pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0252743**
Facility Type	**Industrial**	APS ID	**712461**
Major / Minor	**Minor**	Authorization ID	**1216900**

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

Applicant and Facility Information

Applicant Name	**Indian Creek Valley Water Authority**	Facility Name	**Indian Creek Valley Water Authority**
Applicant Address	PO Box 486	Facility Address	Millertown Road
	Indian Head, PA 15446-0486		Indian Head, PA 15446
Applicant Contact	R. Witt	Facility Contact	R. Witt
Applicant Phone	724-455-2905	Facility Phone	724-455-2905
Client ID	8055	Site ID	263241
SIC Code	4941	Municipality	Saltlick Township
SIC Description	Trans. & Utilities - Water Supply	County	Fayette
Date Application Received	February 5, 2018	EPA Waived?	Yes
Date Application Accepted	May 2, 2019	If No, Reason	

Purpose of Application: Renewal of NPDES permit to discharge treated industrial wastewater.

Summary of Review

Permitting History

Indian Creek Valley Water Authority held a minor individual IW permit without ELG for its Neal's Run Water Treatment Plant located in Saltlick Township, Fayette County. The previous permit coverage expired on July 31, 2018. An application for renewal was received on February 5, 2018.

Facility Overview

The Indian Creek Valley Water Authority's drinking water treatment system treats raw water from Neal's Run Well to produce potable water for the Authority's customers. The Water Treatment Plant currently treats an average of 0.216 MGD. A schematic of the treatment system is presented in Appendix A.

Raw water is withdrawn from Neal's Run Well and treated with potassium permanganate and chlorine for pre-disinfection. This is followed by filtration using two 50-square-foot greensand filters. The finished water is pumped from the filters into the distribution system by the high service pumps.

When the filter head-loss reaches a pre-set level, the filters are backwashed to remove oxidized materials which have accumulated during filtration. The filters are backwashed using finished water from the distribution system. The filter backwash water is discharged to the backwash tanks and allowed sufficient time to settle out the suspended solids. Sludge from the backwash tanks is removed as needed and disposed of at an approved landfill or wastewater treatment facility.

Approve	Deny	Signatures	Date
X		Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineer	02/11/2021
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	2/23/2021

Summary of Review

Generally, the supernatant from the backwash tank is recycled to the head of the plant. The second option is to discharge the supernatant into Back Creek under the current NPDES permit. The facility did not discharge through Outfall 001 during the last five years. The wastewater generated at this plant consists of filter backwash water from greensand filters, filter to waste water, utility sink, and continuous read analytical equipment for chlorine and turbidity.

On September 16, 2020, the Department's water quality specialist, Lisa Milsop, conducted an inspection of the facility. The Authority Manager, Kerry Witt, was present during the inspection. The inspection outlines that the facility has two pipes at the outfall location. One pipe (Outfall 001) that was sealed is designed to discharge water from the backwash tanks, utility sink and process water from the finish water turbidimeters. A slight trickle was observed at the second pipe discharge location. The manager of the facility (Kerry Witt) confirmed that the second pipe only discharges condensation drippings from the steel filter tank. Uncontaminated condensation drippings are generally allowed to be discharged under the PAG-03 General Permit for discharges of stormwater associated with industrial activity. During the current renewal, the second discharge location is considered as Outfall 002 and the permit limit/monitoring requirements will be developed accordingly. Table 1 outlines the outfall details.

Table 1. Outfall Details

Outfall No.	Type of discharge
Outfall 001	Filter backwash, filter to waste, and miscellaneous wastewater
Outfall 002	Steel filter tank condensation drippings

Chemical Additives

No chemical additives are currently used at the facility to treat backwash water.

Public Notifications and Zoning Approval

Indian Creek Valley Water Authority submitted Act 14 notification to Saltlick Township on December 27, 2017. No newspaper notification was published since it is an NPDES renewal application.

Violation History

No effluent related violations were noted.

Conclusion

There are currently no open violations by Client ID. Permit issuance is recommended.

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)	0.0064
Latitude	40º 02' 14"	Longitude	-79º 21' 06"
Quad Name	Seven Springs	Quad Code	1811
Wastewater Description:	IW Process Effluent without ELG		

Receiving Waters	Back Creek (CWF)	Stream Code	38319
NHD Com ID	69916485	RMI	3.56
Drainage Area	6.25 sq. miles	Yield (cfs/mi^2)	0.01872
Q_{7-10} Flow (cfs)	0.117	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2432	Slope (ft/ft)	0.0001
Watershed No.	19-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	**None**	Name	**None**

Background/Ambient Data		Data Source
pH (SU)	7	25 §93.7
Temperature (°F)		
Hardness (mg/L)	100	25 §93.8
Other:		

Nearest Downstream Public Water Supply Intake	Indian Creek Valley Water Authority		
PWS Waters	Indian Creek/Mill Run Reservoir	Flow at Intake (cfs)	3.59
PWS RMI	5.0	Distance from Outfall (mi)	13.4

Changes Since Last Permit Issuance: None.

Other Comments: None.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.0064
Latitude	40º 02' 14"	**Longitude**	-79º 21' 6.0"
Wastewater Description:	Filter backwash, filter to waste, and miscellaneous wastewater		

Process Water Overview

In the case of discharge through Outfall 001, the outfall will receive supernatant of the filter backwash water (i.e., process wastewater) from the backwash tanks and will discharge intermittently at a design flow of 0.0064 MGD during operation. Outfall 001 discharges to Back Creek that is identified as cold water fishery (CWF) per Chapter 93 Designated Use.

Technology-Based Effluent Limits (TBELs)

Outfall 001 is comprised of process wastewater that has gone through treatment, i.e., settling. Pursuant to Section 95.2(c)(1) of the Department's rules and regulations, the Bureau of Clean Water has developed technology-based effluent control requirements for water treatment plants (WTPs) proposing to discharge wastewater to surface waters of the Commonwealth. These technology-based effluent control requirements are only applicable where the WTP's wastewater discharge will not result in a water quality standards violation in the receiving stream. These requirements are based upon use of "best professional judgment" (BPJ) in applying the factors specified in Section 304 of the Federal Clean Water Act to determine Best Practicable Control Technology Currently Available (BPT), Best Conventional Pollutant Control Technology (BCT), and Best Available Technology Economically Achievable (BAT). These BPT technology-based effluent controls require that filter backwash wastewater or waste sludges generated from pre-sedimentation, coagulation/settling, water softening, or iron/manganese removal processes cannot be discharged to surface waters of the Commonwealth unless the effluent quality in Table 1 can be achieved. Therefore, Table 2 standards will be applied at Outfall 001. The guideline identifies settling tanks or lagoons, as the minimum treatment the permittee would be able to use to meet the requirements. The permittee has already employed settling tanks, known as backwash tanks, to achieve the technology-based limits as discussed in the Fact Sheet of the previous permit cycle.

Table 2. Technology-Based Control Requirements for Water Treatment Plants (WTPs)

Parameter	Monthly Average (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
pH	6.0-9.0 at all times	
Total Residual Chlorine	0.5	1.0 IMAX

These requirements also consider the provisions of Section 97.14 of the Department's rules and regulations (pertaining to industrial wastes) which states,

"The pollution load of wastes shall be reduced to the maximum extent practical by process changes, segregation of strong wastes, reduction in volume and re-use of water, and by general measures of 'good housekeeping' within the plant. The term 'practical' shall not be limited to that which is profitable or economical."

When the TBELs in Table 2 are compared with TBELs adopted in the previous permit cycle, total aluminum TBELs were more stringent in the previous permit cycle. The BPJ limits imposed during the previous permit cycle were 1.3 mg/L average monthly and 2.6 mg/L daily maximum. Due to the "no discharge' status, the permittee had been consistently achieving the limits for total aluminum. Therefore, the BPJ limits for total aluminum from the previous cycle will be preserved in the renewed permit.

Water-Quality Based Effluent Limitations (WQBELs)

Total Maximum Daily Load (TMDL) Considerations

There is no approved TMDL for Back Creek.

Evaluation of Reasonable Potential and PENTOXSD Modeling

Toxics Screening Analysis identifies toxic pollutants of concern whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion. This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used is greater than the most stringent water quality criterion.

PENTOXSD Version 2.0d for Windows is a single discharge, mass-balance water quality modeling program that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. PENTOXSD evaluates each pollutant 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, PENTOXSD recommends average monthly and maximum daily WQBELs.

The identified toxic pollutants of concern are selected for analysis through PENTOXSD 2.0. The most stringent WQBELs are determined using PENTOXSD Version 2.0d for high values of the identified pollutants. The most stringent WQBELs are then added back to the Toxics Screening spreadsheet (Version 2.7) and screening recommendations are determined. The effluent concentrations of the pollutants from Groups 1-2 submitted with the application are presented in Appendix B. The laboratory quantitation limits (QLs) for the yellow highlighted parameters were less stringent than DEP's QLs. Therefore, any values that exceed DEP's QLs will be evaluated to determine their toxicity and the need for PENTOXSD modeling. Appendix C displays some PENTOXSD input parameters, such as, $Q_{7\text{-}10}$, drainage area, and stream elevation which were determined using United States Geological Survey (USGS) StreamStats analysis. Appendix D includes PENTOXSD modeling details and modeling results. The identified toxic pollutants of concern and parameter screening recommendations are listed in Appendix E.

According to toxic screening analysis, hexavalent chromium, total mercury, and total manganese are recommended to be monitored. Total iron and dissolved iron are recommended to have established limits. Monitoring of hexavalent chromium and total mercury were not part of the previous permit, and therefore, will be added in the current permit. The technology-based effluent limitations (TBELs) for total iron applied in previous permit and listed in Table 2 in the current Draft Permit Fact Sheet are more stringent than the current recommended WQBELs. Therefore, previous limits for total iron will be preserved in the current renewal. For dissolved iron, the recommended maximum daily limit (MDL) is 3.85 mg/l and average monthly limit (AML) is 6.0 mg/L. Final effluents are currently recycled within the system and do not discharge to Back Creek. If effluent is discharged to Back Creek, with the adoption of proper treatment for total iron, the concentrations for dissolved iron are expected to be reduced simultaneously. Therefore, no additional limit will be applied for dissolved iron. TBELs for total manganese listed in Table 2 are more stringent than the WQBEL monitoring requirements. Therefore, TBELs listed in Table 2 will be applied for total manganese. The sampling frequencies of the new parameters will be set as twice per month as the existing parameters in previous permit.

Total Residual Chlorine

The Neal's Run Well WTP discharges total residual chlorine (TRC) at 2.18 mg/L daily maximum and 1.72 mg/L average monthly values. The discharge concentrations were evaluated using the Department's TRC Evaluation spreadsheet. The details of the spreadsheet are presented in Appendix F. The recommended WQBELs obtained from TRC evaluation are: 0.5 mg/L of average monthly limit and 1.17 mg/L of instantaneous maximum limit. Per 25 Pa. §92a.48(b)(2), the technology-based effluent limits for TRC should be 0.5 mg/L of monthly average that was applied in the previous permit. When compared with TBELs in previous and current permit, the monthly average WQBEL determined based on the data submitted with the application is same as TBEL mentioned in Table 2. The instantaneous maximum in the previous permit cycle is more stringent than the current analysis. Therefore, the previous permit limits will be carried over to the current renewal cycle. The sampling frequency will be applied as once per day per Table 6-3 of *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Document No. 362-0400-001, 10/97).*

Summary of Effluent Limitations for Outfall 001

Effluent limits imposed at the outfalls are the most stringent of TBELs, WQBELs, regulatory effluent standards and monitoring requirements as described in the sections above. The applicable requirements for Outfall 001 during the operation of Neal's Run Well WTP are summarized in Table 3. The sampling frequencies are based on the recommended frequencies in Table 6-4 of *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits (Document No. 362-0400-001, 10/97).* In other cases, previous limit/monitoring requirements and frequencies were carried over to the current permit.

Table 3. Outfall 001 Effluent Limitations and Monitoring

Parameter	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Flow (MGD)	-	Report	Report	-	2/month	Measured
pH (S.U.)	6.0	-	-	9.0	1/day	Grab
Total Residual Chlorine (mg/L)	-	0.5	-	1.0	1/day	Grab
Total Suspended Solids (mg/L)	-	30.0	60.0	-	2/month	Grab
Total Aluminum (mg/L)	-	1.3	2.6	-	2/month	Grab
Total Iron (mg/L)	-	2.0	4.0	-	2/month	Grab
Total Manganese (mg/L)	-	1.0	2.0	-	2/month	Grab
Hexavalent Chromium (mg/L)	-	Report	Report	-	2/month	Grab
Total Mercury (mg/L)	-	Report	Report	-	2/month	Grab

Treatment Facility Summary

Treatment Facility Name: Indian Creek Valley Water Authority Neal's Run Well WTP

WQM Permit No.	Issuance Date
None	N/A

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary	Settling	None	0.0064

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
			None	Landfill/wastewater treatment plant

Changes Since Last Permit Issuance: None.

Other Comments: None.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0
Latitude	40º 02' 14"	Longitude	-79º 21' 06"
Quad Name	Seven Springs	Quad Code	1811
Wastewater Description:	Condensation drippings		
Receiving Waters	Back Creek (CWF)	Stream Code	38319
NHD Com ID	69916485	RMI	3.56
Drainage Area	6.25 sq. miles	Yield (cfs/mi^2)	0.01872
Q_{7-10} Flow (cfs)	0.117	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2432	Slope (ft/ft)	0.0001
Watershed No.	19-E	Chapter 93 Class.	CWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status	**None**	Name	**None**

Background/Ambient Data		Data Source
pH (SU)	7	25 §93.7
Temperature (°F)		
Hardness (mg/L)	100	25 §93.8
Other:		

Nearest Downstream Public Water Supply Intake	Indian Creek Valley Water Authority		
PWS Waters	Indian Creek/Mill Run Reservoir	Flow at Intake (cfs)	3.59
PWS RMI	5.0	Distance from Outfall (mi)	13.4

Changes Since Last Permit Issuance: New discharge.

Other Comments: None.

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0
Latitude	40º 02' 14"	**Longitude**	-79º 21' 6.0"
Wastewater Description:	Condensation drippings		

During the inspection in September 2020, the Department identified a second pipe having a low flow (not quantified at the site) point discharge next to Outfall 001. This discharge was not identified during the previous permit renewal. Upon communication with the permittee, this discharge was confirmed to be condensation drippings from the steel filter tank of the drinking water treatment system. The condensation drippings around the steel filter tank are collected and piped to a designated outfall which is named as Outfall 002 during current renewal.

Condensation drippings are a form of precipitation and are similar to stormwater discharge. The steel filter tank is exposed to industrial activity inside the facility. In addition, the condensation at the steel tank exterior over time can lead to

corrosion. In absence of the water quality of the condensation drippings and the possible sources of contamination, stormwater monitoring requirements currently imposed under the PAG-03 General Permit for discharges of stormwater associated with industrial activity will be applied at Outfall 002. The standard industrial classification (SIC) code of the facility is 4941 – Water Treatment Plant. Based on the SIC code, the facility would be classified under Appendix J – Additional Facilities. The monitoring requirements of Appendix J of the PAG-03 will be imposed and are displayed in Table 4.

Table 4. PAG-03 – Appendix J Minimum Monitoring Requirements

Discharge Parameter	Units	Sample Type	Benchmark Values
Total Suspended Solids	mg/L	Grab	100
Oil and Grease	mg/L	Grab	30

The applicable requirements are summarized in Table 5. Discharges from Outfall 002 can be non-continuous and grab sampling will be required for all parameters except flow, which can be estimated. The sampling frequencies will be applied per PAG-03 requirements.

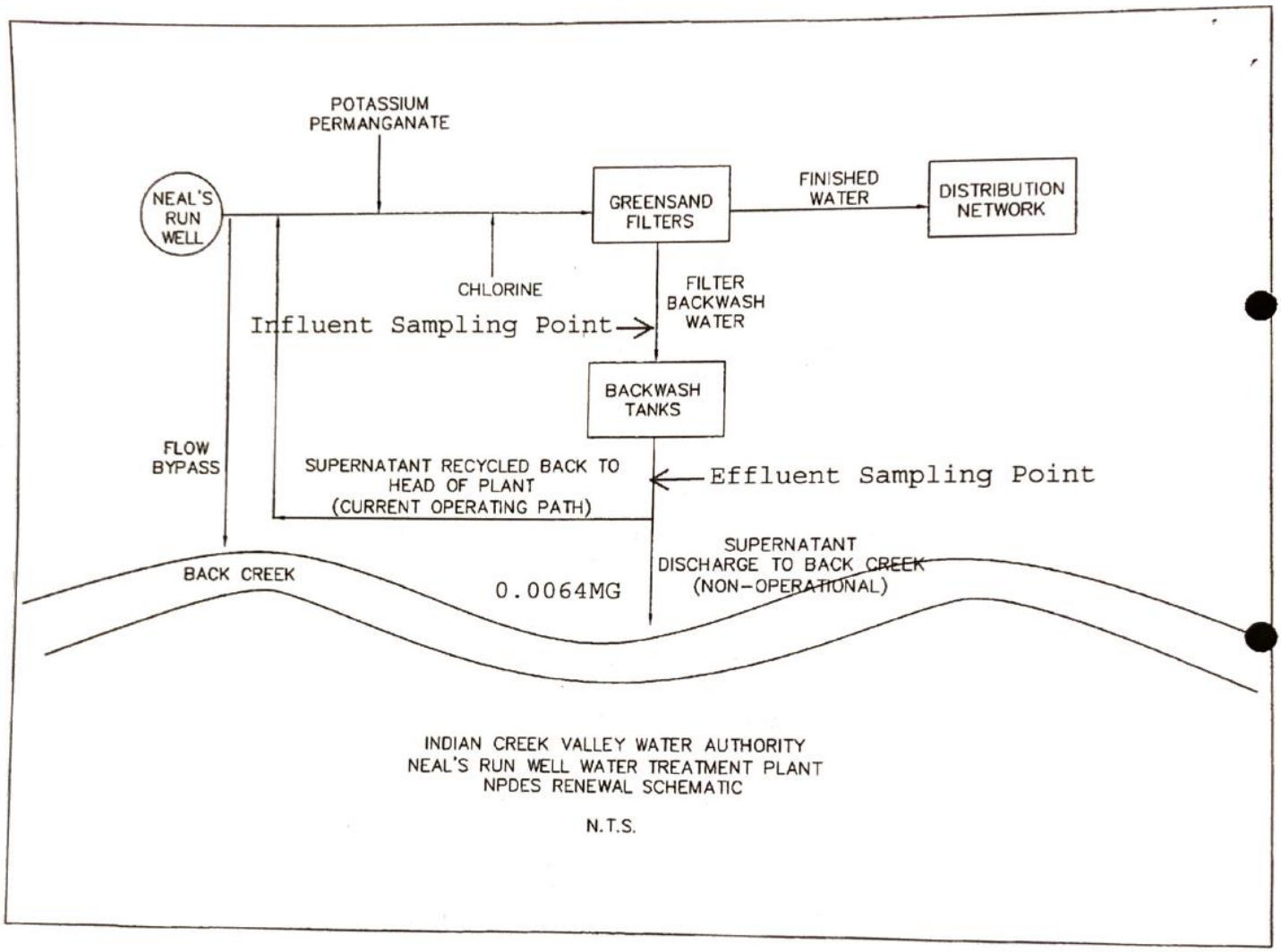
Table 5. Monitoring Requirements for Outfall 002

