pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0232602**
Facility Type	**Industrial**	APS ID	**983809**
Major / Minor	**Major**	Authorization ID	**1256955**

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

Applicant Information

Applicant Name	**Panda Hummel Station LLC**	Facility Name	**Panda Hummel Station LLC**
Applicant Address	5001 Spring Valley Road Suite 1150	Facility Address	2386 N Old Trail Road
	Dallas, TX 75244-3946		Shamokin Dam, PA 17876
Applicant Contact	Michael Stahr	Facility Contact	Donna Switzer
Applicant Phone	(423) 912-4777	Facility Phone	(610) 574-1813
Client ID	314638	Site ID	786918
SIC Code	4911	Municipality	Shamokin Dam Borough
SIC Description	Trans. & Utilities - Electric Services	County	Snyder
Date Application Received	December 21, 2018	EPA Waived?	No
Date Application Accepted	January 17, 2019	If No, Reason	Major Facility
Purpose of Application	Renewal of an existing NPDES permit for the discharge of treated industrial waste.		

Public Participation

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

Approve	Deny	Signatures	Date
		Derek S. Garner / Project Manager	
		Nicholas Hartranft, P.E. / Environmental Engineer Manager	

Facility Summary

Panda Hummel Station ("PHS") is a 1,122 MW natural gas-fired combined-cycle power plant converted from the retired Sunbury Generation 440 MW coal-fired power plant. PHS consists of three gas turbines, one steam turbine, three air-cooled generators, one hydrogen-cooled generator, and three heat recovery steam generators ("HRSGs"). A closed-cycle recirculating cooling system withdraws water from a cooling water intake structure ("CWIS") located in the Susquehanna River. Wastewater streams throughout the site are discharged into the cooling tower basin where it is concentrated up to five times before it is wasted as cooling tower blowdown to the onsite industrial wastewater treatment plant ("IWTP"). The on-site industrial wastewater treatment plant ("IWTP") that consists of; one coagulation tank, one flocculation tank, two disc filters (1 duty, 1 standby), and appropriate chemical dosing before being discharged to the Susquehanna River. The construction/operation of the IWTP was/is covered under WQM Permit No. 5516201.

The natural-gas fired power plant began operation and discharge in March 2018.

Refer to Attachment A for a satellite overview of the facility.

Compliance History

The facility was last inspected by John Springer, Water Quality Specialist, on February 19, 2019. No violations were noted during the inspection.

No violations have occurred within the existing permit term.

There are no open violations, DEP-wide, associated with the permittee.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	1.114 (1)
Latitude	40º 50' 2.34"	Longitude	-76º 49' 28.22"
Quad Name	Sunbury	Quad Code	1231
Wastewater Description:	Cooling Tower Blowdown		

Receiving Waters	Susquehanna River	Stream Code	6685
NHD Com ID	54962831	RMI	122
Drainage Area	18,438	Yield (cfs/mi^2)	0.108
Q_{7-10} Flow (cfs)	1,990	Q_{7-10} Basis	Streamgage No. 01554000
Elevation (ft)	419	Slope (ft/ft)	n/a
Watershed No.	6-B	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	PCBs		
Source(s) of Impairment	Source Unknown		
TMDL Status	Pending	Name	n/a

Nearest Downstream Public Water Supply Intake	Suez Water Pennsylvania – Harrisburg 6th St. WTP		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	2,356
PWS RMI	76.7	Distance from Outfall (mi)	45.3

(1) Average flow during operation as reported in the renewal application.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 1.114
Latitude 40º 50' 15.00" **Longitude** -76º 49' 30.00"
Wastewater Description: Cooling tower blowdown

Outfall 002 is the discharge point for the IWTP.

Technology-Based Effluent Limitations (TBELs)

Per the criterion for a new source determination at 40 CFR § 122.29(b)(1)(ii), by totally replacing the process or production equipment that causes the discharge of pollutants at an existing source, PHS is designated as a new source. Consequently, the facility is subject to new source performance standards ("NSPS") as well as; best practicable control technology currently available ("BPT"), best available technology economically achievable ("BAT"), and best conventional pollutant control technology ("BCT") at 40 CFR Part 423 – Steam Electric Power Generating Point Source Category.

The following TBELs apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	Waste Stream	State Regulation
pH	6.0	Minimum	423.12(b)(1), 423.15(b)(1)	All	95.2(1)
	9.0	IMAX	423.12(b)(1), 423.15(b)(1)	All	95.2(1)
Total PCBs (µg/L) (1)	Non-detect	IMAX	423.12(b)(2), 423.13(a), 423.15(b)(2)	All	
Free Available Chlorine	0.2	Average Monthly	423.12(b)(7), 423.13(d)(1), 413.15(b)(10)(i)	Cooling tower blowdown	
	0.5	IMAX	423.12(b)(7), 423.13(d)(1), 413.15(b)(10)(i)	Cooling tower blowdown	
Priority Pollutants, Appendix A (2)	Non-detect	IMAX	423.13(d)(1), 423.15(b)(10)(i)	Cooling tower blowdown	
Total Chromium	0.2	Average Monthly	423.13(d)(1). 423.15(b)(10)(i)	Cooling tower blowdown	
	0.2	Daily Maximum	423.13(d)(1), 423.15(b)(10)(i)	Cooling tower blowdown	
Total Zinc	1.0	Average Monthly	423.13(d)(1), 423.15(b)(10)(i)	Cooling tower blowdown	
	1.0	Daily Maximum	423.13(d)(1), 423.15(b)(10)(i)	Cooling tower blowdown	
Oil and Grease (3)	15	Daily Maximum		All	95.2(2)
	30	IMAX		All	95.2(2)
Dissolved Iron (4)	7	IMAX		All	95.2(4)

(1) 40 CFR 423.12(b)(2) and 13(a) state that there shall be no PCB compounds in the discharge. PCBs are not used on site and the facility has never detected PCBs in the effluent. Accordingly, the existing limit has been removed and replaced with "Report." The existing narrative condition in Part C of the permit, "There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid", will remain.

(2) This requirement will be satisfied by establishing a Part C condition as follows, "Cooling tower blowdown discharges shall contain no detectable amounts of the 126 Priority Pollutants listed in 40 CFR Part 423, Appendix A, that are contained in chemicals added for cooling tower maintenance, except for Total Chromium and Total Zinc. On an annual basis, the permittee shall conduct monitoring or submit engineering calculations to demonstrate compliance with 40 CFR 423.15(b)(10)(i)."

(3) Oil and grease is not present in the discharge at concentrations that approach the TBELs. Since there is no reasonable potential to approach the TBELs no limitations or monitoring requirements are proposed.

(4) Dissolved iron is not present in the discharge at detectable concentrations. Since there is no reasonable potential to approach the TBEL no limitations or monitoring requirements are proposed.

Total Dissolved Solids (TDS) Treatment Requirements

This facility is classified as Unaffected in regard to the TDS treatment requirements of 25 Pa. Code § 95.10. As stated in the preamble to the final rulemaking, Section 95.10 applies only to net loadings. Since the primary source of TDS in the waste streams are naturally occurring (i.e., ambient stream concentration), and the closed-cycle cooling system will only concentrate the natural concentration, effluent limits or monitoring requirements are not necessary.

Water Quality-Based Limitations

Effluent concentration data was entered into the Toxics Screening Analysis (TSA) v2.6 spreadsheet. If the concentration of a pollutant that is entered into the TSA spreadsheet is detected at a concentration higher than the 25 Pa. Code Chapter 93 criteria, or not detected using a detection limit higher than DEP's recommended qualitative limit (QL) and Chapter 93 criteria, that pollutant is considered a pollutant of concern and entered into the PENTOXSD v2.0d model. PENTOXSD is a single discharge model which is used to determine NPDES effluent limits for toxics in wastewater discharges. The most stringent WQBEL criterion, as recommended by PENTOXSD, is then entered back into the TSA spreadsheet, which either recommends establishing limits, reporting requirements, or taking no actions.

A summarized results table for the process identified above is as follows:

Parameter	Effluent Limit (µg/l)	Governing Criterion	Max Daily Limit (µg/l)	WQBEL (µg/l)	WQBEL Criterion	Screening Recommendation
1,1,2,2-Tetrachloroethane	1	Input	1.56	25.191	CRL	No Limits/Monitoring
1,1,2-Trichloroethane	1	Input	1.56	87.428	CRL	No Limits/Monitoring
1,2-Dichloroethane	1	Input	1.56	56.309	CRL	No Limits/Monitoring
1,3-Dichloropropylene	2	Input	3.12	50.382	CRL	No Limits/Monitoring
Acrolein	10	Input	15.602	12.061	AFC	Establish Limits (1)
Acrylamide	10.373	CRL	16.183	10.373	CRL	Establish Limits (1)
Aluminum	2200	Input	3432.354	3015.315	AFC	Establish Limits
Carbon Tetrachloride	1	Input	1.56	34.082	CRL	No Limits/Monitoring
Chlorodibromomethane	1	Input	1.56	59.273	CRL	No Limits/Monitoring
Dichlorobromomethane	1	Input	1.56	81.5	CRL	No Limits/Monitoring
Hexachlorobuta-Diene	2.8	Input	4.368	40.204	AFC	No Limits/Monitoring
Sulfate (PWS)	307000	Input	478969.3	3.9762e+08	THH	No Limits/Monitoring
Tetrachloroethylene	1	Input	1.56	102.246	CRL	No Limits/Monitoring
Total Dissolved Solids (PWS)	618000	Input	964179.4	7.9525e+08	THH	No Limits/Monitoring
Vinyl Chloride	1	Input	1.56	3.705	CRL	Monitor (2)

(1) The TSA spreadsheet recommends establishing limits for these parameters even though they were not detected in the effluent. The detection limit reported on the sample results is higher than DEP's recommended quantitation limits (QLs) and Chapter 93 criteria. Accordingly, the parameters must still be treated as parameters of concern. The permittee will be allowed to resample for these parameters with methods of lesser detection limits to demonstrate whether or not they are present in a lesser concentration than currently reported.

(2) The TSA spreadsheet recommends establishing monitoring requirements for this parameter even though it was not detected in the effluent. The detection limit reported on the sample results is higher than DEP's recommended quantitation limits (QLs) and Chapter 93 criteria. Accordingly, the parameter must still be treated as a parameter of concern. The permittee will be allowed to resample for this parameter with methods of lesser detection limits to demonstrate whether or not it is present in a lesser concentration than currently reported.

A thermal discharge analysis was conducted using the Thermal Discharge Limit Calc v2.0 spreadsheet. The partial mixing factor and site-specific temperatures were developed during the 2014 renewal when the discharge was covered under NPDES Permit No. PA0008451 (Sunbury Generation LP). There have been no substantial changes to the watershed that would warrant a new analysis. The spreadsheet indicates the existing maximum temperature limit of 110 °F, based on public safety rather than water quality concerns, is protective of the Susquehanna River.

The technology-based free available chlorine limit was evaluated using DEP's TRC Evaluation spreadsheet. Since free available chlorine is one component of total residual chlorine, using the spreadsheet provides a conservative analysis. The spreadsheet indicates the abovementioned FAC TBELs will not negatively impact the Susquehanna River.

Refer to Attachment B for all data associated with the WQBEL analysis.

Best Professional Judgment

Waste streams throughout the site are combined in the cooling tower basin and recirculated through the cooling system. Since the cooling tower blowdown is composed of various waste streams throughout the facility, many of which are considered low volume waste streams, DEP proposes to establish low volume waste effluent limit guidelines at Outfall 002. Below are the applicable effluent limit guidelines for low volume waste:

Parameter	Limit (mg/l)	SBC	Federal Regulation	Waste Stream
Total Suspended Solids	30.0	Average Monthly	423.15(b)(3)	Low volume waste
	100.0	Daily Maximum	423.15(b)(3)	Low volume waste
Oil and Grease (1)	15	Average Monthly	423.15(b)(3)	Low volume waste
	20	Daily Maximum	423.15(b)(3)	Low volume waste

(1) Oil and grease is not present in the discharge at concentrations that approach the TBELs. Since there is no reasonable potential to approach the TBELs no limitations or monitoring requirements are proposed.

Chesapeake Bay TMDL Considerations

As with TDS, the Chesapeake Bay TMDL is concerned with net loadings. Since the primary source of total nitrogen (TN) and phosphorus (TP) in cooling tower blown is natural, and the closed-cycle cooling system will only concentrate the natural concentrations, a net increase in TN or TP is not expected.

Anti-Backsliding

The existing permit contains WQBELs for total copper and monitoring for total arsenic, total cadmium, and total thallium. These limits and monitoring requirements were based on expected discharge concentrations since the facility was not in operation at the time the permit was developed. The facility is now operable and has collected samples in accordance with permit requirements, none of which approach Chapter 93 criteria. Based on this new information that was not available at the time of previous permit issuance, per anti-backsliding regulations at 40 CFR § 122.44(l)(2)(i)(B)(1), total copper limits and monitoring requirements for total arsenic, total cadmium, and total thallium have been removed.

The TBEL for Total PCBs has been changed to "Report" since new data, samples collected in accordance with permit requirements, demonstrates there is no reasonable potential to exceed the limit.

Clean Water Act § 316(b)

The existing permit established conditions at Part C.II. for a cooling water intake structure that required the permittee to meet BTA standards for impingement mortality and entrainment by installing a close-cycle recirculating system by June 30, 2017. However, in correspondence dated June 9, 2017 DEP was informed that the deadline would not be met. Target dates of December 31, 2017 for complete installation of the system and February 28, 2018 for first date of operation were provided in the correspondence. An email dated March 26, 2018 from the permittee notified DEP that continuous discharge from Outfall 002 began March 20, 2018.

Part C.II.B. required the permittee to submit the applicable information in 40 CFR §§ 122.21(r)(2) – (r)(8) with the subsequent permit application. The following information was included in the application to satisfy these requirements:

Source water physical data. A Water Baseline Biological Characterization, along with the Susquehanna River Basin Commission's Susquehanna River Fact Sheet, is attached to Module 5 of the application. Data included in these two reports satisfies requirements at §§ 122.21(r)(2)(i) – (iii).

Cooling water intake structure data. A detailed narrative of the cooling water intake structure was included in the application's cover letter. Additionally, latitude and longitude of the physical intake structure, description of the intake flows and operation, a water balance diagram, and engineering drawings have all been included with the application. The provided cooling water intake structure data satisfies requirements at §§ 122.21(r)(3)(i) – (v).

Source water baseline biological characterization data. As mentioned in the source water physical data, a Water Baseline Biological Characterization report was included with Module 5 of the permit. The report satisfies requirements at §§ 122.21(r)(4)(i) – (xii).

Cooling water system data. All cooling water system data relevant to §§ 122.21(r)(5)(i) –(iii) was included with Module 5 of the application.

Chosen method of compliance with impingement mortality standard. The facility uses a closed-cycle recirculating system to meet BTA standards.

Entrainment performance studies. No entrainment performance studies were included with the application. However, the closed-cycle recirculating system satisfies BTA requirements for entrainment.

*Operational status. A description of the facility's o*perational status that satisfies §§ 122.21(r)(8)(i) –(v) has been included in Module 5 of the application.

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)		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	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Free Available Chlorine	XXX	XXX	XXX	0.2	XXX	0.5	1/day	Grab
Temperature (deg F) (ºF)	XXX	XXX	XXX	XXX	110	XXX	Continuous	Metered
Total Suspended Solids	275	925	XXX	30.0	100.0	125	1/week	24-Hr Composite
Aluminum, Total	27.96	31.86	XXX	3.01	3.43	7.52	1/week	24-Hr Composite
Chromium, Total	1.85	1.85	XXX	0.20	0.20	0.5	1/week	24-Hr Composite
Zinc, Total	9.29	9.29	XXX	1.00	1.00	2.5	1/week	24-Hr Composite
Priority Pollutants, Total	XXX	Report IMAX	XXX	XXX	XXX	Report	1/year	See Permit
Acrolein (ug/L)	0.11	0.14	XXX	12.06	15.60	30.15	1/week	24-Hr Composite
Acrylamide (ug/L)	0.09	0.15	XXX	10.37	16.18	25.92	1/week	24-Hr Composite
PCBs, Total (ug/L)	XXX	XXX	XXX	XXX	XXX	Report	1/month	Grab
Vinyl Chloride (ug/L)	Report	XXX	XXX	Report	XXX	XXX	1/month	24-Hr Composite

Compliance Sampling Location: Outfall 002

PA0232602_FACT_S
HEET_ATTACH_20190