pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028126**
Facility Type	**Industrial**	APS ID	**1092124**
Major / Minor	**Minor**	Authorization ID	**1446029**

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

Applicant and Facility Information

Applicant Name	**PA American Water Co.**	Facility Name	**Hays Mine Station**
Applicant Address	380 Becks Run Road	Facility Address	380 Becks Run Road
	Pittsburgh, PA 15201		Pittsburgh, PA 15201
Applicant Contact	Ryan Hardgrove	Facility Contact	Kent Shrontz
Applicant Phone	412.690.5436	Facility Phone	724.986.4113
Applicant Email	ryan.hardgrove@amwater.com	Facility Email	kent.shrontz@amwater.com
Client ID	87712	Site ID	442890
SIC Code	4941	Municipality	Pittsburgh City
SIC Description	Trans. & Utilities - Water Supply	County	Allegheny
Date Application Received	June 30, 2023	EPA Waived?	Yes
Date Application Accepted	August 7, 2023	If No, Reason	
Purpose of Application	NPDES Permit Renewal Coverage		

Summary of Review

The Department received a renewal NPDES permit application from PA American Water Co. on June 30, 2023 for renewal coverage of their Hays Mine Station Water Treatment Plant. The Hays Mine Station Water Treatment Facility purifies water withdrawn from the Monongahela River for potable public consumption. The facility is a 100% recycled plant and the discharges from the plant will only occur when treatment is compromised.

The facility removes naturally occurring sediment from the Monongahela River during the treatment process through a superpulsator clarification process and granular activated carbon (GAC) filtration. The filters are backwashed to remove trapped solids and particles on a daily basis. This backwash water is sent to backwash clarifiers. The sludge from the superpulsators, during blowdown, is sent directly to the gravity thickeners. The clarified decant water from the backwash clarifiers is released back into the head of the raw water basin and is recycled. The sludge from the clarifiers is sent to the gravity thickeners clarifier tanks. The decant water from the gravity thickeners is sent to the head of the raw water basin. The sludge is sent to the sludge holding tank. From the sludge holding tank, everything is sent to the belt filter press. The decant water from the sludge press is discharged back into the raw water basin and recycled. Outfall 001 effluent consists only of the clarified decant water from the gravity thickeners. The press water is recycled to the head of the raw water basin. The backwash clarifiers will be taken out of service. The site flow diagram is included in Appendix D. The site's solids handing building is undergoing a complete upgrade to replace the four belt presses with three screw presses. This upgrade has been approved by the Department under Water Quality Management permit 0288204A-1, dated May 22, 2023.

The site has one process wastewater (Outfall 001) and twelve stormwater outfalls that discharge to an Unnamed Tributary to the Monongahela River, designated in 25 PA Code Chapter 93 as a warm water fishery (WWF). The discharge to Outfall 001 is an emergency discharge and would only consist of clarified water from backwash water and blowdowns. The site has discharged once through Outfall 001 in the past 5 years. Based on the stormwater discharge data that was submitted with

Approve	Deny	Signatures	Date
X		Adam Olesnanik, P.E. / Environmental Engineer	November 9, 2023
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	November 13, 2023

Summary of Review

the renewal application, the discharge concentrations are consistent with the no exposure stormwater benchmarks, as such, the stormwater discharge from the site can be considered uncontaminated stormwater. These outfalls will not receive any stormwater sampling/monitoring requirements in Part A of the Draft Permit. However, these outfalls will be included in Part C of the permit, which contain additional requirements for the stormwater outfalls.

The site was last inspected on March 23, 2023, no violations were noted.

The Permittee has four open violations, but none for this site. The permittee has two violations with the Department's Safe Drinking Water Program in the North Central Regional Office at the PA American White Deer Facility. The permittee has one violation with the Department's Clean Water Program in the Southwest Regional Office for an unauthorized discharge to Waters of the Commonwealth. The permittee has one violation with the Department's Clean Water Program in the Southeast Regional Office for illegal discharge to Waters of the Commonwealth from a sanitary sewer overflow.

Public Participation

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.	001	Design Flow (MGD)	12.168
Latitude	40º 23' 37"	Longitude	-79º 58' 48"
Quad Name	Pittsburgh East	Quad Code	1506
Wastewater Description:	Treated wastewater from water treatment plant backwash and/or sludge blowdown.		
Receiving Waters	Unnamed Tributary to Monongahela River	Stream Code	37186
NHD Com ID	99407806	RMI	2.2
Drainage Area	0.27	Yield (cfs/mi^2)	0.006
Q_{7-10} Flow (cfs)	0.00162	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1060	Slope (ft/ft)	0.04
Watershed No.	19-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Bank Modifications		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	West View Water Authority		
PWS Waters	Ohio River	Flow at Intake (cfs)	2,365
PWS RMI	976	Distance from Outfall (mi)	11

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 12.168
Latitude 40º 23' 37" **Longitude** -79º 58' 48"
Wastewater Description: Treated wastewater from water treatment plant backwash and/or sludge blowdown.

Technology Based Limitations:

Best Practicable Control Technology Currently Achievable (BPT)

BPT for wastewater from treatment of WTP sludges and filter backwash is found in DEPs Technology-Based Control Requirements for Water Treatment Plant Wastes Document which is imposed under Best Professional Judgement under 40 CFR § 125.3. The effluent limitations from this document are displayed below in Table 1.

Table 1: BPT Limits for WTP Sludge and Filter Backwash Wastewater

Parameter	Monthly Avg (mg/l)	Daily Max (mg/l)
Suspended solids	30.0	60.0
Iron (total)	2.0	4.0
Aluminum (total)	4.0	8.0
Manganese (total)	1.0	2.0
Flow (MGD)	Monitor	----
pH (S.U.)	Not less than 6.0 nor greater than 9.0 at all times	
Total Residual Chlorine	0.5	1.0

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1) which is displayed in Table 2 below.

Effluent standards for pH are imposed in accordance with 25 Pa. Code §§ 95.2(1) which is displayed in Table 2 below.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 2 below

Table 2: Regulatory Effluent Standards and Monitoring Requirements for Outfall 001

Parameter	Monthly Average	Daily Maximum	Units
Flow	Monitor and Report		MGD
Total Residual Chlorine (TRC)	0.5	1.6	mg/L
pH	Not less than 6.0 nor greater than 9.0		S.U.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet (“TMS”) to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to

further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion is considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 3. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment B of this Fact Sheet. The water quality-based effluent limitations and monitoring requirements that are recommended by the Toxics Management Spread Sheet are displayed below in Table 4.

Table 3: TMS Inputs for Outfall 001

Parameter	**Value**
River Mile Index	2.2
Discharge Flow (MGD)	12.168
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	0.27
$Q_{7\text{-}10}$ (cfs)	0.00162
Low-flow yield (cfs/mi^2)	0.006
Elevation (ft)	1060
Slope	0.04

Table 4: Water Quality Based Effluent Limitations at Outfall 001

Parameters	Average Monthly	Daily Maximum	Discharge Concentration
Total Aluminum (mg/L)	0.75	0.75	0.40
Hexavalent Chromium (µg/L)	10.4	16.2	10.0
Total Copper (µg/L)	Report	Report	2.9
Total Iron (mg/L)	Report	Report	0.6
Total Manganese (mg/L)	Report	Report	0.247
Total Zinc (µg/L)	Report	Report	20.3

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment C, indicate that average monthly limits of 0.011 mg/L and daily maximum limits of 0.026 mg/L are required for TRC.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 5.

Table 5: Effluent Limitations in the Current Permit for Outfall 001

Parameter	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Sample Frequency	Sample Type
Flow (MGD)	XXX	Report	Report	XXX	2/Discharge	Measured
pH (S.U.)	6.0	XXX	9.0	XXX	2/Discharge	Grab
Total Residual Chlorine (mg/L)	XXX	0.011	0.026	XXX	2/Discharge	Grab
Total Suspended Solids (mg/L)	XXX	30.0	60.0	XXX	2/Discharge	Grab
Total Aluminum (mg/L)	XXX	4.0	8.0	XXX	2/Discharge	Grab
Total Iron (mg/L)	XXX	2.0	4.0	XXX	2/Discharge	Grab
Total Manganese (mg/L)	XXX	1.0	2.0	XXX	2/Discharge	Grab

Proposed Effluent Limitations

The proposed effluent limitations for Outfall 001 are displayed in Table 6 below, they are the most stringent values from the above effluent limitation development. The site received new/more stringent water quality-based effluent limitations for Total Aluminum and Hexavalent Chromium. It should be noted that the Department is not proposing a compliance schedule per 25 Pa. Code § 92a.51(a) for these new limits because the discharge is infrequent, and based on the discharge concentrations, the site can meet the new limits upon permit issuance.

Table 6: Proposed Effluent Limitations for Outfall 001

Parameter	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Sample Frequency	Sample Type
Flow (MGD)	XXX	Report	Report	XXX	2/Discharge	Measured
pH (S.U.)	6.0	XXX	XXX	9.0	2/Discharge	Grab
Total Residual Chlorine (mg/L)	XXX	0.011	0.026	XXX	2/Discharge	Grab
Total Suspended Solids (mg/L)	XXX	30.0	60.0	XXX	2/Discharge	Grab
Total Aluminum (mg/L)	XXX	0.75	0.75	XXX	2/Discharge	Grab
Hexavalent Chromium (µg/L)	XXX	10.4	16.2	XXX	2/Discharge	Grab
Total Copper (µg/L)	XXX	Report	Report	XXX	2/Discharge	Grab
Total Iron (mg/L)	XXX	2.0	4.0	XXX	2/Discharge	Grab
Total Manganese (mg/L)	XXX	1.0	2.0	XXX	2/Discharge	Grab
Total Zinc (µg/L)	XXX	Report	Report	XXX	2/Discharge	Grab

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment **B**)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

ATTACHMENTS

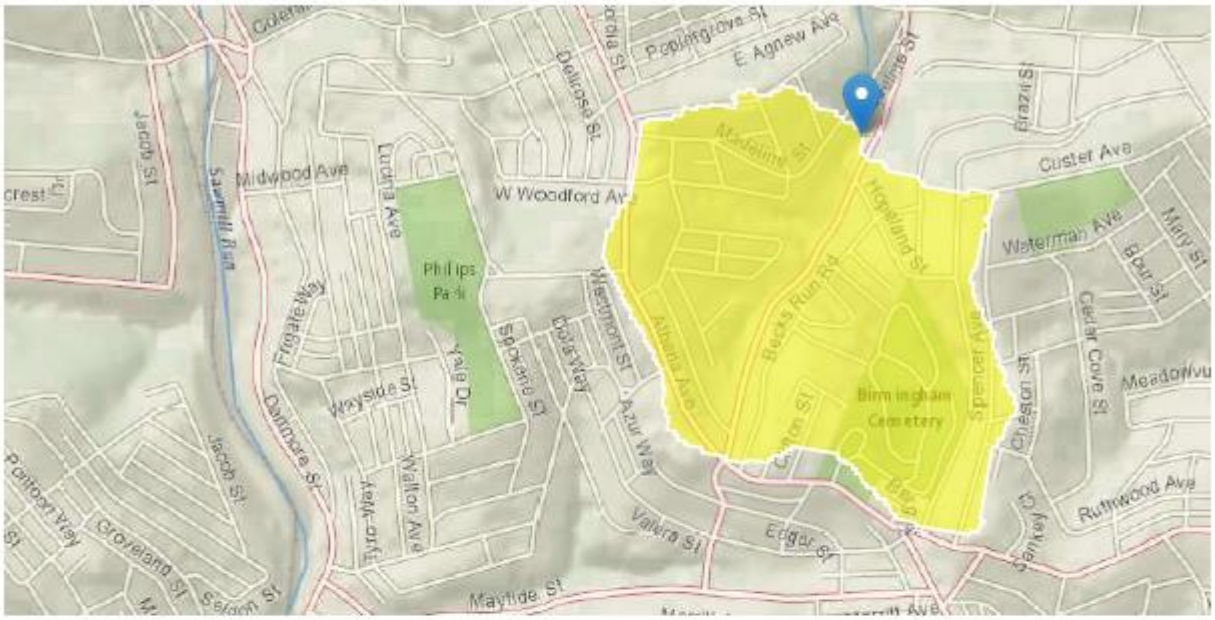
Attachment A: USGS StreamStats Report
Attachment B: Toxics Management Spreadsheet for Outfall 001
Attachment C: TRC Model for Outfall 001
Attachment D: Site Flow Diagram
Attachment E: Site Plan
Attachment F: Site Stormwater Outfalls Drainage Areas

