pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0032379**
Facility Type	**Industrial**	APS ID	**335896**
Major / Minor	**Minor**	Authorization ID	**1110092**

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

Applicant and Facility Information

Applicant Name	**Safe Harbor Water Power Corporation**	Facility Name	**Safe Harbor Hydroelectric Generating Station**
Applicant Address	1 Powerhouse Road	Facility Address	1 Powerhouse Road
	Conestoga, PA 17516-9651		Conestoga, PA 17516-9651
Applicant Contact	Michael Denlinger	Facility Contact	Michael Denlinger
Applicant Phone	(717) 872-0284	Facility Phone	(717) 872-0284
Client ID	82470	Site ID	513627
SIC Code	4911	Municipality	Manor Township
SIC Description	Trans. & Utilities - Electric Services	County	Lancaster
Date Application Received	February 1, 2016	EPA Waived?	Yes
Date Application Accepted	March 2, 2016	If No, Reason	

Purpose of Application: NPDES Renewal.

Summary of Review

Safe Harbor Water Power Corporation (Safe Harbor) has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on July 21, 2011 and became effective on August 1, 2011. The permit authorized discharge from the existing facility located in Manor Township, Lancaster County into the Conestoga River and Susquehanna River. The existing permit expiration date was July 31, 2016, and the permit has been administratively extended since that time.

From the previous permit renewal fact sheet, Safe Harbor is a facility that generates electricity using 12 hydro turbines at the Safe Harbor Dam on the Susquehanna River. It was initially constructed in 1930 and has a total rated capacity of 417.5 MW. The electricity is completely generated by hydropower; no fossil fuels are used. The facility operates 24/7, 365 days a year. All of the flow of the Susquehanna River passes through the turbines, making it available for any thermal assimilation from the cooling waters.

Changes in this renewal: Dissolved Oxygen, Ultraviolet Light Dosage, Ammonia, TN and TN species parameters were added to Outfall 001. A Bromide parameter was added to Outfall 002.

Approve	Deny	Signatures	Date
		Benjamin R. Lockwood / Environmental Engineering Specialist	March 21, 2019
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Program Manager	

Summary of Review

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.

Supplemental information for this report is located in an attachment below.

Safe Harbor
PA0032379 Supplem

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.015
Latitude	39º 55' 38"	Longitude	76º 23' 05"
Quad Name	Safe Harbor	Quad Code	1934
Wastewater Description:	Sanitary wastewater treatment plant effluent		
Receiving Waters	Conestoga River	Stream Code	07548
NHD Com ID	57467915	RMI	0.80
Drainage Area	475 mi^2	Yield (cfs/mi^2)	0.150
Q_{7-10} Flow (cfs)	71.1	Q_{7-10} Basis	USGS PA StreamStats
Elevation (ft)	195	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Mercury		
Source(s) of Impairment	Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	9.85	Distance from Outfall (mi)	7.87

Changes Since Last Permit Issuance: The USGS PA StreamStats is showing a drainage area of 475 mi^2 and a Q_{7-10} of 71.1 cfs.

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	1.181
Latitude	39º 55' 27"	Longitude	76º 23' 24"
Quad Name	Safe Harbor	Quad Code	1934
Wastewater Description:	Internal plant floor drains, groundwater seepage, boiler blowdown, filter plant backwash, non-contact cooling waters		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	57467915	RMI	16.9
Drainage Area	26100	Yield (cfs/mi^2)	0.126
Q_{7-10} Flow (cfs)	3,289	Q_{7-10} Basis	USGS Gage # 01576000
Elevation (ft)	186	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	9.85	Distance from Outfall (mi)	7.05

Changes Since Last Permit Issuance: A drainage area of 26,100 mi^2 and a Q_{7-10} flow of 3,288 cubic feet per second (cfs) were determined by establishing a correlation to the yield of USGS Gage Station #01576000 on the Susquehanna River. The Q_{7-10} and drainage area at the gage are 3,270 cfs and 25,990 mi^2, respectively. These values are taken from the USGS document “Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania”. The Q_{7-10} runoff rate at the gage station was calculated as follows:

Yield = (3,270 cfs)/ 25,990 mi^2 = 0.126 cfs/mi^2

The drainage area at the discharge point, taken from USGS PA StreamStats = 26,100 mi^2

The Q_{7-10} at the discharge point = 26,100mi^2 x 0.126 cfs/mi^2 = 3,289 cfs

Due to incomplete mixing in the Susquehanna River, ¼ of the Q_{7-10} was used in modeling, 822 cfs.

Other Comments: None

Outfalls 003-014

These outfalls collect non-contact turbine cooling waters. The flow rates of these discharges vary, and they are not metered. These outfalls discharge to the main station sump, which discharges to Outfall 002. Since these outfalls combine prior to Outfall 002, they were included in the reasonable potential analysis for Temperature as part of the maximum discharge flow for Outfall 002. The Temperature analysis is detailed below. These outfalls will be identified in the NPDES permit and appropriate Part C conditions will be included.

Outfall 015

This outfall collects frequency changer air cooling water. The flow rate of this discharge varies and is not metered. Estimated flow from this outfall was included in the Temperature analysis. This outfall will be identified in the NPDES permit and appropriate Part C conditions will be included.

Outfalls 016-024

These outfalls contain intermittent discharges of groundwater that are drained to keep the facility dry. From the previous permit fact sheet, these outfalls are not accessible for monitoring and discharge below the water surface. No impacts from these outfalls are expected. These outfalls will be identified in the NPDES permit and appropriate Part C conditions will be included.

Outfall 016 – Dewatering pumps
Outfall 017 – Oil circuit breaker emergency drain
Outfall 018 – Raw water valve sand pit drain
Outfall 019 – Screen heating transformer trench drain
Outfall 020 – Connecting bulkhead tunnel drain pump
Outfall 021 – Frequency changer starting equipment floor drains
Outfall 022 – Emergency flood pumps
Outfall 023 – Substation elevator sump pumps
Outfall 024 – Connection bulkhead and west inspection tunnel drain pump

Discharge, Receiving Waters and Water Supply Information

Outfall No.	025	Design Flow (MGD)	Variable (stormwater)
Latitude	39º 55' 32"	Longitude	76º 23' 21"
Quad Name	Safe Harbor	Quad Code	1934
Wastewater Description:	Stormwater from transformer pocket drains		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	57467915	RMI	16.9
Drainage Area	26100	Yield (cfs/mi^2)	0.126
Q_{7-10} Flow (cfs)	3,289	Q_{7-10} Basis	USGS Gage # 01576000
Elevation (ft)	186	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	9.85	Distance from Outfall (mi)	7.05

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	026	Design Flow (MGD)	Variable (stormwater)
Latitude	39º 55' 27"	Longitude	76º 23' 24"
Quad Name	Safe Harbor	Quad Code	1934
Wastewater Description:	Stormwater from powerhouse roof drains		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	57467915	RMI	16.9
Drainage Area	26100	Yield (cfs/mi^2)	0.126
Q_{7-10} Flow (cfs)	3,289	Q_{7-10} Basis	USGS Gage # 01576000
Elevation (ft)	186	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	9.85	Distance from Outfall (mi)	7.05

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	027	Design Flow (MGD)	Variable (stormwater)
Latitude	39º 55' 32"	Longitude	76º 23' 20"
Quad Name	Safe Harbor	Quad Code	1934
Wastewater Description:	Stormwater from parking lot		
Receiving Waters	Susquehanna River	Stream Code	06685
NHD Com ID	57467915	RMI	16.9
Drainage Area	26100	Yield (cfs/mi^2)	0.126
Q_{7-10} Flow (cfs)	3,289	Q_{7-10} Basis	USGS Gage # 01576000
Elevation (ft)	186	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	PCB		
Source(s) of Impairment	Source Unknown		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Holtwood Power Plant		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	
PWS RMI	9.85	Distance from Outfall (mi)	7.05

Changes Since Last Permit Issuance: None

Other Comments: None

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	7/17/2012: An inspection was conducted by Austin Pardoe, DEP Water Quality Specialist. The inspection was performed due to a broken sewer line, which receives flow from Safe Harbor Village. The Safe Harbor representatives were unsure of where the leak was and were planning on digging to locate it. The wastewater was not actively flowing during the inspection. It was estimated by Safe Harbor that approximately 3,000 gallons of untreated sewage made it to the Conestoga River. The WWTP was inspected. Austin recommended that they clean the clarifier tank more often. He noted that the effluent looked pretty clear. 11/4/2012: Austin Pardoe stopped by Safe Harbor to check on a sewage leak getting to Outfall 002. Safe Harbor said the leak was only a pinhole and estimated only approximately 1 gallon made it to the outfall. The remainder of the leak was captured in a barrel. Austin recommended they fix the pipe within 30 days. 2/12/2013: Austin Pardoe performed a brief inspection. He noted that the plant appeared to be operating properly. 5/14/2013: A routine inspection was conducted by Austin Pardoe. No issues were noted. 12/19/2013: A routine inspection was conducted by Austin Pardoe. He noted that all treatment units appeared to be operating ok. 1/4/2016: A routine inspection was conducted by Sheena Ripple, DEP Water Quality Specialist. She took field readings at Outfall 002 and at the WWTP. No issues were noted.

Other Comments: There are currently no open violations for this permittee or facility.

Compliance History

DMR Data for Outfall 001 (from February 1, 2018 to January 31, 2019)

Parameter	FEB-18	MAR-18	APR-18	MAY-18	JUN-18	JUL-18	AUG-18	SEP-18	OCT-18	NOV-18	DEC-18	JAN-19
Flow (MGD) Average Monthly	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001
Flow (MGD) Daily Maximum	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.003	0.005	0.003	0.003
pH (S.U.) Minimum	6.7	7.0	7.4	7.0	7.1	6.8	7.0	7.1	7.1	7.3	6.8	7.0
pH (S.U.) Maximum	7.8	7.6	8.0	7.5	7.5	7.6	7.6	7.6	7.7	7.7	7.7	7.8
TRC (mg/L) Average Monthly	0.48	0.11	0.03	0.04	0.05	0.06	0.08	0.04	0.02	< 0.03	0.01	0.03
TRC (mg/L) Instantaneous Maximum	0.7	0.15	0.03	0.08	0.07	0.1	0.1	0.07	0.03	0.11	0.03	0.04
CBOD5 (mg/L) Average Monthly	5.3	< 2.0	< 2.8	3.3	2.7	< 2.9	< 2.0	< 2.0	2.4	< 2.5	< 3.0	< 2.7
TSS (mg/L) Average Monthly	50.0	16.0	12.0	11.0	7.0	9.0	8.0	10.0	7.0	< 6.0	< 6.0	< 5.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Phosphorus (mg/L) Average Monthly	1.1	0.26	0.22	0.18	< 0.1	0.12	0.15	0.20	0.13	< 0.12	0.14	< 0.1

DMR Data for Outfall 002 (from February 1, 2018 to January 31, 2019)

Parameter	FEB-18	MAR-18	APR-18	MAY-18	JUN-18	JUL-18	AUG-18	SEP-18	OCT-18	NOV-18	DEC-18	JAN-19
Flow (MGD) Average Monthly	0.588	0.699	0.657	0.712	0.555	0.559	0.682	0.597	0.663	0.647	0.523	0.446
Flow (MGD) Daily Maximum	0.709	0.792	0.806	0.835	0.734	0.958	0.828	0.893	1.649	3.002	0.979	0.583
pH (S.U.) Minimum	7.54	7.43	7.35	6.43	6.89	6.9	7.18	7.5	7.51	7.29	7.35	7.44
pH (S.U.) Maximum	8.11	8.83	8.28	7.57	7.62	8.43	8.06	8.35	8.18	7.81	8.4	7.99
Temperature (ºF) Average Monthly	44.0	46.7	54.2	69.0	76.4	82.1	75.7	72.9	60.4	50.1	45.6	43.3
Temperature (ºF) Daily Maximum	52.9	51.8	60.3	75.7	81.5	84.7	81.0	81.7	70.7	56.1	51.1	49.5
TSS (mg/L) Effluent Net Average Monthly	12.0	28.0	24.0	12.0	5.0	< 5.0	100.0	6.5	< 1.0	< 1.0	< 0.1	< 0.1
TSS (mg/L) Intake Average Monthly	11.0	20.0	19.0	8.0	18.0	14.0	226	144	108.0	41.0	17.0	26.0
TSS (mg/L) Effluent Net Daily Maximum	16.0	51.0	27.0	18.0	5.0	< 5.0	181.0	13.0	< 1.0	< 1.0	< 0.1	< 0.1
TSS (mg/L) Intake Daily Maximum	15.0	35.0	22.0	11.0	23.0	16.0	413	270	181.0	55.0	24.0	42.0
Oil and Grease (mg/L) Effluent Net Average Monthly	< 1.9	2.3	< 1.9	< 1.9	< 1.9	< 2.6	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Oil and Grease (mg/L) Intake Average Monthly	< 1.9	2.3	< 1.9	< 10.9	< 2.0	< 2.0	< 1.9	< 2.3	< 1.9	< 1.9	< 1.9	< 1.9
Oil and Grease (mg/L) Effluent Net Daily Maximum	< 1.9	2.6	< 1.9	< 1.9	< 1.9	3.2	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9	< 1.9
Oil and Grease (mg/L) Intake Daily Maximum	< 1.9	2.7	< 1.9	19.8	< 2.0	2.1	< 1.9	2.6	< 1.9	< 1.9	< 1.9	< 1.9
Total Aluminum (mg/L) Effluent Net Average Monthly	0.26	0.738	0.56	0.20	0.2	0.07	1.46	0.13	< 1.0	< 1.0	< 0.1	< 0.1

Total Aluminum (mg/L) Intake Average Monthly	0.29	0.52	0.38	0.23	0.31	0.105	2.72	1.84	1.89	0.77	0.31	0.35
Total Aluminum (mg/L) Effluent Net Daily Maximum	0.27	1.3	0.71	0.28	0.28	0.083	2.7	0.26	< 1.0	< 1.0	< 0.1	< 0.1
Total Aluminum (mg/L) Intake Daily Maximum	0.35	0.88	0.39	0.34	0.4	0.14	5.1	3.5	3.2	1.1	0.43	0.55
Total Iron (mg/L) Effluent Net Average Monthly	0.55	1.37	1.09	0.45	0.35	0.12	2.99	0.35	< 1.0	< 1.0	< 0.1	< 0.1
Total Iron (mg/L) Intake Average Monthly	0.59	1.09	0.88	0.56	0.62	0.23	5.6	3.92	3.9	1.63	0.71	0.83
Total Iron (mg/L) Effluent Net Daily Maximum	0.57	2.4	1.3	0.62	0.5	0.13	5.5	0.70	< 1.0	< 1.0	< 0.1	< 0.1
Total Iron (mg/L) Intake Daily Maximum	0.60	1.7	0.93	0.78	0.77	0.28	10.4	7.6	6.5	2.3	0.87	1.3
Total Magnesium (mg/L) Effluent Net Average Monthly	0.487	0.139	0.104	0.099	0.21	0.083	0.33	0.035	< 1.0	< 0.1	< 0.1	< 0.1
Total Magnesium (mg/L) Intake Average Monthly	0.098	0.13	0.12	0.124	0.26	0.093	0.63	0.48	0.28	0.12	0.086	0.1
Total Magnesium (mg/L) Effluent Net Daily Maximum	0.88	0.19	0.12	0.13	0.23	0.086	0.56	0.07	< 1.0	< 0.1	< 0.1	< 0.1
Total Magnesium (mg/L) Intake Daily Maximum	0.12	0.14	0.12	0.15	0.26	0.096	1.1	0.83	0.41	0.13	0.087	0.12

Compliance History

Effluent Violations for Outfall 002, from: March 1, 2018 To: January 31, 2019

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	08/31/18	Avg Mo	100.0	mg/L	30.0	mg/L
TSS	08/31/18	Daily Max	181.0	mg/L	60.0	mg/L
Total Iron	08/31/18	Avg Mo	2.99	mg/L	2.0	mg/L
Total Iron	08/31/18	Daily Max	5.5	mg/L	4.0	mg/L

Existing Effluent Limitations and Monitoring Requirements

Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum 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
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	24-Hr Composite

Compliance Sampling Location: At discharge from the facility

Outfall 002

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	Report	Report	XXX	2/month	I-S
TSS Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
TSS Effluent Net	XXX	XXX	XXX	30	60	75	2/month	Grab
Oil and Grease Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Oil and Grease Effluent Net	XXX	XXX	XXX	4.0	8.0	10	2/month	Grab
Total Aluminum Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Aluminum Effluent Net	XXX	XXX	XXX	4.0	8.0	10	2/month	Grab
Total Iron Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Iron Effluent Net	XXX	XXX	XXX	2.0	4.0	5.0	2/month	Grab
Total Magnesium Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Magnesium Effluent Net	XXX	XXX	XXX	1.0	2.0	2.5	2/month	Grab

Compliance Sampling Location: At discharge from the facility

Other Comments: Concentrations are net values over river background concentrations

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .015
Latitude 39º 55' 38" **Longitude** 76º 23' 05"
Wastewater Description: Sanitary wastewater treatment plant effluent

Technology-Based Limitations

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

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)

Comments: None

Water Quality-Based Limitations

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.0b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), ammonia (NH_3-N), and dissolved oxygen (D.O.). The model simulates two basic processes: In the NH_3-N module, the model simulates the mixing and degradation of NH_3-N in the stream and compares calculated instream NH_3-N concentrations to NH_3-N water quality criteria. In the D.O. module, the model simulates the mixing and consumption of D.O. in the stream due to the degradation of $CBOD_5$ and NH_3-N and compares calculated instream D.O. concentrations to D.O. water quality criteria. The model then determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions. DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges.

The model was utilized for this permit application. The model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, an NH_3-N average monthly limit of 25 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality.

The flow data used to run the model was acquired from USGS PA StreamStats and is included as an attachment. SOP No. BPNPSM-PMT-033 (Establishing Effluent Limitations for Individual Sewage Permits) recommends, for existing discharges, a year-round monitoring requirement for ammonia-nitrogen at a minimum when WQM modeling results for summer indicates that an average monthly limit of 25 mg/L is acceptable. Accordingly, a monitoring requirement for NH_3-N has been added to the proposed effluent limitations. A minimum measurement frequency of 2/month will be established for the NH_3-N monitor requirement, to be consistent with the existing effluent limitations. The limit of 25 mg/l for $CBOD_5$ is the same as in the existing permit and will remain in the permit.

There are no industrial/commercial wastewater contributions to this discharge. Accordingly, evaluating reasonable potential of toxic pollutants is not necessary as effluent levels of toxic pollutants are expected to be insignificant.

Best Professional Judgement (BPJ) Limitations

A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). This limit will be included in the permit to ensure that the facility achieves compliance with DEP water quality standards.

Ultraviolet Disinfection

DEP's SOP No. BPNPSM-PMT-033 recommends at a minimum, routine monitoring of UV transmittance, dosage, or intensity when the facility is utilizing a UV disinfection system. The monitoring should occur at the same frequency as would be used for TRC. This approach has been assigned to other facilities equipped with similar technology. Accordingly, a parameter for UV Light Dosage will be included in the permit.

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 2 Supplement was most recently revised on September 6, 2017. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow.

This facility is considered a Phase 5 non-significant discharger with a design flow less than 0.2 MGD but greater than 0.002 MGD. According to DEP's latest-revised Phase 2 Supplement, issuance of permits with monitoring and reporting for TN and TP is recommended for any Phase 5 non-significant sewage facilities (i.e., facilities with average annual design flows on August 29, 2005 less than 0.2 MGD but greater than 0.002 MGD). Furthermore, DEP's SOP No. BPNPSM-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. There is already a TP limit in the existing permit. TN monitoring will be added to the permit. A monitoring frequency for TN species of 2/month will be used to be consistent with the existing permit limits.

Anti-Degradation (93.4)

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

303d Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. The fish consumption impairment is due to mercury – source unknown. The discharge will not contribute to this impairment.

Class A Wild Trout Fisheries

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

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	1.181
Latitude	39º 55' 27"	**Longitude**	76º 23' 24"

Wastewater Description: Internal plant floor drains, groundwater seepage, boiler blowdown, filter plant backwash, non-contact cooling waters

Water Plant Backwash

From the previous permit fact sheet, Outfall 002 receives filter backwash and the primary settling basin sludge from the facility's water treatment plant. Technology limits were set for TSS, Total Aluminum, Total Iron and Total Magnesium. There is no treatment provided, except for dilution provided by the cooling water. Since there is no treatment provided, limits were required for these parameters in past permits. They were incorporated as net effluent limits because of the mixing with river cooling water in the sump. These limits will remain in the permit.

pH

PA Code §§ 95.2(1) requires effluent pH limits of 6.0 to 9.0 standard units (S.U.) at all times in effluent. The permit will continue to require pH limit of 6.0 to 9.0 S.U.

Temperature Limitations

A reasonable potential (RP) analysis was performed for temperature which is the main pollutant of concern in the NCCW. Effluent limitations for temperature were calculated using the Case 2 Thermal Worksheet with an updated wastewater flow of 3.197 mgd. This flow is based off of the maximum flow for Outfall 002 as well as assumptions for the flow from Outfall 015. The maximum flow listed in the application for Outfall 002 is 1.181 mgd. From the previous permit fact sheet, a maximum flow of 1,400 gpm (2.016 mgd) was used for the assumed maximum cooling water discharge from Outfall 005. This assumption was used for the temperature calculations. A stream $Q_{7\text{-}10}$ flow of 844 cfs was used in the temperature worksheet. The worksheet recommended permit limits for a discharge to WWF of 110°F, which is the cap for limits generated by the worksheet. The DMRs for the previous year never had a daily maximum temperature reading above 84.7°F, which is well below the calculated maximum water quality temperature limitation of 110°F. 2/month temperature monitoring will continue for the permit renewal to obtain data for future evaluation. A printout of the worksheet is attached.

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the Pennsylvania Chesapeake Watershed Implementation Plan (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a Phase 2 Watershed Implementation Plan Wastewater Supplement (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. The Phase 2 Supplement was most recently revised on September 6, 2017. Industrial discharges have been prioritized by Central Office based on their delivered TN and TP loadings to the Bay. Significant industrial wastewater dischargers are facilities that discharge more than 75 lbs/day of TN or 25 lbs/day of TP on an average annual basis and the rest are classified as non-significant dischargers. DEP developed a Chesapeake Bay industrial waste (IW) monitoring plan for all industrial facilities that discharge to the Chesapeake Bay. This facility is classified as a non-significant discharger with little or no potential to introduce nutrients to the receiving stream; therefore, no monitoring for TP and TN series will be required at this time for Outfall 002.

Toxics

Effluent sample results for toxic pollutants reported on the renewal application were entered into DEP's Toxics Screening Analysis worksheet and PENTOXSD to develop appropriate permit requirements for toxic pollutants of concern. Based on effluent sample results reported on the application; Total Antimony, Total Arsenic, Total Cadmium, Hexavalent Chromium, Total Lead, Total Phenols, Total Selenium, and Total Silver are candidates for PENTOXSD modeling as these pollutants are discharged at a level that has the reasonable potential to cause excursions above the state water quality criteria. A stream hardness. A default stream hardness and pH were used in the modeling. A discharge hardness of 131 mg/l was used in modeling. The resulting WQBELs from PENTOXSD were as follows: Total Antimony – 825.291 µg/l, Total Arsenic – 1473.734 µg/l, Total Cadmium – 31.222 µg/l, Hexavalent Chromium – 235.179 µg/l, Total Lead – 478.768 µg/l, Total

Phenols – 2314.789 µg/l, Total Selenium – 748.829 µg/l, and Total Silver – 55.924 µg/l. When the WQBELs produced from PENTOXSD were entered into the Toxics Screening Analysis, the worksheet recommended that no limits or monitoring were necessary for any of these parameters. 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. PENTOXSD Model Results are attached to this fact sheet. The Toxics Screening Analysis uses the following logic:

a. Establish average monthly and instantaneous maximum (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.

Since the reported maximum concentrations were less than 10% of their respective WQBEL, per DEP's SOP No. BPNPSM-PMT-033, no limits or monitoring are necessary. The existing limits for Total Aluminum, Total Iron, and Total Magnesium are more stringent and will remain in the permit.

Total Dissolved Solids (TDS)

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 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.

Exelon reported the maximum effluent 118.0 mg/l for TD, and <2.5 mg/l for Bromide. Based upon the data provided in the application, monitoring of Bromide will be required. A monitoring frequency of 2/month will be included to be consistent with the existing permit.

Oil and Grease

DEP's SOP No. BPNPSM-PMT-032 recommends a monitor requirement for Oil and Grease if the maximum concentration reported in the application is greater than 4 mg/l. The application lists a maximum concentration of <5.0 mg/l for Oil and Grease. There is an existing limit for Oil and Grease in the permit, which is more stringent than a monitor only requirement; therefore, the more stringent existing limit will remain in the permit.

Anti-Degradation

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

303(d) Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is an impairment use for fish consumption due to PCB, from an unknown source.

Class A Wild Trout Fisheries

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

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

Development of Effluent Limitations

Outfall No.	025, 026, 027	**Design Flow (MGD)**	Variable
Latitude	39º 55' 32" (025) 39º 55' 27" (026) 39º 55' 32" (027)	**Longitude**	76º 23' 21" (025) 76º 23' 24" (026) 76º 23' 20" (027)
Wastewater Description:	Stormwater		

Limitations

Safe Harbor is classified under SIC Code 4910. The facility's stormwater discharge does not fall with the EPA definition of storm water associated with industrial activity per 40 CFR 122.26(b)(14); therefore, monitoring will not be required. Part C requirements for stormwater outfalls 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	5.0 Inst Min	XXX	XXX	XXX	1/day	Grab
UV Light Dosage ($mWsec/cm^2$)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	24-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Ammonia-N	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Kjeldahl-N	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Nitrate-Nitrite-N	XXX	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4.0	2/month	24-Hr Composite
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	Calculate

Compliance Sampling Location: Outfall 001

Other Comments: None

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	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/day	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	Report	Report	XXX	2/month	I-S
TSS Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
TSS Effluent Net*	XXX	XXX	XXX	30	60	75	2/month	Grab
Oil and Grease Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Oil and Grease Effluent Net*	XXX	XXX	XXX	4.0	8.0	10	2/month	Grab
Total Aluminum Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Aluminum Effluent Net*	XXX	XXX	XXX	4.0	8.0	10	2/month	Grab
Total Iron Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Iron Effluent Net*	XXX	XXX	XXX	2.0	4.0	5.0	2/month	Grab
Total Magnesium Intake	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Magnesium Effluent Net*	XXX	XXX	XXX	1.0	2.0	2.5	2/month	Grab
Bromide	XXX	XXX	XXX	Report	XXX	XXX	2/month	Grab

Compliance Sampling Location: Outfall 002
Other Comments: *The concentrations are net values over the river background concentrations

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	PENTOXSD for Windows Model (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☒	Temperature Model Spreadsheet (see Attachment)
☒	Toxics Screening Analysis 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: