

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL INDUSTRIAL WASTE (IW)
AND IW STORMWATER**

Application No. PA0232653
APS ID 1098430
Authorization ID 1457623

Applicant and Facility Information

Applicant Name	<u>PA Waste LLC</u>	Facility Name	<u>Camp Hope Run Landfill AMD Treatment System</u>
Applicant Address	<u>175 Bustleton Pike</u> <u>Feasterville, PA 19053</u>	Facility Address	<u>Route 153 South</u> <u>West Decatur, PA 16878</u>
Applicant Contact	<u>Steven Rovner</u>	Facility Contact	<u>Steven Rovner</u>
Applicant Phone	<u>(215) 953-2714</u>	Facility Phone	<u>(215) 953-2714</u>
Client ID	<u>251326</u>	Site ID	<u>461639</u>
SIC Code	<u>4953</u>	Municipality	<u>Boggs Township</u>
SIC Description	<u>Trans. & Utilities - Refuse Systems</u>	County	<u>Clearfield</u>
Date Application Received	<u>October 2, 2023</u>	EPA Waived?	<u>No</u>
Date Application Accepted	<u>October 16, 2023</u>	If No, Reason	<u>TMDL</u>
Purpose of Application	<u>Renewal of an existing NPDES permit for the CHRL AMD treatment system.</u>		

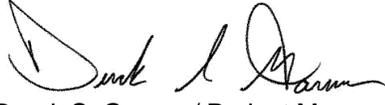
Summary of Review

The proposed Camp Hope Run Landfill (CHRL) is located in Boggs Township, Clearfield County on a 2,070-acre property, which a portion of has been affected by historic mining activities. Specifically, on March 2, 1993 the AI Hamilton Contracting Company (AHCC) was issued a surface mining permit (Kauffman South Surface Mine Permit No. 17890115) as a demonstration project to study the effect of mining in areas where existing sandstone strata contain coal streaks, both in naturally occurring alkaline environment and in a naturally occurring acidic environment where off-site alkaline material was employed as a neutralizing agent. Mining is complete on the site, and it has since been backfilled and revegetated.

In 1999, DEP sampled and documented several mine discharges from the Kauffman South Surface Mine permit area. Consequently, AHCC entered into a Consent Order with DEP requiring AHCC to install a passive treatment system to treat the AMD seeps. The passive treatment system consisted of limestone beds at the seeps and collection channels to convey the limestone bed effluent to a sedimentation pond (S5). Recent sampling of the S5 pond indicates that the passive treatment system installed by AHCC has either failed or is not providing adequate treatment.

As part of the proposed CHRL design, the abovementioned AMD seeps as well as water within the reclaimed surface mine that will be removed during landfill development will be treated by a proposed active treatment system due to the suspected failure of the passive system.

The permit became effective on April 1, 2019. The facility has not been constructed since the permit issuance and there have been no changes to the original proposal. Consequently, the review remains largely unchanged.

Approve	Deny	Signatures	Date
X		 Derek S. Garner / Project Manager	May 29, 2025
X		 Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	May 30, 2025

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>002 ⁽¹⁾</u>	Design Flow (MGD)	<u>0.14</u>
Latitude	<u>40° 55' 40.00"</u>	Longitude	<u>-78° 23' 47.00"</u>
Quad Name	<u>Glen Richey</u>	Quad Code	<u>1118</u>
Wastewater Description: <u>Acid Mine Drainage</u>			

Receiving Waters	<u>Unnamed Tributary to Sanborn Run</u>	Stream Code	<u>n/a – Not identified</u>
NHD Com ID	<u>n/a – Not identified</u>	RMI	<u>0.6</u>
Drainage Area	<u>0.13</u>	Yield (cfs/mi ²)	<u>0.159</u>
Q ₇₋₁₀ Flow (cfs)	<u>0.02</u>	Q ₇₋₁₀ Basis	<u>Streamgage No. 01542500</u>
Elevation (ft)	<u>1640</u>	Slope (ft/ft)	<u>n/a</u>
Watershed No.	<u>8-C</u>	Chapter 93 Class.	<u>CWF, MF</u>
Existing Use	<u>n/a</u>	Existing Use Qualifier	<u>n/a</u>
Exceptions to Use	<u>n/a</u>	Exceptions to Criteria	<u>n/a</u>
Assessment Status	<u>Impaired</u>		
Cause(s) of Impairment	<u>Metals</u>		
Source(s) of Impairment	<u>Acid Mine Drainage</u>		
TMDL Status	<u>Final, 3/17/2005</u>	Name	<u>Sanborn Run Watershed</u>

Nearest Downstream Public Water Supply Intake	<u>Shawville Power LLC</u>		
PWS Waters	<u>West Branch Susquehanna River</u>	Flow at Intake (cfs)	<u>93</u>
PWS RMI	<u>162.8</u>	Distance from Outfall (mi)	<u>22.3</u>

⁽¹⁾ The outfall has been designated as "002" to avoid confusion with Outfall 001 which discharges landfill leachate and sewage from another onsite industrial wastewater treatment plant covered under NPDES Permit No. PA0232343.

Treatment Facility Summary

The CHRL AMD Treatment System will be an active treatment system utilizing chemical precipitation and solids settling to treat the AMD collected at the site of the CHRL. Specifically, the process will be as follows:

- 1) Chemical neutralization and precipitation of the metals,
- 2) Solids settling to remove precipitated metals,
- 3) Sludge storage for dewatering, and
- 4) Landfill disposal of dewatered sludge.

It is proposed to utilize sodium hydroxide to neutralize the collected AMD, which will be added in a mixing reactor. The dose and feed rate will be controlled by a pH controller within the mixing reactor to achieve required pH levels to oxidize and precipitate the metals. After neutralization, the metals will be removed by settling in a settling basin, where they will be removed on an as needed basis. The sludge will be pumped to a sludge storage pond where it will be dewatered via gravity and evaporation. The dewatered sludge will be disposed of at the CHRL.

Compliance History

Since this facility has not yet been constructed there is no associated compliance history.

There are no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 002 Design Flow (MGD) 0.14
 Latitude 40° 55' 40.00" Longitude -78° 23' 47.00"
 Wastewater Description: Acid Mine Drainage

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit	SBC	Regulation
pH	6.0	Minimum	§ 95.2(1)
	9.0	Maximum	§ 95.2(1)
Oil & Grease	15	Avg Monthly	§ 95.2(2)
	30	IMAX	§ 95.2(2)
Dissolved Iron	7.0	IMAX	§ 95.2(4)

Oil & grease is not anticipated to be present in the effluent based on expected effluent data submitted with the application. The technology-based limit for dissolved iron of 7.0 mg/L is higher than the proposed water quality-based limit for total iron (see below). Consequently, it is not appropriate to assign technology-based limitations or monitoring requirements for either of these parameters.

25 Pa Code § 95.10(a)(2) states that facilities treating postmining pollutional discharges from abandoned mine sites are not considered new and expanding mass loadings of total dissolved solids (TDS) and are exempt from the section's treatment requirements. Accordingly, no effluent limits or monitoring requirements for TDS are proposed.

Water Quality-Based Limitations

The treated effluent is proposed to be discharged to an unidentified tributary to Sanborn Run. A TMDL for the Sanborn Run Watershed was finalized by EPA on March 17, 2005. The TMDL allocates allowable loads and necessary load reductions at the mouth of the unidentified tributary (Station SBRN05) as follows:

Parameter	Existing Load (lbs/day)	TMDL Allowable Load (lbs/day)	WLA (lbs/day)	LA (lbs/day)	Load Reduction (lbs/day)	Reduction Identified %
Fe	2.8	1.5	0	1.5	1.3	46
Mn	24.4	0.7	0	0.7	23.7	97
Al	9.0	0.7	0	0.7	8.3	92
Acidity	223.2	0	0	0	223.2	100
Alkalinity	0.7					

Since this load allocation is established at the mouth of unidentified tributary to Sanborn Run and the AMD seeps on the landfill property are the only known source of AMD on the tributary, it is appropriate to assign the entire load allocation to the AMD seep discharges. However, the proposed discharge will also include AMD water that has "pooled" within the reclaimed surface mine that will be removed during landfill development that has not historically contributed to the impairment of the watershed and was not taken into account by the TMDL. Consequently, Chapter 93 water quality criteria for iron, manganese, and aluminum should be applied to this portion of wastewater. Since the assimilative capacity will be increased by the treatment of the "pooled" AMD water, requiring this portion of effluent to meet Chapter 93 water quality criteria will not lead to further impairment of the watershed.

Based on the above rationale and the fact that the two separate streams will be blended at treatment at some point in the future, a phased limit approach is appropriate. The first phase will reflect only the discharge of the treated AMD seeps wastewater. The second phase will be a flow-based mass balance of the seep and pooled AMD wastewaters. The third phase will be the same as the first since the necessity to treat the pooled AMD wastewater will eventually cease as the landfill develops. The development of the phased effluent limits is as follows:

Loading limits for the AMD seeps portion of the wastewater are based on the loading allocations in the Sanborn Run TMDL. The concentration limits are based off the TMDL loading allocations and discharging at 0.04 MGD. These limits, identified below, will be directly applied to effluent limit Phases 1 and 3 of the permit.

Parameter	Phase 1 and 3 Effluent Limitations					
	Mass Units (lbs/day)		Concentrations (mg/L)			
	Average Monthly	Maximum Daily	Minimum	Average Monthly	Maximum Daily	Instant. Maximum
Total Iron	1.50	1.50	XXX	4.50	4.50	4.50
Total Manganese	0.70	0.70	XXX	2.10	2.10	2.10
Total Aluminum	0.70	0.70	XXX	2.10	2.10	2.10
Total Acidity ¹	XXX	XXX	Greater than alkalinity			

Concentration limits for the pooled AMD wastewater are taken from Chapter 93 criteria. The loading limits are based off criteria and discharging at 0.10 MGD. These limits, identified in the table directly below, will not be directly applied in the permit since the pooled AMD wastewater will not be discharged on its own. Instead, these limits will be used in conjunction with the table directly above to develop the second phase of effluent limits.

Parameter	Effluent Limitations at Criteria					
	Mass Units (lbs/day)		Concentrations (mg/L)			
	Average Monthly	Maximum Daily	Minimum	Average Monthly	Maximum Daily	Instant. Maximum
Total Iron	1.25	1.25	XXX	1.50	1.50	1.50
Total Manganese	0.83	0.83	XXX	1.00	1.00	1.00
Total Aluminum	0.63	0.63	XXX	0.75	0.75	0.75
Total Acidity ¹	XXX	XXX	Greater than alkalinity			

A flow-based mass balance was calculated using the two above tables. These limits, identified below, will be established in the permit as Phase 2.

Parameter	Phase 2 Effluent Limitations					
	Mass Units (lbs/day)		Concentrations (mg/L)			
	Average Monthly	Maximum Daily	Minimum	Average Monthly	Maximum Daily	Instant. Maximum
Total Iron	2.75	2.75	XXX	2.36	2.36	2.36
Total Manganese	1.53	1.53	XXX	1.31	1.31	1.31
Total Aluminum	1.33	1.33	XXX	1.14	1.14	1.14
Total Acidity ¹	XXX	XXX	Greater than alkalinity			

The above tables propose to establish limits as maximum daily limits (MDLs). Since the MDLs fully address the water quality concerns by virtue of setting the limit equal to the most stringent applicable criterion (TMDL and Chapter 93), the point source has no capacity to cause or contribute to any violation of water quality standards. However, an AML is still necessary to satisfy the requirements of 40 CFR § 122.45(d) which require all continuous non-POTW discharges to report AMLs and MDLs. Therefore, it is appropriate to assign an AML equal to the MDL.

A model of the discharge was not created in PENTOXSD v2.0d because all water quality concerns for expected parameters (i.e., AMD metals) are addressed by the above rationale.

Chesapeake Bay Considerations

Total phosphorus and total nitrogen are not expected to be present in the discharge. Accordingly, the Chesapeake Bay TMDL will not impact the development of the permit's effluent limitations.

Anti-Backsliding

No limits or monitoring requirements are proposed to be made less stringent. Anti-backsliding should not impact the development of the permit's effluent limits.

¹ The Sanborn Run TMDL requires a 100% reduction in acidity. Requiring the alkalinity to be greater than acidity should address this impairment.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Outfall 002, Effective Period: Permit Effective Date through Commencing Treatment of AMD Encountered During Landfilling Excavation.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Acidity, Total (as CaCO3)	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Alkalinity, Total (as CaCO3)	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Aluminum, Total	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite
Iron, Total	1.50	1.50 Daily Max	XXX	4.50	4.50	4.5	1/week	24-Hr Composite
Manganese, Total	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Outfall 002, Effective Period: Commencing Treatment of AMD Encountered During Landfilling Excavation through Ceasing Treatment of AMD Encountered During Landfilling Excavation

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Acidity, Total (as CaCO ₃)	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Alkalinity, Total (as CaCO ₃)	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Aluminum, Total	1.33	1.33 Daily Max	XXX	1.14	1.14	1.14	1/week	24-Hr Composite
Iron, Total	2.75	2.75 Daily Max	XXX	2.36	2.36	2.36	1/week	24-Hr Composite
Manganese, Total	1.53	1.53 Daily Max	XXX	1.31	1.31	1.31	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Ceasing Treatment of AMD Encountered During Landfilling Excavation through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Acidity, Total (as CaCO ₃)	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Alkalinity, Total (as CaCO ₃)	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Aluminum, Total	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite
Iron, Total	1.50	1.50 Daily Max	XXX	4.50	4.50	4.5	1/week	24-Hr Composite
Manganese, Total	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Alkalinity Effluent Net	XXX	XXX	0	XXX	XXX	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

Outfall 002, Effective Period: Permit Effective Date through Commencing Treatment of AMD Encountered During Landfilling Excavation.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Acidity	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Alkalinity	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Aluminum	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite
Total Iron	1.50	1.50 Daily Max	XXX	4.50	4.50	4.5	1/week	24-Hr Composite
Total Manganese	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Outfall 002, Effective Period: Commencing Treatment of AMD Encountered During Landfilling Excavation through Ceasing Treatment of AMD Encountered During Landfilling Excavation.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Acidity	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Alkalinity	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Aluminum	1.33	1.33 Daily Max	XXX	1.14	1.14	1.14	1/week	24-Hr Composite
Total Iron	2.75	2.75 Daily Max	XXX	2.36	2.36	2.36	1/week	24-Hr Composite
Total Manganese	1.53	1.53 Daily Max	XXX	1.31	1.31	1.31	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Outfall 002, Effective Period: Ceasing Treatment of AMD Encountered During Landfilling Excavation through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Total Acidity	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Alkalinity	XXX	XXX	XXX	XXX	Report	XXX	1/week	24-Hr Composite
Total Aluminum	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite
Total Iron	1.50	1.50 Daily Max	XXX	4.50	4.50	4.5	1/week	24-Hr Composite
Total Manganese	0.70	0.70 Daily Max	XXX	2.10	2.10	2.1	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Total Alkalinity Effluent Net	XXX	XXX	0	XXX	XXX	XXX	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002



Basin Characteristics Report

Date: Fri Dec 19 2014 06:19:31 Mountain Standard Time
 NAD27 Latitude: 40.9287 (40 55 43)
 NAD27 Longitude: -78.3981 (-78 23 53)
 NAD83 Latitude: 40.9288 (40 55 44)
 NAD83 Longitude: -78.3979 (-78 23 52)

Parameter	Value
Area In square miles	0.131
Mean Basin Elevation In feet	1756.0
Unadjusted basin slope, in degrees	1.1
Adjusted basin slope, In degrees	5.9
Total stream length In miles	0.211
Stream density (miles/square mile)	1.611
Percent of area covered by lakes, ponds, reservoirs and wetlands	0.0
Percent of area covered by carbonate bedrock	a.a
Percent of area covered by glacial activity	a.a
Depth to rock In feet	4.61
Mean annual precipitation In Inches	41.7
Maximum Daily Temperature In degrees F	107.0
Percent of area covered by forest	100
Percentage of Impervious area determined from NLUI	100
Percent of area covered by urban land according to an official red version of NLD	100
Percentage of urban land cover determined from NLCD 2001 land cover dataset	100
Drainage quality Index from STATSGO	3.1
X coordinate of the centroid, In map projection, meters	-3319.0
Y coordinate of the centroid, in map projection, meters	2117.0
X coordinate of the outlet, In map projection, meters	21.50
Y coordinate of the outlet, In map projection, meters	2117.0
Longitude of the outlet, in decimal degrees	-78.3979

Basin characteristics for the ungedaged site.

12/19/2014
Worksheet
LLC_AMD

Basin Characteristic	Value	Units	warnings
Drainage area	0.15	miles squared	The drainage area is less than 2.39 or greater than 1462. Streamflow estimates are uncertain for all flows because drainage area is outside of the range under which the regression equations were developed.
Average annual precipitation	41.00	inches	No Warnings
Percent of basin that is carbonate	0.00	percent	No Warnings
Depth to bedrock	4.63	feet	No Warnings
X-location at the outlet of the basin	-33604.90	Albers meters	No Warnings
Y-location at the outlet of the basin	214154.90	Albers meters	No Warnings
Drainage runoff curve number	3.50	unitless	No Warnings
Percent of basin that is impervious	0.00	percent	Streamflow estimates are uncertain for flows greater than or equal to the 70-percent exceedence because percent impervious land cover is outside of the range under which the regression equations were developed.
Mean daily high temperature	57.00	degrees Fahrenheit	No Warnings
X-location at the center of the basin	-33238.80	Albers meters	No Warnings
Y-location at the center of the basin	214434.90	Albers meters	No Warnings
Longitude	78.399045	Decimal degrees	No Warnings

Information related to the reference streamgage.

Streamgage code	Streamgage number	Streamgage name
01542500	01542500	WestBr. Susquehanna River at Karthaus, PA

Basin Characteristic	Value for the reference streamgage	Value at the un-gaged site	Percent Difference
Drainage area, in miles squared	1462.00	0.15	99.99
Average annual precipitation in inches	41.93	41.00	2.22
Percent of basin with carbonate rock	0.00	0.00	0.00
Depth to bedrock, in feet	4.52	4.63	2.42
Drainage runoff curve number	3.52	3.50	--
Percent of basin that is impervious	0.74	0.00	0.74
Mean daily high temperature in degrees Fahrenheit	55.60	57.00	2.52
Outlet X-location, in PA Albers meters	-9167.33	-33604.90	--
Outlet Y-location, in PA Albers meters	235115.24	214154.90	-
Longitude, in decimal degrees	78.11	78.40	--
Distance between un-gaged site and reference streamgage, in miles	20.01		

Correlation of streamflow between un-gaged site and reference streamgage	0.98
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Reference streamgages most-correlated with the un-gaged site

Reference streamgages most-correlated with the un-gaged site	Correlation	Drainage area in miles squared	Average precipitation in inches	Percent of basin with carbonate rock	Depth to bedrock, in feet	Drainage runoff curve number	Percent of basin that is impervious	Mean daily high temperature in degrees Fahrenheit
<u>01542500 WestBr. Susquehanna River at Karthaus, PA</u>	<u>0.985</u>	<u>1462.00</u>	<u>41.93</u>	<u>0.00</u>	<u>4.52</u>	<u>3.52</u>	<u>0.74</u>	<u>55.60</u>
<u>01543500 Sinnemahoning Creek at Sinnemahoning, PA</u>	<u>0.958</u>	<u>685.00</u>	<u>43.44</u>	<u>0.00</u>	<u>4.60</u>	<u>3.65</u>	<u>0.20</u>	<u>53.93</u>
<u>01541000 West Branch Susquehanna River at Bower, PA</u>	<u>0.944</u>	<u>315.00</u>	<u>44.29</u>	<u>0.00</u>	<u>4.50</u>	<u>3.57</u>	<u>0.69</u>	<u>56.24</u>
<u>01548005 Bald Eagle Creek near Beech Creek Station, PA</u>	<u>0.941</u>	<u>562.00</u>	<u>38.96</u>	<u>27.43</u>	<u>4.63</u>	<u>3.11</u>	<u>1.81</u>	<u>55.83</u>
<u>01558000 Little Juniata River at Spruce Creek, PA</u>	<u>0.936</u>	<u>220.00</u>	<u>39.65</u>	<u>20.48</u>	<u>4.58</u>	<u>3.10</u>	<u>2.67</u>	<u>55.96</u>

Reference-gage site name: 01542500 WestBr. Susquehanna River at Karthaus, PA

Correlation coefficient: 0.98

Basin characteristics	Index-gage site	Ungaged site	Units	Percent difference
Drainage area	1462.00	0.15 miles squared		99.99
Average annual precipitation	41.93	41.DD inches		2.22
Percent of basin with carbonate rock	0.00	0.00 percent of basin		0.00
Depth to bedrock, in feet	4.52	4.63 feet		2.42
Drainage runoff curve number	3.52	3.50 unitless		
Percent of basin that is impervious	0.74	0.00 percent of basin		0.74
Mean daily high temperature	55.60	57.00 degrees Farenheit		2.52

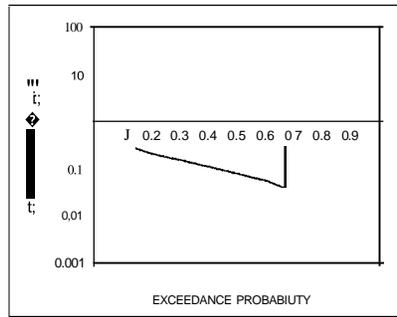


Figure 1. Flow-duration curves in cubic feet per second for ungaged site.

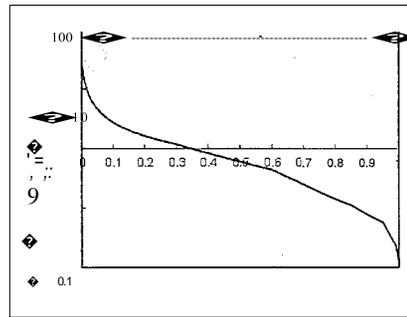


Figure 2. Flow-duration curves in cubic feet per second per mile for ungaged site.

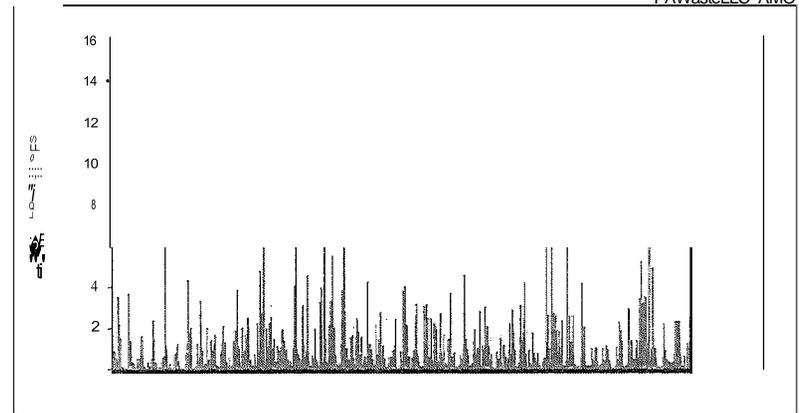


Figure 3. Hydrographs in cubic feet per second for ungaged site.

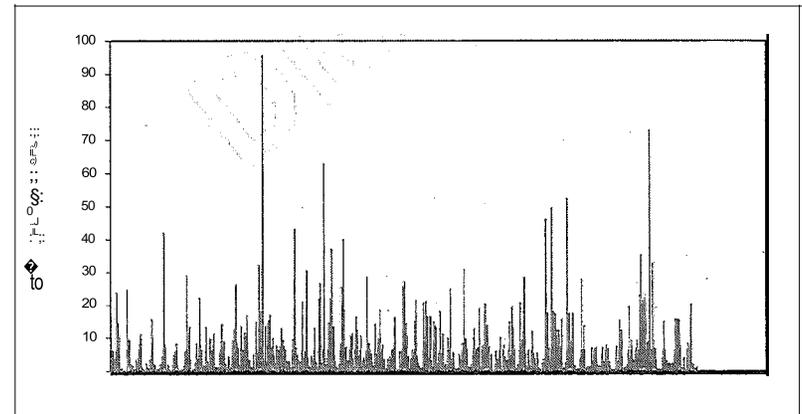


Figure 4. Hydrographs in cubic feet per second per mile for ungaged site.

DFLOW Results

{All available data from Apr 1, 1983 through Mar 31, 2013 are included in analysis.

Gage	Period	Days in Record	Zero/Missing	1B3	Percentile	Excur per 3 yr	IQ10	Percentile	Excur per 3 yr	IQyType	xQy	Percentile	Harmonic	Percentile
01542500 - WB Susquehanna River at Karthaus, PA	1982/04/01 - 2013/04/01	11,323	0/4,149	2.30E+02	0.33%	0.87	2.18E+02	0.18%	0.48	IQ3	1.98E+02	0.02%	9.90E+02	33.02%
01542500 - WB Susquehanna River at Karthaus, PA	1982/04/01 - 2013/04/01	11,323	0/4,149	183	0.33%	0.87	2.33E+02	0.43%	0.97	7Q11	1.51E+02	0.00%	9.90E+02	33.02%
01542500 - WB Susquehanna River at Karthaus, PA	1982/04/01 - 2013/04/01	11,323	0/4,149	183	0.33%	0.87	<u>2.68E+02</u>	2.39%	4.45	30Qy Type 30QII	1.80E+02	0.00%	9.90E+02	33.02%

Low-Flow (0_{7.10}) Calculation

Facility: CHRL AMD Treatment System
NPDES Permit No. PA0232653

Gage Information

Drainage Area: 1462 mi²
07.10: 233 cfs
LFY: 0.159 cfs

Outfall Information

Drainage Area: 0.13 mi²
07.10: 0.02 cfs

Downstream Locations

RMI:
Drainage Area: _____ mi²
07.10: _____ cfs

RMI:
Drainage Area: _____
07.10: -- cfs

RMI:
Drainage Area: _____ mi²
07.10: _____ cfs

RMI:
Drainage Area: _____
07.10: _____ cfs

RMI:
Drainage Area: _____ mi²
07.10: _____ cfs

RMI: --
Drainage Area: _____
07.10: -- cfs

RMI:
Drainage Area: _____ mi²
07.10: _____ cfs

RMI: --
Drainage Area: _____
07.10: _____ cfs