Attachment A:

USGS StreamStats Reports

StreamStats Report

Region ID: PA
Workspace ID: PA20231109120959902000
Clicked Point (Latitude, Longitude): 40.39428, -79.97993
Time: 2023-11-09 07:10:20 -0500



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.27	square miles
ELEV	Mean Basin Elevation	1177	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.27	square miles	2.26	1400
ELEV	Mean Basin Elevation	1177	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.00622	ft^3/s
30 Day 2 Year Low Flow	0.0127	ft^3/s
7 Day 10 Year Low Flow	0.00162	ft^3/s
30 Day 10 Year Low Flow	0.00381	ft^3/s
90 Day 10 Year Low Flow	0.00828	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.18.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment B:

Toxics Management Spreadsheet for Outfall 001

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Discharge Information

Instructions | Discharge | Stream

Facility: **PA American Water - Hays Mine WTP** NPDES Permit No.: **PA0028126** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Filter Backwash and Sludge Blowdown**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
12.168	100	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		198									
	Chloride (PWS)	mg/L		32.3									
	Bromide	mg/L		0.2									
	Sulfate (PWS)	mg/L		64.5									
	Fluoride (PWS)	mg/L		0.09									
Group 2	Total Aluminum	µg/L		400									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		39.7									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		41.9									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		0.9									
	Hexavalent Chromium	µg/L		10									
	Total Cobalt	µg/L		0.4									
	Total Copper	µg/L		2.9									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		600									
	Total Lead	µg/L	<	0.2									
	Total Manganese	µg/L		247									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2.7									
	Total Phenols (Phenolics) (PWS)	µg/L		5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		20.3									
	Total Molybdenum	µg/L		1.1									
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Stream / Surface Water Information

PA American Water - Hays Mine WTP, NPDES Permit No. PA0028126, Outfall 001

Instructions | Discharge | Stream

Receiving Surface Water Name: **Unnamed Trib to the Monongahela Riv**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	037186	2.2	1060	0.27	0.04		Yes
End of Reach 1		1.2	860	1.49			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	2.2	0.1	0.00162									100	7		
End of Reach 1	1.2	0.1	0.0126												

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	2.2														
End of Reach 1	1.2														

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2023

Model Results

PA American Water - Hays Mine WTP, NPDES Permit No. PA0028126, Outfall 001

Instructions | *Results* | RETURN TO INPUTS | SAVE AS PDF | PRINT | (•) All ( ) Inputs ( ) Results ( ) Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	750	
Total Antimony	0	0		0	1,100	1,100	1,100	
Total Arsenic	0	0		0	340	340	340	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	21,002	
Total Boron	0	0		0	8,100	8,100	8,101	
Total Cadmium	0	0		0	2.014	2.13	2.13	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	569.763	1,803	1,803	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	16.3	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	95.0	
Total Copper	0	0		0	13.439	14.0	14.0	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	64.581	81.6	81.7	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	1.65	Chem Translator of 0.85 applied
Total Nickel	0	0		0	468.236	469	469	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.217	3.78	3.78	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	65.0	
Total Zinc	0	0		0	117.180	120	120	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	220	
Total Arsenic	0	0		0	150	150	150	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	4,100	
Total Boron	0	0		0	1,600	1,600	1,600	
Total Cadmium	0	0		0	0.246	0.27	0.27	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.115	86.2	86.2	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	10.4	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	19.0	
Total Copper	0	0		0	8.956	9.33	9.33	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	1,500	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.517	3.18	3.18	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	0.91	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.007	52.2	52.2	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	4.99	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	13.0	
Total Zinc	0	0		0	118.139	120	120	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	5.6	
Total Arsenic	0	0		0	10	10.0	10.0	
Total Barium	0	0		0	2,400	2,400	2,400	
Total Boron	0	0		0	3,100	3,100	3,100	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	300	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,000	
Total Mercury	0	0		0	0.050	0.05	0.05	
Total Nickel	0	0		0	610	610	610	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.24	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 0.000 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	0	0		0	N/A	N/A	N/A	
Total Boron	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	N/A	N/A	N/A	
Total Nickel	0	0		0	N/A	N/A	N/A	
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			
Total Aluminum	76.1	76.1	750	750	750	µg/L	750	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	1.05	1.65	10.4	16.2	26.0	µg/L	10.4	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	9.33	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	1,500	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	1,000	THH	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	120	AFC	Discharge Conc > 10% WQBEL (no RP)

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	2,400	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,600	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	0.27	µg/L	Discharge Conc < TQL
Total Chromium (III)	86.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	19.0	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	300	µg/L	Discharge Conc < TQL
Total Lead	3.18	µg/L	Discharge Conc < TQL
Total Mercury	0.05	µg/L	Discharge Conc < TQL
Total Nickel	52.2	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	4.99	µg/L	Discharge Conc < TQL
Total Silver	3.78	µg/L	Discharge Conc < TQL
Total Thallium	0.24	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS

Attachment C:

TRC Model for Outfall 001

TRC EVALUATION

0.00162	= Q stream (cfs)	0.5	= CV Daily
12.168	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.995	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
	= %Factor of Safety (FOS)		=Decay Coefficient (K)

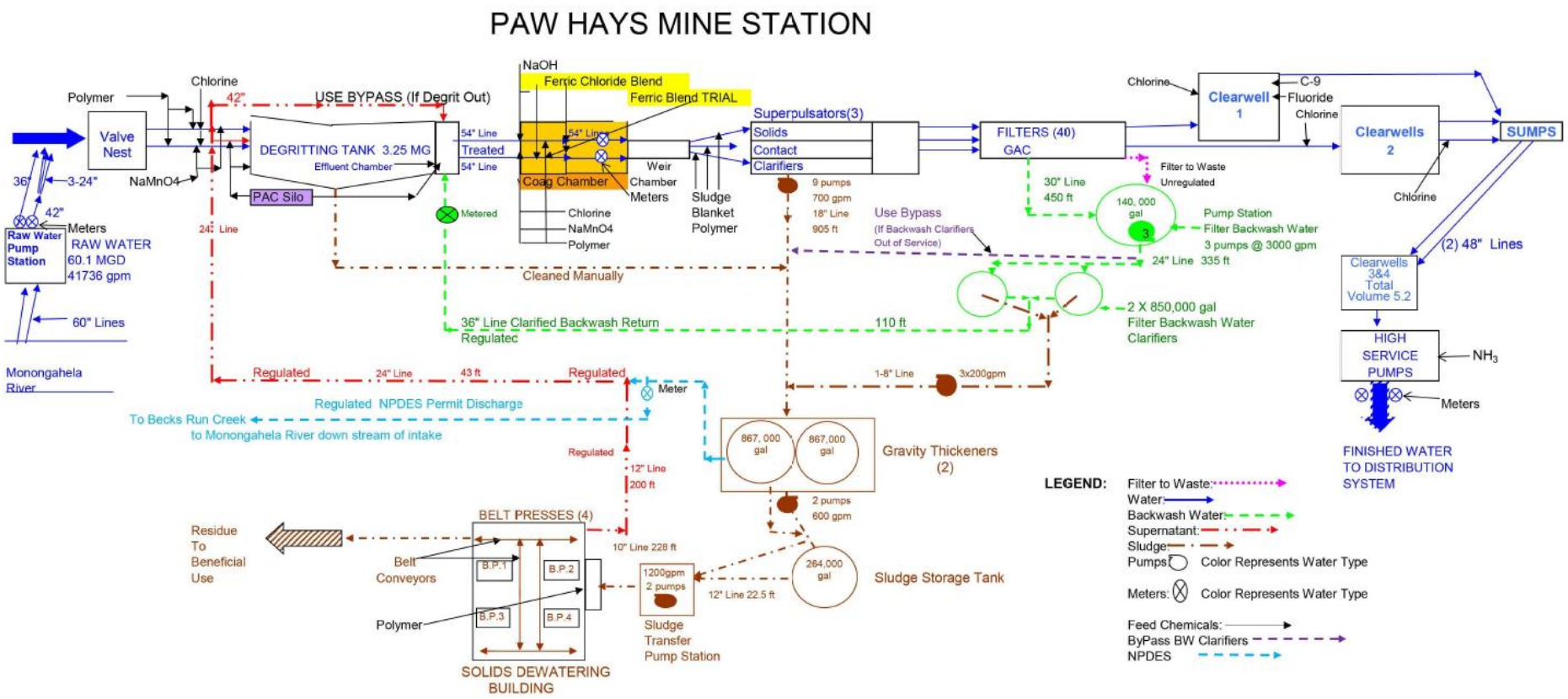
Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	0.019	**1.3.2.iii**	WLA cfc =	0.011
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	0.007	**5.1d**	LTA_cfc =	0.006

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.011	CFC
		INST MAX LIMIT (mg/l) =	0.026	

WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...**
	...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...**
	...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**

Attachment D:

Site Flow Diagram


PAW HAYS MINE STATION
Polymer
Chlorine
42"
USE BYPASS (If Degrit Out)
NaOH
Ferric Chloride Blend
Ferric Blend TRIAL
Valve Nest
DEGRITTING TANK 3.25 MG
Effluent Chamber
54" Line
Treated
54" Line
Coag Chamber
Weir Chamber
Meters
Sludge Blanket Polymer
Superpulsators(3)
Solids Contact Clarifiers
9 pumps
700 gpm
18" Line
905 ft
Use Bypass
(If Backwash Clarifiers Out of Service)
FILTERS (40) GAC
Chlorine
Clearwell 1
C-9
Fluoride
Chlorine
Clearwells 2
SUMPS
Chlorine
Filter to Waste
Unregulated
30" Line
450 ft
140, 000 gal
3
Pump Station
Filter Backwash Water
3 pumps @ 3000 gpm
24" Line 335 ft
(2) 48" Lines
Clearwells 3&4 Total Volume 5.2
2 X 850,000 gal
Filter Backwash Water
Clarifiers
HIGH SERVICE PUMPS
NH_3
Meters
FINISHED WATER TO DISTRIBUTION SYSTEM
36"
3-24"
NaMnO4
42"
Meters
Raw Water Pump Station
RAW WATER
60.1 MGD
41736 gpm
60" Lines
Monongahela River
PAC Silo
Metered
24" Line
Chlorine
NaMnO4
Polymer
Cleaned Manually
36" Line Clarified Backwash Return
Regulatec
110 ft
Regulated
24" Line
43 ft
Regulated
Meter
1-8" Line
3x200gpm
Regulated NPDES Permit Discharge
To Becks Run Creek
to Monongahela River down stream of intake
Regulated
12" Line
200 ft
867, 000 gal
867,000 gal
Gravity Thickeners (2)
2 pumps
600 gpm
BELT PRESSES (4)
Residue To Beneficial Use
Belt Conveyors
B.P.1
B.P.2
B.P.3
B.P.4
Polymer
10" Line 228 ft
1200gpm
2 pumps
12" Line 22.5 ft
264,000 gal
Sludge Storage Tank
Sludge Transfer Pump Station
SOLIDS DEWATERING BUILDING
LEGEND:
Filter to Waste:
Water:
Backwash Water:
Supernatant:
Sludge:
Pumps: Color Represents Water Type
Meters: Color Represents Water Type
Feed Chemicals:
ByPass BW Clarifiers
NPDES

Attachment E:

Site Plan


INTAKE ON MONONGAHELA RIVER
CLEARWELLS
HIGH SERVICE PUMP STATION
ZONE: PITTSBURGH MAIN HGL:1405
BACKWASH WATER TANKS
SUPERPULSATORS
CHEMICAL BUILDING
FILTER BACKWASH CLEANERS
FILTER BUILDING
BASIN
OUTFALL 001
GRAVITY THICKENERS
DEWATERING BUILDING
REFERENCE: AERIAL IMAGERY FROM GOOGLE EARTH PRO VERSION 7.3.6.9345 (MAY 3, 2023). PITTSBURGH, PA., 40° 23' 48.75", 79°58' 43.19", EYE ALT 4369
IMAGERY DATE: 4/23/2022.
NOTE: TO BE USED FOR REFERENCE ONLY. ALTHOUGH EVERY EFFORT HAS BEEN MADE TO ENSURE THE ACCURACY OF THE INFORMATION, ERRORS AND CONDITIONS ORIGINATING FROM PHYSICAL SOURCES TO DEVELOP THE INFORMATION MAY BE REFLECTED IN THE DATA SUPPLIED.
SCALE
PENNSYLVANIA AMERICAN WATER
HAYS MINE WATER TREATMENT PLANT
SITE PLAN
DRAWN BY MEC
SCALE 1" = 150'
DATE 05/03/2023
001

Attachment F:

Site Stormwater Outfalls Drainage Areas


Outfall 006
Drainage Area = 101,912 SF
(Includes Outfalls 004, 005 DA)
Impervious Area = 24%
Outfall 004
Drainage Area = 36,445 SF
Impervious Area = 40%
Outfall 002
Drainage Area = 56,489 SF
Impervious Area = 35%
Outfall 010
Drainage Area = 19,682 SF
Impervious Area = 96%
Outfall 005
Drainage Area = 51,365 SF
(Includes Outfall 004 DA)
Impervious Area = 36%
Outfall 012
Drainage Area = 16,318 SF
(Includes Outfalls 011 DA)
Impervious Area = 96%
Outfall 003
Drainage Area = 8,648 SF
Impervious Area = 55%
Outfall 007
Drainage Area = 153,234 SF
(Includes Outfalls 004, 005, 006, 009, 010 DA)
Impervious Area = 44%
Outfall 008
Drainage Area = 12,971 SF
Impervious Area = 25%
Outfall 013
Drainage Area = 25,450 SF
(Includes Outfalls 011, 012 DA)
Impervious Area = 97%
Outfall 011
Drainage Area = 7,972 SF
Impervious Area = 91%
Outfall 009
Drainage Area = 31,399 SF
(Includes Outfall 010 DA)
Impervious Area = 94%
002
003
004
005
006
007
008
009
010
011
012
013
1220
1200
1180
1160
1140
1120
1100
1080
1060
1040
1020
Outfalls
Drainage Areas
20' Contours (PASDA)
Date: 6/15/2023
NPDES Permit Outfall Map
Drainage Areas