pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0002054**
Facility Type	**Industrial**	APS ID	**1055713**
Major / Minor	**Major**	Authorization ID	**1383294**

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

Applicant and Facility Information

Applicant Name	**Seward Generation LLC**	Facility Name	**Seward Generating Station**
Applicant Address	595 Plant Road	Facility Address	595 Plant Road
	New Florence, PA 15944-8927		New Florence, PA 15944-8927
Applicant Contact	Mark Crawford	Facility Contact	Mark Crawford
Applicant Phone	(814) 446-7162	Facility Phone	(814) 446-7162
Client ID	325554	Site ID	244772
SIC Code	4911	Municipality	East Wheatfield Township
SIC Description	Trans. & Utilities - Electric Services	County	Indiana
Date Application Received	January 29, 2022	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility

Purpose of Application: To renew coverage under the NPDES permit.

Summary of Review

Seward Generation LLC (Seward) is a coal fired power plant consisting of two, circulating fluidized-bed (CFB) combustion boilers with a combined generating capacity of 525 MW located in East Wheatfield Township, Indiana County. The plant was previously fueled by pulverized coal but now utilizes waste coal and coal refuse. Wastewater generated at the facility consists of treated sanitary wastewater, non-contact cooling water blowdown, treated groundwater and stormwater runoff.

On September 30, 2015, EPA finalized a rule revising the regulations for the Steam Electric Power Generating category; 40 CFR 423. The rule set the first federal limits on the levels of toxic metals in wastewater that can be discharged from power plants, based on technology improvements in the steam electric power industry over the last three decades. The ELG update applies to industries utilizing flue gas desulfurization and discharges of treated FGD wastewater. Seward does not generate this type of wastewater; therefore, the new ELGs do not apply to this facility. Seward disposes of its quenched ash at various offsite locations. A summary of the 2023 and 2024 ash disposal volumes and locations is included at the end of this report (**Attachment A**).

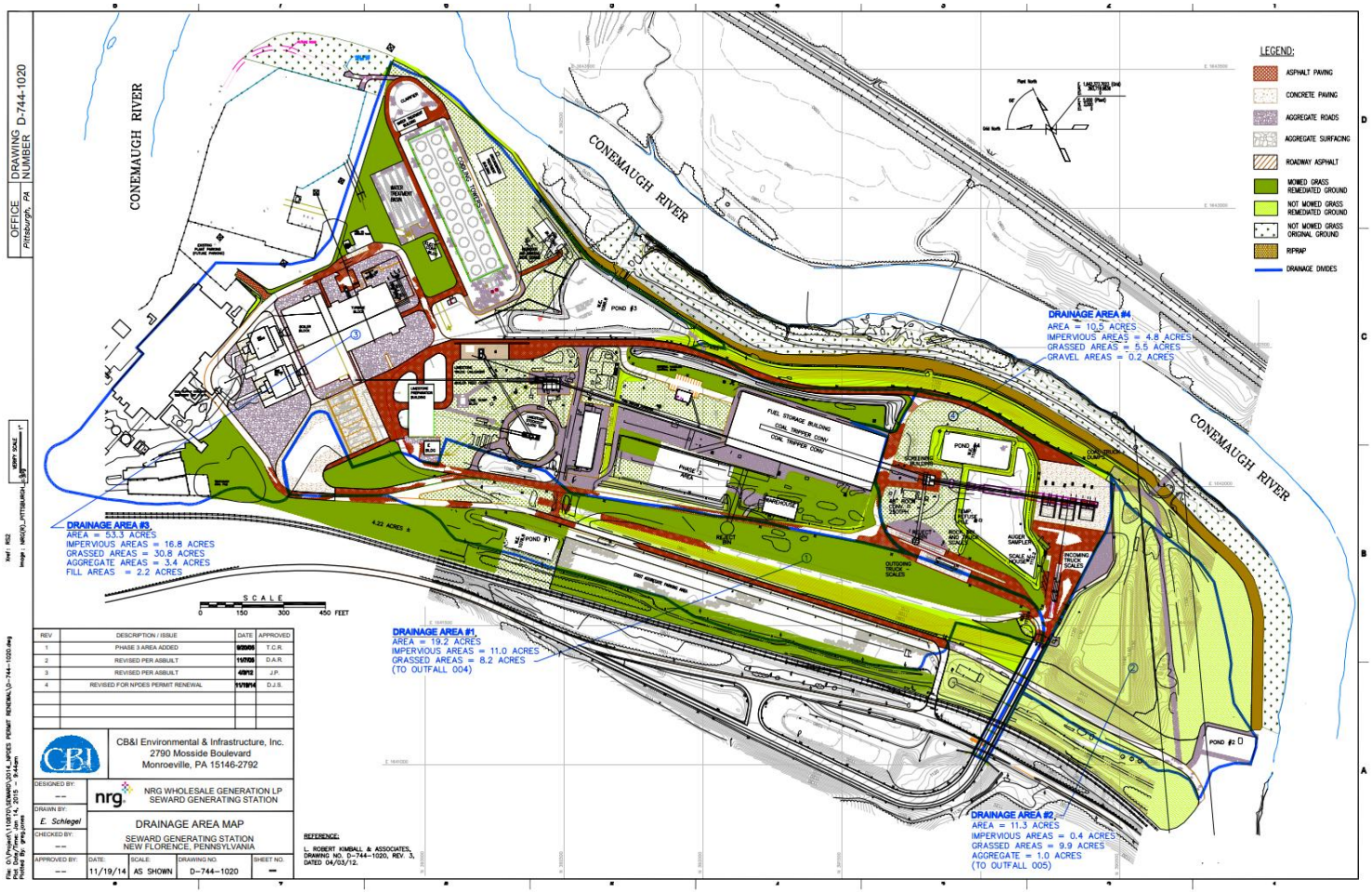
On December 10, 2015, representatives of Seward Generating Station notified the Department that the plant will be sold to Seward Generation, LLC but the plant would continue to be operated by NRG personnel. The Department received an NPDES permit transfer application for the Seward Generating Station on January 7, 2016. The transfer application also applied to WQM permit 3274203 and 3272407. The final permit was issued on July 28, 2017 under the name Seward Generation, LLC. This application is to renew coverage of the current permit.

The previous permit had used 150 cfs as the $Q_{7\text{-}10}$ Flow based on USGS Stream gauge flow data from the 25 years prior to that permit issuance (1990-2015). The stream gauge was evaluated for the flowrate from 2014-2024 to get the average for the last 10 years. This average was a $Q_{7\text{-}10\ of}$ 243 cfs. Taking into account those two averages, the $Q_{7\text{-}10}$ of 150 cfs will be

Approve	Deny	Signatures	Date
X		Alexa Howard, E.I.T. / Environmental Engineering Trainee	December 16, 2025
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	December 16, 2025

Summary of Review

maintained for developing effluent limitations. The drainage area, elevation, and slope are determined from the USGS StreamStats (Attachment B) and has been updated accordingly.



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)	1.0
Latitude	40º 24' 25"	Longitude	-79º 01' 57"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Cooling water intake screen backwash water		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721874	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Other Comments

Outfall 001 discharges up to 1.0 MGD of intake screen backwash water. There are currently no effluent limitations applicable to wastewater of this nature. A condition of the permit requires that debris removed from the intake rack not be returned to the waterway. The existing, weekly flow monitoring requirement will remain in effect.

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.

Effective Period: Permit Effective Date through Permit Expiration Date.

Table 1: Proposed Draft Permit Limits - 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	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Estimate

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	002	Design Flow (MGD)	0.015
Latitude	40º 24' 28"	Longitude	-79º 01' 59"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Treated sanitary wastewater		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721874	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Technology-Based Limitations

Outfall 002 discharges treated sanitary sewage from the onsite treatment plant. Federal secondary effluent limitations apply based on the use of (Best Professional Judgment) and in accordance with 40 CFR 125.3(c). The Department's current standard procedure for regulating treated sanitary wastewaters includes additional effluent limitations for NH3-N and dissolved oxygen.

In general, sewage discharges with design flows greater than 2,000 gallons per day will include monitoring, at a minimum, for Total Nitrogen and Total Phosphorous in new and reissued permits, with a monitoring frequency equivalent to conventional pollutants in Table 6-3 of DEP's *Technical Guidance for Development and Specification of Effluent Limitations (362-0400-001)* where the facility discharges to nutrient-impaired waters, or a lesser frequency for discharge to waters not impaired for nutrients, at the discretion of the application manager. Monitoring for total nitrogen and phosphorous is kept on this draft permit at a frequency of 2/month.

Water Quality-Based Limitations

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and discharge chlorine demands for the receiving stream, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/L from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is then proposed. The results of the modeling, included in **Attachment C**, indicate that average monthly limits of 0.5 mg/L and daily maximum limits of 1.635 mg/L are required for TRC, shown in **Table 2**.

Table 2. TRC Limits from TRC_CALC for Outfall 002

Parameter	Monthly Avg (mg/L)	Daily Max (mg/L)
Total Residual Chlorine	0.5	1.635

The Department of Environmental Protection has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The TMS is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The TMS is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 002

Discharges from Outfall 002 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the TMS. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the TMS. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion. The TMS is run with the discharge and receiving stream characteristics shown in **Table 3**. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL.

No WQBELs were recommended. The Output from the TMS is included in **Attachment D**.

Table 3. TMS Inputs for Outfall 002

Discharge Information	
Parameter	**Value**
River Mile Index	41.73
Discharge Flow (MGD)	0.015
Basin/Stream Information	
Parameter	**Value**
Drainage Area (mi^2)	724
Q_{7-10} (cfs)	150
Low-flow yield (cfs/mi^2)	0.0967
Elevation (ft)	2089
Slope (ft/ft)	0.0677

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits below in **Table 4** are from the current permit.

Table 4. Current Permit Effluent Limits - Outfall 002

Parameters	Mass (lb/day)		Concentration (mg/L)			
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Flow (MGD)	Report	0.015	XXX	XXX	XXX	XXX
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX
