pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0261581**
Facility Type	**Industrial**	APS ID	**733900**
Major / Minor	**Minor**	Authorization ID	**1372907**

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

Applicant and Facility Information

Applicant Name	**Red Lion Borough Municipal Authority York County**	Facility Name	**Red Lion Cabin Creek Water System**
Applicant Address	11 East Broadway, PO Box 190 Red Lion, PA 17356-0190	Facility Address	425 Gebhart Road Windsor, PA 17356-0190
Applicant Contact	John Krantz	Facility Contact	John Krantz
Applicant Phone	(717) 244-3475	Facility Phone	(717) 244-3475
Client ID	69803	Site ID	740979
SIC Code	4941	Municipality	Windsor Township
SIC Description	Trans. & Utilities - Water Supply	County	York
Date Application Received	October 15, 2021	EPA Waived?	Yes
Date Application Accepted	December 14, 2021	If No, Reason	
Purpose of Application	NPDES permit renewal		

Summary of Review

Red Lion Municipal Authority (RLMA) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of the NPDES permit no. PA0261581. Under this permit, RLMA is authorized to discharge treated industrial wastewater generated from the water treatment plant known as Cabin Creek Water Treatment Plant. The current permit will expire on April 30, 2022. In case the permit expires prior to issuance of this renewal, the terms and conditions of the permit will be administratively extended.

The WQM Part II Nos.6711201 & 6711202 original were issued on 7/21/2011 & 3/06/2012.

Changes from the previous permit:

- Total Dissolved Solids, Total Iron, & Total Zinc limits and monitoring are removed from the proposed permit.
- Total Manganese monitoring and report concentration & mass of average monthly & daily maximum requirements will be replaced from the limits in the proposed permit.
- Total Aluminum limits of 0.854 mg/L (854 µg/L) average monthly, 1.333 mg/L (1,333 µg/L) daily maximum, & 2.136 mg/L (2,136 µg/L) IMAX; and mass average monthly of 2.49 lbs/day & daily maximum of 3.89 lbs/day are in the proposed permit.
- Total Copper limits of 0.119 mg/L (11.9 µg/L) average monthly, 0.186 mg/L (18.6 µg/L) daily maximum, & 0.298 mg/L (29.8 µg/L) IMAX; and mass average monthly of 0.035 lbs/day & daily maximum of 0.54 lbs/day, are in the proposed permit. The minimum measurement frequency monitoring requirements also changed from 2/month to 1/month.

Based on the review outlined in this fact sheet, it is recommended that the permit be drafted. A public notice of the draft permit will be published in the *Pennsylvania Bulletin* for public comments for 30 days.

Approve	Deny	Signatures	Date
X		*Hilaryle* Hilary H. Le / Environmental Engineering Specialist	January 31, 2023
X		/s/ Daniel W. Martin, P.E. / Environmental Engineer Manager	February 22, 2023

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.35
Latitude	39º 56' 34.09"	Longitude	-76º 34' 50.04"
Quad Name	Red Lion	Quad Code	1933
Wastewater Description:	IW Process Effluent without ELG		
Receiving Waters	Cabin Creek (WWF)	Stream Code	07848
NHD Com ID	57468335	RMI	9.20 miles
Drainage Area	2.63 mi.^{2}	Yield (cfs/mi^2)	0.16
Q_{7-10} Flow (cfs)	0.42	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	593	Slope (ft/ft)	
Watershed No.	7-I	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	York Water Company		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	23.0 miles	Distance from Outfall (mi)	Approximate 4.4 miles

Changes Since Last Permit Issuance: none

Drainage Area

The discharge is to Cabin Creek at RMI 9.20, immediately below the spill way of the Cabin Creek reservoir. A drainage area upstream of the outfall is determined to be 2.63 mi.^{2}, according to the USGS PA StreamStats.

Streamflow

The Susquehanna River Basin Commission issued a water allocation permit on March 25, 1983 to RLMA. The permit allows up to 3.5 MGD of withdrawal from Cabin Creek, Beaver Creek and the Susquehanna River for potable water supply for a period of fifty years. The previous NPDES permit renewal fact sheet contains the following statement:

> *"…paragraph eight of the water allocation permit, WA-38B, states the following:*
>
> *"A continuous flow of not less than 0.280 MGD and 0.680 MGD respectively shall be maintained at all times in Cabin Creek and Beaver Creek immediately below the dams. At such time as the Average Yearly Withdraw Rate for any calendar year exceeds 2.5 MGD, the conservation releases shall automatically increase such that continuous flows of not less than 0.320 and 0.780 MGD respectively shall be maintained at all times in Cabin Creek and Beaver Creek. Once increased, the conservation release requirement shall not decrease. Accurate measuring and recording devices shall be installed to measure this flow and records of the daily releases shall be submitted at the direction of the Department. The original field records shall be available at all times for inspection by representatives of the Department."*
>
> *…for stream modeling, the conservation release is assumed to be equal to the Q_{7-10} since this is the required minimum flow over the spill way."*

This is a reasonable approach to estimate the Q_{7-10} or lowest (most conservative) flow rate of the stream at the outfall, rather than using the Q_{7-10} derived from the USGS PA StreamStats since the USGS PA StreamStats does not consider this conservation release. Accordingly, the conservation release will be used as a Q_{7-10} again for this permit reissuance, resulting in a low-flow yield of 0.42 cfs / 2.63 mi.^{2} = 0.16 cfs/mi.^{2}.

Receiving Water Characteristics
Under 25 Pa Code §93.9o, Cabin Creek is designated as warm water and migratory fishes (WWF & MF). The discharge is located within a stream segment listed as attaining uses.

Downstream Water Supply Intake
The nearest **downstream** water supply intake is York Water Company, located on the Susquehanna River, approximately 4.4 miles from the discharge point. Considering the distance and dilution, the discharge is not expected to significantly impact the water supply.

Treatment Facility Summary

Treatment Facility Name: Red Lion Municipal Authority WTP

WQM Permit No.	Issuance Date
6711201	07/21/2011
6711202	03/06/2012

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary	Settling	Chlorine	0.386

Changes Since Last Permit Issuance: none

General Description
RLMA owns and operates the Cabin Creek Water Treatment Plant (WTP). The plant was first constructed in 1925 and then redesigned in 1988 for improvement. The previous WTP repeatedly had operation and maintenance issues, including wastewater handling. As a result, improvement was necessary and RLMA proposed to build a new WTP located east of the reservoir and convert the existing WTP into an industrial wastewater treatment plant (IWTP) in 2011. The Water Quality Management (WQM) permit no. 6711202 as well as NPDES permit amendment was issued on March 6, 2012 to reflect this project. The new WTP was online as of early April 2015 and the conversion of the IWTP was completely finalized in February 2016.

Treatment Process
Treatment processes for both WTP and IWTP are as follows:

Water Treatment Plant (DEP Safe Drinking Water Program PWS Permit Nos. 6703504/6796504/6711512)

Pre-Treatment Basin → Rapid Mix Basins (2) → Flocculation Basins (2) → Clarifiers (2) → Duel Media Filters (4) → IWTP or → Chlorine Contact Disinfection → Clearwell → PWS Distribution System

Industrial Wastewater Treatment Plant (DEP Clean Water Program WQM Permit no. 6711202)

Wastewater Settling Basins (2) → Outfall 001

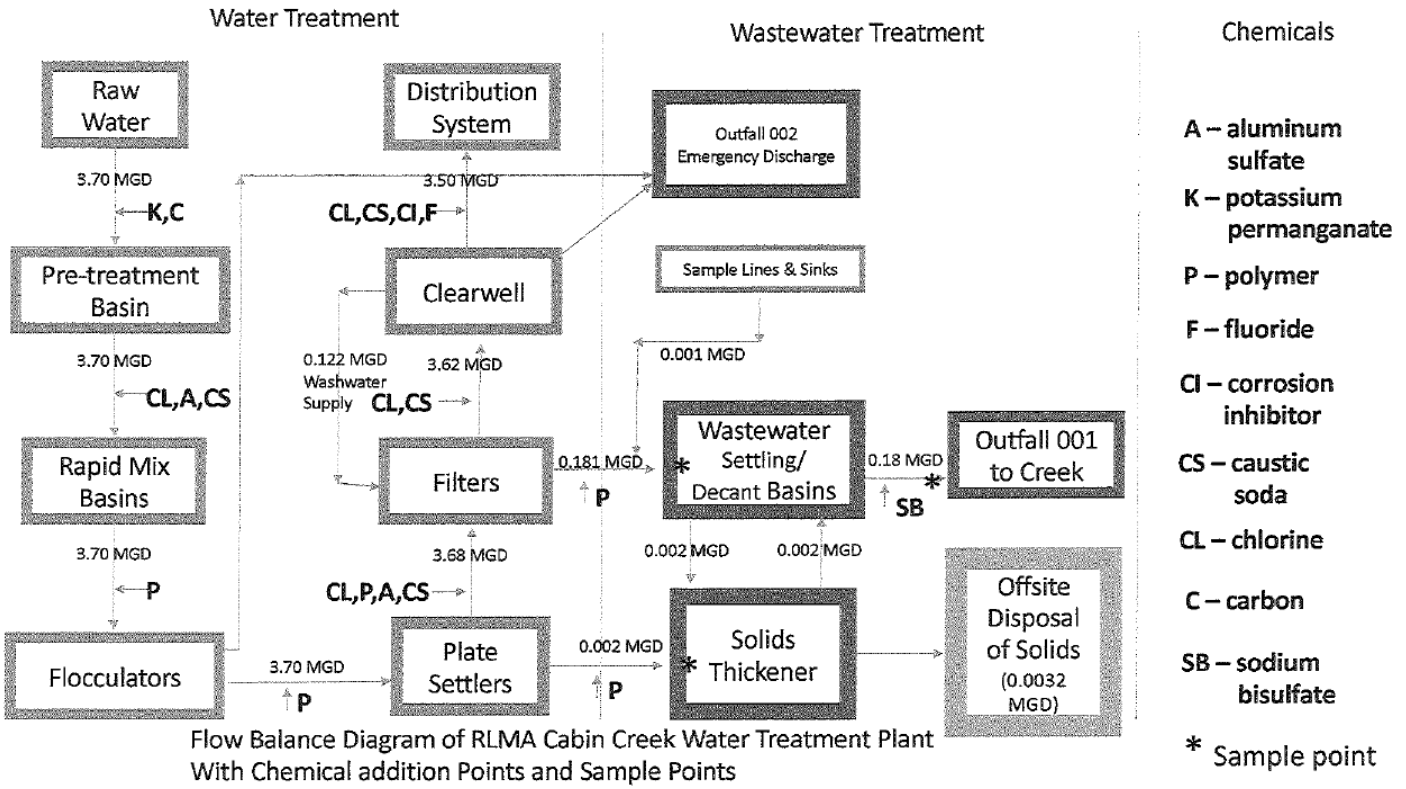
The WTP has a permitted capacity of 3.5 MGD and the IWTP is designed to handle 0.35 MGD of industrial wastewaters. Wastewaters generated from the WTP are primarily filter backwash and rinse water (total of 0.181 MGD). Additional sources, according to the application, include sample sink drains, floor drains, and drainage of the process unit basins for periodic maintenance.

Filter backwash and rinse water from the WTP is directly sent to settling basins (2) and settled solids from these basins are pumped to the solid thickener. Solids blowdown from the WTP Clarifier basins is also sent to the solid thickener. Supernatant from the thickener is decanted back to the settling basins at a designed rate of 0.0178 MGD. Sludge generated from the thickener is periodically hauled off-site for disposal.

Flows
Wastewater settling basins are utilized in a batch sequence. According to the application, the batch discharge occurs from the settling basins for 6 hours per day for 7 days per week. During this 6-hour daily discharge, two discharge cycles occur at a rate of 500 GPM (500 GPM * 60 min * 6 hours / 24 hours = 0.18 MGD). While the IWTP is designed to handle 0.35 MGD of water treatment wastewater, the average flow at Outfall 001 is expected to be 0.10 MGD with the maximum of 0.386 MGD during production.

Chemical Addition

The following table summarizes a number of chemicals currently being added within the treatment processes of both WTP and IWTP:



Flow Balance Diagram of RLMA Cabin Creek Water Treatment Plant
With Chemical addition Points and Sample Points

Chemical Product	Injection Point	Purpose(s)	Chemical Additive?
Potassium Permanganate	Prior to Pre-treatment Basin @ WTP	Oxidation of iron and manganese	No (used for treatment)
Aluminum Sulfate	Prior to Rapid Mix Basins @ WTP	Coagulation	No (used for treatment)
Caustic Soda (Sodium Hydroxide)	Prior to Rapid Mix Basins @ WTP	pH adjustment	No (used for treatment)
Polymer	Prior to Rapid Mix Basins @ WTP	Coagulation	No (used for treatment)
Sodium Hypochlorite	Prior to Filters @ WTP	Disinfection	No (used for treatment)
Polymer	Prior to Filters @ WTP	Coagulation	No (used for treatment)
Sodium Hypochlorite	Prior to Clearwell @ WTP	Disinfection	No (used for treatment)
Caustic Soda (Sodium Hydroxide)	Prior to Distribution System @ WTP	pH adjustment	No (used for treatment)
Aqua Ammonia	Prior to Distribution System @ WTP	Disinfection	No (used for treatment)
Zinc Orthophosphate	Prior to Distribution System @ WTP	Corrosion Inhibitor	Yes
Hydrofluorosilicic acid (Fluoride)	Prior to Distribution System @ WTP	Preventative measure (public health)	No (used for treatment)
Polymer	Prior to Solids Thickener @ IWTP	Coagulation	No (used for treatment)
Polymer	Prior to Settling Basins @ IWTP	Coagulation	No (used for treatment)
Sodium Bisulfate	Prior to Outfall 001 @ IWTP	Dechlorination	No (used for treatment)

None of above-mentioned chemicals, except for Zinc Orthophosphate is considered a chemical additive since chemicals are used for treatment purpose(s). Zinc Orthophosphate is a corrosion inhibitor for the PWS distribution system. It is not expected to be present in the IWTP process since it is added after filters and clear-well but before the distribution system. Water at the clear-well (before the chemical injection point) is used for backwashing filters.

Outfall 002

Outfall 002 receives stormwater collected in a stormwater sewer located nearby the new WTP. Outfall 002 also infrequently receives overflows from both flocculation basins and the clear-well. An overflow from the clear-well is "finish water" that has been filtered but is not yet treated by chemicals used in the distribution system (i.e., corrosion inhibitor, ammonia, and fluoride). The current permit contains a monitoring requirement for Total Residual Chlorine (TRC) at Outfall 002 and will remain in the proposed permit.

Compliance History	
Summary of DMRs:	A summary of past 12-month DMRs is presented on the page 6 & 7.
Summary of Inspections:	01/30/2020: Ashley Chong, DEP Water Quality Specialist, conducted a follow up on the incident inspection. The violation was noted during inspection such as release chlorinated water to Fishing Creek, a water of the Commonwealth. Recommendations were to ensure all valves are in the correct position, and update plans to include all lines and valves in water distribution system. 4/1/2019: Austen Randecker, DEP Water Quality Specialist, conducted a routine inspection. There were no violations noted during the inspection.
Other Comments:	There are no open violations against the permittee or applicant.

Other Comments:

Compliance History

DMR Data for Outfall 001 (from December 1, 2021 to November 30, 2022)

Parameter	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21
Flow (MGD) Average Monthly	0.114	0.114	0.118	0.119	0.149	0.158	0.156	0.161	0.15	0.154	0.138	0.135
Flow (MGD) Daily Maximum	0.16	0.164	0.169	0.166	0.172	0.168	0.171	0.268	0.164	0.214	0.160	0.150
pH (S.U.) Minimum	6.79	6.77	6.90	6.92	6.80	6.81	6.27	6.94	6.84	6.85	6.93	6.94
pH (S.U.) IMAX	7.15	7.07	7.24	7.13	7.17	7.09	7.14	7.16	7.20	7.15	7.25	7.19
TRC (mg/L) Average Monthly	0.02	0.02	0.04	0.03	0.04	0.03	0.02	0.02	0.02	0.03	0.03	0.03
TRC (mg/L) IIMAX	0.04	0.04	0.16	0.09	0.27	0.06	0.04	0.05	0.06	0.09	0.09	0.06
TSS (lbs/day) Average Monthly	3	3.0	3.0	4	3.00	4	3.0	3	5.0	2.0	3.0	1.00
TSS (lbs/day) Daily Maximum	8	6.0	4.0	11	5.00	9	5.0	5	10	3.0	7.0	1.00
TSS (mg/L) Average Monthly	0.02	3.0	2.5	3.8	2.00	3.0	2.5	2.3	3.6	1.50	2.8	1.00
TSS (mg/L) Daily Maximum	0.04	5.0	4.0	8.00	4.00	7.00	4.0	3.0	8.0	2.0	6.0	1.00
Total Dissolved Solids (lbs/day) Average Monthly	157	76.0	208	136	161.0	125.00	174	122.0	159	253	160.00	142.0
Total Dissolved Solids (lbs/day) Daily Maximum	208	92.0	245	177	161.0	142.00	183	160	295	406	205.00	130.0
Total Dissolved Solids (mg/L) Average Monthly	149.0	83.0	193.00	132.67	122.0	173.00	125.00	92.0	123.33	193.0	136.00	120.0
Total Dissolved Solids (mg/L) Daily Maximum	208.0	118.0	212.00	162.00	122.0	195.00	130.00	120.0	230.00	310.0	174.00	130.0
Total Aluminum (lbs/day) Average Monthly	0.30	0.20	0.20	0.06	0.30	0.40	0.30	0.40	0.30	0.40	0.30	0.20
Total Aluminum (lbs/day) Daily Maximum	0.30	0.50	0.40	0.20	0.50	0.50	0.40	0.60	0.80	0.60	0.40	0.20
Total Aluminum (mg/L) Average Monthly	0.27	0.25	0.18	< 0.10	0.30	0.27	0.21	0.25	0.25	0.29	0.23	0.18

Total Aluminum (mg/L) Daily Maximum	0.41	0.38	0.27	0.07	0.38	0.39	0.26	0.36	0.61	0.43	0.33	0.18
Total Copper (lbs/day) Average Monthly	< 0.005	< 0.005	< 0.006	< 0.005	< 0.006	< 0.007	< 0.007	< 0.007	< 0.006	0.007	< 0.006	< 0.006
Total Copper (lbs/day) Daily Maximum	< 0.006	< 0.006	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	< 0.007	0.007	< 0.006	< 0.006
Total Copper (mg/L) Average Monthly	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005
Total Copper (mg/L) Daily Maximum	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005
Total Iron (lbs/day) Average Monthly	< 0.05	< 0.05	< 0.06	< 0.06	< 0.07	0.20	< 0.008	< 0.08	< 0.07	0.09	< 0.07	< 0.06
Total Iron (lbs/day) Daily Maximum	< 0.07	0.08	< 0.07	0.10	0.09	0.40	0.100	0.10	< 0.07	0.10	< 0.09	< 0.06
Total Iron (mg/L) Average Monthly	< 0.1	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.1	< 0.10	< 0.10	0.1	< 0.07	< 0.1
Total Iron (mg/L) Daily Maximum	< 0.05	0.06	0.05	0.07	0.07	0.25	0.07	0.06	< 0.05	0.08	< 0.09	< 0.05
Total Manganese (lbs/day) Average Monthly	0.10	0.20	0.20	0.20	0.20	0.20	0.10	0.08	0.05	0.07	0.04	0.10
Total Manganese (lbs/day) Daily Maximum	0.20	0.40	0.50	0.40	0.30	0.40	0.30	0.10	0.08	0.09	0.07	0.30
Total Manganese (mg/L) Average Monthly	0.10	0.20	0.20	0.2	0.2	0.20	0.1	0.10	0.04	0.10	0.03	0.10
Total Manganese (mg/L) Daily Maximum	0.16	0.39	0.54	0.28	0.36	0.27	0.19	0.079	0.06	0.069	0.051	0.29
Total Zinc (lbs/day) Average Monthly	0.008	0.008	< 0.006	< 0.006	0.006	< 0.007	< 0.007	0.007	< 0.006	0.008	0.006	0.007
Total Zinc (lbs/day) Daily Maximum	0.01	0.008	< 0.008	0.008	0.007	< 0.007	< 0.007	< 0.007	< 0.007	0.008	0.007	0.007
Total Zinc (mg/L) Average Monthly	0.007	0.008	< 0.006	< 0.006	< 0.005	< 0.005	< 0.005	< 0.05	< 0.005	0.006	0.006	0.006
Total Zinc (mg/L) Daily Maximum	0.009	0.01	0.006	0.006	< 0.005	< 0.005	< 0.005	0.05	0.005	0.006	0.006	0.006

DMR Data for Outfall 002 (from December 1, 2021 to November 30, 2022)

Parameter	NOV-22	OCT-22	SEP-22	AUG-22	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21
TRC (mg/L) Instantaneous Maximum	0.04	0.04	0.20	0.09	0.27	0.006	0.04	0.03	0.06	0.07	0.09	0.06

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .35
Latitude 39º 56' 34.00" **Longitude** -76º 34' 50.00"
Wastewater Description: IW Process Effluent without ELG

Technology-Based Limitations

The majority of industrial wastewater is filter backwash. DEP's technical guidance no. 362-2183-003 addresses technology-based control requirements along with the following recommended Best Practicable Control Technology Currently Available (BPT) effluent requirements for WTP sludge and filter backwash:

Parameter	Limit (mg/l)	SBC
Suspended Solids	30	Average Monthly
	60	Daily Maximum
Iron, Total	2.0	Average Monthly
	4.0	Daily Maximum
Aluminum, Total	4.0	Average Monthly
	8.0	Daily Maximum
Manganese, Total	1.0	Average Monthly
	2.0	Daily Maximum
Flow	Monitor	Average Monthly
pH	6.0	Minimum
	9.0	Maximum
Total Residual Chlorine	0.5	Average Monthly
	1.0	Daily Maximum

Water Quality-Based Limitations

DEP's SOP No. BPNPSM-PMT-032 recommends the average monthly flow as a design flow in water quality modeling unless a different flow is determined to be more representative of conditions. According to the application, the design capacity of the IWTP is 0.35 MGD with the average flow of 0.10 MGD and maximum of 0.386 MGD during production.

WQM 7.0
CBOD5 and NH3-N are not pollutants of concern for the water treatment waste as the discharge of these pollutants is not resulting from the water treatment process. Therefore, WQM 7.0 modeling is not necessary and permit requirements for these pollutants are not recommended.

Total Residual Chlorine
Sodium hypochlorite is used before and after filters. Total Residual Chlorine (TRC) effluent concentrations must be monitored and regulated. DEP's TRC_CALC worksheet was utilized to determine if existing limits are still appropriate under the flow of 0.350 MGD. The worksheet showed that a most stringent average monthly effluent limit of 0.12 mg/L and 0.4 mg/L IMAX are needed to protect the stream. These limits will remain in the proposed permit.

Toxics
The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

- Discharge pH = 7.42 (Renewal Application)
- Stream pH = 7.0 (Default)
- Discharge Hardness = 53.0 mg/L (Renewal Application)
- Stream Hardness = 100 mg/L (Default)

This data was analyzed based on the guidelines found in DEP's Water Quality Toxics Management Strategy (Document No. 361-0100-003) and DEP's SOP No. BPNPSM-PMT-033. Spreadsheet results are attached to this fact sheet. The Toxics Management Spreadsheet uses the following logic:

a. Establish average monthly and IMAX limits in the draft permit where the maximum reported concentration exceeds 50% of the WQBEL.
b. For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25%-50% of the WQBEL.
c. For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10%-50% of the WQBEL.

DEP's Toxics Management spreadsheet was utilized to perform a reasonable potential analysis and develop water quality effluent limits for toxic pollutants. The analysis shows that all existing limits for toxic pollutants that are included in the permit are still protective of water quality as follows.

- Total Iron, and Total Zinc maximum concentrations were less than 10% of their respective WQBEL, per DEP's SOP No. BPNPSM-PMT-033 therefore, the monitoring and reporting requirements of these pollutants are not necessary and will be removed from the proposed permit.
- Total Aluminum limit of 0.854 mg/L (854 µg/L) average monthly, 1.333 mg/L (1,333 µg/L) daily maximum, & 2.136 mg/L (2,136 µg/L) IMAX; and mass average monthly of 2.49 lbs/day & daily maximum of 3.89 lbs/day are recommended which are slightly more stringent and will be replaced in the proposed permit.
- Total Copper limit of 0.119 mg/L (11.9 ug/L) average monthly, 0.186 mg/L (18.6 ug/L) daily maximum, and 0.298 mg/L (29.8 ug/L) IMAX are recommended which is slightly more stringent and will be in the proposed permit. Mass average monthly of 0.035 lbs/day and daily maximum of 0.054 lbs/day are also in the proposed permit. The minimum measurement frequency monitoring requirements changed from 2/month to 1/month in the proposed permit.
- Total Manganese monitoring and report concentration & mass of average monthly & daily maximum requirements will be replaced from the limits in the proposed permit which based on the fact that DEP protects for all water uses, not just the critical uses stated in 25 Pa. Code § 93.7. During the next permit renewal cycle, the need for Manganese monitoring in the permit will be re-evaluated.

Additional Considerations

1. Total Dissolved Solids (TDS)

DEP's technical guidance no. 362-2183-003 considers TDS a pollutant of concern when the water treatment plant utilizes ion-exchange softening units mainly because brine is used to chemically remove solids in backwash. Therefore, RLMA's IWTP is not expected to have high TDS levels in both influent and effluent. Past DMRs as well as the application confirmed this information. Particularly, past DMR data 5 years showed average monthly concentrations of 154.81 mg/L (average) and 297 mg/L (maximum) with daily maximum concentrations of 156.32 mg/L (average) and 414 mg/L (maximum). The existing permit contains effluent concentration limits of 500 mg/L (average monthly) and 1000 mg/L (daily maximum).

Additionally, Total Dissolved Solids and its major constituents including Bromide, Chloride, and Sulfate have become statewide pollutants of concern and threats to DEP's mission to prevent violations of water quality standards. The requirement to monitor these pollutants is necessary under the following 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.*

However, the maximum daily TDS discharge reported in the application is 196.0 mg/L, Chloride reported is 21.0 mg/L, Bromide reported is < 0.2 mg/L, and Sulfate reported is 20.0 mg/L. The monitoring for TDS, Chloride, Bromide, and Sulfate are not required per Toxic Management Spreadsheet Analysis Table. Therefore, no monitoring requirements are necessary. Then the TDS monitoring and limit requirements will be removed from the proposed permit.

2. Chesapeake Bay TMDL

Since this is a non-significant industrial wastewater facility, it is not necessary to provide total phosphorus (TP) and total nitrogen (TN) cap loads. The DEP's Supplement to Phase II Watershed Implementation Plan (WIP) indicates that monitoring and reporting of TN and TP are necessary for non-significant IW facilities throughout the permit term anytime the facility has the potential to introduce a net TN or TP increase to the load contained within the intake water used in processing. The facility does not use any chemical products prior to filtration that contain nitrogen or phosphorus and no nutrients are expected to be generated from the water treatment process. Accordingly, no TP and TN monitoring is necessary.

3. Total Suspended Solids (TSS)

The existing permit TSS limits of 30.0 mg/L average Monthly, 60.0 mg/L daily maximum, & 75.0 mg/L IMAX and report mass average monthly & daily maximum will remain in the proposed permit.

4. Flow Monitoring

Flow monitoring will remain in the permit and is required by 40 CFR § 122.44(i)(1)(ii).

5. Anti-Degradation requirements

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

6. Outfall 002

Outfall 002 (latitude: 39°56'31.21, long: -76°34'50.74") receives stormwater collected in a stormwater sewer located nearby the new WTP. Outfall 002 also infrequently receives overflows from both flocculation basins and the clear-well. An overflow from the clear-well is "finish water" that has been filtered but is not yet treated by chemicals used in the distribution system (i.e., corrosion inhibitor, ammonia, and fluoride). Since chlorine is expected to be present in the overflow discharge, monitoring for TRC is recommended.

Toxic Data:

The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

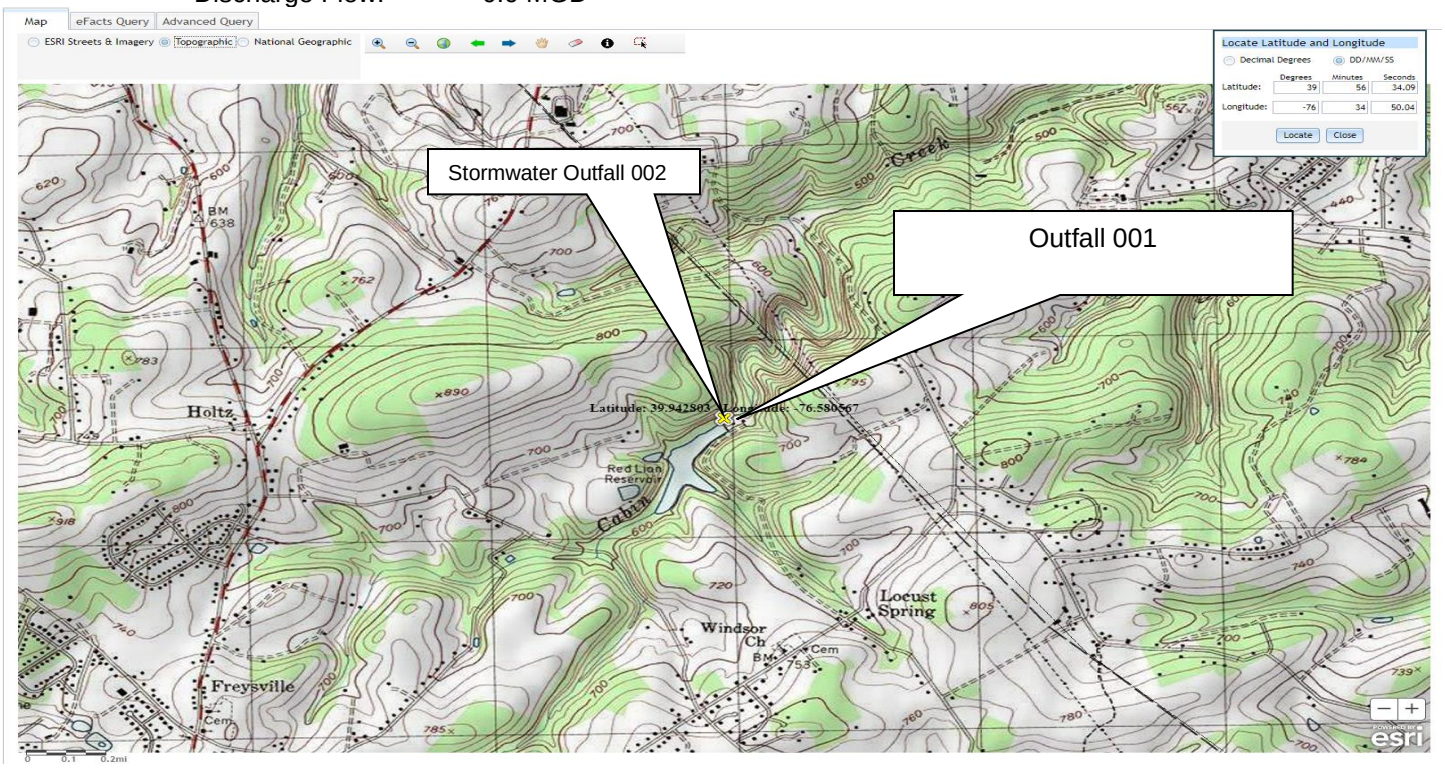
* Discharge pH = 7.42 (Application)
* Stream pH = 7.0 (Default)
* Discharge Hardness = 53.0 mg/l (Application)
* Stream Hardness = 100 mg/l (Default)

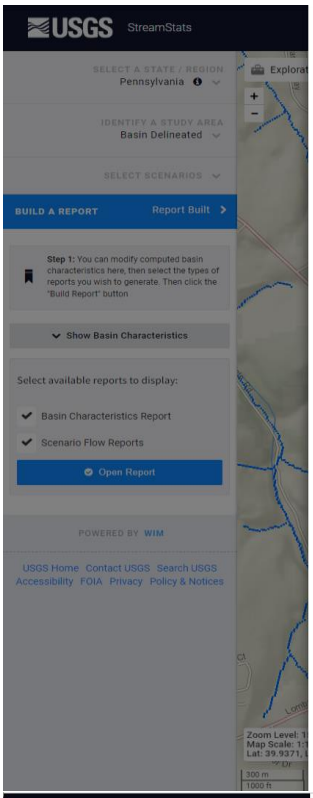
Node 1: Outfall 001 on Cabin Creek (07848)

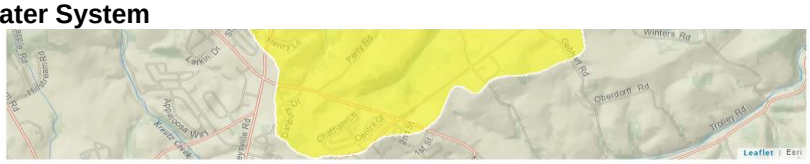
Elevation:	593.00 ft (USGS National Map Viewer)
Drainage Area:	2.63 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	9.20 (PA DEP eMapPA)
Low Flow Yield:	0.16 $cfs/mi.^2$
Discharge Flow:	0.35 MGD

Node 2: Cabin Creek (07848)

Elevation:	485 ft (USGS National Map Viewer)
Drainage Area:	3.33 $mi.^2$ (USGS PA StreamStats)
River Mile Index:	8.12 (PA DEP eMapPA)
Low Flow Yield:	0.16 $cfs/mi.^2$
Discharge Flow:	0.0 MGD







Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	5.6876	degrees
DRNAREA	Area that drains to a point on a stream	2.63	square miles
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	0.9997	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

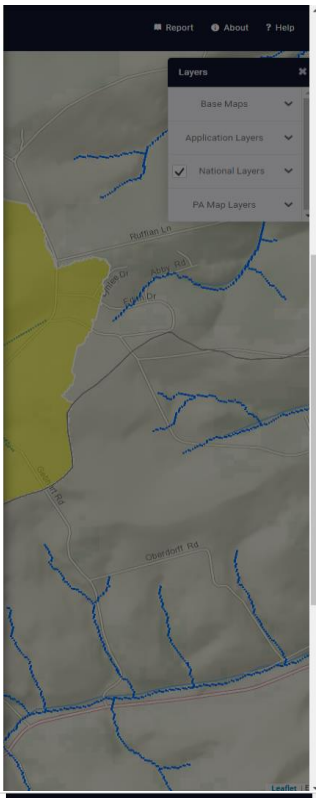
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.63	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	5.6876	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	0.9997	percent	0	89

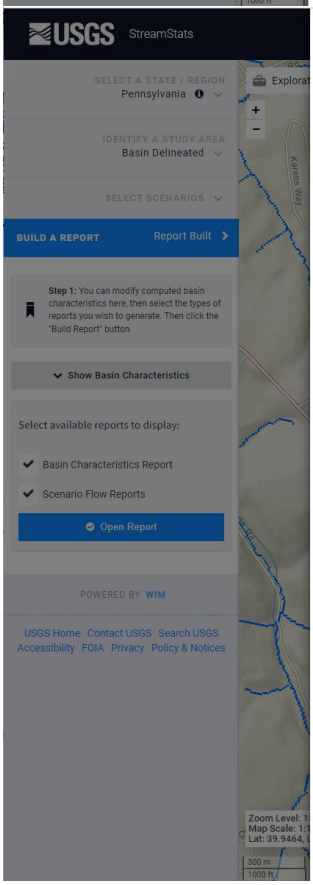
Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.846	ft^3/s
30 Day 2 Year Low Flow	1.03	ft^3/s
7 Day 10 Year Low Flow	0.418	ft^3/s
30 Day 10 Year Low Flow	0.522	ft^3/s
90 Day 10 Year Low Flow	0.725	ft^3/s





Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.607	degrees
DRNAREA	Area that drains to a point on a stream	3.33	square miles
ROCKDEP	Depth to rock	5	feet
URBAN	Percentage of basin with urban development	0.8033	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 1]

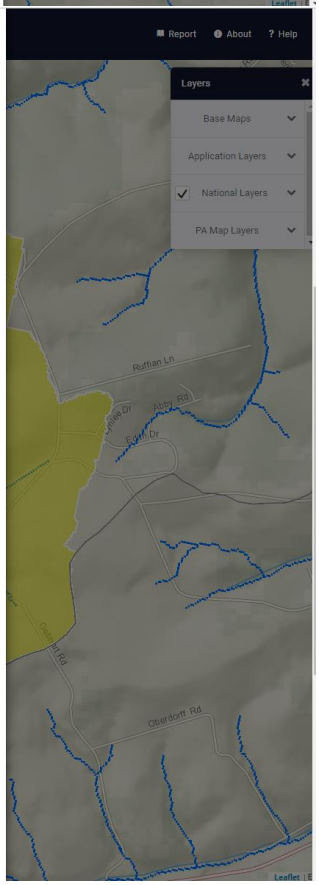
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	3.33	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	6.607	degrees	1.7	6.4
ROCKDEP	Depth to Rock	5	feet	4.13	5.21
URBAN	Percent Urban	0.8033	percent	0	89

Low-Flow Statistics Disclaimers [Low Flow Region 1]

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

Low-Flow Statistics Flow Report [Low Flow Region 1]

Statistic	Value	Unit
7 Day 2 Year Low Flow	1.29	ft^3/s
30 Day 2 Year Low Flow	1.51	ft^3/s
7 Day 10 Year Low Flow	0.679	ft^3/s
30 Day 10 Year Low Flow	0.817	ft^3/s
90 Day 10 Year Low Flow	1.05	ft^3/s



TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

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

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 0.266	1.3.2.iii	WLA cfc = 0.252
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.099	5.1d	LTA_cfc = 0.147

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.122	AFC
		INST MAX LIMIT (mg/l) = 0.400	

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

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.2, February 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Red Lion Municipal Authority** NPDES Permit No.: **PA0261581** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Cabin Creek**

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
0.35	53	7.42						

					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		196									
	Chloride (PWS)	mg/L		21									
	Bromide	mg/L	<	0.2									
	Sulfate (PWS)	mg/L		20									
	Fluoride (PWS)	mg/L	<	0.2									
Group 2	Total Aluminum	µg/L		3300									
	Total Antimony	µg/L	<	1									
	Total Arsenic	µg/L	<	1									
	Total Barium	µg/L		23									
	Total Beryllium	µg/L	<	1									
	Total Boron	µg/L	<	50									
	Total Cadmium	µg/L	<	0.2									
	Total Chromium (III)	µg/L	<	0.4									
	Hexavalent Chromium	µg/L	<	0.25									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		9									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	4									
	Dissolved Iron	µg/L		40									
	Total Iron	µg/L		180									
	Total Lead	µg/L	<	1									
	Total Manganese	µg/L		790									
	Total Mercury	µg/L	<	0.2									
	Total Nickel	µg/L	<	1									
	Total Phenols (Phenolics) (PWS)	µg/L	<	2									
	Total Selenium	µg/L	<	3									
	Total Silver	µg/L	<	0.2									
	Total Thallium	µg/L	<	1									
	Total Zinc	µg/L		8									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

	2,6-Dinitrotoluene	µg/L	<											
	Di-n-Octyl Phthalate	µg/L	<											
	1,2-Diphenylhydrazine	µg/L	<											
	Fluoranthene	µg/L	<											
	Fluorene	µg/L	<											
	Hexachlorobenzene	µg/L	<											
	Hexachlorobutadiene	µg/L	<											
	Hexachlorocyclopentadiene	µg/L	<											
	Hexachloroethane	µg/L	<											
	Indeno(1,2,3-cd)Pyrene	µg/L	<											
	Isophorone	µg/L	<											
	Naphthalene	µg/L	<											
	Nitrobenzene	µg/L	<											
	n-Nitrosodimethylamine	µg/L	<											
	n-Nitrosodi-n-Propylamine	µg/L	<											
	n-Nitrosodiphenylamine	µg/L	<											
	Phenanthrene	µg/L	<											
	Pyrene	µg/L	<											
	1,2,4-Trichlorobenzene	µg/L	<											
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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Toxics Management Spreadsheet
Version 1.2, February 2021

Stream / Surface Water Information

Red Lion Municipal Authority, NPDES Permit No. PA0261581, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Cabin Creek**

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	007848	9.2	593	2.63			Yes
End of Reach 1	007848	8.12	485	3.33			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	9.2	0.16										100	7		
End of Reach 1	8.12	0.16													

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	9.2														
End of Reach 1	8.12														

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Toxics Management Spreadsheet
Version 1.2, February 2021

Model Results

Red Lion Municipal Authority, NPDES Permit No. PA0261581, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.559 PMF: 1 Analysis Hardness (mg/l): 73.553 Analysis pH: 7.19

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	1,333	
Total Antimony	0	0		0	1,100	1,100	1,955	
Total Arsenic	0	0		0	340	340	604	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	37,321	
Total Boron	0	0		0	8,100	8,100	14,395	
Total Cadmium	0	0		0	1.494	1.56	2.77	Chem Translator of 0.957 applied
Total Chromium (III)	0	0		0	443.040	1,402	2,492	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	29.0	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	169	
Total Copper	0	0		0	10.062	10.5	18.6	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	46.153	55.2	98.1	Chem Translator of 0.836 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	2.93	Chem Translator of 0.85 applied
Total Nickel	0	0		0	361.086	362	643	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	1.897	2.23	3.97	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	116	
Total Zinc	0	0		0	90.329	92.4	164	Chem Translator of 0.978 applied

☑ *CFC* CCT (min): 0.559 PMF: 1 Analysis Hardness (mg/l): 73.553 Analysis pH: 7.19

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	220	220	391	
Total Arsenic	0	0		0	150	150	267	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	7,286	
Total Boron	0	0		0	1,600	1,600	2,843	
Total Cadmium	0	0		0	0.199	0.22	0.38	Chem Translator of 0.922 applied
Total Chromium (III)	0	0		0	57.630	67.0	119	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	18.5	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	33.8	
Total Copper	0	0		0	6.888	7.18	12.8	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	2,666	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.799	2.15	3.82	Chem Translator of 0.836 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1.61	Chem Translator of 0.85 applied
Total Nickel	0	0		0	40.106	40.2	71.5	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	8.87	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	23.1	
Total Zinc	0	0		0	91.068	92.4	164	Chem Translator of 0.986 applied

☑ *THH* CCT (min): 0.559 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	9.95	
Total Arsenic	0	0		0	10	10.0	17.8	
Total Barium	0	0		0	2,400	2,400	4,265	
Total Boron	0	0		0	3,100	3,100	5,509	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	

Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	533	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	1,777	
Total Mercury	0	0		0	0.050	0.05	0.089	
Total Nickel	0	0		0	610	610	1,084	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	0.43	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ *CRL* CCT (min): 0.851 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

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

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

No. Samples/Month: 4

Pollutants	*Mass Limits* AML (lbs/day)	*Mass Limits* MDL (lbs/day)	*Concentration Limits* AML	*Concentration Limits* MDL	*Concentration Limits* IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	2.49	3.89	854	1,333	2,136	µg/L	854	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	0.035	0.054	11.9	18.6	29.8	µg/L	11.9	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	1,777	THH	Discharge Conc > 10% WQBEL (no RP)

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	Discharge Conc < TQL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	4,265	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	2,843	µg/L	Discharge Conc < TQL
Total Cadmium	0.38	µg/L	Discharge Conc < TQL
Total Chromium (III)	119	µg/L	Discharge Conc < TQL
Hexavalent Chromium	18.5	µg/L	Discharge Conc < TQL
Total Cobalt	33.8	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	533	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	2,666	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	3.82	µg/L	Discharge Conc < TQL
Total Mercury	0.089	µg/L	Discharge Conc < TQL
Total Nickel	71.5	µg/L	Discharge Conc < TQL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	8.87	µg/L	Discharge Conc < TQL

Total Silver	2.54	µg/L	Discharge Conc < TQL
Total Thallium	0.43	µg/L	Discharge Conc < TQL
Total Zinc	105	µg/L	Discharge Conc ≤ 10% WQBEL

Existing Effluent Limitations and Monitoring Requirements

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
Total Residual Chlorine	XXX	XXX	XXX	0.28	XXX	0.75	1/day	Grab
Total Suspended Solids	Report	Report	XXX	30	60	75	1/week	24-Hr Composite
Total Aluminum	2.51	3.91	XXX	0.86	1.34	2.15	1/week	24-Hr Composite
Total Iron	5.83	8.75	XXX	2.0	3.0	5.0	1/week	24-Hr Composite
Total Manganese	2.91	4.37	XXX	1.0	1.5	2.5	1/week	24-Hr Composite
Total Copper	0.04	0.07	XXX	0.016	0.025	0.04	2/month	24-Hr Composite
Total Zinc	0.37	0.58	XXX	0.13	0.20	0.32	2/month	24-Hr Composite
Total Dissolved Solids	Report	Report	XXX	500	1,000	1250	2/month	24-Hr Composite

Outfall 002

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 Residual Chlorine	XXX	XXX	XXX	XXX	XXX	Report	When Discharging	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 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	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.12	XXX	0.40	1/day	Grab
TSS	Report	Report	XXX	30.0	60.0	75.0	1/week	24-Hr Composite
Total Aluminum	2.49	3.89	XXX	0.85	1.33	2.14	1/week	24-Hr Composite
Total Copper	0.035	0.054	XXX	0.012	0.019	0.03	1/month	24-Hr Composite
Total Manganese	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite

Compliance Sampling Location:

Other Comments:

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, 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		
TRC	XXX	XXX	XXX	XXX	XXX	Report	Daily when Discharging	Grab

Compliance Sampling Location:

Other Comments:

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 No. BCW-PMT-032
☐	Other: