pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0028142**
Facility Type	**Non-Municipal**	APS ID	**36014**
Major / Minor	**Major**	Authorization ID	**1150993**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**PA Department Of Military & Veterans Affairs Army National Guard**	Facility Name	**Fort Indiantown Gap Military Ops & ADM**
Applicant Address	Bldg 0-11 Fort Indiantown Gap	Facility Address	Bldg 0-11 Fort Indiantown Gap
	Annville, PA 17003		Annville, PA 17003
Applicant Contact	Donald Paul	Facility Contact	Donald Paul
Applicant Phone	(717) 861-8100	Facility Phone	(717) 861-8100
Client ID	142907	Site ID	453633
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	East Hanover Township
Connection Status	Dept. Imposed Connection Prohibitions	County	Lebanon
Date Application Received	May 24, 2016	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: NPDES Renewal.

Summary of Review

1.0 General Discussion

This fact sheet supports the re-issuance of an existing NPDES permit for discharge of treated domestic wastewater from Fort Indiantown Gap (FTIG) wastewater treatment plant (WWTP) which serves base and the Township of Ono. PA Department of Military and Veterans Affairs owns, operates, and maintains the WWTP. The facility is located in East Hanover Township in Lebanon County. The facility falls under standard industrial classification (SIC) Code of 4952. The sewer collection system is not combined. The treatment plant has a hydraulic design capacity of 2.5MGD and an annual average design capacity of 1MGD. The organic design capacity of the facility is 2,085 lbs/day- BOD5. The facility discharge treated sewage via outfall 001 to Swatara Creek classified for warm water fishes (WWF). The facility also discharges storm water through outfalls 002 to 006 to Aires Run and Qureg Run. The existing NPDES permit was issued on November 11, 2011 with an effective date of December 1, 2011 and expiration date of November 30, 2016. The applicant submitted an administratively complete NPDES renewal application to the Department on May 24, 2016, and is currently operating under the terms and conditions in the existing permit under administrative extension provisions pending Department action on the renewal application.

A topographic map showing the discharge location is presented in attachment A.

1.1 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-

Approve	Deny	Signatures	Date
X		J. Pascal Kwedza / Environmental Engineering Specialist	January 22, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Program Manager	

Summary of Review

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.

1.2 Changes to the existing Permit

- The monitoring frequency for Total Nitrogen species have increased to 2/week per the new requirements of the Chesapeake Bay Program. The "Phase 2 Watershed Implementation Plan Wastewater Supplement" (September 17, 2015) states that "the minimum monitoring frequency for TN species and TP in new or renewed NPDES permits for significant sewage dischargers will be 2/week."
- UV transmittance monitoring has been added to the permit.
- Copper Monitoring discontinued

1.3 Existing Permit Limits and Monitoring Requirements

DISCHARGE LIMITATIONS								MONITORING REQUIREMENTS	
	Mass Units lbs/day			Concentrations mg/l					
Discharge Parameter	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily	Inst. Maximum	Monitoring Frequency	Sample Type
Flow (mgd)	Monitor & Report	XXX	Monitor & Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	XXX	From 6.0 to 9.0 inclusive				1/day	Grab
D.O.	XXX	XXX	XXX	Minimum of 5.0 mg/l at all times				1/day	Grab
TSS	250	XXX	XXX	30	XXX	XXX	60	2/week	24-hour comp
$CBOD_5$	209	XXX	XXX	25	XXX	XXX	50	2/week	24-hour comp
NH3N (5/1 to 10/31)	31	XXX	XXX	12	XXX	XXX	24	2/week	24-hour comp
NH3N (11/1 to 4/30)	Report	XXX	XXX	Report	XXX	XXX	Report	2/week	24-hour comp
Fecal Col. (5/1 to 9/30)	XXX	XXX	XXX	200	XXX	XXX	1,000	2/week	Grab
Fecal Col. (10/1 to 4/30)	XXX	XXX	XXX	2,000	XXX	XXX	10,000	2/week	Grab
Total Phosphorus	25	XXX	XXX	2.0	XXX	XXX	4.0	2/week	24-hour comp
Total Copper	XXX	XXX	XXX	XXX	XXX	Report	XXX	2/month	24-hour comp

Summary of Review

Discharge Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Load(lbs)		Concentrations (mg/l)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia---N	Report	Report	XXX	Report	XXX	2/week	24-hr Comp
Kjeldahl---N	Report	XXX	XXX	Report	XXX	1/Week	24-hr Comp
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	1/Week	24-hr Comp
Total Nitrogen	Report	Report	XXX	Report	XXX	1/Month	Calculate
Total Phosphorus	Report	Report	XXX	Report	XXX	2/week	24-hr Comp
Net Total Nitrogen	Report	24,353	XXX	XXX	XXX	1/Month	Calculate
Net Total Phos.	Report	3,044	XXX	XXX	XXX	1/Month	Calculate

2.0 Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.0
Latitude	40º 23' 56.92"	Longitude	-76º 34' 5.88"
Quad Name	Indiantown Gap	Quad Code	1931
Wastewater Description:	Sewage Effluent		

Receiving Waters	Swatara Creek	Stream Code	09361
NHD Com ID	56396887	RMI	29.7
Drainage Area	323	Yield (cfs/mi^2)	0.0656
Q_{7-10} Flow (cfs)	21.2	Q_{7-10} Basis	USGS Gage Station
Elevation (ft)	363	Slope (ft/ft)	
Watershed No.	7-D	Chapter 93 Class.	WWF
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		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	PA American Company		
PWS Waters	Swatara Creek	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	>13

Changes Since Last Permit Issuance:

Other Comments:

2.1 Water Supply Intake

The closest water supply intake located downstream from the discharge is PA American Company at approximately 13 miles on Swatara Creek. Because of the dilution and distance, the discharge will have no impact on the intake.

