Pennsylvania Department of Environmental Protection

Northeast Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0008664**
Facility Type	**Industrial**	APS ID	**551679**
Major / Minor	**Minor**	Authorization ID	**1216622**

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

Applicant and Facility Information

Applicant Name	**Hunlock Creek Generating LLC**	Facility Name	**Hunlock Creek Energy Center**
Applicant Address	390 US Route 11	Facility Address	390 US Route 11
	Hunlock Creek, PA 18621		Hunlock Creek, PA 18621
Applicant Contact	Jeff Steeber	Facility Contact	Jeff Steeber
Applicant Phone	(570) 542-2780	Facility Phone	(570) 542-2790
Client ID	72983	Site ID	264295
SIC Code	4911	Municipality	Hunlock Township
SIC Description	Trans. & Utilities - Electric Services	County	Luzerne
Date Application Received	January 31, 2018	EPA Waived?	Yes
Date Application Accepted	February 12, 2018	If No, Reason	-

Purpose of Application: Renewal and amendment of existing NPDES permit.

Summary of Review

The Hunlock Creek Energy Center consists of two combustion turbines fueled by natural gas, two heat recovery steam generators with duct burners, and a steam driven turbine that generates 127 Megawatts (MW) of electricity. The facility is permitted to combust natural gas and a limited amount of ultralow sulfur distillate oil.

Due to the construction of new units, the facility is subject to 40 CFR 423.15 1982 New Source Performance Standards (NSPS) requirements. The NSPS requirements mirror the best available technology economically achievable (BAT) and best practicable control technology currently achievable (BPT) requirements. The standards include limitations for low volume waste sources, FGD wastewater, flue gas mercury control wastewater, gasification wastewater and combustion residual leachate (some of which do not apply to this discharge).

40 CFR 423 allows for the application of concentration limitations instead of mass-based limitations and those provisions are carried over in this permit renewal. Mass-based limitations were also established in the previous renewal for Total Zinc and Total Chromium for Outfall 003 based on the potential variability of flows.

Cooling Water Intake Structure (CWIS) Requirements

Once-through cooling and other plant water needs for Unit 3 are met using a CWIS located on the Susquehanna River. The shoreline intake structure is located at the end of an intake 230-ft channel and consists of a screen house and two parallel intake bays up to and including the intake pumps. The screen house includes two parallel flow paths from the river to the pumps. Each flow path includes a trash rack, traveling water screen, chlorination equipment, service water pump, and circulating water pump. Each traveling screen can be isolated with stop logs in the inlet and outlet sides of the screen. A sluice gate installed between the two flow paths allows for operation of all pumps with only one traveling screen in operation. The screens are rotated and cleaned for approximately 30 minutes during every plant operating shift.

Approve	Deny	Signatures	Date
X		Brian Burden, E.I.T. / Project Manager	December 23, 2024
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Acting Engineer Manager	12-24-24

Summary of Review

The facility is subject to the requirements of the Existing Facilities Rule at 40 CFR 122.21(r). According to the 2014 Existing Facilities Final Rule, the owner or operator of a facility that meets the applicability thresholds in 40 CFR § 125.91 must comply with one of seven alternatives for BTA standards for impingement mortality and are required to submit biological assessments and other data to the Department for evaluation and determination of BTA for entrainment. The permittee submitted a CWIS report (prepared by AECOM – January 2017) with the permit renewal application that describes their compliance with the above requirements.

Specific requirements related to CWIS were to be established during this renewal and included as a Part C special condition in the permit. Review of the biological assessments conclude that the permittee does not have any entrainment data that's appropriate for determining BTA. There was no site-specific data but rather data that are 15 years old from another facility (SSES) 10 miles downstream. There is no attempt to provide any comparison of the facilities and therefore the applicability of the data to the permittee's facility. DEP requires all facilities under the regulation to collect one year of peak season entrainment data at the facility to make a BTA determination.

The reports do not make an impingement BTA selection citing the need for an entrainment BTA selection first. The facility's current intake does not meet any of the defined BTA options in the regulation. Closed-cycle cooling is not utilized, the velocity at the intake is greater than the allowed 0.5 fps, and there is no fish return (all fish are dumped with the trash/debris collected). Notes from the biologists' review of the submitted reports are included at the end of this fact sheet.

This renewal will be issued without a selected BTA, however, a compliance schedule is included for submitting site-specific entrainment performance studies required by 40 CFR 122.21(r)(7) within one year of permit issuance. DEP will review the studies to make an entrainment BTA determination. An amended permit will then be issued and include another compliance schedule for selecting a method(s) of compliance with impingement mortality standard (40 CFR 122.21(r)(6)).

The template Part C special condition regarding existing cooling water intake structures will be updated to reflect the above requirements as follows:

I. COOLING WATER INTAKE STRUCTURE(S)

A. Nothing in this permit authorizes a take of endangered or threatened species under the Endangered Species Act.

B. Technology and operational measures currently employed at the cooling water intake structure(s) must be operated in a way that minimizes impingement mortality and entrainment to the fullest extent possible.

C. The permittee shall not alter the location, design, construction or capacity of the intake structure(s) without prior approval of DEP.

D. Best Technology Available (BTA) Requirements

The permittee shall meet the BTA requirements to minimize adverse impacts from entrainment as directed by DEP. Within one year of the permit effective date, the permittee shall submit to DEP the site-specific entrainment performance studies required by 40 CFR 122.21(r)(7). *After the entrainment BTA is established, an amended NPDES permit will be issued requiring the permittee to select a compliance alternative for meeting impingement mortality standards for the operation of the cooling water intake structure (CWIS).*

E. If DEP determines the methods to meet impingement and entrainment BTA requirements are not sufficient, the permittee shall employ additional controls to reduce adverse impacts from impingement and entrainment.

F. The permittee shall, on an annual basis, submit a report describing any modifications to the operation of any unit at the facility that impacts cooling water withdrawals or operation of the cooling water intake structure(s) during a calendar year. If not applicable, the permittee shall submit a statement certifying that no modifications have occurred in lieu of a report. The annual report or statement is due by January 28 of each year.

G. If the permittee wishes to submit a request for a reduction in permit application requirements as specified in 40 CFR § 125.95(c), the request must be submitted to DEP at least two years and six months before the permit expiration date.

Summary of Review

H. The permittee shall retain data and other records for any information developed pursuant to Section 316(b) of the Clean Water Act for a minimum of ten years.

I. New Units.

The permittee must submit applicable information in 40 CFR § 122.21(r) at least 180 days prior to the planned commencement of cooling water withdrawals associated with the operation of a new unit (as defined in 40 CFR § 125.92(u)).

Outfall 001

Up to 55.05 MGD of cooling water for Unit 3 is supplied from the existing Susquehanna River surface water intake. Water is pumped (two condenser cooling pumps rated at 17,014 gpm each and two service water pumps rated at 2,100 gpm each) to a condenser and provides once-through cooling before discharge through Outfall 001, which is located approximately 350 feet downstream of the intake. There is no consumptive use associated with this unit.

Stormwater runoff on site is collected via a series of inlets and underground piping that's conveyed to a 90,000-gallon cistern. Normal overflow from the cistern is reused as cooling water for Unit 3, and eventually discharges through Outfall 001.

Limitations for pH, Temperature and Oil & Grease (effluent net) are carried over from the previous permit and based on a design flow rate of 55.05 MGD. Please note: The previous permit amendment document contained a typographical error on page 9 that only approved a 50.05 MGD discharge. This renewal/amendment approves a 55.05 MGD flow value in Part A of the permit.

Monitoring/reporting requirements for Flow, Oil & Grease (influent and effluent), chlorination duration, and nutrients (TP, TN, TKN, NO_2+NO_3-N) are carried over from the previous permit.

Total Residual Chlorine ELG limitations (40 CFR 423.15(a)(8)) for once through cooling water apply and are carried over from the previous permit.

The following Part A.I.A. footnote from the previous renewal is included in this renewal: "All TRC sampling shall take place during discharge of Units' chlorinated effluent. No TRC sampling is required if no chlorination of CWIS intake waters during that day ensures no chlorinated discharge."

The Susquehanna River Metals TMDL did not assign any waste load allocations to Outfall 001.

Water quality modeling the sampling results of Pollutant Groups 1-4 was performed using DEP's Toxics Management Spreadsheet. Intake concentrations were subtracted from the discharge concentrations. Monitoring requirements were recommended for Total Copper since the net concentration is greater than 10% of the WQBEL. Based on the limited number of samples and the expectation that the intake/cooling system will not add significant amount of copper to the discharge, monitoring requirements are not included for Outfall 001. Water Quality Network (WQN) background data was not utilized from the nearby station due to the once-through cooling nature of discharge through this outfall.

For modeling inputs, the RMI values, drainage areas, elevations and stream width values are carried over from previous permit renewal modeling. The LFY of 0.087 cfs/mi^2 was calculated using data for stream gage 01536500 (Susquehanna River at Wilkes-Barre, PA) from the USGS Open File Report 2011-1070 and is the same LFY used in the previous renewal.

DEP's Thermal Discharge Limit calculation spreadsheet and the TRC calculation spreadsheet did not recommend more stringent limitations.

Outfall 003

The facility is permitted to discharge 0.346 MGD of combustion turbine generator inlet air cooling tower blowdown, heat recovery steam generator blowdown, stormwater overflows from the underground storage tank, and other low-volume wastewater through Outfall 003. Cooling tower blowdown and discharges are chlorinated. To control the discharge, the cooling tower basin has a discharge valve. The valve is shut off before chlorine is added and chlorine concentrations are

Summary of Review

monitored until the concentration is within the permit effluent limitations. The permit renewal application indicated the same maximum production discharge rate of 0.346 MGD.

Units 5 and 6 were added to the facility in 2010 when the former coal-fired power plant was converted and fueled primarily by natural gas. Water for Units 5 and 6 is supplied by Pennsylvania American Water Company (PAWC) for cooling and other facility processes. Currently, the facility withdrawals and consumes up to 0.87 MGD. Water enters the facility and is stored in a potable water supply tank where it is used for power generation and cooling purposes. Of the 0.87 MGD, approximately 0.13 MGD of combustion turbine generator inlet air cooling tower blowdown and heat recovery steam generator blowdown is discharged to Outfall 003.

The permit amendment application requests the addition of process water discharges from Unit 4 to Outfall 003. Unit 4 is a natural gas-fired combustion turbine generator rated at 44 MW. The unit was previously owned by Allegheny Energy and purchased by the permittee in June 2018. Unit 4 is a peaking unit and only authorized to operate 1,850 hours per year per their Air Quality permit.

Cooling water to Unit 4 is also supplied by PAWC and wastewater discharges include cooling tower blowdown and reject water from the demineralization process. The wastewater is currently sent to a 12,000-gallon holding tank and periodically hauled off-site for disposal. As per the amendment request, the permittee proposes to redirect the wastewater through an existing sump and oil/water separators before discharging approximately 0.004 MGD along with the existing 0.13 MGD wastewater discharges through Outfall 003. No request was made to increase the design flow of 0.346 MGD in the permit amendment application.

Excess stormwater that's not used for Unit 3 overflows the 90,000-gallon cistern and discharges through Outfall 003.

Limitations for TSS and Oil & Grease (required under 40 CFR 423.15(a)(3)) for low volume waste sources, FGD wastewater, flue gas mercury control wastewater, combustion residual leachate, and gasification wastewater) are carried over from the previous permit. With the addition of Unit 4 process wastewater, chemical metal cleaning wastes limitations (40 CFR 423.15(a)(4)) for Total Copper and Total Iron are included in this renewal for Outfall 003.

Bottom ash transfer water limitations (40 CFR 423.15(a)(6)), fly ash transport water limitations (40 CFR 423.15(a)(7)), once through cooling water limitations for facilities under 25 MW (40 CFR 423.15(a)(9)), do not apply to this facility.

Cooling tower blowdown limitations (40 CFR 423.15(a)(10)) for Free Available Chlorine, Chlorination duration, Total Chromium and Total Zinc are carried over from the previous permit. The permittee may not discharge detectable amounts of the 126 priority pollutants contained in chemicals added for cooling tower maintenance found in Appendix A of 40 CFR 423. Monitoring requirements for Total Nickel were included in the previous renewal due to the stormwater contribution to Outfall 003 and the monitoring requirements from Appendix H of the PAG-03 permit in effect at the time. Appendix H of the latest PAG-03 permit (revised 12/2022) does not include monitoring requirements for Total Nickel. Monitoring requirements for Total Nickel are removed from this permit renewal. Note that the latest revised PAG-03 permit includes monitoring requirements for Total Nitrogen, Total Phosphorus, pH, TSS, Oil & Grease, and Total Iron; all of which are currently monitored in the permit.

Limitations for pH and Temperature are carried over from the previous permit.

The mass waste load allocations for Total Iron and Total Manganese from the Susquehanna River Metals TMDL are carried over in this permit renewal.

Water quality modeling the sampling results of Pollutant Groups 1-5 was performed using DEP's Toxics Management Spreadsheet. For a conservative modeling approach, the concentrations of pollutants discharging from Unit 4 submitted with the permit amendment application were added to the concentrations reported in the permit renewal application (which included results without Unit 4 discharge). Monitoring/reporting for Total Copper was recommended, however, this parameter already has limitations at Outfall 003 under the chemical metal cleaning wastes ELG requirements. WQN background data was not utilized due to the dilution available for this discharge.

Monitoring reporting for Total Silver was required in the previously issued permit. After modeling DMR results for this parameter in the Toxics Management Spreadsheet it's been determined Total Silver is no longer a pollutant of concern and monitoring requirements are removed from the permit.

Summary of Review

DEP's Thermal Discharge Limit calculation spreadsheet and the TRC calculation spreadsheet did not recommend more stringent limitations.

Chemical Additive Notification forms were included in the permit amendment application for the three cooling water additives used in Unit 4 (GE Continuum AT4505; GE Gengard GN8300; and Suez Spectrus OX909). All chemicals appear on DEP's approved list and are not expected to negatively impact water quality at their usage rates.

Outfall 004

The facility is permitted to discharge 0.00357 MGD of treated sewage through Outfall 004. Due to the large difference between river flow and the discharge flow, technology-based limitations will apply and are carried over for $CBOD_5$, TSS, Fecal Coliform, Ammonia-Nitrogen (summer) and pH. The dissolved oxygen minimum of 4.0 mg/L is carried over from the previous permit. Annual monitoring/reporting for E. Coli is added to the permit as per current guidance.

The 1.0 mg/L monthly average and 2.0 mg/L IMAX limitations for Total Residual Chlorine (TRC) in the previously issued permit were technology-based limitations. As per PA Code 92a.47(a)(8) (which refers to PA Code 92a.48(b)(2)), a monthly average TRC facility-specific BAT effluent limit of 0.5 mg/L and an IMAX limit of 1.1 mg/L is applied to this permit renewal. The TRC Calculation Spreadsheet (attached) did not recommend more stringent water quality-based limitations. The permittee will be required to meet the new technology-based limits for TRC on the effective date of the permit.

Nutrients

This facility is considered a non-significant IW discharger as per DEP's Phase 3 Watershed Implementation Plan Wastewater Supplement (revised 9/13/2021). An industrial facility is considered significant if after expansion or increase in production the gross effluent discharges have exceeded 75 lbs/day of TN or 25 lbs/day of TP. Outfalls 003 and 004 generally discharge less than 1 lb/day TN/TP and Outfall 001 isn't considered a source of nutrients since it discharges once-through cooling water with no significant phosphorus or nitrogen-related chemical additives. Monitoring/reporting requirements included in the permit are consistent with the requirements for non-significant facilities in the Phase 3 document. No cap loads are established for this facility.

SRBC Docket

SRBC Docket 20090916-1 for the facility was originally approved on September 10, 2009 and modified on September 10, 2015. In the modified docket, the permittee requested an increase in the peak day consumptive water use for a proposed expansion adding a new 170-megawatts (MW) combined-cycle power block (identified as Units 7 and 8) to the existing facility. Following technical review, and consistent with applicable regulatory standards, Commission staff recommended that the approved rate of consumptive water use be increased to 2.396 MGD. Note that DEP has not yet received a request to increase flows or surface water withdrawals for that proposed expansion.

Other Part C Conditions

The following template Part C special condition is included in this renewal:

BMPS TO ADDRESS AQUEOUS FILM FORMING FOAM (AFFF)

The permittee shall update their Preparedness, Prevention and Contingency (PPC) Plan within 1 year of permit issuance to include measures to reduce PFAS discharges due to the use of AFFF. The updates must include the following, at a minimum:

A. Restricting the use of PFAS-containing AFFF to emergency situations and firefighting activities only.

B. Eliminating the use PFOS and PFOA-containing AFFFs to the maximum extent practicable.

C. Implementation measures to minimize discharges of PFAS during emergency activities, including diversions and other measures that prevent discharges via storm sewer systems.

Summary of Review

Most Part C conditions from the previous renewal are carried over. Some conditions are slightly adjusted to include new template language. The condition from the previous permit requiring intake monitoring of TN and TP is removed from this permit as well as the condition including a compliance schedule at Outfall 004 for Ammonia-N and D.O effluent limitations.

Monthly/quarterly total load reporting requirements for nutrients is removed from the permit and replaced with a lbs/day mass loading calculation requirement. Only annual total load reporting requirements are included in this renewal.

Requirement to report maximum Ammonia-N at Outfall 004 removed and is adjusted to report average monthly. The summertime IMAX limitation remains in the permit.

Previous Modeling Information.pdf
TMS Outfall 001.pdf
TMS Outfall 003.pdf
TRC Calculation Outfall 001.pdf
TRC Calculation Outfall 003.pdf
TRC Calculation Outfall 004.pdf
Thermal Outfall 001.pdf
Thermal Outfall 003.pdf
SRBC Docket.pdf
SRBC Unit 4 Approval.pdf
Susquehanna River Final TMDL.pdf

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	55.05
Latitude	41º 12' 2"	Longitude	-76º 4' 12"
Quad Name	Nanticoke	Quad Code	0937
Wastewater Description:	Noncontact Cooling Water (NCCW)		

Receiving Waters	Susquehanna River (WWF/MF)	Stream Code	6685
NHD Com ID	65636105	RMI	176.59
Drainage Area	10154 mi^2	Yield (cfs/mi^2)	0.087
Q_{7-10} Flow (cfs)	883	Q_{7-10} Basis	Gage 01536500
Elevation (ft)	503	Slope (ft/ft)	0.0008
Watershed No.	5-B	Chapter 93 Class.	WWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	Mercury, Metals, Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Acid Mine Drainage, Unknown sources		
TMDL Status	Final, Final	Name	Susquehanna River Metals, Susquehanna River PCB

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

Nearest Downstream Public Water Supply Intake	Danville Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1123
PWS RMI	122.5	Distance from Outfall (mi)	~39

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.346
Latitude	41º 11' 59"	Longitude	-76º 4' 28"
Quad Name	Nanticoke	Quad Code	0937
Wastewater Description:	Combined turbine generator inlet air cooling tower blowdown, HRSG blowdown, low-volume wastewater from floor drains, reject wastewater, and site stormwater overflows from the underground tank (plus stormwater used as process water).		

Receiving Waters	Susquehanna River (WWF/MF)	Stream Code	6685
NHD Com ID	65636105	RMI	176.59
Drainage Area	10154 mi^2	Yield (cfs/mi^2)	0.087
Q_{7-10} Flow (cfs)	883	Q_{7-10} Basis	Gage 01536500
Elevation (ft)	503	Slope (ft/ft)	0.0008
Watershed No.	5-B	Chapter 93 Class.	WWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	Mercury, Metals, Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Acid Mine Drainage, Unknown sources		
TMDL Status	Final, Final	Name	Susquehanna River Metals, Susquehanna River PCB

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

Nearest Downstream Public Water Supply Intake	Danville Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1123
PWS RMI	122.5	Distance from Outfall (mi)	~39

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	0.00357
Latitude	41º 12' 2.86"	Longitude	-76º 4' 11.62"
Quad Name	Nanticoke	Quad Code	0937
Wastewater Description:	Sewage Effluent		

Receiving Waters	Susquehanna River (WWF/MF)	Stream Code	6685
NHD Com ID	65636105	RMI	176.59
Drainage Area	10154 mi^2	Yield (cfs/mi^2)	0.087
Q_{7-10} Flow (cfs)	883	Q_{7-10} Basis	Gage 01536500
Elevation (ft)	503	Slope (ft/ft)	0.0008
Watershed No.	5-B	Chapter 93 Class.	WWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	Mercury, Metals, Polychlorinated Biphenyls (PCBs)		
Source(s) of Impairment	Acid Mine Drainage, Unknown sources		
TMDL Status	Final, Final	Name	Susquehanna River Metals, Susquehanna River PCB

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

Nearest Downstream Public Water Supply Intake	Danville Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1123
PWS RMI	122.5	Distance from Outfall (mi)	~39

Notes on CWIS Report Review

Entrainment

- No data from Hunlock
- Data provided from SSES, 10 miles downstream
    - Samples were collected at sunset and two hours after sunset, narrative implies that samples were combined but this is unclear.
    - Samples were collected weekly from 4/22/08-8/13/08 and 3/17/09-4/17/09
    - Data are 15 years old
    - No comparison between facilities, intakes, changes in the river that could influence entrainments, etc.
    - SSES study data provided does not estimate total entrainment

Impingement

- Study from 5/21/74-4/18/75 at Hunlock
    - 20, 24-hr samples
    - No efficiency study cited
    - No estimated total entrainment
- Another study 1/4/06-12/7/06 at Hunlock
    - No details of study design (number of samples, frequency, efficiency study, etc.)
    - 'Increased effort' in the study to document any impacts to American Shad
    - No estimated total entrainment
- Study results from SSES also provided, 4/22/08-4/20/09
    - Weekly sampling except for period from 6/11-8/11
    - No efficiency study cited
    - No estimated total entrainment
    - No comparison of the two facilities
- SSES data also provided from American Shad impingement studies
    - Targeted to downstream migration period
    - Daily monitoring during period in 2010, 12, 13, 14, 15, and 16