Parameter	Minimum	Average Monthly	Daily Maximum	Instantaneous Maximum	Sample Frequency	Sample Type
Flow (MGD)	-	-	Report	-	1/ 6 months	Estimate
Total Suspended Solids (mg/L)	-	-	Report	-	1/ 6 months	Grab
Oil and Grease (mg/L)	-	-	Report	-	1/ 6 months	Grab

Compliance History	
Summary of DMRs:	No discharge during 2015-2020. No effluent related violations noted.
Summary of Inspections:	Last DEP inspection on September 16, 2020. Two discharge pipes were found. The discharge from the second pipe is named as Outfall 002 in the current renewal.

Other Comments: **None.**

Appendix A - Neal's Run Well WTP Schematic



Appendix B – Backwash Supernatant Water Quality

ANALYSIS RESULTS TABLE
POLLUTANT GROUP 1

Please read instructions carefully before completing this form.

APPLICANT NAME	Indian Creek Valley Water Authority

☒ **Outfall / IMP Number 001** (Show location of sampling point on Line Drawing)
☐ Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)
☐ Intake Sampling Results (Specify Source: _____)
☐ Background (Upstream) Sampling Results (Specify Location: _____)
☐ New Discharge (Basis for Information: _____)

POLLUTANT GROUP 1 PARAMETERS	CONCENTRATION / MASS PRESENT						No. Analyses	No. "Non-Detect" Results	QL Used	Method Used
	Min/Max Daily Value		Max Avg Monthly Value		Long-Term Avg Value					
	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)				
BOD_5 (mg/L)	<3.0		<2.3		<2.3		3	3	3.0	SM 5210B
COD (mg/L)	<10.0		<10.0		<10.0		3	3	10.0	HACH 8000
TOC (mg/L)	<0.5		<0.5		<0.5		3	3	0.5	SM 5310C
TSS (mg/L)	137.0		<49.0		<49.0		3	1	5.0	SM2540D
Ammonia-Nitrogen (mg/L)	<0.10		<0.10		<0.10		3	3	0.10	EPA350.1
Temperature (Winter) (°F)	50	XXX	49.3	XXX	49.3	XXX	3	XXX	XXX	Field
Temperature (Summer) (°F)		XXX		XXX		XXX		XXX	XXX	
pH – Minimum (S.U.)	7.96	XXX	XXX	XXX	7.96	XXX	3	XXX	XXX	
pH – Maximum (S.U.)	8.03	XXX	XXX	XXX	8.03	XXX	3	XXX	XXX	SM 4500H+B
Fecal Coliform (No./100 mL)	<1.0	XXX	<1.0	XXX	<1.0	XXX	3	3	XXX	SM9223B
Oil and Grease (mg/L)	<5.0		<5.0		<5.0		3	3	5.0	EPA1664
TRC (mg/L)	2.18	XXX	1.72	XXX	1.72	XXX	3	0	0.10	SM4500CLG
Total Phosphorus (mg/L)	0.22		<0.83		<0.83		3	1	0.01	EPA200.7
TKN (mg/L)	<1.0		<0.7		<0.7		3	3	1.0	EPA351.2
Nitrite + Nitrate-Nitrogen (mg/L)	0.23		0.19		0.19		3	0	0.05	EPA353.2
Total Dissolved Solids (mg/L)	142		125.3		125.3		3	0	2.0	SM 2540 C
Color (Pt-Co Units)	<5.0	XXX	<5.0	XXX	<5.0	XXX	3	3	5.0	SM5540C
Bromide (mg/L)	0.3		<0.23		<0.23		3	3	0.2	EPA300
Chloride (mg/L)	19.0		16.7		16.7		3	0	1.0	EPA300
Sulfate (mg/L)	15.0		14.0		14.0		3	0	2.0	EPA300
Sulfide (mg/L)	<0.1		<0.1		<0.1		3	3	0.1	SM4500S2D
Surfactants (mg/L)	<0.050		<0.050		<0.050		3	3	0.050	SM5540C
Fluoride (mg/L)	<0.1		<0.1		<0.1		3	3	0.1	EPA300
Total Hardness (mg/L)	89.7		85.3		85.3		3	0	1.0	EPA200.7

ANALYSIS RESULTS TABLE
POLLUTANT GROUP 2

Please read instructions carefully before completing this form.

APPLICANT NAME	Indian Creek Valley Water Authority

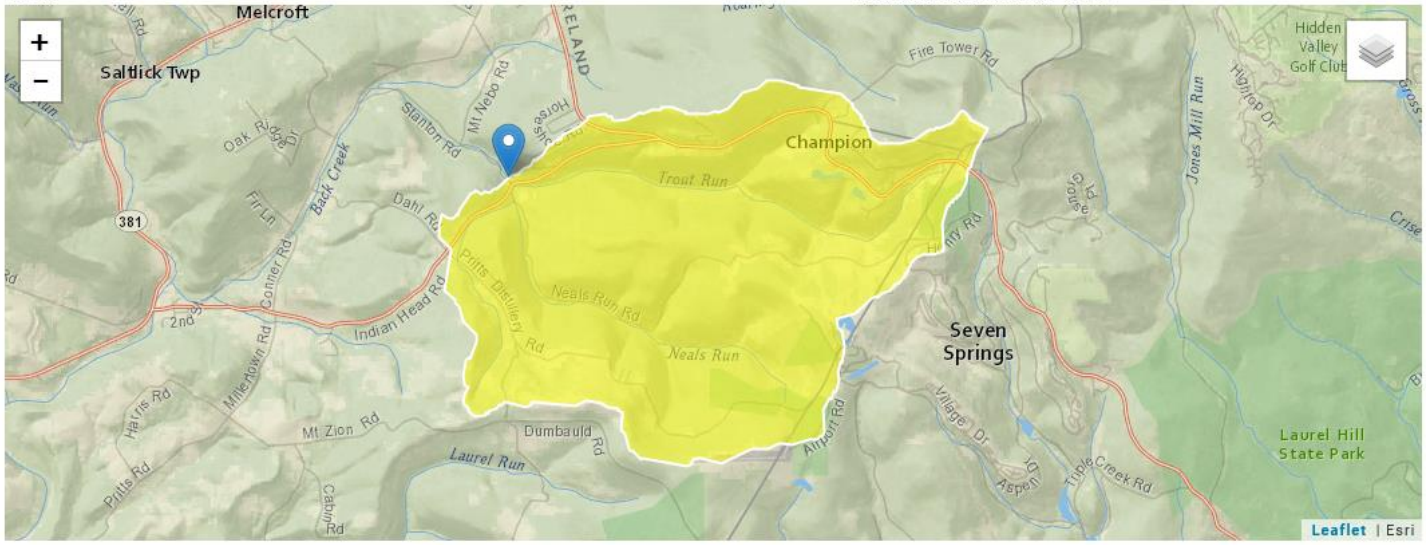
☒ **Outfall / IMP Number 001** (Show location of sampling point on Line Drawing)
☐ Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)
☐ Intake Sampling Results (Specify Source: _____)
☐ Background (Upstream) Sampling Results (Specify Location: _____)
☐ New Discharge (Basis for Information: _____)

POLLUTANT GROUP 2 PARAMETERS	CONCENTRATION / MASS PRESENT						No. Analyses*	No. "Non-Detect" Results	QL Used	Method Used
	Min/Max Daily Value		Max Avg Monthly Value		Long-Term Avg Value					
	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)				
Aluminum, Total (µg/L)	200.0		<133.3		<133.3		3	3	100	EPA200.7
Antimony, Total (µg/L)	<1.0		<0.83		<0.83		3	2	1.0	EPA200.8
Arsenic, Total (µg/L)	3.20		<1.73		<1.73		3	2	1.0	EPA200.8
Barium, Total (µg/L)	527.0		323.0		323.0		3	0	25.0	EPA200.8
Beryllium, Total (µg/L)	<1.0		<0.83		<0.83		3	2	1.0	EPA200.8
Boron, Total (µg/L)	<50.0		<36.7		<36.7		3	3	50.0	EPA200.7
Cadmium, Total (µg/L)	<0.2		<0.17		<0.17		3	2	0.2	EPA200.8
Chromium, Total (µg/L)	<5.0		<4.0		<4.0		3	3	5.0	EPA200.8
Chromium, Hexavalent (µg/L)	<20.0		<16.7		<16.7		3	3	20.0	USGSI123085
Cobalt, Total (µg/L)	<5.0		<4.0		<4.0		3	3	5.0	EPA200.7
Copper, Total (µg/L)	1.40		<1.13		<1.13		3	2	1.0	EPA200.8
Cyanide, Total (µg/L)	<20.0		<16.7		<16.7		3	3	20.0	ASTM D7511
Iron, Total (µg/L)	13,800		4,863.3		4,863.3		3	0	50.0	EPA200.7
Iron, Dissolved (µg/L)	14,300		5,026.7		5,026.7		3	0	50.0	EPA200.7
Lead, Total (µg/L)	<1.0		<0.73		<0.73		3	3	1.0	EPA200.8
Manganese, Total (µg/L)	3,970		1,443.3		1,443.3		3	0	10.0	EPA200.7
Mercury, Total (µg/L)	<0.20		<0.17		<0.17		3	3	0.20	SM3112B
Molybdenum, Total (µg/L)	<20.0		<16.7		<16.7		3	3	20.0	EPA200.7
Nickel, Total (µg/L)	0.90		<0.63		<0.63		3	2	0.5	EPA200.8
Phenols, Total (µg/L)	<20		<18		<18		3	3	20.0	EPA420.4
Selenium, Total (µg/L)	<1.00		<0.83		0.83		3	3	1.0	EPA200.8
Silver, Total (µg/L)	<0.20		<0.17		<0.17		3	3	0.2	EPA200.8
Thallium, Total (µg/L)	<0.20		<0.17		<0.17		1	1	0.2	EPA200.8
Zinc, Total (µg/L)	6.6		<5.5		<5.5		3	2	5.0	EPA 200.8

Appendix C – StreamStats Report

StreamStats Report

Region ID:	PA
Workspace ID:	PA20200922144023670000
Clicked Point (Latitude, Longitude):	40.03755, -79.35176
Time:	2020-09-22 10:40:39 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	6.25	square miles
ELEV	Mean Basin Elevation	2432	feet

Low-Flow Statistics Parameters[Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	6.25	square miles	2.26	1400
ELEV	Mean Basin Elevation	2432	feet	1050	2580

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

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	0.408	ft^3/s	43	43
30 Day 2 Year Low Flow	0.754	ft^3/s	38	38
7 Day 10 Year Low Flow	0.117	ft^3/s	66	66
30 Day 10 Year Low Flow	0.233	ft^3/s	54	54
90 Day 10 Year Low Flow	0.512	ft^3/s	41	41

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.

Appendix D – PENTOXSD Analysis and Results

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWS With (mgd)	Apply FC
38319	3.56	2432.00	6.25	0.00010	0.00	☑

Stream Data

	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Rch Velocity (fps)	Rch Trav Time (days)	Tributary Hard (mg/L)	Tributary pH	Stream Hard (mg/L)	Stream pH	Analysis Hard (mg/L)	Analysis pH
Q7-10	0.1	0	0.117	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
Neal's Run WTP	PA0252743	0	0	0.0064	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Conc (µg/L)	Trib Conc (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Conc (µg/L)	Stream CV	Fate Coef	FOS	Crit Mod	Max Disc Conc (µg/L)
CHROMIUM, VI	20	0	0.5	0.5	0	0	0	0	1	0
DISSOLVED IRON	14300	0	0.5	0.5	0	0	0	0	1	0
MANGANESE	3970	0	0.5	0.5	0	0	0	0	1	0
MERCURY	0.2	0	0.5	0.5	0	0	0	0	1	0
PHENOL	20	0	0.5	0.5	0	0	0	0	1	0
TOTAL IRON	13800	0	0.5	0.5	0	0	0	0	1	0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
19E	38319	BACK CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-10 Hydrodynamics											
3.560	0.117	0	0.117	0.0099	0.0001	0.4353	9.1290	20.972	0.0319	0.9568	33.808
3.060	0.118	0	0.118	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
3.560	1.1392	0	1.1392	0.0099	0.0001	1.1477	9.1290	7.9543	0.1097	0.2786	9.131
3.060	1.1477	0	1.1477	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
3.56	Neal's Run WTP	PA0252743

AFC

Q7-10: CCT (min) 15 PMF 0.666 Analysis pH 7 Analysis Hardness 100

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TOTAL IRON	0	0	0	0	NA	NA	NA
DISSOLVED IRON	0	0	0	0	NA	NA	NA
MANGANESE	0	0	0	0	NA	NA	NA
MERCURY	0	0	0	0	1.4	1.647	14.612
Dissolved WQC. Chemical translator of 0.85 applied.							
PHENOL	0	0	0	0	NA	NA	NA
CHROMIUM, VI	0	0	0	0	16	16.293	144.543
Dissolved WQC. Chemical translator of 0.982 applied.							

CFC

Q7-10: CCT (min) 33.808 PMF 1 Analysis pH 7 Analysis Hardness 100

Parameter	Stream Conc. (µg/L)	Stream CV	Trib Conc. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TOTAL IRON	0	0	0	0	1500	1500	19225.84
WQC = 30 day average. PMF = 1.							
DISSOLVED IRON	0	0	0	0	NA	NA	NA
MANGANESE	0	0	0	0	NA	NA	NA
MERCURY	0	0	0	0	0.77	0.906	11.611
Dissolved WQC. Chemical translator of 0.85 applied.							
PHENOL	0	0	0	0	NA	NA	NA
CHROMIUM, VI	0	0	0	0	10	10.395	133.235
Dissolved WQC. Chemical translator of 0.962 applied.							

THH

Q7-10: CCT (min) 33.808 PMF 1 Analysis pH NA Analysis Hardness NA

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TOTAL IRON	0	0	0	0	NA	NA	NA
DISSOLVED IRON	0	0	0	0	300	300	3845.168

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number						
3.56	Neal's Run WTP	PA0252743						
	MANGANESE	0	0	0	0	1000	1000	12817.23
	MERCURY	0	0	0	0	0.05	0.05	0.641
	PHENOL	0	0	0	0	21000	21000	269161.8
	CHROMIUM, VI	0	0	0	0	NA	NA	NA

CRL

Qh: CCT (min) 9.131 PMF 1

Parameter	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
TOTAL IRON	0	0	0	0	NA	NA	NA
DISSOLVED IRON	0	0	0	0	NA	NA	NA
MANGANESE	0	0	0	0	NA	NA	NA
MERCURY	0	0	0	0	NA	NA	NA
PHENOL	0	0	0	0	NA	NA	NA
CHROMIUM, VI	0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
19E	38319	BACK CREEK

RMI	Name	Permit Number	Disc Flow (mgd)
3.56	Neal's Run WTP	PA0252743	0.0064

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
CHROMIUM, VI	20	INPUT	31.203	92.646	AFC
DISSOLVED IRON	3845.168	THH	5999.08	3845.168	THH
MANGANESE	3970	INPUT	6193.838	12817.23	THH
MERCURY	0.2	INPUT	0.312	0.641	THH
PHENOL	20	INPUT	31.203	269161.8	THH
TOTAL IRON	13800	INPUT	21530.22	19225.84	CFC

Appendix E – Toxic Screening Analysis (DEP Spreadsheet Version 2.7)

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.7

CLEAR FORM

Facility: **Neal's Run WTP** NPDES Permit No.: **PA0252743** Outfall: **001**
Analysis Hardness (mg/L): **100** Discharge Flow (MGD): **0.0064** Analysis pH (SU): **7**
Stream Flow, Q_{7-10} (cfs): **0.117**

	Parameter	Maximum Concentration in Application or DMRs (µg/L)	Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Group 1	Total Dissolved Solids	142000	500000	No		
	Chloride	19000	250000	No		
	Bromide	300	N/A	No		
	Sulfate	15000	250000	No		
	Fluoride	0.1	2000	No		
Group 2	Total Aluminum	200	750	No		
	Total Antimony	1	5.6	No		
	Total Arsenic	3.2	10	No		
	Total Barium	527	2400	No		
	Total Beryllium	1	N/A	No		
	Total Boron	50	1600	No		
	Total Cadmium	0.2	0.271	No		
	Total Chromium	5	N/A	No		
	Hexavalent Chromium	20	10.4	Yes	92.646	Monitor
	Total Cobalt	5	19	No		
	Total Copper	1.4	9.3	No		
	Total Cyanide	20	N/A	No		
	Total Iron	13800	1500	Yes	19225.84	Establish Limits
	Dissolved Iron	14300	300	Yes	3845.168	Establish Limits
	Total Lead	1	3.2	No		
	Total Manganese	3970	1000	Yes	12817.23	Monitor
	Total Mercury	0.2	0.05	Yes	0.641	Monitor
	Total Molybdenum	20	N/A	No		
	Total Nickel	0.9	52.2	No		
	Total Phenols (Phenolics)	20	5	Yes	269161.8	No Limits/Monitoring
	Total Selenium	1	5.0	No		
	Total Silver	0.2	3.8	No		
	Total Thallium	0.2	0.24	No		
	Total Zinc	6.6	119.8	No		

Appendix F – Total Residual Chlorine Analysis

TRC EVALUATION

0.117	= Q stream (cfs)	0.5	= CV Daily
0.0064	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.666	= 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	33.808	= 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 =	2.530	**1.3.2.iii**	WLA cfc =	3.686
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	0.943	**5.1d**	LTA_cfc =	2.143

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**