3.0Treatment Facility Summary

Treatment Facility Name: Fort Indiantown Gap

WQM Permit No.	Issuance Date
3801401	7/5/2005
3801401	7/24/2013

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Ammonia And Phosphorus	Sequencing Batch Reactor	Ultraviolet	1

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
2.5	2085	Existing Hydraulic Overload	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance:

Other Comments:

3.1 Treatment Facility

The treatment plant consists of grit chamber, mechanical bar screen, influent pump station, flow splitter, two SBRs, 2 Aqua-aerobic disk filters, 2 aerobic digesters, volute press for sludge dewatering, UV disinfection system, a post EQ tank and storm overflow basin(treatment retention basin). A septage receiving station has been added adjacent to the headworks to receive hauled-in wastes.

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4.0 Compliance History

4.1 DMR Data for Outfall 001 (from December 1, 2017 to November 30, 2018)

Parameter	NOV-18	OCT-18	SEP-18	AUG-18	JUL-18	JUN-18	MAY-18	APR-18	MAR-18	FEB-18	JAN-18	DEC-17
Flow (MGD) Average Monthly	1.35	0.48	1.09	1.27	1.11	0.71	0.86	0.78	0.64	1.27	0.76	0.33
Flow (MGD) Daily Maximum	2.85	1.26	4.09	3.49	4.78	3.49	3.04	2.94	2.48	3.28	3.80	0.70
pH (S.U.) Minimum	6.9	7.0	6.9	6.9	6.9	7.0	6.5	6.3	6.6	6.7	6.8	6.7
pH (S.U.) Maximum	7.2	7.3	7.3	7.2	7.4	7.9	7.3	7.1	7.5	7.4	7.4	7.3
DO (mg/L) Minimum	8.1	6.6	6.4	6.6	6.0	7.5	7.9	6.4	6.9	6.0	6.2	8.5
CBOD5 (lbs/day) Average Monthly	< 26.5	< 12.2	< 27.4	< 46.2	61.0	< 26.2	< 16.1	< 20.2	< 10.0	< 19.2	< 15.1	< 6.4
CBOD5 (mg/L) Average Monthly	< 2.6	< 2.9	< 2.8	< 3.6	4.0	< 3.5	< 2.8	< 2.2	< 2.5	< 2.2	< 2.6	< 2.0
BOD5 (lbs/day) Raw Sewage Influent Ave. Monthly	751.9	265.1	487.6	1269.6	< 1149.2	594	504.5	779.2	407.1	440.2	279.2	409.3
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	1540.3	386.7	1062.1	2946.6	2361.5	660.1	722.5	1734.8	486.8	598.3	344.0	452.4
BOD5 (mg/L) Raw Sewage Influent Ave. Monthly	68.2	95.4	78.7	142.4	233.6	153.2	127.3	111.3	133.7	54.9	86.2	205.5
TSS (lbs/day) Average Monthly	< 50.2	< 10.6	< 38.2	78.5	< 233.1	< 13.7	< 7.8	< 9.4	< 4.1	< 8.9	< 20.9	< 3.2
TSS (lbs/day) Raw Sewage Influent Ave. Monthly	844.1	280.4	893.3	2790.3	5831.3	571.3	795.4	1332.2	219.0	942.7	285.8	623.5
TSS (lbs/day) Raw Sewage Influent Daily Maximum	1985.4	562.6	1718.7	8078.9	16922.3	860.0	1215.1	3750.4	275.1	< 1381.2	557.2	1870.2
TSS (mg/L) Average Monthly	< 4.0	< 2.4	< 3.9	6.3	< 9.7	< 2.0	< 1.1	< 1.0	< 1.0	< 1.0	< 3.6	< 1.0
TSS (mg/L) Raw Sewage Influent Ave. Monthly	72.8	95.6	166.3	275.8	1053.0	119.5	165.2	133.8	66.5	> 91.5	77.2	346.9

Fecal Coliform (CFU/100 ml) Geometric Mean	> 1.7	< 1.0	< 2.0	< 4.5	< 8.8	< 1	< 1.0	< 1.0	< 1.0	< 1	< 1.0	< 1.4
Fecal Coliform (CFU/100 ml) Instant. Maximum	7.0	1.0	39.0	2200	230.0	< 1	1.0	< 1.0	< 1.0	< 1	< 1.0	19.0
Nitrate-Nitrite (mg/L) Average Monthly	2.9	3.3	1.5	1.4	2.0	< 1.2	3.5	1.3	1.0	1.4	< 1.8	< 0.8
Nitrate-Nitrite (lbs) Total Monthly	1252.3	479.1	490.7	650.0	1184.5	450.2	489.2	413.5	115.3	536	< 218.8	< 59.3
Total Nitrogen (mg/L) Average Monthly	< 3.9	< 5.1	< 2.4	< 2.9	< 3.4	< 24.7	< 4.5	< 2.6	< 3.0	< 2.4	< 2.6	< 1.3
Total Nitrogen (lbs) Effluent Net Total Monthly	< 1713.0	< 664.5	< 862.2	< 1274.5	< 1921.4	< 740	< 672.3	746.9	< 317.4	< 849.5	< 335.6	< 105.4
Total Nitrogen (lbs) Total Monthly	< 1713.0	< 664.5	< 862.2	< 1274.5	< 1921.4	< 740	< 672.3	746.9	317.4	< 849.5	< 335.6	< 105.4
Total Nitrogen (lbs) Total Annual			10593									
Ammonia (lbs/day) Average Monthly	< 1.2	< 0.50	< 3.0	< 8.8	< 8.8	< 2.5	< 1.3	3.9	< 2.5	< 1.5	< 5.1	< 0.4
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.3	< 0.7	< 0.5	< 0.4	< 0.3	0.5	< 0.8	< 0.2	< 1.4	< 0.1
Ammonia (lbs) Total Monthly	< 36.2	< 15.4	< 862.2	< 273.3	< 272.0	< 74.6	< 40.2	116.2	< 78.5	< 41.7	< 158.3	< 12.2
Ammonia (lbs) Total Annual			1345									
TKN (mg/L) Average Monthly	< 1.0	< 1.8	< 1.1	< 1.5	< 1.4	< 1.0	< 1.1	< 1.4	< 2.0	< 1.0	< 0.8	< 0.5
TKN (lbs) Total Monthly	< 460.7	< 185.5	< 349.7	< 624.5	< 736.8	< 289.7	< 183.1	< 333.4	202.1	< 313.5	< 116.8	< 46.2
Total Phosphorus (lbs/day) Ave. Monthly	< 1.6	< 0.3	< 1.7	< 1.7	< 2.9	< 0.4	< 0.3	< 0.5	< 0.2	< 0.3	< 0.4	0.1
Total Phosphorus (mg/L)Ave. Monthly	< 0.14	< 0.08	< 0.15	< 0.12	< 0.14	< 0.06	< 0.05	< 0.05	< 0.06	< 0.04	< 0.7	0.04
Total Phosphorus (lbs) Effluent Net Total Monthly	< 48.5	< 10.4	< 50.2	< 52.0	< 88.6	< 10.7	< 10.1	15.8	< 6.3	< 9.8	< 12.1	3.6
Total Phosphorus (lbs) Total Monthly	< 48.5	< 10.4	< 50.2	< 52	< 88.6	< 10.7	< 10.1	15.8	< 6.3	< 9.8	< 12.1	3.6
Total Phosphorus (lbs) Total Annual			328									
Total Copper (mg/L) Average Monthly	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.0050	< 0.01	< 0.005	< 0.01	< 0.01	< 0.005	< 0.01

4.2 Summary of DMRs:

No DMR violations noted during past 24 months of operation.

4.3 Summary of Inspections:

Th facility was inspected 16 times during the previous permit cycle. No effluent violations noted during inspections but, a series sanitary sewer overflows and headworks emergency overflows occurred. These overflows have reduced after I&I projects and repairs have been completed within the collection system. The permittee will continue to take steps to completely address recurrence of sanitary sewer overflows at pump stations and emergency bypasses at the headworks. The treatment facility is operated and maintained well.

5.0 Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1
Latitude 40º 23' 57.00" **Longitude** -76º 34' 6.00"
Wastewater Description: Sewage Effluent

5.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

5.2 Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: Weekly averages are not applicable to this discharge.

5.3 Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (lb/day) = concentration limit (mg/L) × design flow (mgd) × 8.34

5.4 Water Quality-Based Limitations

5.4.1 Receiving Stream

The receiving stream is the Swatara Creek. According to 25 PA § 93.9, this stream is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). It is located in Drainage List N and State Watershed 7-D. It has been assigned stream code 09361. According to eMapPA, the segment of Swatara Creek receiving the discharge is attaining its designated uses.

5.4.2 Streamflow:

Streamflows for the water quality analysis were determined by correlating with the yield of USGS gauging station No 01573000 on Swatara Creek at Harper Tavern. The Q_{7-10} and drainage area at the gage is 22.1ft3/s and 337 mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (22.1ft^3/s)/337 mi^2 = 0.0656ft^3/s/ mi^2
- Q_{30-10} / Q_{7-10} = 1.40
- Q_{1-10} / Q_{7-10} = 0.80

The drainage area at discharge is calculated by USGS StreamStats = 323 mi^2

The Q_{7-10} at discharge = 323 mi^2 x 0.0.0656ft^3/s/mi^2 = 21.2 ft^3/s.

5.4.3 NH_3N Calculations

NH_3N calculations will be based on the Department's Implementation Guidance of Section 93.7 Ammonia Criteria, dated 11/4/97 (ID No. 391-2000-013). The following data is necessary to determine the instream NH_3N criteria used in the attached computer model of the stream:

* Discharge pH = 6.90 (July -Sept DMR median)
* Discharge Temperature = 25 ° C (Default)
* Stream pH = 7.0 (Default)
* Stream Temperature = 20°C (Default)
* Background NH_3-N = 0.0 (default)
* Discharge flow = 1.0MGD

5.4.4 $CBOD_5$ & NH_3-N

The attached computer printout of the WQM 7.0 stream model (attachment B) indicates that secondary treatment is adequate to protect the water quality of the stream. This limit is consistent with the existing permit and the STP has been consistently achieving below this limitation. Therefore, an average monthly limit (AML) of 25mg/l and 50 mg/l IMAX is recommended for this permit cycle. Mass limits are calculated as follows:

Mass based AML (lb/day) = 25 (mg/L) × 1(mgd) × 8.34 = 209

The attached computer printout of the WQM 7.0 stream model (attachment B) also indicates that a summer limitation of 20mg/l NH_3 as a monthly average is necessary to protect the aquatic life from toxicity effects. However, due to anti-backsliding restrictions, the existing summer limit of 12mg/l and monitoring requirement for winter months will remain in the permit. Mass limits are calculated as follows:

Mass based AML (lb/day) for the summer months = 12 (mg/L) × 1.0(mgd) × 8.34 = 100

5.4.5 Dissolved Oxygen

The existing permit contains a limit of 5 mg/l for Dissolved Oxygen (DO). DEP's Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001, 10/97) suggests that either the adopted minimum stream D.O. criteria for the receiving stream or the effluent level determined through water quality modeling be used for the limit. Since the WQM 7.0 model was run using a minimum D.O. of 5.0 mg/l, this limit will be continued in the renewed permit with a daily monitoring requirement per DEP guidance.

5.4.6 Total Suspended Solids(TSS):

There is no water quality criterion for TSS. A limit of 30 mg/l AML will be required based on the minimum level of effluent quality attainable by secondary treatment as defined in 40 CFR 133.102b(1) and 25 PA § 92a.47(a)(1)

Mass based AML (lb/day) = 30 (mg/L) × 1(mgd) × 8.34 = 250

5.4.7 Total Residual Chlorine:

The discharge does not have any reasonable potential to cause or contribute to a water quality standards violation for total residual chlorine since the permittee utilizes UV instead of chlorine for wastewater disinfection. Therefore, the proposed permit does not contain effluent limits for total residual chlorine. The permittee may use chlorine based chemicals for cleaning and is required to optimize chlorine usage to prevent negative impacts on receiving stream. Daily UV transmittance monitoring in % will be required in the permit to ensure efficiency of the UV unit.

5.4.8 Toxics

A reasonable potential (RP) analysis was done for pollutant Groups 1- 5 submitted with the application. All pollutants detected in the application sampling were entered into the Toxics Screening Analysis spreadsheet (attachment C) to determine if any pollutants were candidates for PENTOXSD modeling. None of the pollutants detected were determined to be candidates for PENTOXSD modeling. Toxics in the discharge are not at levels of concern. Monitoring of copper required in the existing permit will be discontinued because the copper based chemical usage that triggered the monitoring requirement is no longer used at the facility being used at the facility.

5.4.9 Total Phosphorus:

The existing phosphorus AML of 2mg/l to control phosphorus discharges to the Lower Susquehanna River Basin has been superseded by the Chesapeake Bay Strategy but would be continued due to anti-backsliding.

Mass based AML (lb/day) = 2 (mg/L) × 0.75(mgd) × 8.34 = 16.7

5.4.10 Chesapeake Bay Strategy:

The Department formulated a strategy in April 2007, to comply with the EPA and Chesapeake Bay Foundation requirements to reduce point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP) to the Bay. In the Strategy, sewage dischargers have been prioritized by Central Office based on their delivered TN loadings to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual loading caps based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. Phase 4 (0.2 -0.4mgd) and Phase 5(below 0.2mdg) will be required to monitor and report TN and TP during permit renewal at a monitoring frequency following Table 6-3 of DEP's Technical Guidance for Development and Specification of effluent Limitations (No. 362-0400-001). Any facility in Phases 4 and 5 that undergoes expansion is subjected to cap load right away.

EPA published the Chesapeake Bay Total Maximum Daily Load (TMDL) in December of 2010. Despite extensive restoration efforts during the past 25 years, the TMDL was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries.

In order to address the TMDL, Pennsylvania developed in addition to the Bay Strategy, a Chesapeake Watershed Implementation Plan (WIP) Phase 1 in January 2011 and Phase 2 in March 2012. In accordance with the Phase 2 WIP and its supplement, re-issuing permits for significant dischargers follow the same phased approach formulated in the original Bay strategy, whilst Phase 4 and Phase 5 will be required to monitor and report TN and TP during permit renewal.

The facility is classified a significant discharger in the Chesapeake Bay watershed and was one of the few facilities that voluntarily agreed to receive an annual cap load based on 2010 flows at 8 mg/l Total Nitrogen(TN) and 1 mg/l Total Phosphorus(TP). The facility's 2010 flow was 1MGD which resulted in annual TN load of 24,3531lbs/year and annual TP load 3,044 lbs/year. The annual loads will be continued in the current permit. The facility is in compliance with the load requirements.

5.4.11 TDS, Chloride, Sulfate, Bromide, and 1,4-dioxane

Under the authority of §92a.61, DEP has determined it should implement increased monitoring in NPDES permits for TDS, sulfate, chloride, bromide, and 1,4-dioxane. The following approach will be implemented for point source discharges upon issuance or reissuance of an individual NPDES permit:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

- Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/L.

The maximum daily TDS discharge submitted with the application is 346 mg/L which is equivalent to 2,887lbs/day based on the permitted flow of 1.0 MGD. The discharge level for TDS is below the minimum 1000 mg/l and 20,000lbs/day, to require monitoring, therefore no monitoring of TDS, Chloride, Sulfate, and Bromide will be required in the permit. The maximum daily discharge of 0.64 µg/L for 1,4-dioxane submitted with the application is well below 10 µg/L, therefore no monitoring is required for 1,4-dioxane

5.4.12 Influent BOD and TSS Monitoring

The facility receives flow from Ono Township and is required to submit annual wasteload management report. The permit will include influent BOD5 and TSS monitoring at the same frequency as is done for effluent in order to collect data to prepare the annual wasteload management report per §94.12

5.4.13 Stormwater

The previous permit listed 5 outfalls as stormwater outfalls. Outfalls 002 -005 receive storm water from the 2 main drainage areas of the base and outfall 006 receives storm water from the treatment plant site. To comply with stormwater requirements of 40CFR 122.26(b)(14)(ix), part C of the permit will require compliance with the standard requirements applicable to stormwater outfalls for 002, 003,004 005 and 006 with best management practices. Outfall 004 will be monitored once a year for Total Suspended Solids and Oil and Grease due to its proximity to fueling area. The monitoring results should be submitted with the annual storm water inspection form. Location of the outfalls and the receiving streams are as follows: 002 (40°25’43”/76°35’26”) discharges to UNT Velse Run, 003 (40°26’24”/76°33’49”)) discharges to Aires Run, 004 (40°25’49”/76°33’22”) located on Aires Run, 005 (40°25’55”/76°33’44”) is located Qureg Run and Outfall 006 (40°25’36”/76°33’06”) located Qureg Run.

Outfall details and description is shown the table below:

Outfall No.	Area Drained (ft^2)	Latitude	Longitude	Description
002	1,440,000 ft^2	40°25’43”	76°35’26”	Houses, roadways, and vegetated areas.
003	2,700,000 ft^2	40° 26’ 24	76° 33’ 49”	Airfield, parking lots and vegetated areas.
004*	1,365,000 ft^2	40° 25’ 49”	76° 33’ 22”	Fueling point, the recycling building, roadways and vegetated areas.
005	4,080,000 ft^2	40° 25’ 55”	76° 32’ 44”	Buildings, gravel/paved parking lots roadways, and vegetated areas.
006	252,553 ft^2	40° 25’ 36”	76° 33’ 06”	Areas surrounding the wastewater treatment plant.

5.4.14 Pretreatment Requirements

The design annual average flow of the treatment plant is 1 MGD and the facility receives no flow from significant Industrial users. EPA does not require development of pretreatment program for facilities with design flow less than 5MGD. However, the permit contains standard conditions requiring the permittee to monitor and control industrial users if applicable.

5.4.15 Whole effluent Toxicity (WET)

WET testing has not been required for this facility, 40 CFR 122.21(j)(5) applies primarily to public owned treatment works(POTW) This facility does not qualify as a POTW

6.0 Other Requirements

6.1 The permit contains the following special conditions:

1. Stormwater Prohibition. 2. Approval Contingencies, 3. Proper Waste/solids Management, 4. Restriction on receipt of hauled in waste under certain conditions. 5. Requirement to develop a treatment facility operations and maintenance (O&M) plan. 6.

6.2 Biosolids Management

Waste activated sludge is directed to the 2 aerobic digesters for digestion. Digested sludge is dewatered using volute sludge press and hauled out for land application under biosolid permit No. PAG08-3607.

6.3 Sanitary Sewer Overflows(SSO) And emergency Headworks Overflow

The permittee has completed a series of sewer replacement and rehabilitation projects required by under a corrective action plan/Memorandum of Understanding signed between the permittee and the Department. However, SSO discharges and emergency sanitary overflows at the headworks continue to occur, the permittee will continue to identify areas of inflow and infiltration and address them until SSO discharges and emergency sanitary overflows discharges at the headworks and at the retention treatment basin ceases.

On or before January 31st of each year, the permittee shall submit an annual report to the Department. The report shall identify, include and describe the following, at a minimum:

- Summary of work conducted to rehabilitate the sewage collection system, pump station and any upgrades or modifications wastewater treatment plant during the previous year;
- Maps showing where work was completed;
- Collection system flow monitoring data using the four portable flow meters and any other flow measuring devices used;
- Treatment facility flow data;
- Precipitation data;
- Frequency, volume and duration of sanitary sewer overflows at pump stations and sewage bypasses from the headworks structure;
- Frequency, volume and duration of sewage bypasses from the retention treatment basin that do not receive biological treatment;
- Solids wasted from biological treatment units and disposed;
- Flow reductions achieved through the rehabilitation work; and
- Comparisons of average and peak hydraulic and organic loads to design capacities.
- Summary of sanitary sewer overflow and bypass abatement activities

6.4 Anti-backsliding

Not applicable to this permit

6.5 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

6.6 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

6.7 303d Listed Streams

The discharge is not located on a 303d listed stream segment.

6.8 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

6.9 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

7.0 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" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date 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	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
CBOD5	209	XXX	XXX	25	XXX	50	2/week	24-Hr Composite
TSS	250	XXX	XXX	30	XXX	60	2/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/week	Grab
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Ammonia May 1 - Oct 31	100	XXX	XXX	12	XXX	24	2/week	24-Hr Composite
Total Phosphorus	16.7	XXX	XXX	2.0	XXX	4	2/week	24-Hr Composite

Compliance Sampling Location: 001

7.1 Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

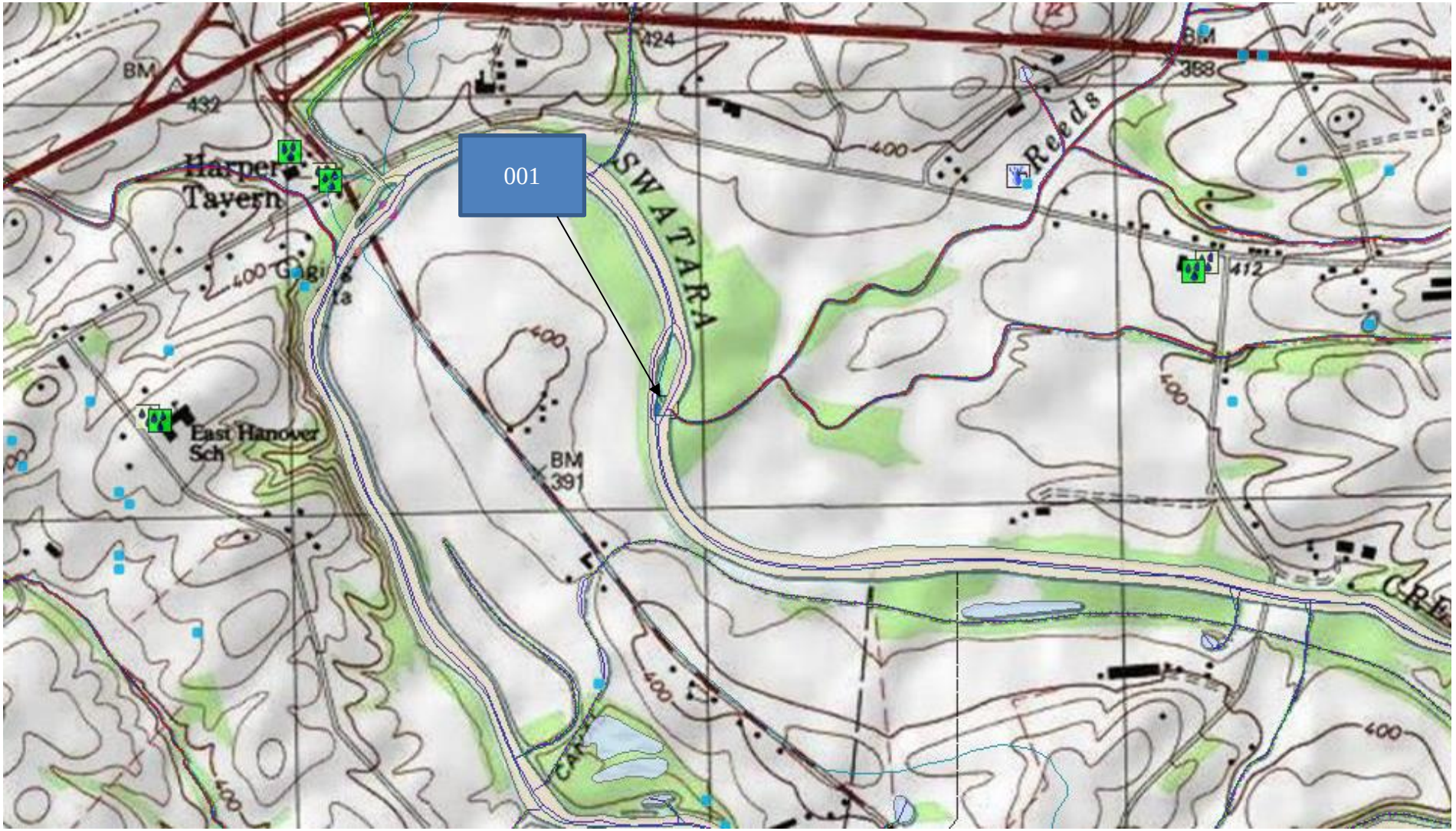
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	24-Hr Composite
Net Total Nitrogen	XXX	24,353	XXX	XXX	XXX	XXX	1/month	Calculation
Net Total Phosphorus	XXX	3,044	XXX	XXX	XXX	XXX	1/month	Calculation

Compliance Sampling Location: Outfall 001

8.0 Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	PENTOXSD for Windows Model (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis Spreadsheet (see Attachment **C**)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☒	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: Establishing effluent limitation for individual sewage permit
☐	Other:

9.0 Attachments

A. Topographical Map



B. WQM Model Results

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
44.390	Monroe Valley	PA0247570	0.100	CBOD5	25		
				NH3-N	20.26	40.52	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
39.220	Nor Leb Co Auth	PA0080748	0.750	CBOD5	25		
				NH3-N	20.26	40.52	
				Dissolved Oxygen			5

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
29.700	Fort IndianTG	PA0028142	1.000	CBOD5	25		
				NH3-N	20.26	40.52	
				Dissolved Oxygen			5

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9361	SWATARA CREEK	**44.390**	417.00	170.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.065	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Monroe Valley	PA0247570	0.1000	0.1000	0.1000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9361	SWATARA CREEK	**39.220**	392.00	291.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.065	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Nor Leb Co Auth	PA0080748	0.7500	0.7500	0.7500	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9361	SWATARA CREEK	**29.700**	363.00	323.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.065	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Fort IndianTG	PA0028142	1.0000	1.0000	1.0000	0.000	25.00	6.90

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
07D	9361	SWATARA CREEK	**22.200**	343.19	371.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.065	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
44.390	11.05	0.00	11.05	.1547	0.00092	.833	58.99	70.86	0.23	1.385	20.07	7.00
39.220	18.91	0.00	18.91	1.3149	0.00058	.926	80.42	86.82	0.27	2.142	20.33	7.00
29.700	20.99	0.00	20.99	2.8619	0.00050	.951	87.24	91.78	0.29	1.593	20.60	6.99
Q1-10 Flow												
44.390	8.84	0.00	8.84	.1547	0.00092	NA	NA	NA	0.20	1.566	20.09	7.00
39.220	15.13	0.00	15.13	1.3149	0.00058	NA	NA	NA	0.24	2.406	20.40	7.00
29.700	16.80	0.00	16.80	2.8619	0.00050	NA	NA	NA	0.26	1.776	20.73	6.99
Q30-10 Flow												
44.390	15.47	0.00	15.47	.1547	0.00092	NA	NA	NA	0.27	1.150	20.05	7.00
39.220	26.48	0.00	26.48	1.3149	0.00058	NA	NA	NA	0.32	1.793	20.24	7.00
29.700	29.39	0.00	29.39	2.8619	0.00050	NA	NA	NA	0.34	1.346	20.44	6.99

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.8	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.4	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
44.390	Monroe Valley	9.61	50	9.61	50	0	0
39.220	Nor Leb Co Auth	9.43	50	9.4	50	0	0
29.700	Fort IndianTG	9.44	50	9.23	50	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
44.390	Monroe Valley	1.91	25	1.91	25	0	0
39.220	Nor Leb Co Auth	1.89	25	1.88	25	0	0
29.700	Fort IndianTG	1.89	25	1.86	25	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
44.39	Monroe Valley	25	25	25	20.26	5	5	3	14
39.22	Nor Leb Co Auth	25	25	25	20.26	5	5	3	14
29.70	Fort IndianTG	25	25	25	20.26	5	5	3	14

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
44.390	0.100	20.069	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
58.995	0.833	70.864	0.228
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.32	0.101	0.28	0.704
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.198	1.428	Tsivoglou	5
Reach Travel Time (days)			
1.385			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.138	2.29	0.25	8.22
0.277	2.25	0.23	8.23
0.415	2.22	0.21	8.23
0.554	2.19	0.19	8.23
0.692	2.16	0.17	8.23
0.831	2.13	0.16	8.23
0.969	2.10	0.14	8.23
1.108	2.07	0.13	8.23
1.246	2.04	0.12	8.23
1.385	2.02	0.11	8.23

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
39.220	0.850	20.325	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
80.421	0.926	86.820	0.272
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.33	0.234	1.22	0.718
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.051	1.077	Tsivoglou	5
Reach Travel Time (days)			
2.142			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.214	3.16	1.05	7.34
0.428	3.01	0.90	6.89
0.643	2.86	0.77	6.62
0.857	2.71	0.66	6.50
1.071	2.58	0.57	6.47
1.285	2.45	0.49	6.52
1.500	2.33	0.42	6.60
1.714	2.21	0.36	6.72
1.928	2.10	0.31	6.86
2.142	2.00	0.26	7.01

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07D	9361	SWATARA CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
29.700	1.850	20.600	6.993
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
87.244	0.951	91.777	0.288
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.49	0.337	1.54	0.733
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.983	0.996	Tsivoglou	5
Reach Travel Time (days)			
1.593			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.159	3.30	1.37	6.31
0.319	3.13	1.22	5.83
0.478	2.96	1.08	5.51
0.637	2.80	0.96	5.31
0.797	2.65	0.86	5.20
0.956	2.51	0.76	5.17
1.115	2.37	0.68	5.20
1.275	2.24	0.60	5.27
1.434	2.12	0.54	5.38
1.593	2.01	0.48	5.51

C. Toxic Screening Analysis

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.5

Facility: **Fort Indiantown Gap STP** NPDES Permit No.: **PA0028142** Outfall: **001**
Analysis Hardness (mg/L): **100** Discharge Flow (MGD): **1** Analysis pH (SU): **7**

	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		346000	500000	No		
	Chloride		138000	250000	No		
	Bromide		0.073	N/A	No		
	Sulfate		40900	250000	No		
Group 2	Total Aluminum		19	750	No		
	Total Antimony		0.62	5.6	No		
	Total Arsenic		0.8	10	No		
	Total Barium		53	2400	No		
	Total Beryllium		0.1	N/A	No		
	Total Boron		16	1600	No		
	Total Cadmium		0.16	0.271	No		
	Total Chromium		0.33	N/A	No		
	Hexavalent Chromium		0.052	10.4	No		
	Total Cobalt		0.83	19	No		
	Total Copper		0.86	9.3	No		
	Free Available Cyanide		1.5	5.2	No		
	Total Cyanide		2	N/A	No		
	Dissolved Iron		35	300	No		
	Total Iron		650	1500	No		
	Total Lead	<	0.49	3.2	No (Value < QL)		
	Total Manganese		6.3	1000	No		
	Total Mercury		0.0007	0.05	No		
	Total Nickel		1.8	52.2	No		
	Total Phenols (Phenolics)	<	5	5	No (Value < QL)		
	Total Selenium		0.66	5.0	No		
	Total Silver		0.33	3.8	No		
	Total Thallium		0.16	0.24	No		
	Total Zinc		16	119.8	No		
	Total Molybdenum		0.92	N/A	No		
Group 3	Acrolein	<	1.9	3	No (Value < QL)		
	Acrylonitrile	<	1.2	0.051	No (Value < QL)		
	Benzene	<	0.23	1.2	No (Value < QL)		
	Bromoform	<	0.4	4.3	No (Value < QL)		
	Carbon Tetrachloride	<	0.31	0.23	No (Value < QL)		
	Chlorobenzene	<	0.19	130	No (Value < QL)		
	Chlorodibromomethane	<	0.45	0.4	No (Value < QL)		
	Chloroethane	<	0.33	N/A	No (Value < QL)		
	2-Chloroethyl Vinyl Ether	<	0.38	3500	No (Value < QL)		
	Chloroform	<	1	5.7	No		
	Dichlorobromomethane	<	0.27	0.55	No (Value < QL)		
	1,1-Dichloroethane	<	0.28	N/A	No (Value < QL)		
	1,2-Dichloroethane	<	0.32	0.38	No (Value < QL)		
	1,1-Dichloroethylene	<	0.29	33	No (Value < QL)		
	1,2-Dichloropropane	<	0.24	2200	No (Value < QL)		
	1,3-Dichloropropylene	<	0.47	0.34	No (Value < QL)		
	1,4-Dioxane	<	0.64	N/A	No (Value < QL)		
	Ethylbenzene	<	0.34	530	No (Value < QL)		
	Methyl Bromide	<	0.47	47	No (Value < QL)		
	Methyl Chloride	<	0.39	5500	No (Value < QL)		
	Methylene Chloride	<	1.3	4.6	No		
	1,1,2,2-Tetrachloroethane	<	0.34	0.17	No (Value < QL)		
	Tetrachloroethylene	<	0.35	0.69	No (Value < QL)		
	Toluene	<	0.76	330	No		
	1,2-trans-Dichloroethylene	<	0.26	140	No (Value < QL)		
	1,1,1-Trichloroethane	<	0.22	610	No (Value < QL)		
	1,1,2-Trichloroethane	<	0.33	0.59	No (Value < QL)		
	Trichloroethylene	<	0.33	2.5	No (Value < QL)		
	Vinyl Chloride	<	0.3	0.025	No (Value < QL)		

2-Chlorophenol	<	0.31	81	No (Value < QL)	
2,4-Dichlorophenol	<	0.3	77	No (Value < QL)	
2,4-Dimethylphenol	<	0.19	130	No (Value < QL)	
4,6-Dinitro-o-Cresol	<	0.31	13	No (Value < QL)	
2,4-Dinitrophenol	<	1.7	69	No (Value < QL)	
2-Nitrophenol	<	0.42	1600	No (Value < QL)	
4-Nitrophenol	<	0.97	470	No (Value < QL)	
p-Chloro-m-Cresol	<	0.18	30	No (Value < QL)	
Pentachlorophenol	<	0.99	0.27	No (Value < QL)	
Phenol	<	0.21	10400	No (Value < QL)	
2,4,6-Trichlorophenol	<	0.53	1.4	No (Value < QL)	
Acenaphthene	<	0.14	17	No (Value < QL)	
Acenaphthylene	<	0.18	N/A	No (Value < QL)	
Anthracene	<	0.14	8300	No (Value < QL)	
Benzidine	<	2.9	0.000086	No (Value < QL)	
Benzo(a)Anthracene	<	0.12	0.0038	No (Value < QL)	
Benzo(a)Pyrene	<	0.2	0.0038	No (Value < QL)	
3,4-Benzofluoranthene	<	0.1	0.0038	No (Value < QL)	
Benzo(ghi)Perylene	<	0.2	N/A	No (Value < QL)	
Benzo(k)Fluoranthene	<	0.18	0.0038	No (Value < QL)	
Bis(2-Chloroethoxy)Methane	<	0.19	N/A	No (Value < QL)	
Bis(2-Chloroethyl)Ether	<	0.16	0.03	No (Value < QL)	
Bis(2-Chloroisopropyl)Ether	<	0.26	1400	No (Value < QL)	
Bis(2-Ethylhexyl)Phthalate	<	0.2	1.2	No (Value < QL)	
4-Bromophenyl Phenyl Ether	<	0.16	54	No (Value < QL)	
Butyl Benzyl Phthalate	<	0.1	35	No (Value < QL)	
2-Chloronaphthalene	<	0.17	1000	No (Value < QL)	
4-Chlorophenyl Phenyl Ether	<	0.13	N/A	No (Value < QL)	
Chrysene	<	0.11	0.0038	No (Value < QL)	
Dibenzo(a,h)Anthrancene	<	0.19	0.0038	No (Value < QL)	
1,2-Dichlorobenzene	<	0.38	160	No (Value < QL)	
1,3-Dichlorobenzene	<	0.25	69	No (Value < QL)	
1,4-Dichlorobenzene	<	0.27	150	No (Value < QL)	
3,3-Dichlorobenzidine	<	0.44	0.021	No (Value < QL)	
Diethyl Phthalate	<	0.23	800	No (Value < QL)	
Dimethyl Phthalate	<	0.13	500	No (Value < QL)	
Di-n-Butyl Phthalate	<	0.13	21	No (Value < QL)	
2,4-Dinitrotoluene	<	0.11	0.05	No (Value < QL)	
2,6-Dinitrotoluene	<	0.19	0.05	No (Value < QL)	
Di-n-Octyl Phthalate	<	0.93	N/A	No (Value < QL)	
1,2-Diphenylhydrazine	<	0.24	0.036	No (Value < QL)	
Fluoranthene	<	0.16	40	No (Value < QL)	
Fluorene	<	0.19	1100	No (Value < QL)	
Hexachlorobenzene	<	0.21	0.00028	No (Value < QL)	
Hexachlorobutadiene	<	0.18	0.44	No (Value < QL)	
Hexachlorocyclopentadiene	<	0.16	1	No (Value < QL)	
Hexachloroethane	<	0.28	1.4	No (Value < QL)	
Indeno(1,2,3-cd)Pyrene	<	0.093	0.0038	No (Value < QL)	
Isophorone	<	0.14	35	No (Value < QL)	
Naphthalene	<	0.11	43	No (Value < QL)	
Nitrobenzene	<	0.26	17	No (Value < QL)	
n-Nitrosodimethylamine	<	0.59	0.00069	No (Value < QL)	
n-Nitrosodi-n-Propylamine	<	0.22	0.005	No (Value < QL)	
n-Nitrosodiphenylamine	<	0.17	3.3	No (Value < QL)	
Phenanthrene	<	0.12	1	No (Value < QL)	
Pyrene	<	0.15	830	No (Value < QL)	
1,2,4-Trichlorobenzene	<	0.12	26	No (Value < QL)	