APPALACHIAN
MOUNTAIN
ADVOCATES

Great Horned Owl © Estate of Roger Tory Peterson.

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January 15, 2016

Penn Virginia Operating Co., LLC
Three Radnor Corporate Center, Suite 230
100 Matsonford Road
Radnor, PA 19087

By Certified Mail - Return Receipt Requested

Re: 60-Day notice of Intent to File Citizens Suit Under Clean Water Act Section 505(a)(1) for Violations of Section 301 of that Act.

To Penn Virginia Operating Co., LLC,[1]

The Sierra Club, Ohio Valley Environmental Coalition, and West Virginia Highlands Conservancy, in accordance with section 505 of the Clean Water Act (the "Act" or the "CWA"), 33 U.S.C. § 1365, and 40 C.F.R. Part 135, hereby notify you that Penn Virginia Operating Co., LLC ("PVOC") has violated, and continues to violate, "an effluent standard or limitation" under Sections 301(a) and 505(a)(1)(A) of the Act, 33 U.S.C. §§ 1311(a), 1365(a)(1)(A), by discharging pollutants from at least ten unpermitted point sources. Those point sources are located in Randolph County, West Virginia, on property that was formerly subject to coal mining activities. If, within sixty days of the postmark of this letter, PVOC does not bring its discharges into full compliance with the Act, either by obtaining and complying with a WV/NPDES permit with appropriate effluent limitations or by ceasing the discharge of pollutants through treatment or otherwise, we intend to file a citizen suit seeking civil penalties for PVOC's ongoing violation and an injunction compelling PVOC to comply with the Act.

I. Factual Background

In 2013 and 2014, the West Virginia Department of Environmental Protection ("WVDEP") water sampling, photography and laboratory analysis of surface water discharges in the Tygart Valley Watershed for purposes of Total Maximum Daily Load ("TMDL") development. Ten particular locations sampled were identified by WVDEP as mine discharges. None of those ten sites are on current or former West Virginia Surface Coal Mining and Reclamation Act ("WVSCMRA") permits, indicating that the sources are associated with mining activities that took place prior to the enactment of the federal Surface Mine Control and Reclamation Act, 30 U.S.C. § 1234 *et seq.*

[1] The name of the President, CEO, or managing agent of Penn Virginia Operating Co., LLC is not publicly available.

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According to public records, Penn Virginia owns the real property containing the ten sampled mine discharges. Each of those discharges is from a discernible, confined and discrete conveyance, which are point sources under the Act. None of the point sources are covered by WV/NPDES permits. Following is a description of each of the ten sites, as compiled from WVDEP field sheets, pictures, and lab reports.

Site 1: Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77

Site 1 consists of two pipes emerging from the ground. The discharges from each pipe have the same water chemistry. The pipes are discharging water containing aluminum, calcium, iron, magnesium, manganese, and very low pH into an unnamed tributary of Grassy Run of the Tygart Valley River. *See* Exhibit 1.

Site 2: Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09

Site 2 consists of an 18 inch pipe emerging from the ground. The pipe is discharging water containing aluminum, iron, manganese, very low pH, conductivity, TDS, and sulfates into an unnamed tributary of Roaring Creek of the Tygart Valley River. *See* Exhibit 2.

Site 3: Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09

Site 3 consists of a collapsed deep mine portal. The mine portal is discharging water containing aluminum, iron, manganese, very low pH, conductivity, TDS, and sulfates into an unnamed tributary of Roaring Creek of the Tygart Valley River. *See* Exhibit 3.

Site 4: Mine Discharge into UNT/Roaring Creek RM 4.09

Site 4 consists of a 12 inch pipe emerging from the ground. The pipe is discharging water containing aluminum, iron, manganese, very low pH, conductivity, TDS, and sulfates into an unnamed tributary of Roaring Creek of the Tygart Valley River. *See* Exhibit 4.

Site 5: Mine outlet into UNT/Cassity Fork RM 0.76

Site 5 consists of a pipe emerging from the ground. The pipe is discharging water containing aluminum, iron, manganese, very low pH, conductivity, TDS, and sulfates into an unnamed tributary of Cassity Fork of the Middle Fork River of the Tygart Valley River. *See* Exhibit 5.

Site 6: Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62

Site 6 consists of 4 ponds constructed in a line with an outlet at the lowest pond. The ponds are discharging water containing aluminum, beryllium, iron, manganese, very low pH, conductivity, TDS, and sulfates into an unnamed tributary of Panther Run of Cassity Fork of the Middle Fork River of the Tygart Valley River. *See* Exhibit 6.

Site 7: Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62

Site 7 consists of two seeps that surface into a manmade rip-rap channel which ends in a series of ponds, separated by berms. The lowest pond discharges into an unnamed tributary of Panther Run of Cassity Fork of the Middle Fork River of the Tygart Valley River. The rip-rap channel is discharging iron into the ponds and then into the unnamed tributary of Panther Run. *See* Exhibit 7.

Site 8: Mine Pond Discharge into UMT/Panther Run RM 1.03

Site 8 consists of 2 concrete channels which end in a pond. The pond discharges through a third concrete channel to an unmapped tributary of Panther Run of Cassity Fork of the Middle Fork River of the Tygart Valley River. The pond is discharging aluminum, iron, manganese, very low pH, conductivity, TDS, and sulfates into the concrete channel and then into the unmapped tributary of Panther Run. *See* Exhibit 8.

Site 9: Mine Discharge into UMT/Panther Run RM 1.03

Site 9 consists of a 12 inch pipe emerging from the ground, discharging into a concrete channel. The concrete channel then discharges into an unmapped tributary of Panther Run of Cassity Fork of the Middle Fork River of the Tygart Valley River. The pipe is discharging iron, manganese, conductivity, TDS, and sulfates into the concrete channel and then into the unmapped tributary of Panther Run. *See* Exhibit 9.

Site 10: Mine pond discharge into UMT/Cassity Fork RM 1.73

Site 10 consists of a manmade pond. The pond is discharging aluminum, iron, manganese, very low pH, conductivity, TDS, and sulfates into an unmapped tributary of Cassity Fork. *See* Exhibit 10.

The coordinates, specific water chemistry, and dates sampled for each location are contained in Exhibit 11 to this letter.

WVDEP has identified many of the receiving streams as impaired for pollutants discharged from the above listed point sources and has developed Total Maximum Daily Loads ("TMDLs") for some. Grassy Run is impaired for aluminum and the biological condition, with TMDLs for iron and pH. UNT/Roaring Creek RM 4.09 is impaired for aluminum, the biological condition, iron, and pH. Roaring Creek is impaired for aluminum, with TMDLs for iron and pH. Cassity Fork is impaired for aluminum, beryllium, and the biological condition, with TMDLs for iron and pH. Panther Run is impaired for aluminum (trout), with TMDLs for iron and pH. UNT/Panther Run RM 0.62 is impaired for aluminum (trout).

The sampling performed by WVDEP does not purport to specify all possible pollutants discharged from the various sources. Therefore, it is likely that other pollutants are being discharged as well. The point sources are untreated and therefore discharges are likely to continue unabated.

II. Clean Water Act Violations

Section 301 of the CWA bans "any addition of any pollutant to navigable waters from any point source" without a permit. West Virginia Highlands Conservancy v. Huffman, 625 F.3d 159, 165 (4th Cir. 2010). This prohibition applies to post-mining discharges. Section 301(a) prohibits "the discharge of any pollutant by any person" without a permit under the Act. In the absence of an active operator, the landowner is responsible for obtaining a permit and complying with its provisions. *Webb v. Gorsuch*, 699 F.2d 157, 161 (4th Cir. 1983) ("post-mining discharges from a point source such as these mines are illegal in the absence of an NPDES permit, the conditions of which the owner of the property must meet").

The sources sampled by WVDEP, described above, are point sources as that term is used in the context of the CWA. 33 U.S.C. § 1362(14). The streams receiving the mine discharges are "navigable waters" under the Act. The above-described point sources discharged the identified pollutants into their receiving streams on the dates sampled by WVDEP and every time water flows from each point source. Without an active operator to control the discharges, PVOC is responsible for obtaining and complying with a WV/NPDES Permit for those sources. It has not done so. As a result, PVOC is in violation of Section 301(a) of the CWA, 33 U.S.C. 1311(a), for discharging pollutants without a permit.

III. Conclusion

As described above, PVOC has discharged pollutants from at least ten unpermitted point sources on its property into tributaries of Grassy Run, Roaring Creek, Cassity Fork, and Panther Run without a permit, and these streams are waters of the United States. Consequently, PVOC has violated and is in violation of the CWA. If PVOC does not cease these violations, we intend to bring a citizen suit against it under Section 505 of the Clean Water Act seeking civil penalties and injunctive relief to enforce the permit requirement.

If PVOC does not advise us of any remedial steps during the 60-day period, we will assume that no such steps have been taken, that the violations described above are accurate and persist, and that violations are likely to continue. Additionally, we would be happy to meet with PVOC or its representatives to attempt to resolve these issues within the 60-day notice period. However, if violations are continuing at the time this letter ripens, we do not intend to delay filing suit.

Sincerely,

Amy Vernon-Jones
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(304) 522-0246

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cc:
Via Certified Mail

Secretary Randy Huffman
West Virginia Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Regional Administrator Shawn M. Garvin
U.S. Environmental Protection Agency Region III
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Administrator Gina McCarthy
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Mail Code 1101A
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Registered Agent for Penn Virginia Operating Co., LLC
Corporation Service Company
209 West Washington Street
Charleston, WV 25302

Exhibit 1

76021

TMDL Source Form

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Reviewers Initials	

Stream Name (with location) ~~UNT/Grassy Run Outlet #1~~ Mine Discharge to UNT/UNT RM 0.53/Grassy Run RM 1.77

AN-Code	MT-41-B-2-(0.03)-Discharge	**Date**	1-21-14	**Time**	1030	**Geo**	NS	**Bio**	EG
Basin	Tygart	**County**	Randolph	**Quad**	Junior				
GPS Type	Garmin	**EPE**	18	**XY's Proofed**		**By**			
Field Lat X-site	38° 55' 9.2"	N	**Field Lon X-site**	79° 59' 15.3"	W				
Corrected Lat		N	**Corrected Lon**		W				

Sampled ☑ Yes ☐ No

If not, why?
☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*)
☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*)
☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded
☐ Other:

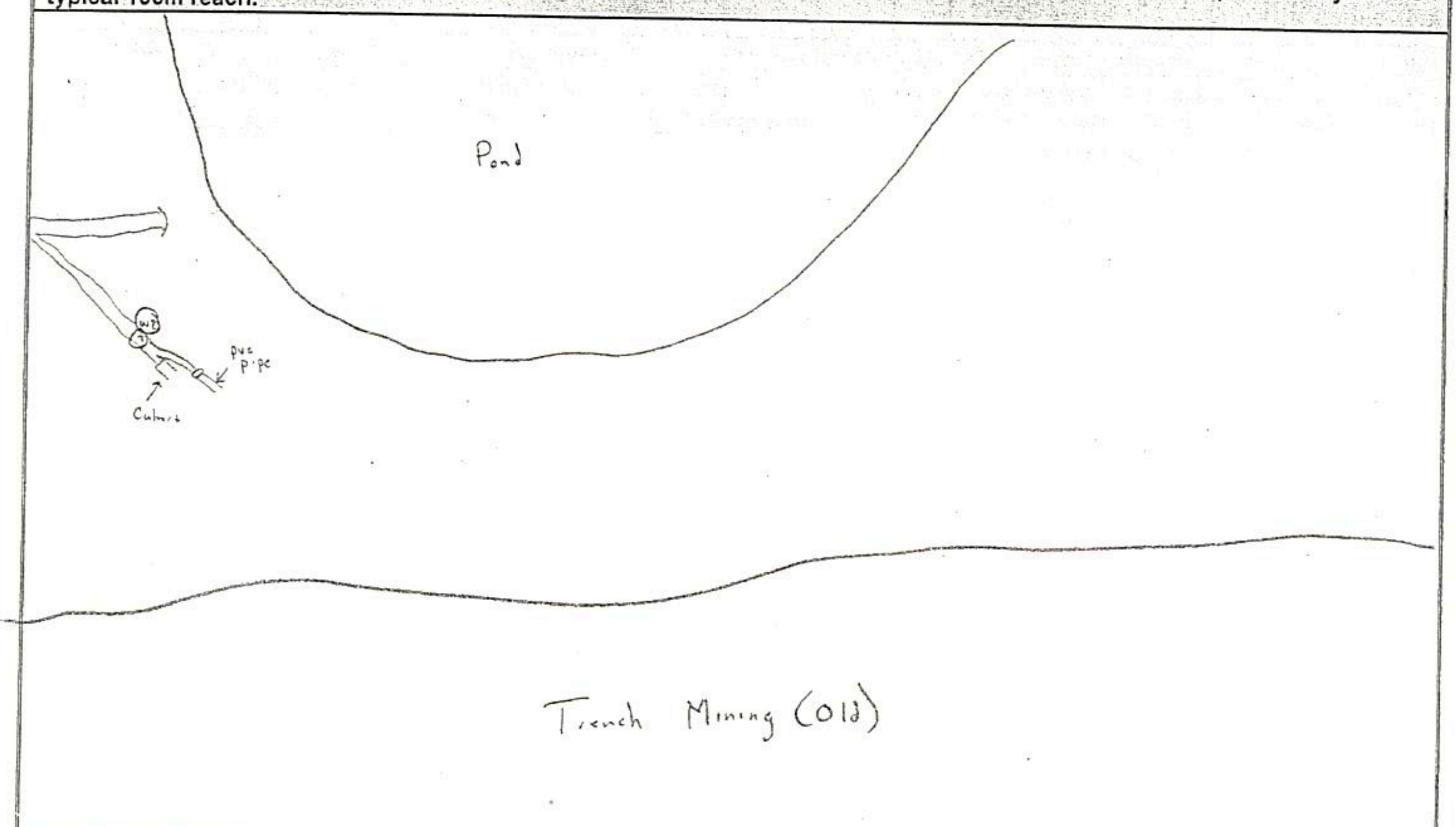
Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☑ Flow ☐ Other:

Duplicate type ☑ None ☐ Lab ☐ Fecal **Duplicate WQ ID** — **Was site moved?** ☐ Yes ☑ No

Explanation?

Directions To Site From Elkins take Rt 33W to Rt 151. Follow Rt 151 to CR 53 on left. Continue on CR 53 ≈ 1.3 mi to gravel road on right. Go through gate and continue 0.3 mi. Park and hike to site.

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		**Single WQ Sample ID**	71-914

EXHIBIT 1

Reviewers Initials		FIELD WATER>>>

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	8.75	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	3.35	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	10.15	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	337	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	Snow	Past 24 Hours (If Known)	Snow	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow = 14 gpm (14 gal = 1.87 cubic foot) = 0.0312 cf sec

Outlet is combination of two pipe with same water chem. Moderate Fe and red dog.

EXHIBIT 1

Exhibit

2

TMDL Source Form

76137 vps

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Reviewers Initials	

Stream Name (with location)	Mine Discharge into UNT/UNT RM 0.61/ Roaring Creek RM 4.09 ~~Outlet #4/UNT Roaring Creek RM 4.09~~ on LDB W of Coalton

AN-Code	MT-42-0.8A-1 - (0.81) - Discharge	**Date**	2-26-14	**Time**	1330	**Geo** NS	**Bio** EG
Basin	Tygart	**County**	Randolph	**Quad**			
GPS Type	Garmin	**EPE**	20	**XY's Proofed**		**By**	

Field Lat X-site	38 53 27.9 N	**Field Lon X-site**	79 59 1.7	W
Corrected Lat	N	**Corrected Lon**		W

Sampled	☑ Yes ☐ No	**If not, why?**	☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

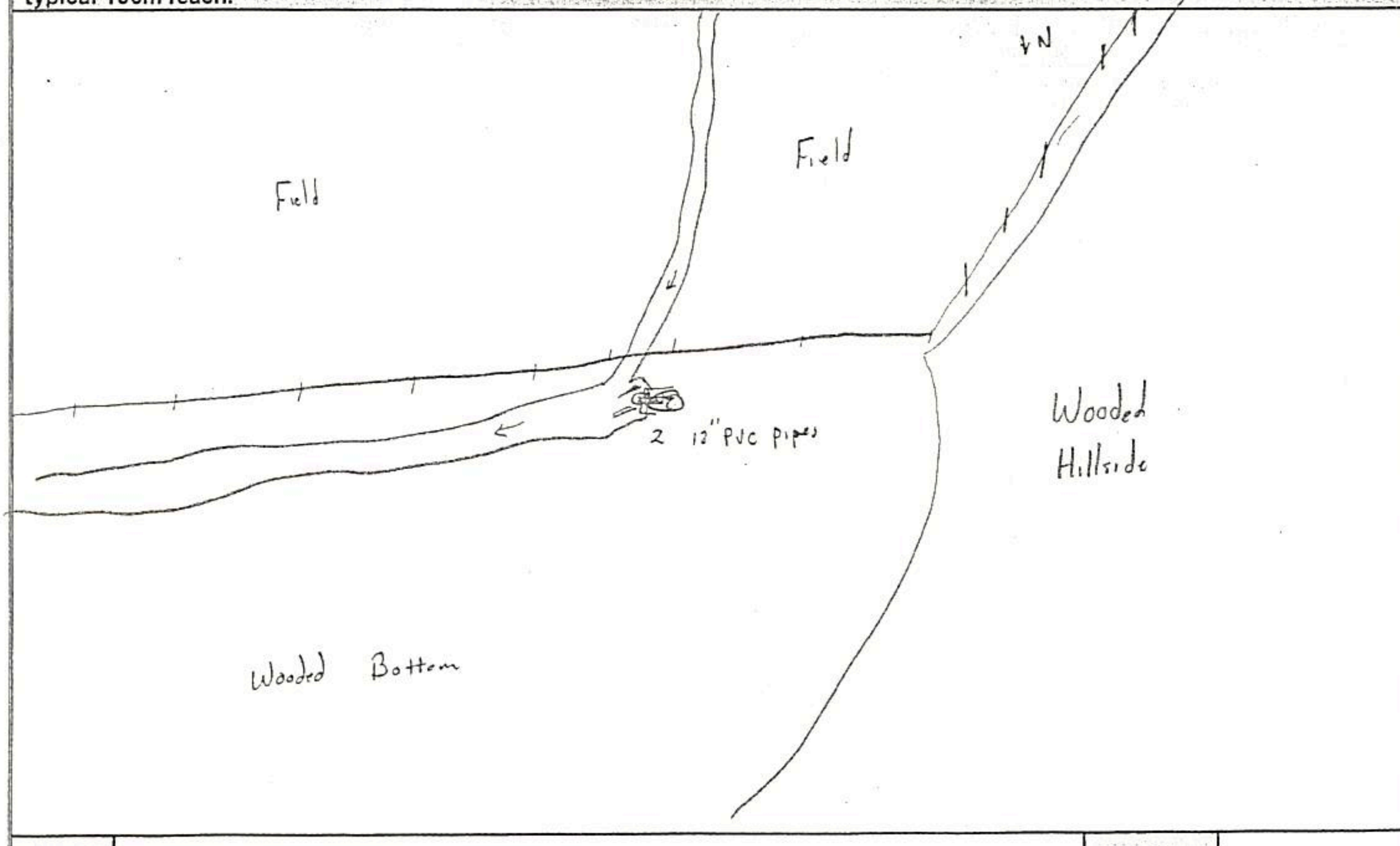
Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☑ Flow ☐ Other:

Duplicate type	☑ None ☐ Lab ☐ Fecal	**Duplicate WQ ID**		**Was site moved?**	☐ Yes ☑ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes	WQ taken from inside pipes	**Single WQ Sample ID**	73-617

EXHIBIT 2

Reviewers Initials		FIELD WATER>>>

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	9.81	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	2.64	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	7.05	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	1331	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	None	Past 24 Hours (If Known)	Snow	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies: ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow ≅ 30gpm 0.0668

EXHIBIT 2

Exhibit 3

76139

TMDL Source Form

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>		Reviewers Initials	VB
Stream Name (with location)	Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09 ~~Seep #1/UNT/UNT/UNT [illegible]~~ on RDB W of Coalton		

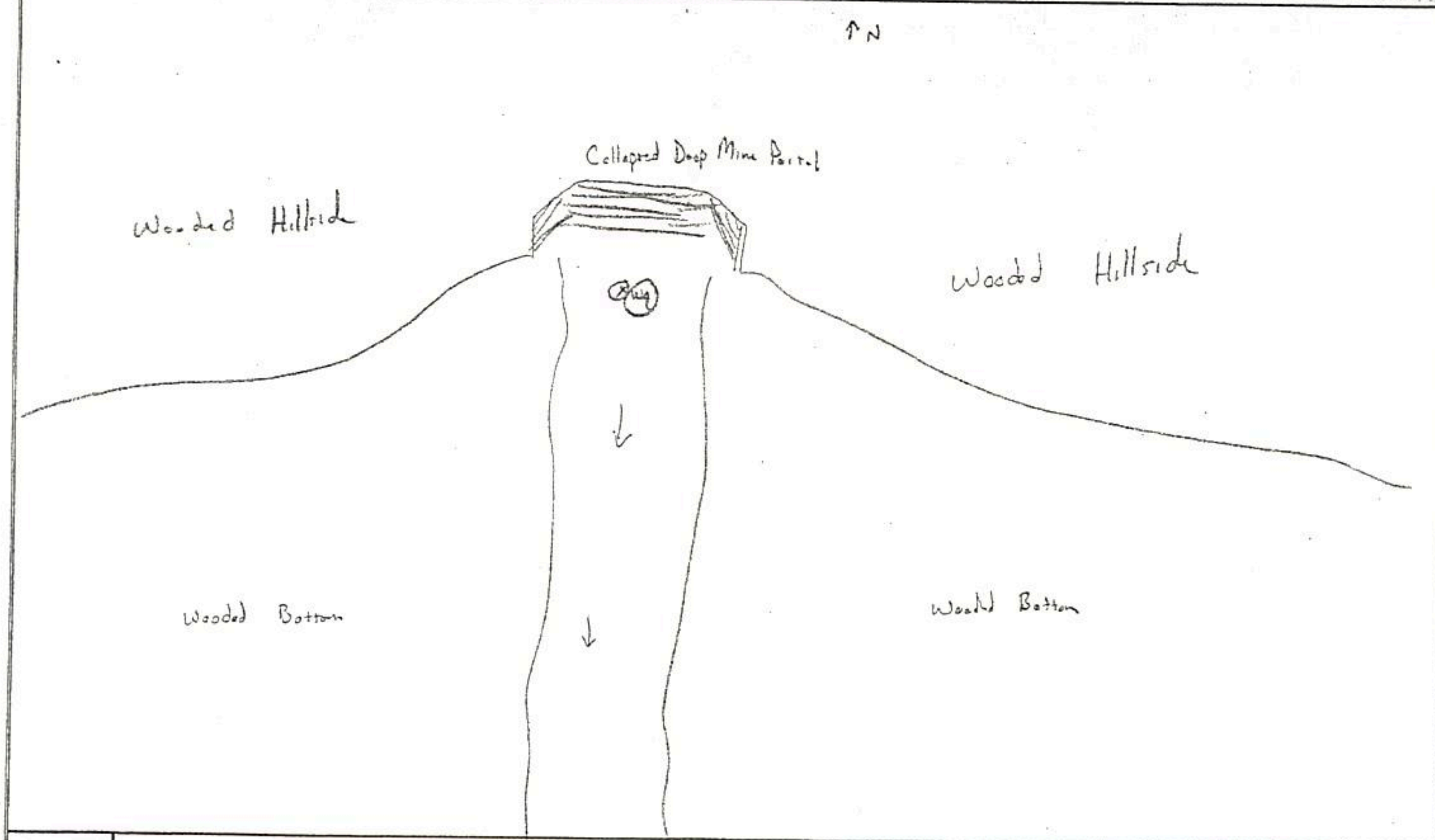
AN-Code	MT-42-0.8A-3-(0.31)-Seep ~~Discharge~~	Date	2-26-14	Time	1000	Geo	NS	Bio	EG
Basin	Tygart	County	Randolph	Quad					
GPS Type	Garmin	EPE	25	XY's Proofed		By			

Field Lat X-site	38 53 37.7	N	Field Lon X-site	79 59 9.5	W
Corrected Lat		N	Corrected Lon		W

Sampled	☑ Yes ☐ No	If not, why?	☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

Sample Type	☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☑ Flow ☐ Other:				
Duplicate type	☑ None ☐ Lab ☐ Fecal	Duplicate WQ ID	—	Was site moved?	☐ Yes ☑ No
Explanation?					
Directions To Site					

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		Single WQ Sample ID	73-613

EXHIBIT 3

Reviewers Initials		FIELD WATER

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	11.59	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	2.68	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	6.73	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	1363	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	Snow	Past 24 Hours (If Known)	Snow	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow = 20gpm 0.0446

EXHIBIT 3

Exhibit

4

76135

TMDL Source Form

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>		Reviewers Initials	
Stream Name (with location)	Mine Discharge to UNT/Roaring Creek RM 4.09 on RDB W of Coalton ~~[illegible]~~		

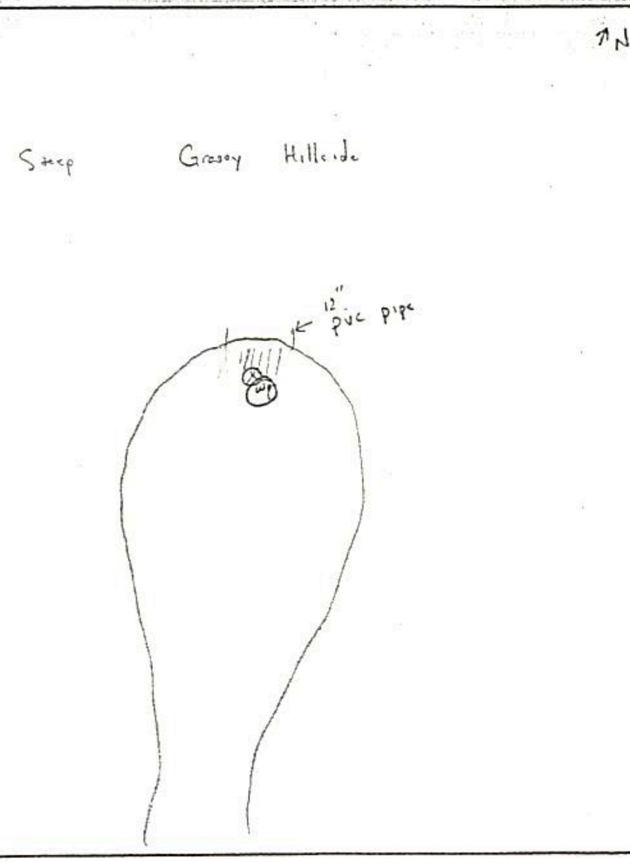
AN-Code	MT-42-0.8A-(1.73)-Discharge	Date	2-26-14	Time	1100	Geo	NS	Bio	EG
Basin	Tygart	County	Randolph	Quad	Junior				
GPS Type		EPE	18	XY's Proofed		By			
Field Lat X-site	38 53 54.5 N	Field Lon X-site	79 59 35.2 W						
Corrected Lat	N	Corrected Lon	W						

Sampled	☑ Yes ☐ No	If not, why?	☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☑ Flow ☐ Other:

Duplicate type	☑ None ☐ Lab ☐ Fecal	Duplicate WQ ID		Was site moved?	☐ Yes ☑ No
Explanation?					
Directions To Site					

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		Single WQ Sample ID	73-615

EXHIBIT 4

Reviewers Initials		FIELD WATER

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	11.66	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	2.50	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	2.06	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	5102	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
						Anaerobic (septic)		Slick		
					✓	Other: Metallic				
						Foam/Suds (Rate 0-4 or NR)	0			

Sonde I.D. #: 95

If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.

Notes:

Water color: Red/Orange

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	Snow	Past 24 Hours (If Known)	Snow	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow ≈ 125 gpm 0.2785

EXHIBIT 4

Exhibit 5

TMDL Source Form

76023

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>		Reviewers Initials	ND
Stream Name (with location)	UNT/Cassity Fork Outlet #1 Mine Outlet to UNT/Cassity FK RM 0.76 SE of Cassity		

AN-Code	MTM-16-0.5A-(0.89)-Mine	Date	1-28-14	Time	1115	Geo	NS	Bio	JH
Basin	Tygart	County	Randolph	Quad	Cassity				
GPS Type	Garmin	EPE	19	XY's Proofed		By			

Field Lat X-site	38 48 47.3 N	Field Lon X-site	80 1 14.4	W
Corrected Lat	N	Corrected Lon		W

Sampled	☑ Yes ☐ No	If not, why?	☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

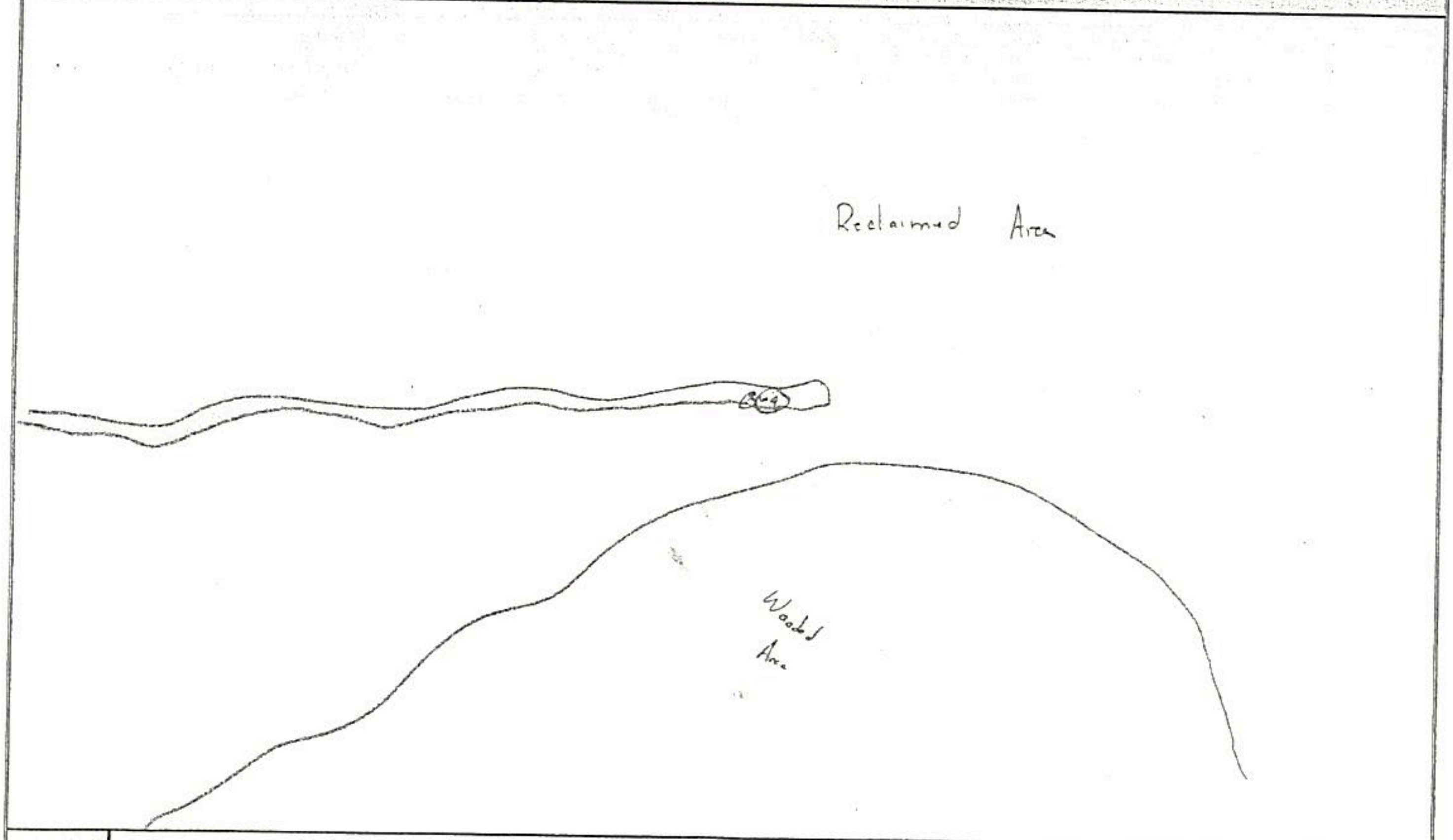
Sample Type: ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☑ Flow ☐ Other:

Duplicate type	☑ None ☐ Lab ☐ Fecal	Duplicate WQ ID		Was site moved?	☐ Yes ☑ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		Single WQ Sample ID	71-897 ✓

EXHIBIT 5

Reviewers Initials		FIELD WATER>>>

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	1.01	Temperature °C		Below Normal	✓	Normal		None	✓	Clear
	5.89	pH (std. Units)	✓	Normal		Sewage (Not Septic)	✓	Flecks		Slightly Turbid
	12.61	Dissolved Oxygen (mg/L)		Above Normal		Petroleum	✓	Sheen		Moderately Turbid
	1035	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95 If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.			Notes:			Anaerobic (septic)		Slick	Water color:	
						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	None	Past 24 Hours (If Known)	None	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

≈ 6" of snow cover

Flow = 2 gpm = 0.0045 cfs

EXHIBIT 5

Exhibit

6

75460 [initials]

TMDL Source Form

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> | **Reviewers Initials**

Stream Name (with location)	Mine Pond Discharge to UNT/UNT Rm 0.30/ Panther Run Rm 0.62 ~~Gallet #1~~ E of Cassity								
AN-Code	MTM-16-A-1-A-(0.41)-Mine	**Date**	11-13-13	**Time**	1030	**Geo**	NS	**Bio**	JL
Basin	Tygart	**County**	Randolph	**Quad**	Cassity				
GPS Type	Garmin	**EPE**	15	**XY's Proofed**		**By**			
Field Lat X-site	38 49 25.1 **N**	**Field Lon X-site**	79 59 59.3 **W**						
Corrected Lat	**N**	**Corrected Lon**	**W**						

Sampled ☑ Yes ☐ No

If not, why? ☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

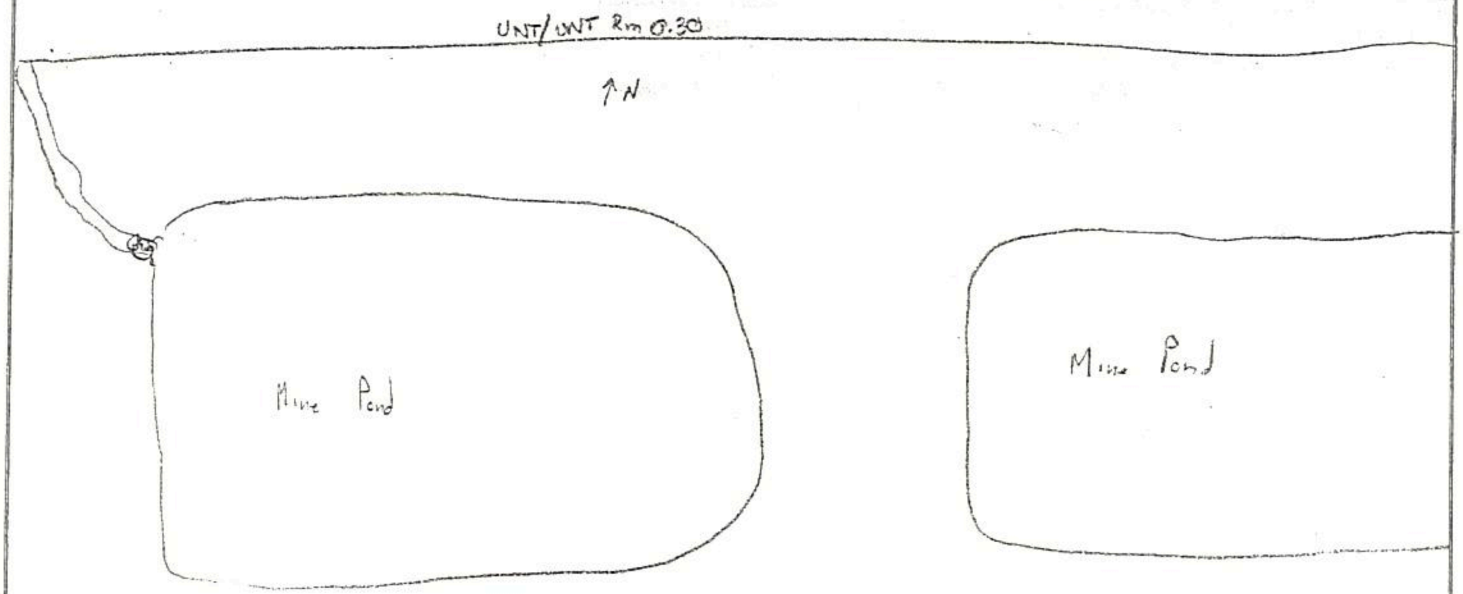
Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☐ Flow ☐ Other:

Duplicate type ☑ None ☐ Lab ☐ Fecal | **Duplicate WQ ID** | **Was site moved?** ☐ Yes ☑ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes

Single WQ Sample ID 71-894

EXHIBIT 6

Reviewers Initials		FIELD WATER>>>
WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type: ☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method: ☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	4.23	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	2.94	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	11.83	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	11.05	Conductivity (μmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	1				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	None	Past 24 Hours (If Known)	Snow	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies: ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

4 mine ponds with ① at outlet of lowest pond

Flow: 5 gpm

EXHIBIT 6

Exhibit

7

75461 i/Mr

TMDL Source Form

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>		Reviewers Initials	
Stream Name (with location)	Mine Seep to UNT/UNT Rm 0.30/ Panther Run Rm 0.62 ~~Seep #1~~ on LDB E of Cassity		

AN-Code	MTM-16-A-1-A-(0.76)-Seep LDB	Date	11-13-13	Time	940	Geo	NS	Bio	IL
Basin	Tygart	County	Randolph	Quad	Beverly West				
GPS Type	Garmin 76csx	EPE	22'	XY's Proofed		By			

Field Lat X-site	38° 49' 31.0"	N	Field Lon X-site	79° 59' 34.8"	W
Corrected Lat		N	Corrected Lon		W

Sampled	☑ Yes ☐ No	If not, why?	☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

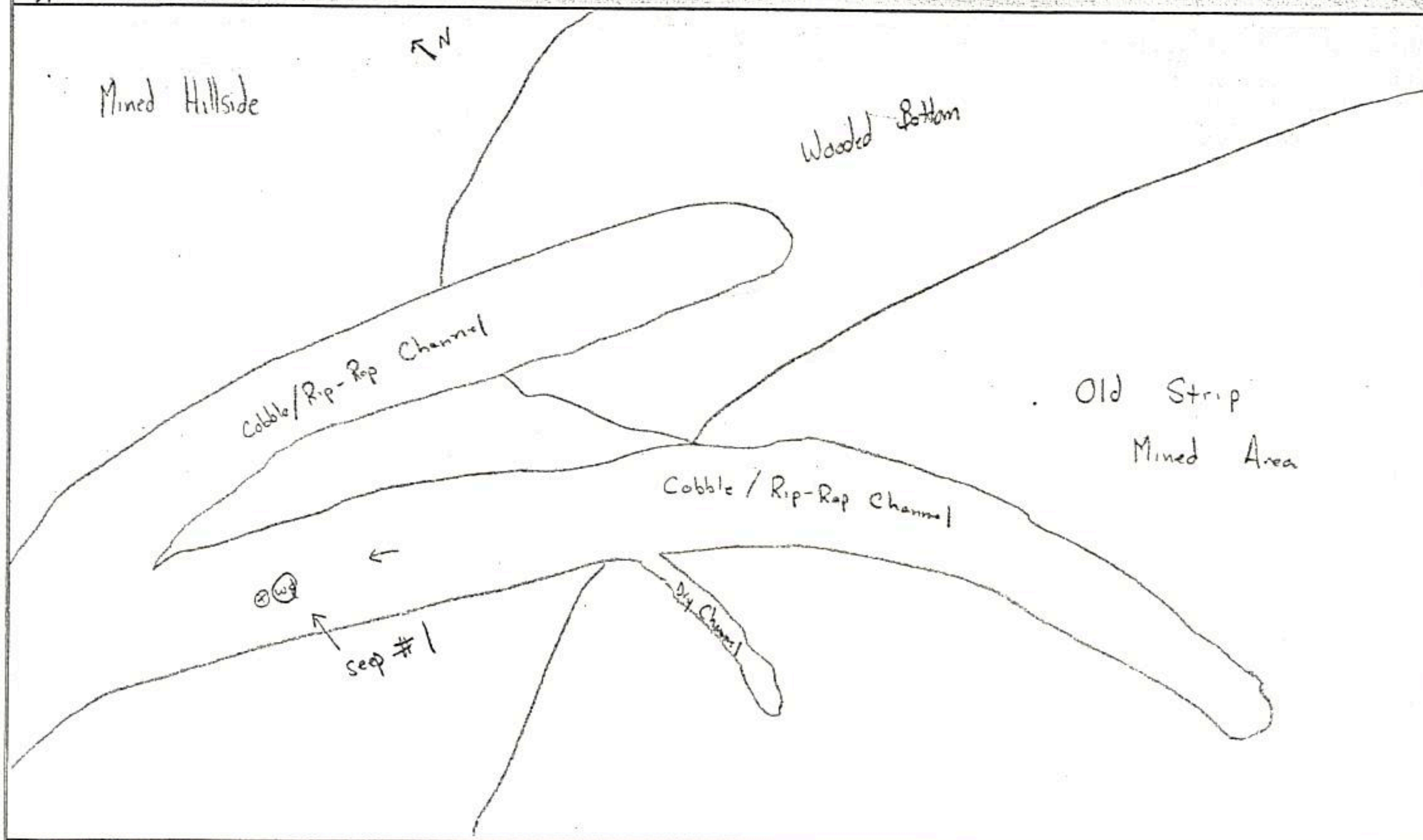
Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☐ Flow ☐ Other:

Duplicate type	☑ None ☐ Lab ☐ Fecal	Duplicate WQ ID		Was site moved?	☐ Yes ☐ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		Single WQ Sample ID	71-892

EXHIBIT 7

Reviewers Initials		FIELD WATER>>

WQ Sample Location: ☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:

WQ Type: ☑ Single ☐ Profile ☐ Other:

Sonde Method: ☑ Grab ☐ Sample Tube ☐ Bucket

Lab Water Method: ☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	1.62	Temperature °C		Below Normal		Normal	✓	None	✓	Clear
	7.10	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	8.73	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	541	Conductivity (μmhos/cm)		Flooding	✓	Chemical		Globs		Highly Turbid
	Sonde I.D. #: 95		Notes:			Anaerobic (septic)		Slick	Water color:	
	If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.					Other:				
					Foam/Suds (Rate 0-4 or NR)	1				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	Light Snow	Past 24 Hours (If Known)	Snow	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies: ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Seep # 1 culminates from underground source at head of cobble filled channel. Strip mined area (reclaimed now) encompasses area surrounding seep.

Flow ≅ 1 gpm

EXHIBIT 7

Exhibit

8

75628

TMDL Source Form *on LDB SE of Cassity*

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>				Reviewers Initials			
Stream Name (with location)	~~UMT/Panther Run Discharge #1~~ Mine pond Discharge to UMT/Panther Run RM 1.03						
AN-Code	MTM-16-A-1.4-(0.3)-Discharge	**Date**	12-4-13	**Time**	1730	**Geo** NS	**Bio** NS
Basin	Tygart	**County**	Randolph	**Quad**	Cassity		
GPS Type	Garmin	**EPE**	18	**XY's Proofed**		**By**	
Field Lat X-site	38 48 53.2 N	**Field Lon X-site**	80 1 4.5 W				
Corrected Lat	N	**Corrected Lon**	W				

Sampled ☑ Yes ☐ No

If not, why? ☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

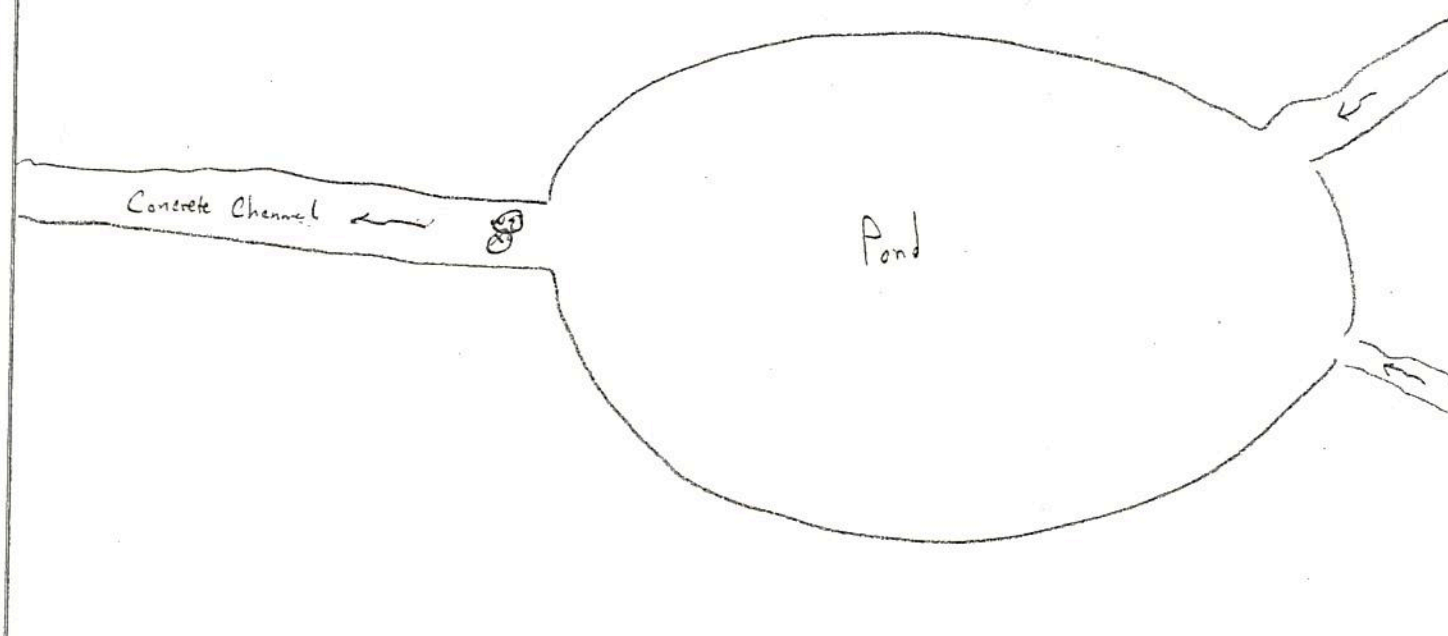
Sample Type ☑ YSI ☐ Fecal ☐ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☐ Flow ☐ Other:

Duplicate type ☑ None ☐ Lab ☐ Fecal | **Duplicate WQ ID** | **Was site moved?** ☐ Yes ☑ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		**Single WQ Sample ID**	71-902

EXHIBIT 8

Reviewers Initials		FIELD WATER>>>

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	9.67	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	4.73	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	9.29	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	1013	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	None	Past 24 Hours (If Known)	None	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies: ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow = 20gpm (Bucket/Stopwatch) 0.0446 cfs

Discharge #1 is cummulative sample of up to 8 outlets that empty into small pond via two concrete channels. Heavy metal deposition present.

EXHIBIT 8

Exhibit 9

TMDL Source Form on RDB-SE of Cassity

75629

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Reviewers Initials	

Stream Name (with location)	~~UMT/Panther R~~ Outlet #1 Mine Disch. to UMT/Panther Run RM 1.03

AN-Code	MTM-16-A-1.4-(0.7)-Mine	Date	12-4-13	Time	1700	Geo	NS	Bio	NS
Basin	Tygart	County	Randolph	Quad	Cassity				
GPS Type	Garmin	EPE	16	XY's Proofed		By			

Field Lat X-site	38 48 39.5	N	Field Lon X-site	80 1 4.3	W
Corrected Lat		N	Corrected Lon		W

Sampled ☑ Yes ☐ No

If not, why? ☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

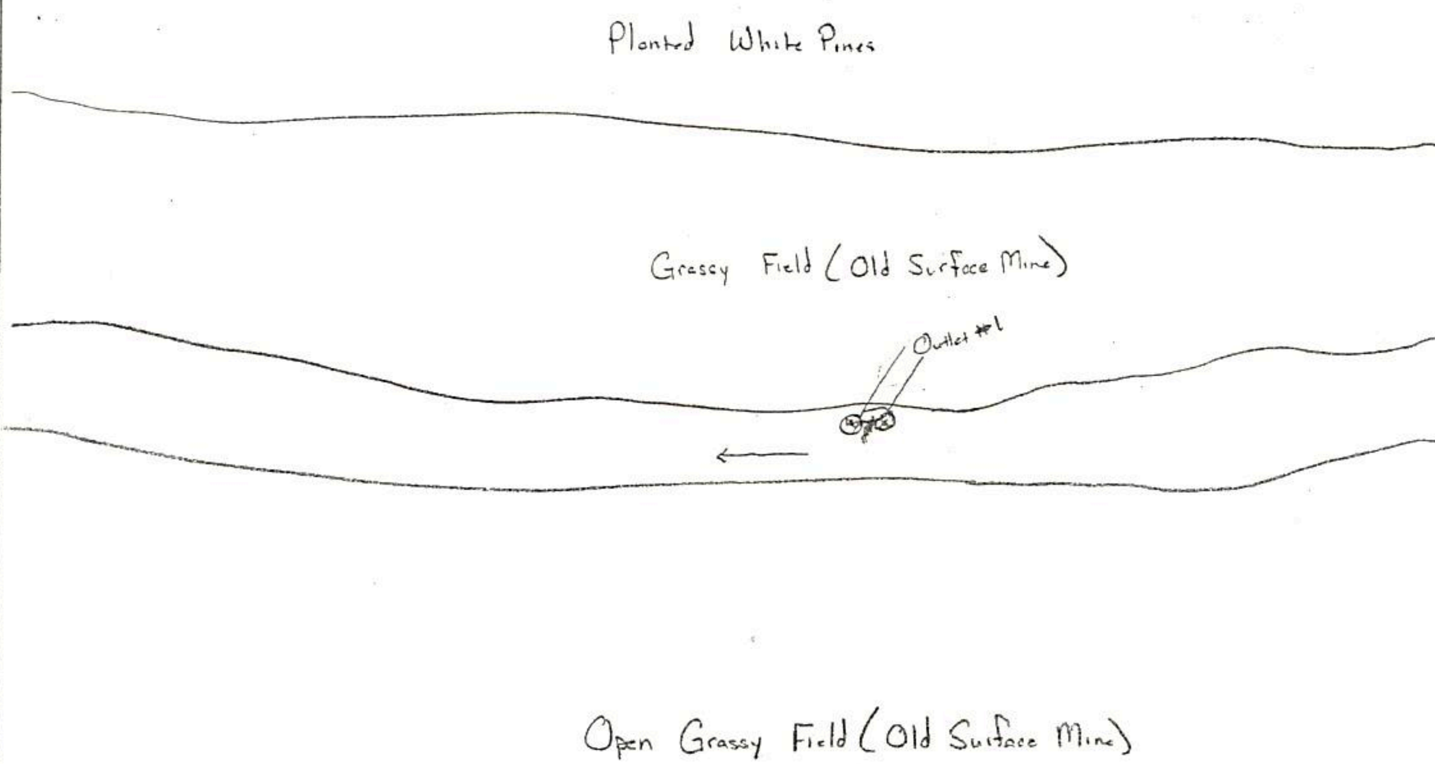
Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☐ Flow ☐ Other:

Duplicate type ☑ None ☐ Lab ☐ Fecal | **Duplicate WQ ID** | **Was site moved?** ☐ Yes ☑ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes		Single WQ Sample ID	71-901

EXHIBIT 9

Reviewers Initials		FIELD WATER>>

WQ Sample Location: ☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:

WQ Type: ☑ Single ☐ Profile ☐ Other:

Sonde Method: ☑ Grab ☐ Sample Tube ☐ Bucket

Lab Water Method: ☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	9.76	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	6.50	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	2.94	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	1082	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	None	Past 24 Hours (If Known)	None	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies: ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow = 12 gpm (Bucket/Stopwatch) 0.0267 cfs

12" diameter pipe extends from bank and flows water into concrete channel. Several other pipes throughout channel, but none flowing nearly as much as this. No other outlets US. Any water in channel US of ⊗ is only surface runoff and no distinct source. H_2O chem confirms this.

EXHIBIT 9

Exhibit 10

TMDL Source Form

16026

STREAM VERIFICATION >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>> **Reviewers Initials**

Stream Name (with location)	Mine Pond Discharge into UNT/Cassity Fork/ Seep #7 UNT/Cassity Fork RM 1.73 on LDB E of Cassity						
AN-Code	MTM-16-A.4-(0.24)-Pond	**Date**	1-29-14	**Time**	1050	**Geo**	NJ
						Bio	JH
Basin	Tygart	**County**	Randolph	**Quad**	Cassity		
GPS Type	Garmin	**EPE**	16	**XY's Proofed**		**By**	
Field Lat X-site	38 49 38.2 N	**Field Lon X-site**	80 0 23.9 W				
Corrected Lat	N	**Corrected Lon**	W				

Sampled ☑ Yes ☐ No — **If not, why?** ☐ No Access-Physical Barrier (☐ *Permanent* / ☐ *Temporary*) ☐ No Access-Landowner Denial (☐ *Verbal Denial* / ☐ *Posted* / ☐ *Fenced* / ☐ *Private*) ☐ Too Deep (☐ *Permanent-Not Wadeable* / ☐ *Temporary*) ☐ Dry ☐ Filled ☐ Impounded ☐ Other:

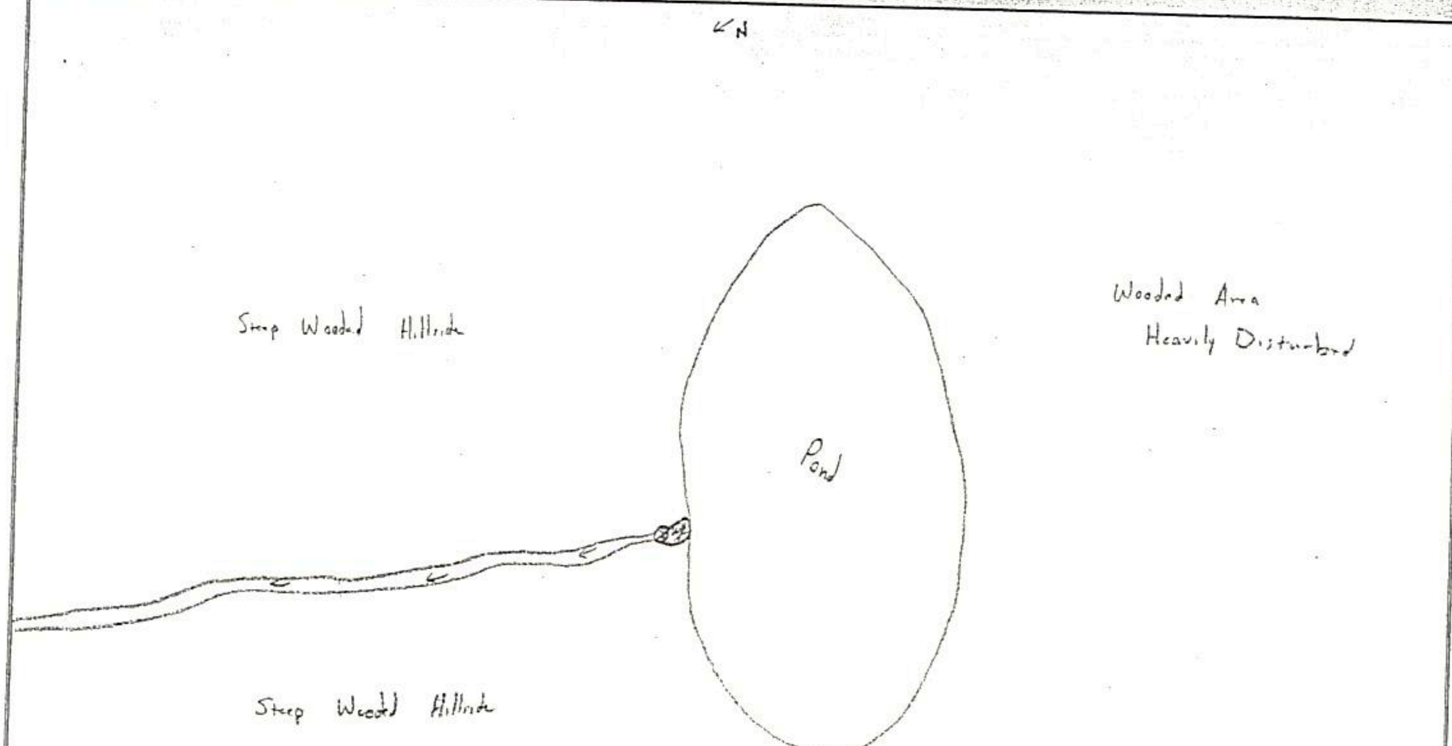
Sample Type ☑ YSI ☐ Fecal ☑ AMD ☐ Sedimentation ☐ Nutrients ☐ Acid Rain ☐ Orthophosphate ☑ Flow ☐ Other:

Duplicate type ☑ None ☐ Lab ☐ Fecal — **Duplicate WQ ID** / — **Was site moved?** ☐ Yes ☑ No

Explanation?

Directions To Site

Sketch of Assessment Reach and Comments: Indicate North with (↑), indicate flow direction, indicate water sample (wq), indicate lat and long site with (X). Draw the sketch with a coarse resolution to give an overall idea of the sample area beyond the typical 100m reach.



Notes

Single WQ Sample ID 71-934 ✓

EXHIBIT 10

Reviewers Initials		FIELD WATER>>

WQ Sample Location	☑ Mid-Stream ☐ Bank (☐ Left ☐ Right) ☐ Thalweg (☐ Left ☐ Middle ☐ Right) ☐ Left Channel ☐ Right Channel ☐ Other:	WQ Type	☑ Single ☐ Profile ☐ Other:
Sonde Method	☑ Grab ☐ Sample Tube ☐ Bucket	Lab Water Method	☑ Grab ☐ Sample Tube ☐ Bucket

Flag	Physicochemical Parameters (for a Single Water Quality Sample)		Seasonal Water Level		Water Odors		Surface "Oils"		Turbidity	
	0.63	Temperature °C		Below Normal	✓	Normal	✓	None	✓	Clear
	3.12	pH (std. Units)	✓	Normal		Sewage (Not Septic)		Flecks		Slightly Turbid
	10.38	Dissolved Oxygen (mg/L)		Above Normal		Petroleum		Sheen		Moderately Turbid
	1453	Conductivity (µmhos/cm)		Flooding		Chemical		Globs		Highly Turbid
Sonde I.D. #: 95			Notes:			Anaerobic (septic)		Slick	Water color:	
If any problems occur with the Water Meter or any readings are suspect, record notes in the space to the right.						Other:				
					Foam/Suds (Rate 0-4 or NR)	0				

ABOVE: Record readings in box for corresponding physicochemical parameter. Insert a √ in the box for other categories.

Precipitation Status and History

Current	None	Past 24 Hours (If Known)	None	Major Rain Event in past week?	☐ Yes ☑ No

If it is raining or has rained recently, which of the following best describes the peak runoff (flush) condition of the stream at the site when water samples were collected? If the runoff condition is in response to snowmelt, please indicate as such above.

N/A		< 1 Hour		1 to 4 Hours		4 to 12 Hours		12 to 24 Hours		1 to 2 Days		2 to 4 Days		4 to 7 Days		Unknown	✓

Is the stream level in the process of rising or falling at the time of visit? ☑ Baseflow ☐ Rising ☐ Falling

No Flow?: If a flow was scheduled for the site and not performed, then indicate if one of the following applies: ☐ Dry ☐ Low Flow ☐ Too Deep/Too Fast ☐ Instrument Failure ☐ Frozen/Ice ☐ Safety ☐ Substrate

Field Water Notes & Precipitation Comments:

Flow: 12 gpm =0.0267 cfs
6" of snowcover
Heavy Fe dep

Sample taken from outlet of pond. No visible seeps/sources entering pond.

EXHIBIT 10

Exhibit 11

Stream Name	Sample Date	Ancode	Latitiude	Longitude	Parameter	Flag	Value	Units
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Al Dissolved		4.81	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Al Total		4.89	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Alkalinity	<	5	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Bromide Total	<	0.075	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Ca Total		15.8	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Chloride Total		2.16	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	DO		10.15	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Fe Dissolved		0.25	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Fe Total		0.25	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Hardness	calc.	77.34	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Hot Acidity		55	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Mg Total		9.2	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Mn Total		0.8	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	PH		3.35	S.U.
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Specific Conductance		337	uS or umhos/cm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Sulfate		122	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	TDS		164	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	TSS	<	2	mg/L or ppm
Mine discharge into UNT/UNT RM 0.53/Grassy Run RM 1.77	1/21/2014	WVMT-41-B-2-{0.03}-Discharge	38.91922222	-79.98758333	Temperature		8.75	°C
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Al Dissolved		16.2	mg/L or ppm

EXHIBIT 11

Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Al Total		16.4	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Alkalinity	<	5	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Bromide Total	<	0.5	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Chloride Total		34.9	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	DO		7.05	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Fe Dissolved		38.2	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Fe Total		38.6	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Hot Acidity		304	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Mn Total		0.61	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	PH		2.64	S.U.
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Specific Conductance		1331	uS or umhos/cm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Sulfate		383	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	TDS		521	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	TSS	<	2	mg/L or ppm
Mine Discharge into UNT/UNT RM 0.61/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-1-{0.81}-Discharge	38.89108333	-79.98380556	Temperature		9.81	°C
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Al Dissolved		12.4	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Al Total		13.1	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Alkalinity	<	5	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Bromide Total	<	1	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Chloride Total		27.6	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	DO		6.73	mg/L or ppm

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Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Fe Dissolved		23.6	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Fe Total		25	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Hot Acidity		242	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Mn Total		0.71	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	PH		2.68	S.U.
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Specific Conductance		1363	uS or umhos/cm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Sulfate		569	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	TDS		664	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	TSS	<	2	mg/L or ppm
Mine Seep into UNT/UNT RM 0.88/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-3-{0.31}-Seep	38.89380556	-79.98597222	Temperature		11.59	°C
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Al Dissolved		217	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Al Total		215	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Alkalinity	<	5	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Bromide Total	<	2	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Chloride Total		36.6	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	DO		2.06	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Fe Dissolved		996	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Fe Total		982	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Hot Acidity		4090	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Mn Total		15.8	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	PH		2.5	S.U.

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Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Specific Conductance		5102	uS or umhos/cm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Sulfate		4270	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	TDS		5480	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	TSS		5	mg/L or ppm
Mine Discharge into UNT/Roaring Creek RM 4.09	2/26/2014	WVMT-42-0.8A-{1.73}-Discharge	38.89847222	-79.99311111	Temperature		11.66	°C
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Al Dissolved		0.104	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Al Total		1.99	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Alkalinity		22	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Bromide Total	<	0.5	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Chloride Total		11.5	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	DO		12.61	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Fe Dissolved		1.84	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Fe Total		3.13	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Hot Acidity	<	5	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Mn Total		2.17	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	PH		5.89	S.U.
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Specific Conductance		1085	uS or umhos/cm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Sulfate		554	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	TDS		926	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	TSS		22	mg/L or ppm
Mine outlet into UNT/Cassity Fork RM 0.76	1/28/2014	WVMTM-16-0.5A-{0.89}-Mine	38.81313889	-80.02066667	Temperature		1.01	°C

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Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Al Dissolved		4.25	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Al Total		4.2	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Alkalinity	<	5	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Be Total		0.00431	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Chloride Total		10.9	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	DO		11.83	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Fe Dissolved		18	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Fe Total		17.8	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Hot Acidity		126	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Mn Total		11.3	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	PH		2.94	S.U.
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Specific Conductance		1105	uS or umhos/cm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Sulfate		751	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	TDS		1100	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	TSS	<	2	mg/L or ppm
Mine pond discharge into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.41}-Discharge	38.82363889	-79.99980556	Temperature		4.23	°C
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Al Dissolved		0.013	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Al Total		0.018	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Alkalinity		156	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Be Total	<	0.00005	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Chloride Total		2.09	mg/L or ppm

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Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	DO		8.73	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Fe Dissolved		1.34	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Fe Total		3.77	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Hot Acidity	<	5	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Mn Total		0.825	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	PH		7.1	S.U.
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Specific Conductance		541	uS or umhos/cm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Sulfate		133	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	TDS		368	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	TSS		7	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepLDB	38.82527778	-79.993	Temperature		1.62	°C
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Al Dissolved		0.014	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Al Total		0.078	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Alkalinity		90	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Be Total	<	0.00005	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Chloride Total		1.49	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	DO		7.87	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Fe Dissolved		2.68	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Fe Total		3.11	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Hot Acidity	<	5	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Mn Total		0.999	mg/L or ppm

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Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	PH		6.94	S.U.
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Specific Conductance		271	uS or umhos/cm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Sulfate		40.6	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	TDS		169	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	TSS		5	mg/L or ppm
Mine seep into UNT/UNT RM 0.30/Panther Run RM 0.62	11/13/2013	WVMTM-16-A-1-A-{0.76}-SeepRDB	38.82536111	-79.993	Temperature		2.62	°C
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Al Dissolved		1.32	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Al Total		2.52	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Alkalinity	<	5	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Be Total		0.00324	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Chloride Total		11.9	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	DO		9.29	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Fe Dissolved		65.4	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Fe Total		62.1	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Hot Acidity		146	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Mn Total		11.4	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	PH		4.73	S.U.
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Specific Conductance		1013	uS or umhos/cm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Sulfate		606	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	TDS		875	mg/L or ppm
Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	TSS		12	mg/L or ppm

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Mine Pond Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.3}-Discharge	38.81477778	-80.01791667	Temperature		9.67	°C
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Al Dissolved	<	0.005	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Al Total	<	0.005	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Alkalinity		209	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Be Total		0.00026	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Chloride Total		11.2	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	DO		2.94	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Fe Dissolved		19.1	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Fe Total		19.3	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Hot Acidity	<	5	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Mn Total		6.5	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	PH		6.5	S.U.
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Specific Conductance		1082	uS or umhos/cm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Sulfate		353	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	TDS		725	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	TSS		11	mg/L or ppm
Mine Discharge into UMT/Panther Run RM 1.03	12/4/2013	WVMTM-16-A-1.4-{0.7}-Mine	38.81097222	-80.01786111	Temperature		9.76	°C
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Al Dissolved		2.98	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Al Total		2.95	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Alkalinity	<	5	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Bromide Total	<	0.5	mg/L or ppm

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Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Chloride Total		11.1	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	DO		10.38	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Fe Dissolved		26.6	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Fe Total		26.6	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Hot Acidity		106	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Mn Total		10.4	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	PH		3.12	S.U.
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Specific Conductance		1453	uS or umhos/cm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Sulfate		751	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	TDS		1140	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	TSS	<	2	mg/L or ppm
Mine pond discharge into UMT/Cassity Fork RM 1.73	1/29/2014	WVMTM-16-A.4-{0.24}-Pond	38.82727778	-80.00663889	Temperature		0.63	°C

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