pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0010502**
Facility Type	**Industrial**	APS ID	**928053**
Major / Minor	**Minor**	Authorization ID	**1360608**

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

Applicant and Facility Information

Applicant Name	**Letterkenny Army Depot**	Facility Name	**Letterkenny Army Depot WWTP**
Applicant Address	1 Overcash Avenue Bldg 14	Facility Address	1 Overcash Avenue Bldg 14
	Chambersburg, PA 17201-4150		Chambersburg, PA 17201-4150
Applicant Contact	Randall Quinn	Facility Contact	Randall Quinn
Applicant Phone	(717) 267-9022	Facility Phone	(717) 267-9022
Client ID	83807	Site ID	249465
SIC Code	3489	Municipality	Greene Township
SIC Description	Manufacturing - Ordnance And Accessories, Nec	County	Franklin
Date Application Received	July 7, 2021	EPA Waived?	No
Date Application Accepted	July 21, 2021	If No, Reason	Discharges to TMDL
Purpose of Application	NPDES Renewal.		

Summary of Review

Letterkenny Army Depot (LEAD) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its NPDES permit. The permit was last reissued on December 27, 2016 and became effective on January 1, 2017. The permit expired on December 31, 2021.

Based on the review, it is recommended that the permit be drafted.

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.

Approve	Deny	Signatures	Date
X		*Jinsu Kim* Jinsu Kim / Environmental Engineering Specialist	February 23, 2022
x		*Maria D. Bebenek for* Daniel W. Martin, P.E. / Environmental Engineer Manager	March 1, 2022
x		*Maria D. Bebenek* Maria D. Bebenek, P.E. / Program Manager	March 1, 2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.29
Latitude	40º 0' 32.05"	Longitude	-77º 37' 52.41"
Quad Name	Roxbury	Quad Code	1824
Wastewater Description:	IW Process Effluent with ELG		
Receiving Waters	Rowe Run	Stream Code	10668
NHD Com ID	56410815	RMI	4.57
Drainage Area	2.21	Yield (cfs/mi^2)	0.46
Q_{7-10} Flow (cfs)	1.02	Q_{7-10} Basis	Please see below
Elevation (ft)	639	Slope (ft/ft)	
Watershed No.	7-B	Chapter 93 Class.	CWF, MF
Existing Use	None	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Organic Enrichment/Low D.O., Siltation		
Source(s) of Impairment	Agriculture, Agriculture		
TMDL Status	Final	Name	Conodoguinet Creek Watershed
Nearest Downstream Public Water Supply Intake	Carlisle Borough Municipal Authority Water System		
PWS Waters	Conodoguinet Creek	Flow at Intake (cfs)	48
PWS RMI	35.95	Distance from Outfall (mi)	44.93

Drainage Area
The discharge is to Rowe Run at RM 4.57. Previously, DEP determined that the discharge point is to a dry stream and the point of first use (POFU) is determined to be further downstream (1.62 miles) from the discharge point. A drainage area upstream of this POFU was previously determined to be 2.21 sq.mi.

Streamflow
Nearest USGS Streamgage is 01570000 on Conodoguinet Creek near Hogestown is located about 350' below the PA American Water Co. intake and is affected to some degree by the withdrawal. Recent stream flow retrievals resulted in a Q7-10 of 69.3 cfs for a record period of 1971-2008 at this gage. USGS split the record period to incorporate the PA American PWS intake. The average daily PWS withdrawal has been 6 MGD or 9.28 cfs according to Source Water Assessment Summary for Silver Spring Water Plant. This results in a total flow of 78.58 cfs at the gage after adjustment for the PWS intake. The drainage area is reported to be 470 mi^2 at the stream gage and 2.21 mi^2 at the point of first use.

Q_{7-10} runoff rate = (69.3+9.28)/470 = 0.167 cfs/mi^2.

Q_{30-10}:Q_{7-10} = 78.3/69.3 = 1.13:1

Q_{1-10}:Q_{7-10} = 63.1/69.3 = 0.91:1

Q_{7-10} = 0.167*2.21 = 0.369 cfs

Daily measurements of streamflow from January 1, 1995 to September 30, 1996 at Rowe Run at T433 bridge was collected and discussed in previous protection report. In summary, the flows were compared to Conodoguinet Creek streamflows at the Hogestown USGS gage during same time period, in accordance with DEP's SOP tilted "Design Stream Flows", Document number 391-2000-023, effective date September 14, 1998. The Q7-10 was 82.7% of the lowest flow at Hogestown during the period. 82.7% of the lowest measured flow at Rowe Run was 1.23*0.827 = 1.02 cfs which will be used for WQM and other required modeling purposes. Using this Q_{7-10} flow, the yield is 1.02/2.21 or 0.46 cfs/mi^2 which will be used to calculate the flow at node 2 for modeling purposes.

Rowe Run
Rowe Run is designated as cold water fishes and supports migratory fishes. The discharge is located in a stream segment that is Recreational and Aquatic Life impaired. Recreational impairment is due to pathogens and the source is unknown. This designation was achieved on October 10, 2015. Aquatic life impairment is due to siltation and organic enrichment/low DO and the source is agricultural activities. A Total Maximum Daily Load (TMDL) was developed in December 2000 for the Conodoguinet Creek Watershed which includes Rowe Run. More details will be discussed later in this report.

Public Water Supply Intake
The nearest downstream PWS intake is Carlisle Borough on the Conodoguinet Creek in North Middleton Township at RMI 35.95 about 44.93 miles downstream of discharge. The Q_{7-10} at the intake is about 48 cfs so the discharge will not have an impact on the PWS because of the additional dilution, distance, and effluent limitations.

Treatment Facility Summary

Treatment Facility Name: Letterkenny Army Depot

WQM Permit No.	Issuance Date
2890201 10-1	06/14/2010
2890201 A-2	09/06/2016

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Chemical (Industrial Treatment)	Chemical Precipitation	No Disinfection	0.29

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.29		Not Overloaded		

Under Standard Industrial Classification Codes of 3489, 3471, 3483, industrial activities performed at LEAD are vehicle repairing, paint work, specialized maintenance, electroplating, degreasing, and washing. The permittee also holds a groundwater treatment permit (PA0087378) and Industrial Stormwater (OB/OD) permit (PA0246891.). All industrial wastewater generated during these activities are treated by an onsite wastewater treatment facility operated by LEAD. This facility is designed for 0.29 MGD. The maximum daily discharge rate is 0.1117 MGD and the average discharge rate is 0.0510 MGD. According to the permit application, the plant operates 17 hours/day, 260 days/year.

Influent flows to an equalization tank for pH adjustment and then passes through the skimmer for oil and grease. Followed by oil/grease separation, wastewater is mixed with lime, sodium sulfide, and ferric chloride and pass through flocculation, coagulation and setting stages. Wastewater is then treated via Moving Bed Biofilm Reactor (MBBR) biological treatment process in which phosphoric Acid, defoamer, Ammonia, and carbon source all are added and mixed in the MBBR. From MBBR, flow is directed to a secondary clarifiers, then to sand filters and Granular Activated Carbon (GAC) filtration system (for backwash water). pH is once again adjusted during these stages with sodium hydroxide. Effluent from these stages is to Rowe Run via Outfall 001.

According to the application, there are no chemical additives used at this facility. All chemicals used at this facility are for wastewater treatment purpose(s).

Sludge from primary and secondary clarifiers goes to sludge holding tanks and is dewatered in the filter press. The sludge is sent for disposal and the filtrates are directed to influent wet well.

The stormwater outfalls are outfalls S01, S02, and SO3 which were formerly known as Outfall 002, 004, and 005, respectively. The stormwater outfall S02 discharges at the same point as outfall 001. The stormwater outfalls will be discussed in more detail in the stormwater section of the report.

Compliance History

Summary of DMRs:	A summary of past 12-month DMR data is presented on the next page.
Summary of Inspections:	1/23/2019: Mike Benham, former DEP Water Quality Specialist, conducted an incident inspection in response to 250 gallons of purged groundwater from RCRA monitoring wells sent to the industrial wastewater treatment plant. The industrial wastewater treatment plant is not intended to treat groundwater. 01/31/2018: Pat Bowen, former DEP Water Quality Specialist, conducted a routine inspection. No issues were identified at the time of inspection.
Other Comments:	A number of permit violations occurred previously. These violations are identified below.

Date	Violation Type	PARAMETER	Sample Results	Limits	Units	SBC
Jan-18	Late DMR Submission					
Sep-18	Effluent Violation	Cadmium, Total	0.0021	0.0015	mg/L	Average Monthly
Sep-18	Effluent Violation	Cadmium, Total	0.0066	0.0023	mg/L	Daily Maximum
Oct-18	Effluent Violation	Cadmium, Total	0.0016	0.0015	mg/L	Average Monthly
Dec-18	Effluent Violation	Cadmium, Total	0.0019	0.0015	mg/L	Average Monthly
Dec-18	Effluent Violation	Cadmium, Total	0.0025	0.0023	mg/L	Daily Maximum
Jan-19	Late DMR Submission					
Jun-19	Late DMR Submission					
Jul-19	Late DMR Submission					
Dec-19	Late DMR Submission					
Jan-20	Effluent Violation	Total Suspended Solids	22	20	mg/L	Daily Maximum
Feb-20	Late DMR Submission					
Mar-20	Effluent Violation	Cadmium, Total	0.0025	0.0023	mg/L	Daily Maximum
Jun-20	Late DMR Submission					
Jan-21	Late DMR Submission					
Jan-21	Effluent Violation	Cadmium, Total	0.002	0.0015	mg/L	Average Monthly
Jan-21	Late DMR Submission					
Feb-21	Late DMR Submission					
Feb-21	Effluent Violation	Cadmium, Total	0.0024	0.0023	mg/L	Daily Maximum
Jun-21	Sample collection less frequent than required	Bis(2-Ethylhexyl)Phthalate				
Jun-21	Sample collection less frequent than required	Cadmium, Total				
Jun-21	Sample collection less frequent than required	Carbonaceous Biochemical Oxygen Demand (CBOD5)				
Jun-21	Sample collection less frequent than required	Chromium, Total				
Jun-21	Sample collection less frequent than required	Copper, Total				
Jun-21	Sample collection less frequent than required	Cyanide, Total				
Jun-21	Sample collection less frequent than required	Lead, Total				
Jun-21	Sample collection less frequent than required	Nickel, Total				
Jun-21	Sample collection less frequent than required	Oil and Grease				
Jun-21	Sample collection less frequent than required	Total Phosphorus				
Jun-21	Sample collection less frequent than required	Total Suspended Solids				
Jun-21	Sample collection less frequent than required	Zinc, Total				
Aug-21	Late DMR Submission					
Sep-21	Late DMR Submission					
Sep-21	Effluent Violation	Total Suspended Solids	23	20	mg/L	Daily Maximum
Oct-21	Late DMR Submission					
Dec-21	Effluent Violation	Cadmium, Total	0.003	0.0015	mg/L	Average Monthly
Dec-21	Effluent Violation	Cadmium, Total	0.0052	0.0023	mg/L	Daily Maximum

DEP's database shows there is one open violation associated with this permittee. The violation was identified by DEP Storage Tanks on October 12, 2021 regarding failure to comply with underground storage tank system release detection requirements. A draft permit cover letter will indicate that DEP may not finalize the permit until all violations are resolved and closed.

Effluent Data

DMR Data for Outfall 001 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Flow (MGD) Average Monthly	0.0168	0.0155	0.0221	0.0327	0.0253	0.0245	0.0223	0.0212	0.0231	0.0294	0.0252	0.0192
Flow (MGD) Daily Maximum	0.0466	0.0463	0.058	0.0627	0.0669	0.0609	0.0520	0.0626	0.0548	0.0683	0.0551	0.0545
pH (S.U.) Minimum	6.7	6.5	6.9	6.7	6.8	6.7	6.9	6.7	6.6	6.8	6.4	6.7
pH (S.U.) Instantaneous Maximum	7.3	7.4	7.3	7.4	7.6	7.7	7.5	7.6	7.8	8.0	7.8	7.8
CBOD5 (lbs/day) Average Monthly	0.9	0.7	< 1.1	3.6	1.6	2.2	1.6	2.3	1.7	1.2	1.9	< 1.0
CBOD5 (lbs/day) Daily Maximum	1.3	1.1	1.6	8.1	2.4	3.0	2.00	3.5	2.7	2.3	3.1	1.4
CBOD5 (mg/L) Average Monthly	3.5	2.5	< 2.5	8.3	3.8	4.5	4.1	5.1	4.1	2.9	4.4	< 2.6
CBOD5 (mg/L) Daily Maximum	4.9	3.0	3.4	19.7	6.3	6.4	5.3	8.7	6.0	4.6	6.8	3.2
TSS (lbs/day) Average Monthly	1.4	2.0	3.4	3.7	3.0	2.6	1.1	< 1.8	2.1	1.8	2.2	1.0
TSS (lbs/day) Daily Maximum	2.2	4.8	5.3	10.6	5.9	3.5	2.5	3.2	3.2	2.5	4.0	1.4
TSS (mg/L) Average Monthly	6.3	6.8	8.0	8.0	6.3	5.3	3.0	< 4.0	5.3	4.4	5.3	2.5
TSS (mg/L) Daily Maximum	14.0	14.0	11.0	23.0	11.0	7.0	7.00	8.0	7.0	5.0	10.0	3.0
Oil and Grease (lbs/day) Average Monthly	< 1.0	< 1.0	< 1.6	< 2.0	< 1.7	< 1.9	< 1.5	< 1.7	< 1.5	< 1.6	< 1.6	< 1.7
Oil and Grease (lbs/day) Daily Maximum	< 1.3	< 1.4	< 1.8	< 2.6	< 2.0	< 2.0	< 1.7	< 2.0	< 1.7	< 2.1	< 1.8	< 1.8
Oil and Grease (mg/L) Average Monthly	< 3.9	< 3.9	< 3.8	< 4.2	< 3.8	< 3.9	< 3.9	< 3.9	< 3.8	< 3.9	< 3.8	< 4.3
Oil and Grease (mg/L) Daily Maximum	< 4.0	< 3.9	< 4.0	< 5.7	< 3.9	< 3.9	< 4.1	< 3.9	< 3.9	< 4.1	< 3.9	< 5.7
Total Phosphorus (lbs/day) Average Monthly	< 0.04	< 0.03	< 0.04	< 0.05	< 0.04	< 0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.04	< 0.04

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Total Phosphorus (lbs/day) Daily Maximum	0.04	< 0.04	0.06	< 0.05	< 0.05	0.08	0.09	< 0.05	0.07	0.07	< 0.05	< 0.05
Total Phosphorus (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.10	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Phosphorus (mg/L) Daily Maximum	0.24	< 0.1	0.13	< 0.1	< 0.1	0.15	0.3	0.11	0.16	0.13	0.1	0.12
Total Cadmium (lbs/day) Average Monthly	0.0006	0.0003	0.0003	< 0.0003	< 0.0003	0.0003	0.0002	0.0003	< 0.0004	0.0003	0.0005	0.0006
Total Cadmium (lbs/day) Daily Maximum	0.0008	0.0005	0.0004	< 0.0005	< 0.0005	0.0004	0.0002	0.0004	< 0.0008	0.0007	0.001	0.0009
Total Cadmium (mg/L) Average Monthly	0.0030	0.0010	0.0008	< 0.0006	< 0.0007	0.0006	0.00049	0.0007	< 0.0011	0.0007	0.0010	0.0020
Total Cadmium (mg/L) Daily Maximum	0.0052	0.0016	0.00087	< 0.0010	< 0.0010	0.0009	0.00058	0.00076	< 0.0020	0.0013	0.0024	0.0023
Total Chromium (lbs/day) Average Monthly	0.001	0.0007	0.002	< 0.001	< 0.0009	0.001	< 0.0009	0.0008	< 0.001	0.0007	0.0008	0.0006
Total Chromium (lbs/day) Daily Maximum	0.002	0.001	0.004	0.001	0.001	0.001	0.002	0.0009	< 0.004	0.0009	0.0009	0.0008
Total Chromium (mg/L) Average Monthly	0.005	0.003	0.006	< 0.002	< 0.002	0.002	< 0.002	0.002	< 0.004	0.002	0.002	0.002
Total Chromium (mg/L) Daily Maximum	0.0072	0.004	0.0094	0.0033	0.0021	0.0028	0.004	0.002	< 0.01	0.0025	0.0022	0.0017
Total Copper (lbs/day) Average Monthly	< 0.0007	< 0.0008	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.002
Total Copper (lbs/day) Daily Maximum	< 0.0008	0.001	0.002	0.002	0.002	< 0.001	< 0.001	< 0.001	< 0.009	0.003	0.003	0.004
Total Copper (mg/L) Average Monthly	< 0.003	< 0.003	< 0.003	< 0.003	< 0.004	< 0.003	< 0.003	< 0.003	< 0.009	< 0.003	< 0.003	< 0.005
Total Copper (mg/L) Daily Maximum	< 0.0025	0.0036	0.0049	0.0042	< 0.005	< 0.0025	0.003	< 0.0025	< 0.025	0.0058	0.0055	0.0093
Total Cyanide (lbs/day) Average Monthly	< 0.001	< 0.001	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.0008	< 0.002

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Total Cyanide (lbs/day) Daily Maximum	< 0.002	< 0.002	< 0.002	0.003	< 0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	< 0.0009	< 0.007
Total Cyanide (mg/L) Average Monthly	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.002	< 0.006
Total Cyanide (mg/L) Daily Maximum	< 0.005	< 0.005	< 0.005	0.0059	< 0.005	< 0.005	0.007	< 0.005	0.0057	< 0.005	< 0.002	< 0.017
Total Lead (lbs/day) Average Monthly	< 0.0003	< 0.0003	< 0.0004	< 0.0005	< 0.0004	< 0.005	< 0.0004	< 0.0004	< 0.001	< 0.0004	< 0.0004	< 0.0004
Total Lead (lbs/day) Daily Maximum	< 0.0003	< 0.0004	< 0.0005	< 0.0005	< 0.0005	< 0.005	0.0004	< 0.0005	< 0.004	< 0.0006	< 0.0005	0.0005
Total Lead (mg/L) Average Monthly	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0008	< 0.001	< 0.0010	< 0.001	< 0.003	< 0.001	< 0.001	< 0.001
Total Lead (mg/L) Daily Maximum	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0010	< 0.001	< 0.010	< 0.001	< 0.001	0.0011
Total Nickel (lbs/day) Average Monthly	0.006	0.004	0.01	0.009	0.008	0.008	0.007	0.007	< 0.006	0.003	0.004	0.006
Total Nickel (lbs/day) Daily Maximum	0.008	0.005	0.01	0.01	0.009	0.01	0.01	0.009	< 0.009	0.004	0.007	0.01
Total Nickel (mg/L) Average Monthly	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	< 0.02	0.007	0.010	0.01
Total Nickel (mg/L) Daily Maximum	0.028	0.017	0.037	0.0264	0.021	0.021	0.030	0.018	< 0.025	0.0078	0.017	0.027
Total Silver (lbs/day) Average Monthly	< 0.0001	< 0.0001	< 0.0002	< 0.0003	< 0.0007	< 0.0002	< 0.0002	< 0.0002	< 0.0006	< 0.0002	< 0.0002	< 0.0002
Total Silver (lbs/day) Daily Maximum	< 0.0002	< 0.0002	< 0.0002	< 0.0005	< 0.002	< 0.0003	< 0.0002	< 0.0003	< 0.002	< 0.0003	< 0.0002	< 0.0002
Total Silver (mg/L) Average Monthly	< 0.0005	< 0.0005	< 0.0005	< 0.0006	< 0.002	< 0.0005	< 0.0005	< 0.0005	< 0.002	< 0.0005	< 0.0005	< 0.0005
Total Silver (mg/L) Daily Maximum	< 0.0005	< 0.0005	< 0.0005	< 0.001	< 0.005	< 0.0005	< 0.0005	< 0.0005	< 0.005	< 0.0005	< 0.0005	< 0.0005
Total Zinc (lbs/day) Average Monthly	0.003	0.001	0.007	0.003	0.004	0.003	0.002	0.003	< 0.004	0.002	0.004	0.004
Total Zinc (lbs/day) Daily Maximum	0.003	0.002	0.01	0.004	0.007	0.004	0.003	0.004	< 0.009	0.004	0.006	0.006
Total Zinc (mg/L) Average Monthly	0.010	0.006	0.020	0.006	0.009	0.006	0.006	0.006	< 0.010	0.006	0.010	0.010
Total Zinc (mg/L) Daily Maximum	0.022	0.0072	0.024	0.0077	0.0182	0.0081	0.007	0.0072	< 0.025	0.0077	0.014	0.014
Bis(2-Ethyl-hexyl)Phthalate (lbs/day) Average Monthly	< 0.001	< 0.0008	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Bis(2-Ethyl-hexyl)Phthalate (lbs/day) Daily Maximum	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.001	< 0.001
Bis(2-Ethyl-hexyl)Phthalate (mg/L) Average Monthly	< 0.005	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
Bis(2-Ethyl-hexyl)Phthalate (mg/L) Daily Maximum	< 0.012	< 0.0029	< 0.0029	< 0.0029	< 0.0029	< 0.0029	< 0.003	< 0.0029	< 0.0029	< 0.0029	< 0.0028	< 0.0029

DMR Data for Outfall 002 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
pH (S.U.) Semi-Annual Average							8.0					
CBOD5 (mg/L) Semi-Annual Average							19.4					
COD (mg/L) Semi-Annual Average							36					
TSS (mg/L) Semi-Annual Average							99					
Oil and Grease (mg/L) Semi-Annual Average							< 4.0					
Nitrate-Nitrite (mg/L) Semi-Annual Average							< 1.7					
TKN (mg/L) Semi-Annual Average							2.3					
Total Phosphorus (mg/L) Semi-Annual Average							0.34					
Total Aluminum (mg/L) Semi-Annual Average							2.3					
Total Iron (mg/L) Semi-Annual Average							0.75					
Total Zinc (mg/L) Semi-Annual Average							0.20					

DMR Data for Outfall 004 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
pH (S.U.) Semi-Annual Average							8.2					
CBOD5 (mg/L) Semi-Annual Average							12.8					
COD (mg/L) Semi-Annual Average							< 15.0					
TSS (mg/L) Semi-Annual Average							77					
Oil and Grease (mg/L) Semi-Annual Average							< 3.9					
Nitrate-Nitrite (mg/L) Semi-Annual Average							< 0.74					
TKN (mg/L) Semi-Annual Average							1.2					
Total Phosphorus (mg/L) Semi-Annual Average							0.14					
Total Aluminum (mg/L) Semi-Annual Average							0.67					
Total Iron (mg/L) Semi-Annual Average							0.96					

DMR Data for Outfall 005 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
pH (S.U.) Semi-Annual Average							8.0					
CBOD5 (mg/L) Semi-Annual Average							3.9					
COD (mg/L) Semi-Annual Average							< 15					
TSS (mg/L) Semi-Annual Average							20					
Oil and Grease (mg/L) Semi-Annual Average							< 4.0					
Nitrate-Nitrite (mg/L) Semi-Annual Average							< 2.8					
TKN (mg/L) Semi-Annual Average							< 1.0					

Total Phosphorus (mg/L) Semi-Annual Average							< 0.1					
Total Aluminum (mg/L) Semi-Annual Average							0.18					
Total Iron (mg/L) Semi-Annual Average							0.27					
Total Zinc (mg/L) Semi-Annual Average							< 0.01					

Existing Effluent Limits and Monitoring Requirements

Tables below summarize effluent limits and monitoring requirements specified in the existing permit.

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	48	97	XXX	20.0	40.0	50	1/week	24-Hr Composite
Total Suspended Solids	24	48	XXX	10.0	20.0	25	1/week	24-Hr Composite
Oil and Grease	36	72	XXX	15.0	30.0	30	1/week	Grab
Total Phosphorus	4.8	9.7	XXX	2.0	4.0	5	1/week	24-Hr Composite
Cadmium, Total	0.004	0.005	XXX	0.0015	0.0023	0.0038	1/week	24-Hr Composite
Chromium, Total	4.13	6.7	XXX	1.71	2.77	4.25	1/week	24-Hr Composite
Copper, Total	0.13	0.2	XXX	0.054	0.084	0.135	1/week	24-Hr Composite
Cyanide, Total	Report	Report	XXX	0.65	1.2	1.62	1/week	24-Hr Composite
Lead, Total	0.059	0.092	XXX	0.024	0.038	0.061	1/week	24-Hr Composite
Nickel, Total	0.73	1.13	XXX	0.3	0.469	0.75	1/week	24-Hr Composite
Silver, Total	0.061	0.094	XXX	0.025	0.039	0.063	1/month	24-Hr Composite
Zinc, Total	1.07	1.67	XXX	0.443	0.692	1.108	1/week	24-Hr Composite
Total Toxic Organics	XXX	XXX	XXX	XXX	2.13	XXX	1/year	24-Hr Composite
Bis(2-Ethylhexyl)Phthalate	0.052	0.081	XXX	0.021	0.033	0.054	1/week	24-Hr Composite

Outfall S01

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		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Zinc, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab

Outfall S02

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		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab

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		
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Cadmium, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chromium, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Copper, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Cyanide, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Lead, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Nickel, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Silver, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Zinc, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Total Toxic Organics	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

Outfall S03

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		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab

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		
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Zinc, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab

Development of Effluent Limitations and Monitoring Requirements

Outfall No. 001 **Design Flow (MGD)** .29
Latitude 40º 0' 32.00" **Longitude** -77º 37' 52.00"
Wastewater Description: IW Process Effluent with ELG

Technology-Based Limitations

Given the type of industrial activities performed at the site, the facility is subject to federal effluent limitations and guidelines (ELGs) found in 40 CFR Part 433 Subpart A – ELGs for Metal Finishing which specifies the following BAT effluent limits:

Regulated parameter	Concentrations (mg/L)	
	Maximum Daily	Maximum Monthly Avg.
Cadmium Total	0.69	0.26
Chromium Total	2.77	1.71
Copper Total	3.38	2.07
Lead Total	0.69	0.43
Nickel Total	3.98	2.3
Silver Total	0.43	0.24
Zinc Total	2.61	1.48
Cyanide Total	1.20	0.65
TTO	2.13	

Along with these limitations, the facility is also subject to state standards found in 25 Pa Code §§§92a.47, 92a.48 and 95.2. These standards are shown below.

Parameter	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)

The facility reported effluent fecal coliform of 6, 8, <1, and 579 MPN/100 mL with influent fecal coliform of 1,730 MPN/100 mL. It does not seem fecal coliform is a parameter of concern. No requirements are therefore recommended.

The existing effluent limits for Total Suspended Solids are 10 mg/L (average monthly), 20 mg/L (Daily Max) and 25 mg/L (IMAX) which are derived from DEP's technical guidance no. 391-2000-014 as the discharge is to a dry stream.

The existing effluent limits for Oil and Grease are derived from 25 Pa Code §95.2(2)(ii). While the facility has been consistently reporting non-detect values for effluent Oil and Grease, the facility is equipped with a gravity oil separator that could potentially remove Oil and Grease. The existing limits will remain unchanged in the permit to ensure that the facility is consistently meeting the industrial waste effluent standards.

The more stringent of these standards will be written in the permit unless more stringent requirements are needed based on the BPJ analysis and water quality analysis.

Water Quality-Based Limitations

CBOD5, NH3-N and Dissolved Oxygen
WQM 7.0 is a water quality model designed to assist DEP to determine appropriate permit requirements for CBOD5, NH3-N and DO. DEP's technical guidance no. 391-2000-007 describes the technical methods contained in the model for conducting wasteload allocation analyses and for determining recommended limits for point source discharges. DEP recently updated this model (ver. 1.1) to include new ammonia criteria that has been approved by US EPA as part of the 2017 Triennial Review. The model output shows that existing WQBELs for CBOD5 are still protective of water quality. The model also recommended WQBELs for ammonia-nitrogen; however, in the past DEP has ruled out the need of effluent limits for ammonia-nitrogen as effluent concentrations were very low. For this renewal, LEAD collected samples and the results showed effluent NH3-N concentrations of 0.03 mg/L, 0.028 mg/L with influent concentration of 0.109 mg/L. DEP once again determined that effluent limits for NH3-N are not needed. No change is therefore recommended.

Toxics
DEP utilizes a Toxics Management Spreadsheet (TMS) to facilitate calculations necessary for completing a reasonable potential analysis and determining WQBELs for toxic pollutants. The worksheet combines the functionality of DEP's previous water quality models including Toxics Screening Analysis worksheet and PENTOXSD. For this renewal, each toxic pollutant will be evaluated based on the current requirements in the permit. It is noteworthy that stream hardness of 300 mg/L from the past permit renewal has been used in the analysis as no latest data is available.

1) Existing Pollutants (Effluent Limits)
The current permit includes effluent limits for the following toxic pollutants:

Pollutants	Avg. Monthly (mg/L)	Basis
Total Cadmium	0.0015	WQBEL
Total Chromium	1.71	ELG
Total Copper	0.054	WQBEL
Total Cyanide	0.65	ELG
Total Lead	0.024	WQBEL
Total Nickel	0.3	WQBEL
Total Silver	0.025	WQBEL
Total Zinc	0.443	WQBEL
Total Toxic Organics	2.13 (maximum)	ELG
Bis(2-Ethylhexyl)Phthalate	0.021	WQBEL

DEP's TOXCONC worksheet was utilized as ample datasets were obtained during the last permit renewal. The worksheet provided the following statistical average monthly concentrations with daily coefficient of variation:

Pollutants	AMEC (mg/L)	Daily CV
Total Cadmium	0.0039705	1.0063503
Total Chromium	0.0091310	0.7658663
Total Copper	0.0108777	1.6955783
Total Cyanide	0.0109070	1.5337965
Total Nickel	0.0314692	0.4532414
Total Zinc	0.0424251	0.7238212

It is noteworthy that Total Lead, Total Silver and Bis(2-Ethylhexyl)Phthalate have been consistently not detected in effluent (<0.001 mg/L, <0.0005 mg/L & <0.003 mg/L respectively). As a result, these pollutants have been ruled out from TOXCON statistical analysis. For the other pollutants, those AMEC and Daily CV were entered into TMS. TMS shows Total Cadmium still requires WQBELs but Total Copper, Total Chromium, Total Cyanide, Total Nickel, and Total Zinc no longer requires WQBELs.

The relaxation or removal of effluent limits is warranted when no reasonable potential for the concerned pollutant(s) is determined; however, if the facility has implemented treatment to remove such pollutant(s), existing WQBEL should remain in the permit. This is primarily because pollutant(s) has been eliminated or treated only through the treatment process and no source of these pollutants has been identified and eliminated.

For Bis(2-Ethylhexyl)Phthalate, because the facility does not treat this pollutant, DEP assumes that effluent concentration for this pollutant is simply the same as influent concentration. As such, removal of this pollutant is

warranted as no reasonable potential has been determined and there is no known source for this pollutant. This decision is supported by 40 CFR §122.44(l)(2)(i)(B)(1) that ample datasets which are considered new information show that these pollutants are not of concern.

2) New Pollutants
TMS was utilized for all other toxic pollutants that have been sampled as part of the application. TMS output recommends effluent limits or monitoring requirements for the following pollutants:

	Mass Limits		Concentration Limits (mg/L)					
Pollutants	**AML (lbs/day)**	**MDL (lbs/day)**	**AML**	**MDL**	**IMAX**	**Governing WQBEL**	**WQBEL Basis**	**Comments**
Total Aluminum	3.8	5.92	1.57	2.45	3.93	1.57	AFC	Discharge Conc> 50%WQBEL (RP)
Total Antimony	Report	Report	Report	Report	Report	0.018	THH	Discharge Conc> 10%WQBEL (RP)
Total Mercury	0.0004	0.0006	0.0002	0.0003	0.0004	0.0002	THH	Discharge Conc> 50%WQBEL (RP)

These effluent limits and monitoring requirements will be included in the permit in accordance with 40 CFR §122.44(d)(1)(i).

Any methodology used to conduct water quality analyses for this permit renewal is consistent with DEP's SOP nos. BCW-PMT-032 and BCW-PMT-037. All modeling efforts will be included in this fact sheet as attachments.

Best Professional Judgment (BPJ) Limitations

Total Phosphorus
25 Pa Code §96.5(c) requires facilities to meet the average monthly Total Phosphorus concentration limit of 2.0 mg/L when the discharge lone or in combination with the discharge of other pollutants contributes or threatens to impair existing or designated uses of surface waters. The discharge is to Rowe Run which is part of the Conodoguinet Creek Watershed TMDL. The existing concentration effluent limits will remain unchanged in the permit; however, the annual WLA specified will be included in the permit. More details will be discussed later in this report.

Other Considerations

Flow Monitoring
The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii).

Total Dissolved Solids
TDS and its associated solids including Bromide, Chloride, and Sulfate have become statewide pollutants of concern. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

For point source discharges and 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 application reported a maximum effluent TDS concentration of 1,630 mg/L. Therefore, the requirement to monitor for TDS along with sulfate, chloride and bromide is recommended.

Chesapeake Bay TMDL
The discharge is located within the Chesapeake Bay watershed and is considered under the Supplement to Phase III Watershed Implementation Plan (WIP) a non-significant IW facility based on the industrial activities performed at the site. No further monitoring is recommended.

Conodoguinet Creek Watershed TMDL
A TMDL was developed in December 2000 to address the impairments identified in the Conodoguinet Creek watershed. As part of the this TMDL, a wasteload allocation (WLA) of 1,765 lbs/yr of Total Phosphorous was developed specifically for this facility which equates about 2.0 mg/L. This annual WLA was not included in the last permit but instead included the average monthly and daily maximum mass loading limits of 4.8 lbs/yr and 9.7 lbs/yr respectively. In lieu of these average monthly and daily maximum mass loading limits, the annual WLA specified in the TMDL will be included in the permit along with the existing concentration limits of 2.0 mg/L (average monthly) and 4.0 mg/L (IMAX).

Mass Loadings & Concentrations Limits
The mass load effluent limits will be assigned to those pollutants that have water quality based concentration effluent limits. The mass load effluent limits are calculated using a formula: Design Flow (0.29 MGD) * Concentrations (mg/L) * 8.34 (conversion factor).

Monitoring Frequency and Sample Type
All monitoring frequencies and sample types will remain unchanged given a number of non-compliance identified during the last permit renewal term.

Anti-Backsliding Requirements
Unless stated otherwise in this fact sheet, all permit requirements proposed in this fact sheet are at least as stringent as permit requirements specified in the existing permit renewal in accordance with 40 CFR §122.44(l)(1).

Class A Wild Trout Fishery
No Class A Wild Trout Fishery is impacted by this discharge.

Development of Effluent Limitations and Monitoring Requirements

PERMIT REQUIREMENTS FOR STORMWATER OUTFALLS

As mentioned earlier, LEAD also utilizes three (3) outfalls receiving stormwater drained throughout the site.

Outfall No.	Area Drained (sq.ft)	Latitude	Longitude	Description
002 (S01)	25,971,750	39° 59' 04"	77° 37' 57"	Parking Lot, Oil/Grease, Anti-free, mud
004 (S02)	21,126,600	40° 00' 36"	77° 37' 54"	Parking Lot, Oil/Grease, Anti-free, mud
005 (S03)	72,745,200	39° 58' 56"	77° 41' 20"	Parking Lot, Oil/Grease, Anti-free, mud

The permit currently requires semi-annual sampling of the following parameters:

S01 (002)	S02 (004)	S03 (005)
pH (S.U.)	pH (S.U.)	pH (S.U.)
CBOD5	CBOD5	CBOD5
COD	COD	COD
Total Suspended Solids	Total Suspended Solids	Total Suspended Solids
Oil and Grease	Oil and Grease	Oil and Grease
Nitrate-Nitrite as N	Nitrate-Nitrite as N	Nitrate-Nitrite as N
Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen	Total Kjeldahl Nitrogen
Total Phosphorus	Total Phosphorus	Total Phosphorus
Aluminum, Total	Aluminum, Total	Aluminum, Total
Iron, Total	Cadmium, Total (1/yr)	Iron, Total
Zinc, Total	Chromium, Total (1/yr)	Zinc, Total
	Copper, Total (1/yr)	
	Cyanide, Total (1/yr)	
	Iron, Total (1/yr)	
	Lead, Total (1/yr)	
	Nickel, Total (1/yr)	
	Silver, Total (1/yr)	
	Zinc, Total (1/yr)	
	Total Toxic Organics (1/yr)	

In general, DEP uses DEP's NPDES PAG-03 General Permit for Industrial Stormwater as guidance to develop stormwater monitoring requirements for the individual IW permit. Given the SIC codes of 3489, 3471, 3483, the facility would have been classified under Appendix U of the latest PAG-03 permit which requires semi-annual monitoring of pH, TSS, Nitrate + Nitrate-Nitrogen, Total Aluminum, Total Iron and Total Zinc.

A review of sample results shows Oil and Grease, Total Silver, TTO, and Total Nickel have been consistently not detected in stormwater samples. These pollutants will be removed from the permit. All other pollutants will remain in the permit. A standard Part C stormwater discharge condition will be included in the permit.

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	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
CBOD5	48	97	XXX	20.0	40.0	50	1/week	24-Hr Composite
TSS	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Oil and Grease	Report	Report	XXX	15.0	30.0	30	1/week	Grab
Total Phosphorus	Report	Report	XXX	2.0	4.0	5	1/week	24-Hr Composite
Total Phosphorus (Total Loads, lbs)	XXX	1,765 Total Annual	XXX	XXX	XXX	XXX	1/year	Calculation
Total Cadmium	0.004	0.005	XXX	0.0015	0.0023	0.0038	1/week	24-Hr Composite
Total Chromium	Report	Report	XXX	1.71	2.77	4.25	1/week	24-Hr Composite
Total Copper	0.13	0.2	XXX	0.054	0.084	0.135	1/week	24-Hr Composite
Total Cyanide	Report	Report	XXX	0.65	1.2	1.62	1/week	24-Hr Composite
Total Lead	0.059	0.092	XXX	0.024	0.038	0.061	1/week	24-Hr Composite
Total Nickel	0.73	1.13	XXX	0.3	0.469	0.75	1/week	24-Hr Composite
Total Silver	0.061	0.094	XXX	0.025	0.039	0.063	1/month	24-Hr Composite
Total Zinc	1.07	1.67	XXX	0.443	0.692	1.108	1/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Total Aluminum	3.8	5.92	XXX	1.57	2.45	3.93	1/week	24-Hr Composite
Total Mercury	0.0004	0.0006	XXX	0.0002	0.0003	0.0004	1/week	24-Hr Composite
Total Antimony	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Total Dissolved Solids	Report	Report	XXX	Report	Report	XXX	1/month	24-Hr Composite
Sulfate, Total	Report	Report	XXX	Report	Report	XXX	1/month	24-Hr Composite
Chloride	Report	Report	XXX	Report	Report	XXX	1/month	24-Hr Composite
Bromide	Report	Report	XXX	Report	Report	XXX	1/month	24-Hr Composite
Total Toxic Organics	XXX	XXX	XXX	XXX	2.13	XXX	1/year	24-Hr Composite

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 002 (S01), 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		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Zinc, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab

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 004 (S02), 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		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Cadmium, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Chromium, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Copper, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Cyanide, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Lead, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab
Zinc, Total	XXX	XXX	XXX	Report	XXX	XXX	1/year	Grab

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 005 (S03), 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		
pH (S.U.)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Chemical Oxygen Demand (COD)	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Nitrate-Nitrite as N	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Kjeldahl Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Total Phosphorus	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab
Zinc, Total	XXX	XXX	XXX	Report	XXX	XXX	1/6 months	Grab

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	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, 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:
☐	Other:

Attachments

1. WQM 7.0 ver. 1.1

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
07B	10668	ROWE RUN	**4.570**	639.00	2.21	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	0.460	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
LEAD IW	PA0010502	0.2900	0.2900	0.2900	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	20.00	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
07B	10668	ROWE RUN	**2.668**	622.00	2.60	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	0.460	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	0.00	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	3.00	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
07B	10668	ROWE RUN

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												
4.570	1.02	0.00	1.02	.4486	0.00169	.549	13.36	24.34	0.20	0.582	20.00	7.00
Q1-10 Flow												
4.570	0.93	0.00	0.93	.4486	0.00169	NA	NA	NA	0.19	0.603	20.00	7.00
Q30-10 Flow												
4.570	1.15	0.00	1.15	.4486	0.00169	NA	NA	NA	0.21	0.554	20.00	7.00

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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	0.91	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.13	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

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WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07B	10668	ROWE RUN

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
4.570	LEAD IW	16.76	50	16.76	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
4.570	LEAD IW	1.89	6.72	1.89	6.72	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)		
4.57	LEAD IW	20	20	6.72	6.72	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07B	10668	ROWE RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.570	0.290	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
13.361	0.549	24.338	0.200
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
7.51	1.106	2.06	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.250	3.213	Tsivoglou	5
Reach Travel Time (days)			
0.582			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.058	7.04	1.98	6.59
0.116	6.60	1.90	6.10
0.175	6.19	1.82	5.75
0.233	5.81	1.75	5.50
0.291	5.44	1.68	5.34
0.349	5.10	1.61	5.25
0.407	4.79	1.55	5.21
0.465	4.49	1.49	5.22
0.524	4.21	1.43	5.26
0.582	3.95	1.37	5.33

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07B	10668	ROWE RUN

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)
4.570	LEAD IW	PA0010502	0.290	CBOD5	20		
				NH3-N	6.72	13.44	
				Dissolved Oxygen			5

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2. TOXCONC Worksheet

z

Facility:	LEAD
NPDES #:	PA0010502
Outfall No:	001
n (Samples/Month):	4
Reviewer/Permit Engineer:	Jinsu Kim

Parameter Name	Cadmium	Chromium	Copper	Total Cyanide	Total Nickel	Total Zinc
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Detection Limit						
Sample Date	*When entering values below the detection limit, enter "ND" or use the < notation (eg. <0.02)*					
Mar-18	0.0016	0.017	< 0.0025	0.015	0.019	0.033
Apr-18	0.001	0.005	0.004	< 0.005	0.03	0.02
May-18	0.0015	0.004	0.003	< 0.005	0.026	0.028
Jun-18	0.0012	0.003	< 0.003	< 0.01	0.019	0.028
Jul-18	0.0016	0.004	0.005	< 0.005	0.025	0.017
Aug-18	0.001	0.003	< 0.003	0.005	0.025	0.009
Sep-18	0.0066	0.025	< 0.003	< 0.005	0.027	0.066
Oct-18	0.0022	0.018	< 0.004	0.003	0.015	0.031
Nov-18	0.0009	0.003	0.003	< 0.002	0.015	0.025
Dec-18	0.0025	0.004	< 0.003	< 0.002	0.015	0.033
Jan-19	0.0039	0.009	< 0.013	0.004	0.041	0.033
Feb-19	0.002	0.003	0.003	0.004	0.028	0.028
Mar-19	0.001	0.003	0.004	0.005	0.019	0.027
Apr-19	0.0008	0.007	< 0.003	0.003	0.025	0.024
May-19	0.00055	0.0033	< 0.0025	0.0047	0.013	0.0093
Jun-19	0.00039	0.0027	< 0.0025	0.0059	0.0093	0.01
Jul-19	< 0.0004	0.0024	< 0.005	0.0038	0.015	0.011
Aug-19	0.00026	0.0039	< 0.0025	< 0.002	0.015	0.011
Sep-19	0.00037	0.0032	< 0.0025	0.0064	0.0096	0.0068
Oct-19	0.00043	0.0032	< 0.0025	0.0032	0.013	0.0074
Nov-19	0.0013	0.0072	< 0.0025	0.071	0.018	0.017
Dec-19	0.00076	0.0034	0.0054	< 0.002	0.012	0.015
Jan-20	0.00091	0.0031	< 0.0025	< 0.002	0.011	0.017
Feb-20	0.0013	0.0037	< 0.004	0.0023	0.015	0.038
Mar-20	0.0025	0.003	< 0.0025	0.0027	0.025	0.029
Apr-20	0.0011	0.002	0.0027	0.0021	0.014	0.008
May-20	0.0009	0.0026	0.0059	0.003	0.035	0.017
Jun-20	0.00095	0.0025	0.0047	< 0.01	0.013	0.011
Jul-20	0.00082	0.0022	0.0039	0.0051	0.022	0.017
Aug-20	0.0011	0.0017	0.0032	0.012	0.011	0.0098
Sep-20	0.00098	0.0016	< 0.0025	< 0.025	0.0087	0.01
Oct-20	0.0007	0.0015	< 0.0025	0.0027	0.01	0.012
Nov-20	0.00064	0.0011	0.0031	0.0028	0.023	0.02
Dec-20	0.0014	0.0017	0.0055	< 0.017	0.017	0.019
Jan-21	0.0023	0.0017	0.0059	< 0.017	0.027	0.014
Feb-21	0.0024	0.0022	0.0055	< 0.002	0.017	0.014
Mar-21	0.0013	0.0025	0.0058	< 0.005	0.0078	0.0077
Apr-21	< 0.0020	< 0.01	< 0.025	0.0057	< 0.025	< 0.025
May-21	0.014	0.0019	0.12	< 0.005	0.016	0.12
Jun-21	0.00059	0.0021	0.0025	0.007	0.025	0.0071
Jul-21	0.00055	0.0024	< 0.0025	< 0.005	0.021	0.0081
Aug-21	< 0.0010	0.0021	< 0.005	< 0.005	0.021	0.0182
Sep-21	< 0.0010	0.0033	0.0042	0.0059	0.0264	0.0077
Oct-21	0.00087	0.0094	0.0049	< 0.005	0.037	0.024
Nov-21	0.0016	0.004	0.0036	< 0.005	0.017	0.0072
Dec-21	0.0052	0.0072	< 0.0025	< 0.005	0.028	0.022

		Reviewer/Permit Engineer:	Jinsu Kim
Facility:	LEAD		
NPDES #:	PA0010502		
Outfall No:	001		
n (Samples/Month):	4		

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Cadmium (mg/L)	Delta-Lognormal	1.0063503	0.0039705
Chromium (mg/L)	Delta-Lognormal	0.7658663	0.0091310
Copper (mg/L)	Delta-Lognormal	1.6955783	0.0108777
Total Cyanide (mg/L)	Delta-Lognormal	1.5337965	0.0109070
Total Nickel (mg/L)	Delta-Lognormal	0.4532414	0.0314692
Total Zinc (mg/L)	Delta-Lognormal	0.7238212	0.0424251

	Facility:		LEAD			
	NPDES #:		PA0010502			
	Outfall No:		001			
	n (Samples/Month):		4			
Parameter Name	Cadmium	Chromium	Copper	Total Cyanide	Total Nickel	Total Zinc
Number of Samples	46	46	46	46	46	46
Samples Nondetected	4	1	24	22	1	1
LOGNORMAL						
Log MEAN	NA	NA	NA	NA	NA	NA
Log VAR.						
(LTA) [E(x)]						
Variance [V(x)]						
CV (raw)						
CV (n)						
Monthly Avg. (99%, n-day)						
DELTA-LOGNORMAL						
Delta-Log MEAN	-6.7171526	-5.6799747	-5.3202878	-5.3201952	-4.0111071	-4.0865713
Delta-Log VAR.	0.6085257	0.4395837	0.6169431	0.5591282	0.1648556	0.3993052
(LTA) [E(x)]	0.0014976	0.0041603	0.0031846	0.0033755	0.0192420	0.0200626
Variance [V(x)]	0.0000023	0.0000102	0.0000292	0.0000268	0.0000761	0.0002109
CV (raw)	1.0063503	0.7658663	1.6955783	1.5337965	0.4532414	0.7238212
Delta-Log VAR. (n)	0.2256313	0.1368338	0.4646070	0.4088217	0.0500814	0.1230837
A, Table E-2, TSD	0.2531852	0.1466378	0.7187465	0.5881329	0.0513569	0.1309793
B, Table E-2, TSD	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
C, Table E-2, TSD	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Delta-Log MEAN (n)	-6.6166200	-5.5505784	-5.9047305	-5.8418922	-3.9756987	-3.9704392
phi (Φ)	0.9890476	0.9897778	0.9790909	0.9808333	0.9897778	0.9897778
Z*	2.2900000	2.3100000	2.0300000	2.0700000	2.3100000	2.3100000
Monthly Avg. (99%, n-day)	0.0039705	0.0091310	0.0108777	0.0109070	0.0314692	0.0424251
NORMAL						
MEAN	NA	NA	NA	NA	NA	NA
VAR.						
(LTA) [E(x)]						
Variance [V(x)]						
CV (raw)						
CV (n)						
Monthly Avg. (99%, n-day)						

3. Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Letterkenny Army Depot** NPDES Permit No.: **PA0010502** Outfall No.: **001**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **IW**

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
0.29	346	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		1580									
	Chloride (PWS)	mg/L		334									
	Bromide	mg/L		0.3									
	Sulfate (PWS)	mg/L		292									
	Fluoride (PWS)	mg/L		0.38									
Group 2	Total Aluminum	mg/L		0.99									
	Total Antimony	mg/L		0.0025									
	Total Arsenic	mg/L		0.00095									
	Total Barium	mg/L		0.026									
	Total Beryllium	mg/L		0.0001									
	Total Boron	mg/L		0.41									
	Total Cadmium	mg/L		0.0039705			1.0064						
	Total Chromium (III)	mg/L		0.009131			0.7659						
	Hexavalent Chromium	µg/L	<	0.014									
	Total Cobalt	mg/L		0.00084									
	Total Copper	mg/L		0.0108777			1.6956						
	Free Cyanide	mg/L											
	Total Cyanide	mg/L		0.010907			1.5338						
	Dissolved Iron	mg/L		0.058									
	Total Iron	mg/L		0.11									
	Total Lead	mg/L	<	0.001									
	Total Manganese	mg/L		0.0045									
	Total Mercury	mg/L		6.4									
	Total Nickel	mg/L		0.0314692			0.4532						
	Total Phenols (Phenolics) (PWS)	mg/L	<	5									
	Total Selenium	mg/L	<	0.00066									
	Total Silver	mg/L	<	0.0005									
	Total Thallium	mg/L	<	0.00016									
	Total Zinc	mg/L		0.0083									
	Total Molybdenum	mg/L		0.044									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L	<	0.5									

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Group 3	Carbon Tetrachloride	µg/L	<	0.5									
	Chlorobenzene	µg/L		0.5									
	Chlorodibromomethane	µg/L	<	0.5									
	Chloroethane	µg/L	<	0.5									
	2-Chloroethyl Vinyl Ether	µg/L	<	5									
	Chloroform	µg/L	<	0.5									
	Dichlorobromomethane	µg/L	<	0.5									
	1,1-Dichloroethane	µg/L	<	0.5									
	1,2-Dichloroethane	µg/L	<	0.5									
	1,1-Dichloroethylene	µg/L	<	0.5									
	1,2-Dichloropropane	µg/L	<	0.5									
	1,3-Dichloropropylene	µg/L	<	0.5									
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<	0.5									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.5									
	Methylene Chloride	µg/L	<	0.5									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5									
	Tetrachloroethylene	µg/L	<	0.5									
	Toluene	µg/L	<	0.5									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.5									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.5									
	Vinyl Chloride	µg/L	<	0.5									
Group 4	2-Chlorophenol	µg/L	<	10									
	2,4-Dichlorophenol	µg/L	<	10									
	2,4-Dimethylphenol	µg/L	<	10									
	4,6-Dinitro-o-Cresol	µg/L	<	10									
	2,4-Dinitrophenol	µg/L	<	10									
	2-Nitrophenol	µg/L	<	10									
	4-Nitrophenol	µg/L	<	10									
	p-Chloro-m-Cresol	µg/L	<	10									
	Pentachlorophenol	µg/L	<	10									
	Phenol	µg/L	<	10									
	2,4,6-Trichlorophenol	µg/L	<	10									
Group 5	Acenaphthene	µg/L	<	2.5									
	Acenaphthylene	µg/L	<	2.5									
	Anthracene	µg/L	<	2.5									
	Benzidine	µg/L	<	50									
	Benzo(a)Anthracene	µg/L	<	2.5									
	Benzo(a)Pyrene	µg/L	<	2.5									
	3,4-Benzofluoranthene	µg/L	<	2.5									
	Benzo(ghi)Perylene	µg/L	<	2.5									
	Benzo(k)Fluoranthene	µg/L	<	2.5									
	Bis(2-Chloroethoxy)Methane	µg/L	<	5									
	Bis(2-Chloroethyl)Ether	µg/L	<	5									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5									
	Bis(2-Ethylhexyl)Phthalate	mg/L	<	0.003									
	4-Bromophenyl Phenyl Ether	µg/L	<	5									
	Butyl Benzyl Phthalate	µg/L	<	5									
	2-Chloronaphthalene	µg/L	<	5									
	4-Chlorophenyl Phenyl Ether	µg/L	<	5									
	Chrysene	µg/L	<	2.5									
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5									
	1,2-Dichlorobenzene	µg/L	<	0.5									
	1,3-Dichlorobenzene	µg/L	<	0.5									
	1,4-Dichlorobenzene	µg/L	<	0.5									
	3,3-Dichlorobenzidine	µg/L	<	5									
	Diethyl Phthalate	µg/L	<	5									
	Dimethyl Phthalate	µg/L	<	5									
	Di-n-Butyl Phthalate	µg/L	<	5									
	2,4-Dinitrotoluene	µg/L	<	5									

	2,6-Dinitrotoluene	µg/L	<	5									
	Di-n-Octyl Phthalate	µg/L	<	5									
	1,2-Diphenylhydrazine	µg/L	<	10									
	Fluoranthene	µg/L	<	2.5									
	Fluorene	µg/L	<	2.5									
	Hexachlorobenzene	µg/L	<	5									
	Hexachlorobutadiene	µg/L	<	0.5									
	Hexachlorocyclopentadiene	µg/L	<	5									
	Hexachloroethane	µg/L	<	5									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5									
	Isophorone	µg/L	<	5									
	Naphthalene	µg/L	<	0.5									
	Nitrobenzene	µg/L	<	5									
	n-Nitrosodimethylamine	µg/L	<	5									
	n-Nitrosodi-n-Propylamine	µg/L	<	5									
	n-Nitrosodiphenylamine	µg/L	<	5									
	Phenanthrene	µg/L	<	2.5									
	Pyrene	µg/L	<	2.5									
	1,2,4-Trichlorobenzene	µg/L	<	0.5									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Letterkenny Army Depot, NPDES Permit No. PA0010502, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Rowe Run**

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	010668	4.57	639	2.21			Yes
End of Reach 1	010668	2.668	622	2.6			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	4.57	0.46										300	7		
End of Reach 1	2.668	0.46													

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	4.57														
End of Reach 1	2.668														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Letterkenny Army Depot, NPDES Permit No. PA0010502, Outfall 001

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

Hydrodynamics

Wasteload Allocations

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	3.8	5.92	1.57	2.45	3.93	mg/L	1.57	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Antimony	Report	Report	Report	Report	Report	mg/L	0.018	THH	Discharge Conc > 10% WQBEL (no RP)
Total Cadmium	0.005	0.009	0.002	0.004	0.005	mg/L	0.002	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	mg/L	0.081	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Mercury	0.0004	0.0006	0.0002	0.0003	0.0004	mg/L	0.0002	THH	Discharge Conc ≥ 50% WQBEL (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 Arsenic	0.033	mg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	7.84	mg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS

Total Boron	5.23	mg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	0.72	mg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	34.0	µg/L	Discharge Conc < TQL
Total Cobalt	0.062	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	0.98	mg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	4.9	mg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	0.045	mg/L	Discharge Conc < TQL
Total Manganese	3.27	mg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	0.45	mg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		mg/L	PWS Not Applicable
Total Selenium	0.016	mg/L	Discharge Conc < TQL
Total Silver	0.057	mg/L	Discharge Conc ≤ 10% WQBEL
Total Thallium	0.0008	mg/L	Discharge Conc < TQL
Total Zinc	0.66	mg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	6.28	µg/L	Discharge Conc < TQL
Acrylonitrile	1.07	µg/L	Discharge Conc < TQL
Benzene	10.3	µg/L	Discharge Conc < TQL
Bromoform	125	µg/L	Discharge Conc < TQL
Carbon Tetrachloride	7.12	µg/L	Discharge Conc < TQL
Chlorobenzene	327	µg/L	Discharge Conc ≤ 25% WQBEL
Chlorodibromomethane	14.2	µg/L	Discharge Conc < TQL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	11,431	µg/L	Discharge Conc < TQL
Chloroform	101	µg/L	Discharge Conc < TQL
Dichlorobromomethane	16.9	µg/L	Discharge Conc < TQL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	176	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	108	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	16.0	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	4.81	µg/L	Discharge Conc < TQL
Ethylbenzene	222	µg/L	Discharge Conc < TQL
Methyl Bromide	327	µg/L	Discharge Conc < TQL
Methyl Chloride	17,963	µg/L	Discharge Conc < TQL
Methylene Chloride	356	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	3.56	µg/L	Discharge Conc < TQL
Tetrachloroethylene	178	µg/L	Discharge Conc < TQL
Toluene	186	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	327	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	1,992	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	9.79	µg/L	Discharge Conc < TQL
Trichloroethylene	10.7	µg/L	Discharge Conc < TQL
Vinyl Chloride	0.36	µg/L	Discharge Conc < TQL
2-Chlorophenol	98.0	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	32.7	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	327	µg/L	Discharge Conc < TQL

4,6-Dinitro-o-Cresol	6.53	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	32.7	µg/L	Discharge Conc < TQL
2-Nitrophenol	5,226	µg/L	Discharge Conc < TQL
4-Nitrophenol	1,535	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	335	µg/L	Discharge Conc < TQL
Pentachlorophenol	0.53	µg/L	Discharge Conc < TQL
Phenol	13,064	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	26.7	µg/L	Discharge Conc < TQL
Acenaphthene	55.5	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	980	µg/L	Discharge Conc < TQL
Benzidine	0.002	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	0.018	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.002	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	0.018	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	0.18	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	0.53	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	653	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	0.006	mg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	176	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	0.33	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	2,613	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	2.14	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.002	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	523	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	22.9	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	490	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	0.89	µg/L	Discharge Conc < TQL
Diethyl Phthalate	1,960	µg/L	Discharge Conc < TQL
Dimethyl Phthalate	1,633	µg/L	Discharge Conc < TQL
Di-n-Butyl Phthalate	65.3	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	0.89	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	0.89	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	0.53	µg/L	Discharge Conc < TQL
Fluoranthene	65.3	µg/L	Discharge Conc < TQL
Fluorene	163	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.001	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	0.18	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	3.27	µg/L	Discharge Conc < TQL
Hexachloroethane	1.78	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	0.018	µg/L	Discharge Conc < TQL
Isophorone	111	µg/L	Discharge Conc < TQL
Naphthalene	140	µg/L	Discharge Conc < TQL

Nitrobenzene	32.7	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	0.012	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	0.089	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	58.7	µg/L	Discharge Conc < TQL
Phenanthrene	3.27	µg/L	Discharge Conc < TQL
Pyrene	65.3	µg/L	Discharge Conc < TQL
1,2,4-Trichlorobenzene	0.23	µg/L	Discharge Conc < TQL

4. Effluent Data (Outfall 001)

	Cadmium		Chromium		Copper		Total Cyanide		Total Lead		Total Nickel		Total Silver		Total Zinc		Bis(2-Ethylhexl)Phthalate	
	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX	AVG	MAX
Mar-18	0.001	0.0016	0.007	0.017	< 0.003	< 0.0025	< 0.008	0.015	< 0.001	< 0.001	< 0.01	0.019	< 0.001	0.0033	0.03	0.033	0.003	0.0028
Apr-18	0.001	0.001	0.004	0.005	< 0.003	0.004	< 0.005	< 0.005	< 0.001	< 0.001	0.02	0.03	< 0.0005	< 0.0005	0.02	0.02	< 0.003	< 0.003
May-18	< 0.0010	0.0015	< 0.003	0.004	< 0.003	0.003	< 0.005	< 0.005	< 0.001	< 0.001	< 0.02	0.026	< 0.0005	< 0.0005	< 0.020	0.028	< 0.003	< 0.0028
Jun-18	0.0008	0.0012	0.002	0.003	< 0.003	< 0.003	< 0.01	< 0.01	< 0.001	< 0.001	0.02	0.019	< 0.0005	< 0.0005	0.02	0.028	0.003	0.003
Jul-18	0.0013	0.0016	0.003	0.004	< 0.004	0.006	< 0.005	< 0.005	< 0.001	< 0.001	0.02	0.025	< 0.0005	< 0.0005	0.012	0.017	< 0.003	< 0.003
Aug-18	0.0007	0.001	0.002	0.003	< 0.003	< 0.003	< 0.005	0.005	< 0.001	0.001	0.01	0.025	< 0.0005	< 0.0005	0.007	0.009	< 0.003	< 0.0028
Sep-18	0.0021	0.0066	0.007	0.025	< 0.003	< 0.003	< 0.005	< 0.005	< 0.002	0.005	0.01	0.027	< 0.0005	< 0.0005	0.021	0.066	< 0.003	< 0.003
Oct-18	0.0016	0.0022	0.007	0.018	< 0.003	< 0.004	< 0.002	0.003	< 0.0010	0.0011	0.012	0.015	< 0.0005	< 0.0005	0.015	0.031	< 0.003	< 0.003
Nov-18	0.0007	0.0009	0.002	0.003	< 0.003	0.003	< 0.002	< 0.002	< 0.001	< 0.001	0.01	0.015	< 0.0005	< 0.0005	0.019	0.025	< 0.003	< 0.003
Dec-18	0.0019	0.0025	0.003	0.004	< 0.003	< 0.003	< 0.002	< 0.002	< 0.001	< 0.001	0.012	0.015	< 0.0005	< 0.0005	0.024	0.033	< 0.003	< 0.003
Jan-19	0.002	0.0039	0.004	0.009	< 0.005	< 0.013	< 0.002	0.004	< 0.002	< 0.005	0.02	0.041	< 0.0009	< 0.0025	0.019	0.033	< 0.003	< 0.003
Feb-19	0.0015	0.002	0.003	0.003	< 0.003	0.003	< 0.003	0.004	< 0.0010	< 0.0010	0.02	0.028	< 0.0005	< 0.0005	0.024	0.028	< 0.003	< 0.003
Mar-19	0.0009	0.001	0.002	0.003	< 0.003	0.004	< 0.003	0.005	< 0.001	< 0.001	0.016	0.019	< 0.0005	< 0.0005	0.02	0.027	< 0.003	< 0.003
Apr-19	0.0006	0.0008	0.004	0.007	< 0.003	< 0.003	< 0.002	0.003	< 0.001	< 0.001	0.02	0.025	< 0.0005	< 0.0005	0.01	0.024	< 0.003	< 0.003
May-19	< 0.0003	0.00055	0.003	0.0033	< 0.003	< 0.0025	< 0.003	0.0047	< 0.001	< 0.001	0.01	0.013	< 0.0005	< 0.0005	0.006	0.0093	< 0.003	< 0.0034
Jun-19	< 0.0003	0.00039	0.002	0.0027	< 0.003	< 0.0025	< 0.004	0.0059	< 0.001	< 0.001	0.008	0.0093	< 0.0005	< 0.0005	0.008	0.01	< 0.003	< 0.003
Jul-19	< 0.0002	< 0.0004	< 0.002	0.0024	< 0.003	< 0.005	< 0.003	0.0038	< 0.001	< 0.002	0.01	0.015	< 0.0006	< 0.001	0.009	0.011	< 0.003	0.003
Aug-19	< 0.0002	0.00026	0.002	0.0039	< 0.003	< 0.0025	< 0.002	< 0.002	< 0.001	< 0.001	0.009	0.015	< 0.0005	< 0.0005	0.009	0.011	< 0.003	< 0.0029
Sep-19	0.0003	0.00037	0.003	0.0032	< 0.003	< 0.0025	< 0.003	0.0064	< 0.001	< 0.001	0.008	0.0096	< 0.0005	< 0.0005	0.006	0.0068	< 0.003	< 0.0029
Oct-19	0.0004	0.00043	0.003	0.0032	< 0.003	< 0.0025	< 0.002	0.0032	< 0.001	< 0.001	0.009	0.013	< 0.0005	< 0.0005	0.006	0.0074	< 0.003	< 0.0028
Nov-19	0.0006	0.0013	0.004	0.0072	< 0.003	< 0.0025	< 0.02	0.071	< 0.001	< 0.001	0.01	0.018	< 0.0005	< 0.0005	0.01	0.017	< 0.003	< 0.0028
Dec-19	0.0006	0.00076	0.002	0.0034	0.004	0.0054	< 0.002	< 0.002	< 0.001	< 0.001	0.01	0.012	< 0.0005	< 0.0005	0.01	0.015	< 0.003	< 0.0028
Jan-20	0.0009	0.00091	0.002	0.0031	< 0.003	< 0.0025	< 0.002	< 0.002	< 0.001	< 0.001	0.008	0.011	< 0.0005	< 0.0005	0.01	0.017	< 0.003	< 0.0029
Feb-20	0.0008	0.0013	0.003	0.0037	< 0.003	< 0.004	< 0.002	0.0023	< 0.001	< 0.001	0.01	0.015	< 0.0005	< 0.0005	0.02	0.038	< 0.003	< 0.0028
Mar-20	0.0015	0.0025	0.002	0.003	< 0.003	< 0.0025	< 0.002	0.0027	< 0.001	< 0.001	0.01	0.025	< 0.0005	< 0.0005	0.02	0.029	< 0.003	< 0.0028
Apr-20	0.0007	0.0011	0.002	0.002	< 0.003	0.0027	< 0.002	0.0021	< 0.001	< 0.001	0.01	0.014	< 0.0005	< 0.0005	0.007	0.008	< 0.003	< 0.0029
May-20	0.0006	0.0009	0.002	0.0026	< 0.004	0.0059	< 0.002	0.003	< 0.001	< 0.001	0.02	0.035	< 0.0005	< 0.0005	0.01	0.017	< 0.003	< 0.0028
Jun-20	0.0005	0.00095	0.002	0.0025	0.004	0.0047	< 0.006	< 0.01	< 0.001	< 0.001	0.01	0.013	< 0.0005	< 0.0005	0.008	0.011	< 0.0028	< 0.0028
Jul-20	0.0006	0.00082	0.002	0.0022	< 0.003	0.0039	< 0.004	0.0051	< 0.001	< 0.001	0.01	0.022	< 0.0005	< 0.0005	0.009	0.017	< 0.003	< 0.0028
Aug-20	0.0007	0.0011	0.001	0.0017	< 0.003	0.0032	< 0.008	0.012	< 0.001	< 0.001	0.01	0.011	< 0.0005	< 0.0005	0.007	0.0098	< 0.003	< 0.0029
Sep-20	0.0008	0.00098	< 0.001	0.0016	< 0.003	< 0.0025	< 0.01	< 0.025	< 0.001	< 0.001	0.007	0.0087	< 0.0005	< 0.0005	0.009	0.01	< 0.003	< 0.0029
Oct-20	0.0005	0.0007	< 0.001	0.0015	< 0.003	< 0.0025	< 0.002	0.0027	< 0.001	< 0.001	0.008	0.01	< 0.0005	< 0.0005	0.01	0.012	< 0.003	< 0.0029
Nov-20	0.0005	0.00064	< 0.001	0.0011	< 0.003	0.0031	< 0.002	0.0028	< 0.001	0.0011	0.01	0.023	< 0.0005	< 0.0005	0.01	0.02	< 0.003	< 0.0029
Dec-20	0.001	0.0014	< 0.0010	0.0017	< 0.003	0.0055	< 0.005	< 0.017	< 0.001	< 0.001	0.01	0.017	< 0.0005	< 0.0005	0.01	0.019	< 0.003	< 0.0029
Jan-21	0.002	0.0023	0.002	0.0017	< 0.005	0.0093	< 0.006	< 0.017	< 0.001	0.0011	0.01	0.027	< 0.0005	< 0.0005	0.01	0.014	< 0.003	< 0.0029
Feb-21	0.001	0.0024	0.002	0.0022	< 0.003	0.0055	< 0.002	< 0.002	< 0.001	< 0.001	0.01	0.017	< 0.0005	< 0.0005	0.01	0.014	< 0.003	< 0.0028
Mar-21	0.0007	0.0013	0.002	0.0025	< 0.003	0.0058	< 0.005	< 0.005	< 0.001	< 0.001	0.007	0.0078	< 0.0005	< 0.0005	0.006	0.0077	< 0.003	< 0.0029
Apr-21	< 0.0011	< 0.0020	< 0.004	< 0.01	< 0.009	< 0.025	< 0.005	0.0057	< 0.003	< 0.010	< 0.02	< 0.025	< 0.002	< 0.005	< 0.010	< 0.025	< 0.003	< 0.0029
May-21	0.005	0.014	0.002	0.0019	< 0.040	0.12	< 0.005	< 0.005	< 0.001	0.0019	< 0.01	0.016	< 0.0005	< 0.0005	0.04	0.12	< 0.003	< 0.0029
Jun-21	0.00059	0.00059	0.0021	0.0021	< 0.0025	0.0025	0.006	0.007	0.0010	0.001	0.0225	0.025	< 0.0005	< 0.0005	0.0062	0.0071	< 0.0028	< 0.0028
Jul-21	0.0004	0.00055	0.002	0.0024	< 0.003	< 0.0025	< 0.005	< 0.005	< 0.001	< 0.001	0.02	0.021	< 0.0005	< 0.0005	0.007	0.0081	< 0.003	< 0.0029
Aug-21	< 0.0007	< 0.0010	< 0.002	0.0021	< 0.004	< 0.005	< 0.005	< 0.005	< 0.0008	< 0.001	0.02	0.021	< 0.002	< 0.005	0.009	0.0182	< 0.003	< 0.0029
Sep-21	< 0.0006	< 0.0010	< 0.002	0.0033	< 0.003	0.0042	< 0.005	0.0059	< 0.001	< 0.001	0.02	0.0264	< 0.0006	< 0.001	0.006	0.0077	< 0.003	< 0.0029
Oct-21	0.0008	0.00087	0.006	0.0094	< 0.003	0.0049	< 0.005	< 0.005	< 0.001	< 0.001	0.03	0.037	< 0.0005	< 0.0005	0.02	0.024	< 0.003	< 0.0029
Nov-21	0.001	0.0016	0.003	0.004	< 0.003	0.0036	< 0.005	< 0.005	< 0.001	< 0.001	0.02	0.017	< 0.0005	< 0.0005	0.006	0.0072	< 0.003	< 0.0029
Dec-21	0.003	0.0052	0.005	0.0072	< 0.003	< 0.0025	< 0.005	< 0.005	< 0.001	< 0.001	0.02	0.028	< 0.0005	< 0.0005	0.01	0.022	< 0.005	< 0.012

5. Effluent Data (Stormwater Outfalls)

S01			S02			S03		
Jan-18	Aluminum, Total	0.36	Jan-18	Aluminum, Total	0.38	Jan-18	Aluminum, Total	0.079
Jul-18	Aluminum, Total	0.84	Jul-18	Aluminum, Total	0.74	Jul-18	Aluminum, Total	0.14
Jan-19	Aluminum, Total	0.24	Jan-19	Aluminum, Total	0.34	Jan-19	Aluminum, Total	0.05
Jul-19	Aluminum, Total	0.21	Jul-19	Aluminum, Total	0.87	Jul-19	Aluminum, Total	0.17
Jan-20	Aluminum, Total	0.7	Jan-20	Aluminum, Total	0.48	Jan-20	Aluminum, Total	0.15
Jul-20	Aluminum, Total	0.21	Jul-20	Aluminum, Total	0.24	Jul-20	Aluminum, Total	0.15
Jan-21	Aluminum, Total	2.3	Jan-21	Aluminum, Total	0.67	Jan-21	Aluminum, Total	0.18
Jul-21	Aluminum, Total	1.24	Jul-21	Aluminum, Total	1.69	Jul-21	Aluminum, Total	< 0.09
Jan-18	CBOD5	6.5	Jan-18	Cadmium, Total	0.00091	Jan-18	CBOD5	5.7
Jul-18	CBOD5	3	Jan-19	Cadmium, Total	0.00077	Jul-18	CBOD5	< 2.0
Jan-19	CBOD5	3.9	Jan-20	Cadmium, Total	0.0011	Jan-19	CBOD5	< 2
Jul-19	CBOD5	3.5	Jan-21	Cadmium, Total	< 0.0010	Jul-19	CBOD5	< 2.0
Jan-20	CBOD5	17.8	Jan-18	CBOD5	2.6	Jan-20	CBOD5	3.5
Jul-20	CBOD5	4.1	Jul-18	CBOD5	3.7	Jul-20	CBOD5	4.0
Jan-21	CBOD5	19.4	Jan-19	CBOD5	2.5	Jan-21	CBOD5	3.9
Jul-21	CBOD5	< 10.7	Jul-19	CBOD5	4.4	Jul-21	CBOD5	< 1.95
Jan-18	COD	29	Jan-20	CBOD5	2.3	Jan-18	COD	< 15
Jul-18	COD	< 15.0	Jul-20	CBOD5	5.2	Jul-18	COD	< 15.0
Jan-19	COD	28	Jan-21	CBOD5	12.8	Jan-19	COD	< 15
Jul-19	COD	22	Jul-21	CBOD5	< 6.4	Jul-19	COD	21
Jan-20	COD	30	Jan-18	COD	17	Jan-20	COD	< 15
Jul-20	COD	21	Jul-18	COD	< 15.0	Jul-20	COD	< 15.0
Jan-21	COD	36	Jan-19	COD	29	Jan-21	COD	< 15
Jul-21	COD	< 18.0	Jul-19	COD	23	Jul-21	COD	< 15.0

S01			S02			S03		
Jan-18	Iron, Total	0.62	Jan-20	COD	20	Jan-18	Iron, Total	0.31
Jul-18	Iron, Total	1.3	Jul-20	COD	< 15.0	Jul-18	Iron, Total	0.27
Jan-19	Iron, Total	0.24	Jan-21	COD	< 15.0	Jan-19	Iron, Total	0.23
Jul-19	Iron, Total	0.27	Jul-21	COD	< 15.0	Jul-19	Iron, Total	0.53
Jan-20	Iron, Total	1	Jan-18	Chromium, Total	0.0027	Jan-20	Iron, Total	0.24
Jul-20	Iron, Total	0.28	Jan-19	Chromium, Total	0.0029	Jul-20	Iron, Total	0.40
Jan-21	Iron, Total	0.75	Jan-20	Chromium, Total	0.0023	Jan-21	Iron, Total	0.27
Jul-21	Iron, Total	0.54	Jan-21	Chromium, Total	0.0032	Jul-21	Iron, Total	0.21
Jan-18	Nitrate-Nitrite as N	< 0.8	Jan-18	Copper, Total	0.0073	Jan-18	Nitrate-Nitrite as N	1.79
Jul-18	Nitrate-Nitrite as N	< 0.20	Jan-19	Copper, Total	0.00875	Jul-18	Nitrate-Nitrite as N	< 2.95
Jan-19	Nitrate-Nitrite as N	< 0.74	Jan-20	Copper, Total	0.0087	Jan-19	Nitrate-Nitrite as N	< 1.9
Jul-19	Nitrate-Nitrite as N	< 0.72	Jan-21	Copper, Total	0.012	Jul-19	Nitrate-Nitrite as N	< 0.58
Jan-20	Nitrate-Nitrite as N	< 0.88	Jan-18	Cyanide, Total	< 0.005	Jan-20	Nitrate-Nitrite as N	< 2.40
Jul-20	Nitrate-Nitrite as N	0.78	Jan-19	Cyanide, Total	< 0.00345	Jul-20	Nitrate-Nitrite as N	0.38
Jan-21	Nitrate-Nitrite as N	< 1.7	Jan-20	Cyanide, Total	< 0.002	Jan-21	Nitrate-Nitrite as N	< 2.8
Jul-21	Nitrate-Nitrite as N	< 0.75	Jan-21	Cyanide, Total	0.0072	Jul-21	Nitrate-Nitrite as N	< 2.35
Jan-18	Oil and Grease	< 3	Jan-18	Iron, Total	0.55	Jan-18	Oil and Grease	< 2
Jul-18	Oil and Grease	< 2.0	Jul-18	Iron, Total	1.1	Jul-18	Oil and Grease	< 2.0
Jan-19	Oil and Grease	< 3.8	Jan-19	Iron, Total	0.52	Jan-19	Oil and Grease	< 3.8
Jul-19	Oil and Grease	< 3.8	Jul-19	Iron, Total	0.37	Jul-19	Oil and Grease	< 3.9
Jan-20	Oil and Grease	< 3.9	Jan-20	Iron, Total	0.45	Jan-20	Oil and Grease	< 3.9
Jul-20	Oil and Grease	< 4.0	Jul-20	Iron, Total	0.28	Jul-20	Oil and Grease	< 3.9
Jan-21	Oil and Grease	< 4.0	Jan-21	Iron, Total	0.98	Jan-21	Oil and Grease	< 4.0
Jul-21	Oil and Grease	< 4.8	Jul-21	Iron, Total	0.81	Jul-21	Oil and Grease	< 3.8
Jan-18	Zinc, Total	0.11	Jan-18	Silver, Total	< 0.0035	Jan-18	Zinc, Total	0.0233
Jul-18	Zinc, Total	0.064	Jan-19	Silver, Total	< 0.0005	Jul-18	Zinc, Total	< 0.0087
Jan-19	Zinc, Total	0.051	Jan-20	Silver, Total	< 0.0013	Jan-19	Zinc, Total	< 0.0025
Jul-19	Zinc, Total	0.12	Jan-21	Silver, Total	< 0.0020	Jul-19	Zinc, Total	< 0.1
Jan-20	Zinc, Total	< 0.17	Jan-18	Total Kjeldahl Nitrogen	< 1	Jan-20	Zinc, Total	0.055
Jul-20	Zinc, Total	0.065	Jul-18	Total Kjeldahl Nitrogen	1.1	Jul-20	Zinc, Total	0.016
Jan-21	Zinc, Total	0.2	Jan-19	Total Kjeldahl Nitrogen	< 1	Jan-21	Zinc, Total	< 0.01
Jul-21	Zinc, Total	0.21	Jul-19	Total Kjeldahl Nitrogen	2.4	Jul-21	Zinc, Total	< 0.010
			Jan-20	Total Kjeldahl Nitrogen	1.2			
			Jul-20	Total Kjeldahl Nitrogen	< 1.0			
			Jan-21	Total Kjeldahl Nitrogen	1.2			
			Jul-21	Total Kjeldahl Nitrogen	1.15			

SO1			SO2			SO3			SO2		
Jan-18	pH	8.16	Jan-18	Lead, Total	0.007	Jan-18	pH	8.16	Jan-18	Total Phosphorus	< 0.1
Jul-18	pH	7.18	Jan-19	Lead, Total	0.00255	Jul-18	pH	8.0	Jul-18	Total Phosphorus	0.12
Jan-19	pH	7.75	Jan-20	Lead, Total	0.0025	Jan-19	pH	0.23	Jan-19	Total Phosphorus	< 0.1
Jul-19	pH	7.32	Jan-21	Lead, Total	0.0072	Jul-19	pH	7.85	Jul-19	Total Phosphorus	0.16
Jan-20	pH	7.92	Jan-18	Nickel, Total	< 0.0072	Jan-20	pH	8.25	Jan-20	Total Phosphorus	< 0.10
Jul-20	pH	7.75	Jan-19	Nickel, Total	< 0.00285	Jul-20	pH	8.2	Jul-20	Total Phosphorus	< 0.10
Jan-21	pH	8	Jan-20	Nickel, Total	< 0.0047	Jan-21	pH	8.0	Jan-21	Total Phosphorus	0.14
Jul-21	pH	7.7	Jan-21	Nickel, Total	< 0.010	Jul-21	pH	8.3	Jul-21	Total Phosphorus	0.23
Jan-18	Total Kjeldahl Nitrogen	< 1	Jan-18	Nitrate-Nitrite as N	0.88	Jan-18	Total Kjeldahl Nitrogen	< 1	Jan-18	Total Suspended Solids	99
Jul-18	Total Kjeldahl Nitrogen	1	Jul-18	Nitrate-Nitrite as N	< 0.20	Jul-18	Total Kjeldahl Nitrogen	< 1.0	Jul-18	Total Suspended Solids	72
Jan-19	Total Kjeldahl Nitrogen	1.1	Jan-19	Nitrate-Nitrite as N	< 0.56	Jan-19	Total Kjeldahl Nitrogen	< 1	Jan-19	Total Suspended Solids	35
Jul-19	Total Kjeldahl Nitrogen	2.5	Jul-19	Nitrate-Nitrite as N	< 0.72	Jul-19	Total Kjeldahl Nitrogen	1.8	Jul-19	Total Suspended Solids	19
Jan-20	Total Kjeldahl Nitrogen	1.2	Jan-20	Nitrate-Nitrite as N	< 0.70	Jan-20	Total Kjeldahl Nitrogen	< 1.0	Jan-20	Total Suspended Solids	19
Jul-20	Total Kjeldahl Nitrogen	2	Jul-20	Nitrate-Nitrite as N	0.42	Jul-20	Total Kjeldahl Nitrogen	< 1.0	Jul-20	Total Suspended Solids	11
Jan-21	Total Kjeldahl Nitrogen	2.3	Jan-21	Nitrate-Nitrite as N	< 0.74	Jan-21	Total Kjeldahl Nitrogen	< 1.0	Jan-21	Total Suspended Solids	77
Jul-21	Total Kjeldahl Nitrogen	< 1.15	Jul-21	Nitrate-Nitrite as N	< 0.27	Jul-21	Total Kjeldahl Nitrogen	< 1.0	Jul-21	Total Suspended Solids	67
Jan-18	Total Phosphorus	0.24	Jan-18	Oil and Grease	< 2	Jan-18	Total Phosphorus	< 0.1	Jan-18	Total Toxic Organics	< 0.010
Jul-18	Total Phosphorus	0.12	Jul-18	Oil and Grease	< 2.0	Jul-18	Total Phosphorus	< 0.1	Jan-19	Total Toxic Organics	< 0.005
Jan-19	Total Phosphorus	0.16	Jan-19	Oil and Grease	< 3.7	Jan-19	Total Phosphorus	< 0.1	Jan-20	Total Toxic Organics	< 0.005
Jul-19	Total Phosphorus	0.11	Jul-19	Oil and Grease	< 3.9	Jul-19	Total Phosphorus	< 0.1	Jan-21	Total Toxic Organics	< 0.0050
Jan-20	Total Phosphorus	0.19	Jan-20	Oil and Grease	< 4.0	Jan-20	Total Phosphorus	< 0.10	Jan-18	Zinc, Total	0.101
Jul-20	Total Phosphorus	0.13	Jul-20	Oil and Grease	< 4.0	Jul-20	Total Phosphorus	< 0.10	Jan-19	Zinc, Total	0.0975
Jan-21	Total Phosphorus	0.34	Jan-21	Oil and Grease	< 3.9	Jan-21	Total Phosphorus	< 0.1	Jan-20	Zinc, Total	0.079
Jul-21	Total Phosphorus	0.32	Jul-21	Oil and Grease	< 3.9	Jul-21	Total Phosphorus	< 0.10	Jan-21	Zinc, Total	0.13
Jan-18	Total Suspended Solids	165	Jan-18	pH	8.22	Jan-18	Total Suspended Solids	24			
Jul-18	Total Suspended Solids	71	Jul-18	pH	7.58	Jul-18	Total Suspended Solids	< 7.5			
Jan-19	Total Suspended Solids	41	Jan-19	pH	7.82	Jan-19	Total Suspended Solids	9			
Jul-19	Total Suspended Solids	15	Jul-19	pH	7.57	Jul-19	Total Suspended Solids	< 5			
Jan-20	Total Suspended Solids	58	Jan-20	pH	7.86	Jan-20	Total Suspended Solids	9.0			
Jul-20	Total Suspended Solids	11	Jul-20	pH	7.7	Jul-20	Total Suspended Solids	25.0			
Jan-21	Total Suspended Solids	99	Jan-21	pH	8.2	Jan-21	Total Suspended Solids	20			
Jul-21	Total Suspended Solids	54	Jul-21	pH	8	Jul-21	Total Suspended Solids	14.0			

6) Conodoguinet Creek Watershed TMDL

Total Maximum Daily Load
For the Conodoguinet Creek Watershed
Pennsylvania

Prepared for Pennsylvania
Department of Environmental Protection
and
EPA Region 3

Prepared by
Tetra Tech, Inc.
Fairfax, Virginia

December 2000

Executive Summary

The Conodoguinet Creek basin in Cumberland and Franklin counties in Pennsylvania is 507 square miles in size. The protected water uses of the watershed are water supply, recreation and aquatic life. The aquatic life uses for the western part of the main stem of Conodoguinet Creek (in Franklin County) are warm water fishes and cold water fishes. Many of the tributaries in the Conodoguinet Creek basin are specially designated for warm water fishes, cold water fishes, trout stocking, high-quality waters, and exceptional value waters.

Total Maximum Daily Loads (TMDLs) were developed for 16 named subwatersheds and 2 unnamed subwatersheds in the Conodoguinet Creek basin to address the impairments noted on Pennsylvania's 1996 and 1998 Clean Water Act section 303(d) lists. The segments were listed based on biological surveys of the aquatic life in the streams. The impairments are caused by excess nutrient and sediment loads from agriculture, construction, and urban runoff and storm sewers. The nutrient portion of the TMDLs focuses on control of phosphorus. Phosphorus is generally held to be the limiting nutrient in a waterbody when the nitrogen/phosphorus ratio exceeds 10 to 1. All the subwatersheds studied in the Conodoguinet Creek basin have nitrogen/phosphorus ratios far greater than 10 to 1.

Pennsylvania does not currently have numeric water quality criteria for sediment or phosphorus. For this reason, a reference watershed approach was developed to identify the TMDL endpoints or water quality objectives for phosphorus and sediment in the impaired segments of the Conodoguinet Creek basin. Through comparison of the impaired watersheds to similar nonimpaired watersheds, Pennsylvania estimated the amount of phosphorus and/or sediment loading that will meet the water quality objectives for subwatersheds in the Conodoguinet Creek basin, as shown in the table below.

The TMDLs are allocated to the agricultural and urban nonpoint sources, load allocations, or LAs, and 10 percent of the allowable loading is reserved as a margin of safety (MOS). There is only one wasteload allocation (WLA) for a point source in the Rowe Run watershed. The TMDLs cover a total of 119.21 miles of stream segments in the Conodoguinet Creek basin. The TMDLs establish a total reduction for phosphorus loading of 36 percent from the average yearly loading of 55,391 pounds and a total reduction in sediment loading of 32 percent from the average yearly loading of 64,178,593 pounds in the 18 subwatersheds.

TMDLs for Big Spring Creek and the main stem of Conodoguinet Creek were not included in this study. The Big Spring Creek watershed contains a fish hatchery (PA Fish Commission—Big Spring Hatchery [NPDES PA0009865]) that is a contributor of nutrients and oxygen demanding substances to the stream. The impairments in Big Spring Creek will first be addressed through changes to the fish hatchery's NPDES permit.

The TMDLs for Bulls Head Branch and Green Spring Creek pesticide listing and Trindle Spring Run priority organics listing were deferred until quantitative evidence of the presence of specific chemicals in the streams is available.

The TMDL for the main stem of Conodoguinet Creek will be developed at a later date, after further analysis of the point source contributions to the stream. Implementation of the proposed tributary watershed TMDLs will reduce phosphorus and sediment loads to the main stem by 9.8 percent and 11.3 percent, respectively.

TMDLs for Subwatersheds in the Conodoguinet Creek Basin

Listed Streams	Pollutant	TMDL (lb/yr)	LA (lb/yr)	WLA (lb/yr)	MOS (lb/yr)	Existing Load (lb/yr)	Load Reduction (lb/yr)	% Reduc-tion
Alexanders Spring Creek	Sediment	5,904,194	5,313,774	0	590,419	8,482,433	3,168,659	37%
Bulls Head Branch & Green Spring Creek*	Phosphorus	10,853	9,768	0	1,085	13,754	3,986	29%
	Sediment	8,279,005	7,451,105	0	827,901	9,314,545	1,863,440	20%
Center Creek & Back Creek*	Phosphorus	1,456	1,310	0	146	1,815	505	28%
	Sediment	1,059,531	953,578	0	105,953	1,370,464	416,886	30%
Clippingers Run	Phosphorus	1,026	923	0	103	1,395	472	34%
Hogestown Run	Phosphorus	7,133	6,419	0	713	9,855	3,436	35%
	Sediment	5,440,933	4,896,839	0	544,093	6,857,481	1,960,642	29%
Mains Run & Gum Run*	Sediment	1,705,742	1,535,168	0	170,574	2,124,970	589,802	28%
Middle Spring Creek	Sediment	2,532,681	2,279,413	0	253268	2,785,986	506,573	18%
Mount Rock Spring Creek	Phosphorus	9,953	8,958	0	995	14,673	5,715	39%
	Sediment	7,592,471	6,833,224	0	759,247	11,068,148	4,234,924	38%
Newburg Run	Phosphorus	1,315	1,183	0	131	1,523	340	22%
	Sediment	873,236	785,913	0	87,324	1,105,941	320,028	29%
Paxton Run	Sediment	1,179,690	1,061,721	0	117,969	1,554,607	492,886	32%
Rowe Run	Phosphorus	7,604	5,078	1,765	760	12,376	5,533	45%
	Sediment	5,800,318	5,220,286	0	580,032	8,283,209	3,062,923	37%
Trindle Spring Run	Sediment	5,377,457	4,839,711	0	537,746	5,890,754	1,051,043	18%
Wertz Run	Sediment	914,964	823,468	0	91,496	1,437,577	614,109	43%
Unnamed 970729-1605-JLR	Sediment	1,157,160	1,041,444	0	115,716	2,750,374	1,708,929	62%
Unnamed 7403	Sediment	655,966	590,369	0	65,597	1,152,104	561,735	49%
Total Phosphorus						**55,391**	**19,987**	**36%**
Total Sediment						**64,178,593**	**20,552,580**	**32%**

* Aggregated watershed

6.12 Proposed TMDLs for the Rowe Run Watershed

Rowe Run was initially listed on the 1998 303(d) list for organic enrichment and siltation. The total length of impaired stream segments was about 19.75 miles. The location of the Rowe Run watershed is shown in Figure 2.1. Table 6.50 details the listed stream segments, miles degraded, sources, causes, and initial year listed.

Table 6.50 Year 1998 303 (d) List: Rowe Run

Stream Code	Segment ID	Miles Degraded	Data Source	Source Code	Cause Code	Initial Year Listed
10668	970819-1030-JLR	19.75	Unassessed Project	Agriculture	Siltation, Organic Enrichment/ Low DO	1998

The sediment and nutrient TMDLs established for the Rowe Run watershed consist of an LA and an MOS. There is a WLA for this TMDL because there is a known point source discharge in the watershed. The point source discharge is the Letterkenny Army Depot/IW in Chambersburg, Pennsylvania (NPDES ID PA0010502). The reference watershed for Rowe Run was Yellow Breeches Creek-5K (Figure 4.2). The TMDLs for the Rowe Run watershed are presented in Tables 6.51 through 6.53.

Table 6.51 TMDL computation for Rowe Run watershed

Pollutant	Unit Area Loading Rate in Yellow Breeches Creek-5K (lb/ac/yr)	Total Watershed Area in Rowe Run (ac)	TMDL Value (lb/yr)
Phosphorus	0.63	12,004	7,604
Sediment	483.73	12,004	5,800,318

Table 6.52 Load allocation for the Rowe Run watershed by land use/source

		Phosphorus				Sediment			
Source	Area (ac)	Unit Area Loading Rate (lb/ac/yr)	Annual average load (lb/yr)	LA (annual average) (lb/yr)	% Reduc-tion	Unit Area Loading Rate (lb/ac/yr)	Annual average load (lb/yr)	LA (annual average) (lb/yr)	% Reduct-ion
Hay/Past	4,220	0.23	981	770	21.5%	147.08	620,749	554,347.9	10.7%
Cropland	6,489	1.25	8,135	2,815	65.4%	1,176.93	7,636,801	4,640,459.3	39.2%
Coniferous	47	0.00	0	0	0.0%	3.21	151	150.7	0.0%
Mixed For	77	0.01	0	0	0.0%	3.57	273	273.1	0.0%
Deciduous	455	0.01	4	4	0.0%	5.17	2,351	2,350.7	0.0%
Transition	2	0.89	2	2	21.5%	678.45	1,676	1,497.1	10.7%
Lo Int Dev	321	0.08	26	26	0.0%	26.57	8,536	8,535.9	0.0%
Hi Int Dev	393	1.09	427	427	0.0%	32.25	12,672	12,671.8	0.0%
Groundwater			1,001	1,001					
Point Source			1765	1765	0.0%				
Septic Systems			34	34					
Total	**12,004**	**1.03**	**12,376**	**6,843**	**45%**	**690.04**	**8,283,209**	**5,220,286**	**37%**

Table 6.53 TMDLs for the Rowe Run watershed

Pollutant	TMDL (lb/yr)	LA (lb/yr)	WLA (lb/yr)	MOS (lb/yr)
Phosphorus	7,604	5,078	1,765	760
Sediment	5,800,318	5,220,286	0	580,032