6243.36	1097.62	--	30.59	--	797.97	--	7379.9	38.9
Range:		26.5	--	0.65	--	--	29	--	--	--	16541	1952	--	59.4	--	1900	--	17662	106
Median:		8	--	2.79	--	--	17.5	--	--	--	4841	808	--	24.65	--	489.3	--	5578	32
Loading (lb/day):									--	--	522.98	96.72	--	2.61	--	69.28	--		

Sample Point Description: Discharge at culvert pipe beneath McIntyre Road prior to construction of the PTS.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - NL0-D3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2011-09-23	--	10	3	2.8	--	--	--	--	--	0	2549	371.7	--	13.7	--	293.5	--	3219	56
2011-12-16	--	10	3	3	--	--	--	--	--	0	2573	>300	--	13.6	--	304.9	--	3461	68
2012-02-20	--	20	4	3	--	--	6	--	--	0	2846	502	--	12.1	--	313	--	3313	40
2013-06-17	--	10	--	2.63	--	--	--	6083	--	0	4783.57	666	656	27.4	26.79	412	391	6799.7	11
2015-03-17	--	68.6	4.6	3.06	--	--	--	2180	--	0	282.6	135.1	114	4.67	4.64	105	72	1632.5	49
Minimum:		10	3	2.63	--	--	6	2180	--	--	282.6	135.1	114	4.67	4.64	105	72	1632.5	11
Maximum:		68.6	4.6	3.06	--	--	6	6083	--	--	4783.57	>300	656	27.4	26.79	412	391	6799.7	68
Average:		23.7	--	2.87	--	--	6	4132	--	--	2606.83	418.7	385	14.29	15.72	285.68	231.5	3685	44.8
Range:		58.6	1.6	0.43	--	--	0	3903	--	--	4500.97	530.9	542	22.73	22.15	307	319	5167.2	57
Median:		10	3.5	3	--	--	6	4132	--	--	2573	436.85	385	13.6	15.72	304.9	231.5	3313	49
Loading (lb/day):									--	--	420.87	89.05	86.28	2.66	3.52	56.56	53.1		

Sample Point Description: Discharge at culvert pipe beneath McIntyre Road post-construction of the PTS.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - NL0-D4

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	5	--	--	--	--	2.2	1392	--	2	253.9	27.09	--	4.35	--	49.84	--	638	--
2002-02-08	--	8.5	--	5.58	--	8.37	11.1	1041	--	68.86	1	4.51	--	1.3	--	15.01	--	349.9	--
2002-03-08	--	9	--	5.86	--	9.25	20.3	922	--	29.94	1	5.67	--	1.52	--	24.71	--	391.8	--
2002-04-06	--	18.8	--	6.51	--	11.9	11.6	1001	--	93.81	1	2.84	--	0.87	--	9.21	--	325.2	--
2002-05-03	--	34.9	--	4.5	--	11.18	17.1	1064	--	2	125	13.34	--	1.93	--	28.13	--	467.6	--
2002-05-31	--	6.9	--	4.07	--	7.35	22.9	961	--	2	270.1	25.32	--	3.61	--	53.74	--	654	--
2002-07-09	--	2	--	2.61	--	5.37	29.2	6210	--	2	6771	711	--	37.26	--	699.7	--	8121	--
2002-08-02	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2002-09-05	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2002-10-04	--	NA	--	2.6	--	4.51	29.5	4110	--	2	7265	847.1	--	56.96	--	885.9	--	9236	--
2002-11-08	--	19	--	4.36	--	7.07	16.8	1256	--	2	265	28.88	--	3.61	--	56.15	--	654.4	--
2002-12-06	--	7	--	4.47	--	--	4.2	1121	--	2	309.2	28.39	--	5.83	--	67.52	--	725.7	--
2006-12-08	--	--	--	3.1	--	--	--	--	--	0	1541	104	--	15.4	--	190	--	1410	16
2008-02-29	--	1	--	3.1	--	--	--	--	--	0	984	51.6	--	16.7	--	160	--	1373	10
2008-03-28	--	--	--	3.1	--	--	--	--	--	0	1218	52.9	--	13.6	--	142	--	1351	126
2008-05-01	--	--	--	3	--	--	--	--	--	0	1430	127	--	17.4	--	257	--	1848	758
2008-06-03	--	2	--	3	--	--	--	--	--	0	1015	52.3	--	13.4	--	139.6	--	1166	28
2008-07-03	--	3	--	2.8	--	--	--	--	--	0	1167	43.3	--	15.2	--	153	--	1664	24
2008-07-29	--	1	--	2.9	--	--	--	--	--	0	1467	209.3	--	18	--	210.7	--	1913	0
2008-09-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2008-10-08	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2009-01-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum:		0	--	2.6	--	4.51	2.2	922	--	0	1	2.84	--	0.87	--	9.21	--	325.2	0
Maximum:		NA	--	6.51	--	11.9	29.5	6210	--	93.81	7265	847.1	--	56.96	--	885.9	--	9236	758
Average:		6.9	--	--	--	8.13	16.5	1908	--	12.15	1416.72	137.33	--	13.35	--	184.84	--	1899.3	137.4
Range:		34.9	--	3.91	--	7.39	27.3	5288	--	93.81	7264	844.26	--	56.09	--	876.69	--	8910.8	758
Median:		3	--	3.1	--	7.86	17	1093	--	2	984	43.3	--	13.4	--	139.6	--	1166	24
Loading (lb/day):									--	2.55	33.46	3.31	--	0.41	--	5.7	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - NL0-D5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-02-08	--	--	--	4.1	--	8.67	11	1322	--	--	--	--	--	--	--	--	--	--	--
2002-03-08	--	28.7	--	3.65	--	8.82	18.5	1688	--	2	617.2	11.08	--	8.68	--	101.3	--	979.6	--
2002-04-06	--	18	--	4.11	--	12.04	9.6	1631	--	2	1132	9.37	--	7.15	--	86.49	--	878.4	--
2002-05-03	--	13.9	--	3.9	--	8.8	19.9	1202	--	2	480.5	10.51	--	7.32	--	70.75	--	910.5	--
2002-05-31	--	14.2	--	3.18	--	5.25	26.3	1707	--	2	593.7	17.83	--	9.58	--	98.32	--	1029	--
2002-07-09	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2002-08-02	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2002-09-05	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2002-10-04	--	NA	--	2.94	--	6.52	27.7	2350	--	2	2537	77.75	--	22.44	--	342.1	--	3322	--
2002-11-08	--	54	--	3.4	--	9.11	15.6	1354	--	2	893.5	38.92	--	13.07	--	162	--	1679	--
2002-12-06	--	8.5	--	4.11	--	--	1	1631	--	2	815.2	38.32	--	10.7	--	114.7	--	1362	--
2006-12-08	--	--	--	3.2	--	--	--	--	--	0	430	36	--	6.9	--	57.6	--	670	8
2008-02-29	--	4	--	3.4	--	--	--	--	--	0	275	8.7	--	8.2	--	43.7	--	457	0
2008-03-28	--	--	--	3.4	--	--	--	--	--	0	226	5.4	--	6	--	28	--	373	12
2008-05-01	--	--	--	3.3	--	--	--	--	--	0	603	29.2	--	10	--	104	--	826	24
2008-06-03	--	2	--	3.3	--	--	--	--	--	0	381	22.7	--	6.5	--	50.9	--	464	0
2008-07-03	--	2	--	3.1	--	--	--	--	--	0	822	62.2	--	8.2	--	98	--	1091	12
2008-07-29	--	1	--	2.9	--	--	--	--	--	0	2633	297.7	--	18.1	--	356.9	--	3180	24
2008-09-08	--	0.5	--	2.8	--	--	--	--	--	0	4317	>300	--	25.1	--	>500	--	5558	190
2008-10-08	--	0.5	--	2.8	--	--	--	--	--	0	3669	>300	--	26.5	--	>500	--	4680	184
2009-01-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minimum:		0	--	2.8	--	5.25	1	1202	--	0	226	5.4	--	6	--	28	--	373	0
Maximum:		NA	--	4.11	--	12.04	27.7	2350	--	2	4317	>300	--	26.5	--	>500	--	5558	190
Average:		9.8	--	--	--	8.46	16.2	1611	--	0.88	1276.57	47.55	--	12.15	--	122.48	--	1716.2	50.4
Range:		54	--	1.31	--	6.79	26.7	1148	--	2	4091	292.3	--	20.5	--	328.9	--	5185	190
Median:		2	--	3.3	--	8.8	17.1	1631	--	0	716.2	25.95	--	9.13	--	98.16	--	1004.3	12
Loading (lb/day):									--	0.27	118.49	4.58	--	1.52	--	20.87	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - OPC1 Effluent

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2013-06-17	--	10	--	2.56	--	--	--	5844	--	0	4720.1	676	646	27.8	23.38	430	393	5919.4	8
2015-03-17	--	68.6	4.6	3.08	--	--	--	2131	--	0	898.4	104	101.09	4.67	4.47	98	93	1802.1	29
Minimum:		10	4.6	2.56	--	--	--	2131	--	--	898.4	104	101.09	4.67	4.47	98	93	1802.1	8
Maximum:		68.6	4.6	3.08	--	--	--	5844	--	--	4720.1	676	646	27.8	23.38	430	393	5919.4	29
Average:		39.3	--	2.75	--	--	--	3988	--	--	2809.25	390	373.55	16.24	13.93	264	243	3860.8	18.5
Range:		58.6	0	0.52	--	--	--	3713	--	--	3821.7	572	544.91	23.13	18.91	332	300	4117.3	21
Median:		39.3	4.6	2.82	--	--	--	3988	--	--	2809.25	390	373.55	16.24	13.93	264	243	3860.8	18.5
Loading (lb/day):									--	--	652.99	83.37	80.37	3.59	3.24	66.14	61.86		

Sample Point Description: Effluent of OPC1 prior to entering Neal Run.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - MP2

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	310	--	5.7	--	--	--	--	--	54	--	0.5	--	0.3	--	0.1	--	207	--
2002-03-08	--	711.7	--	6.7	--	--	--	--	--	42	--	0.6	--	0.2	--	0.3	--	128	--
2002-05-31	--	764	--	5.4	--	--	--	--	--	48	--	1.2	--	0.3	--	0.9	--	162	--
2002-09-06	--	36	--	6.2	--	--	--	--	--	184	--	0.7	--	0.2	--	0.3	--	322	--
2006-12-08	--		5.9	7.4	--	--	--	--	--	48	92	0.44	--	0.18	--	0.5	--	113.8	4
2007-01-22	--		--	7.4	--	--	--	--	--	32.8	-21.2	0.3	--	0.1	--	0.5	--	103.6	3
2007-03-23	--		--	6.8	--	--	--	--	--	27.4	-8	3.09	--	0.23	--	3.12	--	87.5	74
2008-02-29	--		--	7.2	--	--	--	--	--	35.4	-8	0.33	--	0.11	--	0.2	--	141.8	2
2008-03-28	--		--	7.3	--	--	--	--	--	42.2	-30	0.43	--	0.14	--	0.5	--	114	4
2008-05-01	--		--	7.4	--	--	--	--	--	42.8	-22.6	0.3	--	0.15	--	0.5	--	91.6	10
2008-06-03	--		--	7.1	--	--	--	--	--	60.8	-32	0.32	--	0.33	--	0.5	--	155.2	5
2008-07-29	--		--	7.2	--	--	--	--	--	153.6	-139	1.64	--	1.09	--	0.5	--	240.3	5
2008-11-03	--		6.8	7.5	--	--	--	--	--	152.2	-140.2	0.87	--	0.23	--	0.5	--	463.7	8
2009-01-30	--		6.31	7.3	--	--	--	376	--	40.2	-23.8	0.3	--	0.14	--	0.5	--	129.8	5
2009-04-27	--		--	4.4 7.3	--	--	--	--	--	16.2 48.6	137 -21	25.86 0.3	--	0.91 0.14	--	17.59 0.5	--	252 94.4	28 5
2009-08-10	--		--	7.5	--	--	--	--	--	98	-86.8	0.3	--	0.3	--	0.5	--	166.2	5
2009-11-02	--		6.84	7.4	--	--	--	--	--	82.6	-69.2	0.3	--	0.31	--	0.5	--	118	5
2010-01-25	--		7.11	7.1	--	--	--	--	--	33.6	-17.4	1.47	--	0.12	--	0.67	--	60.8	20
2010-05-10	--		6.35	7.1	--	--	--	--	--	49.4	-30.4	0.3	--	0.23	--	0.5	--	98.5	5
2010-07-26	--		6.47	7.5	--	--	--	--	--	67.2	-52	0.85	--	0.42	--	0.5	--	147.1	8
2010-10-25	--		6.93	7.3	--	--	--	--	--	171	-145.8	1.13	--	0.2	--	0.5	--	362.1	5
2011-04-11	--		7.73	7.2	--	--	--	--	--	34	-23.8	1.96	--	1.08	--	0.5	--	124.7	5
2011-07-19	--		7.02	7.2	--	--	--	--	--	96.8	-75	0.6	--	0.37	--	0.5	--	218	5
2011-09-23	--		4.7	6.9	--	--	--	--	--	82.2	-57.2	0.44	--	0.34	--	0.5	--	188.6	36
2011-10-24	--		6.86	7.3	--	--	--	--	--	74.6	-61.2	0.3	--	0.32	--	0.5	--	179	5
2011-12-16	--	100	6.3	7.3	--	--	--	--	--	58.6	-39.8	0.3	--	0.17	--	0.5	--	115	6
2011-12-19	--	100	6.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2012-01-23	--		6.24	7.1	--	--	--	--	--	39.4	-37.4	0.74	--	0.11	--	0.5	--	124.8	20
2012-02-20	--	40	6.3	7.4	--	--	--	--	--	44.6	-34.8	0.3	--	0.13	--	0.5	--	156.2	5
2012-04-30	--		6.68	7.5	--	--	--	--	--	47	-46.2	0.3	--	0.16	--	0.5	--	108.5	5
2012-07-23	--		6.41	7	--	--	--	--	--	110	-97	0.34	--	0.52	--	0.5	--	258.2	5
2012-09-26	--	15	--	8	--	--	--	--	--	146.2	-110.8	0.3	--	0.19	--	0.5	--	243.8	10
2012-11-05	--		7.1	7.5	--	--	--	--	--	46	-42.2	0.33	--	0.13	--	0.5	--	96.7	5
2012-11-26	--	15	--	4.2	--	--	--	--	--	0	384.2	70.4	--	2.32	--	49.38	--	771.2	58
2013-02-04	--		7.42	7	--	--	--	--	--	31	-23.4	0.3	--	0.05	--	0.5	--	72	5
2013-04-22	--		8.06	7.6	--	--	--	--	--	41.2	-32.6	1.2	--	0.15	--	0.57	--	82.6	8
2013-07-22	--		6.53	7.2	--	--	--	--	--	81.4	-71.8	0.3	--	0.33	--	0.5	--	174.4	5
2014-08-04	--		7.45	7.4	--	--	--	--	--	44.8	-38.4	1.36	--	0.17	--	0.84	--	48.1	20
2014-10-27	--		--	7.3	--	--	--	--	--	139	-102.8	0.38	--	0.31	--	0.5	--	257.6	5
2015-04-27	--		6.46 6.46	7.4 7.4	--	--	--	--	--	42 42	-33.4 -33.4	0.3 0.3	--	0.11 0.11	--	0.5 0.5	--	85.3 85.3	8 8
2015-07-20	--		5.98	7.2	--	--	--	--	--	48.6	-11.4	0.4	--	0.21	--	0.5	--	152.8	5
Minimum:			4.7	4.2	--	--	--	376	--	0	-145.8	0.3	--	0.05	--	0.1	--	48.1	2
Maximum:		764	8.06	8	--	--	--	376	--	184	384.2	70.4	--	2.32	--	49.38	--	771.2	74
Average:		232.4	--	5.57	--	--	--	376	--	66.18	-31.76	2.91	--	0.32	--	2.13	--	173.9	11.3
Range:		749	3.36	3.8	--	--	--	0	--	184	530	70.1	--	2.27	--	49.28	--	723.1	72
Median:		100	6.5	7.3	--	--	--	376	--	48	-34.1	0.39	--	0.2	--	0.5	--	135.8	5
Loading (lb/day):									--	149.65	-3.81	3.94	--	0.8	--	2.64	--		

Sample Point Description: Neal Run above Refuse DitchNeal Run upstream of the D2 discharge.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - MP3

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2002-01-04	--	310	--	4.9	--	--	--	--	--	--	152	24.8	--	2	--	25	--	482	--
2002-03-08	--	922.5	--	4.8	--	--	--	--	--	--	--	18.9	--	1.4	--	22.4	--	343	--
2002-05-31	--	988	--	4.5	--	--	--	--	--	--	--	25.8	--	1.2	--	20	--	311	--
2002-09-06	--	32	--	3.2	--	--	--	--	--	--	--	423.8	--	15.4	--	358.6	--	3667	--
2006-12-08	--		4.8	4.4	--	--	--	--	--	9	181.8	31.2	--	1.09	--	22.2	--	280.8	36
2007-01-22	--		--	4.6	--	--	--	--	--	7.6	66	14.6	--	0.5	--	8.42	--	191.2	18
2007-03-23	--		--	4.8	--	--	--	--	--	8.6	35.6	11.6	--	0.47	--	8.97	--	112.6	142
2008-02-29	--		--	4.5	--	--	--	--	--	8.6	116	24.1	--	0.75	--	15.5	--	213.1	28
2008-03-28	--		--	4.3	--	--	--	--	--	9.4	214.2	43.58	--	1.15	--	26.4	--	352.4	22
2008-05-01	--		--	3.5	--	--	--	--	--	0	306	59.44	--	1.55	--	34.04	--	470.4	56
2008-06-03	--		--	4.2	--	--	--	--	--	6.2	274.8	50.5	--	1.83	--	32.77	--	454.4	36
2008-11-03	--		3.34	3	--	--	--	--	--	0	1211	154.99	--	7.05	--	144.99	--	2869.3	60
2009-01-30	--		5.36	4.3	--	--	--	691	--	9.6	177.6	28.9	--	1.1	--	21.1	--	339.2	6
2009-08-10	--		--	3	--	--	--	--	--	0	525.8	59.59	--	3.15	--	54.53	--	905.2	40
2009-11-02	--		4.53	4.1	--	--	--	--	--	5.6	228.2	42.13	--	2.02	--	34.04	--	436	40
2010-01-25	--		6.48	6.3	--	--	--	--	--	17	9.2	7.43	--	0.33	--	4.43	--	80.5	76
2010-05-10	--		5.15	4.5	--	--	--	--	--	8.6	159.2	33.71	--	0.95	--	19.95	--	312	28
2010-07-26	--		5.24	4.5	--	--	--	--	--	8	108	21.34	--	1.39	--	18.44	--	303.8	48
2010-10-25	--		3.17	3.4	--	--	--	--	--	0	575	49.97	--	3.4	--	80.36	--	1044	42
2011-04-11	--		4.9	4.5	--	--	--	--	--	9.8	133.8	0.54	--	0.85	--	0.89	--	276.9	20
2011-07-19	--		3.39	3.6	--	--	--	--	--	0	1385.4	253.3	--	6.79	--	150.4	--	1797.2	42
2011-09-23	--		--	4.7	--	--	--	--	--	10.4	110	17.02	--	1.37	--	19.25	--	384.9	60
2011-10-24	--		4.64	4.4	--	--	--	--	--	10.2	163.6	30.73	--	1.46	--	23.56	--	427.7	58
2011-12-16	--	100	5.1	4.6	--	--	--	--	--	10	98.6	20.44	--	0.97	--	16.07	--	284.5	38
2011-12-19	--	100	5.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2012-01-23	--		4.69	4.5	--	--	--	--	--	10.2	128.6	31	--	1.05	--	19.68	--	304.9	48
2012-02-20	--	40	4.9	4.4	--	--	--	--	--	10.2	153.8	30.31	--	1.01	--	20.92	--	334.3	30
2012-04-30	--		4.68	4.5	--	--	--	--	--	8.8	89	17.85	--	0.86	--	15.95	--	240.6	52
2012-07-23	--		4.51	4.5	--	--	--	--	--	11.4	145.6	24.18	--	1.88	--	26.1	--	502.5	44
2012-09-26	--	15	--	4.3	--	--	--	--	--	8.4	175.8	10.97	--	2.15	--	32.89	--	525	46
2012-11-05	--		5.93	6.1	--	--	--	--	--	5.8	10	8.01	--	0.47	--	6.47	--	149.8	28
2012-11-26	--	10	--	7.6	--	--	--	--	--	74.2	-68	0.43	--	0.48	--	0.5	--	242.9	5
2013-02-04	--		5.93	5.4	--	--	--	--	--	1.4	21	7.72	--	0.29	--	4.68	--	127.4	22
2013-04-22	--		6.67	4.9	--	--	--	--	--	0.6	23.8	9.62	--	0.49	--	7.31	--	166.3	38
2013-07-22	--		4.35	4.5	--	--	--	--	--	0	149	30.22	--	1.34	--	22.84	--	461.4	46
2014-08-04	--		6.7	6.1	--	--	--	--	--	7.6	3	5.69	--	0.4	--	4.86	--	111.7	44
2014-10-27	--		--	6.3	--	--	--	--	--	54.6	-21.6	4.61	--	1.26	--	8.75	--	376.1	36
2015-04-27	--		5.81 5.81	5 5	--	--	--	--	--	0 0	22.4 22.4	11.35 11.35	--	0.47 0.47	--	7 7	--	180 180	40 40
2015-07-20	--		4.52	4.6	--	--	--	--	--	0	109.2	30.2	--	0.75	--	16.64	--	265.6	44
Minimum:			3.17	3	--	--	--	691	--	0	-68	0.43	--	0.29	--	0.5	--	80.5	5
Maximum:		988	6.7	7.6	--	--	--	691	--	74.2	1385.4	423.8	--	15.4	--	358.6	--	3667	142
Average:		279.7	--	3.94	--	--	--	691	--	9.48	199.88	43.13	--	1.83	--	34.97	--	525.8	41.7
Range:		978	3.53	4.6	--	--	--	0	--	74.2	1453.4	423.37	--	15.12	--	358.1	--	3586.5	137
Median:		100	4.9	4.5	--	--	--	691	--	8.4	131.2	24.18	--	1.1	--	19.95	--	312	40
Loading (lb/day):									--	6.83	156.21	101.4	--	5.65	--	93.89	--		

Sample Point Description: Neal Run below Refuse Dtich at old rail crossingNeal Run downstream of the D2 discharge.

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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Neal Run Restoration Project Water Quality Report - MP3.5

Date	Method of Flow	Flow - Field (gal/min)	pH - Field (S.U.)	pH - Lab (S.U.)	ORP - Field (mvolts)	DO - Field (mg/L)	Temp - Field (C)	Cond - Lab (umhos/cm)	Alkalinity - Field (mg/L)	Alkalinity - Lab (mg/L)	Acidity - Lab (mg/L)	T. Fe - Lab (mg/L)	D. Fe - Lab (mg/L)	T. Mn - Lab (mg/L)	D. Mn - Lab (mg/L)	T. Al - Lab (mg/L)	D. Al - Lab (mg/L)	SO4 - Lab (mg/L)	TSS - Lab (mg/L)
2006-12-08	--		4.8	4.4	--	--	--	--	--	8.8	77.4	31.1	--	1.12	--	22.6	--	386.3	36
Minimum:			4.8	4.4	--	--	--	--	--	8.8	77.4	31.1	--	1.12	--	22.6	--	386.3	36
Maximum:			4.8	4.4	--	--	--	--	--	8.8	77.4	31.1	--	1.12	--	22.6	--	386.3	36
Average:		data has not been set	4.8	4.4	--	--	--	--	--	8.8	77.4	31.1	--	1.12	--	22.6	--	386.3	36
Range:		data has not been set	0	0	--	--	--	--	--	0	0	0	--	0	--	0	--	0	0
Median:		data has not been set	4.8	4.4	--	--	--	--	--	8.8	77.4	31.1	--	1.12	--	22.6	--	386.3	36
Loading (lb/day):									--	--	--	--	--	--	--	--	--		

1. Records with no value are not included in statistical calculations.

2. Values lower than the minimum detection limit are assumed to be 0.

3. Average pH is not calculated as a mean of pH values, but rather a mean of hydronium ion concentration.

4. Dissolved metals used for calculated acidity values when available. Acidities calculated from total metals may be exaggerated.

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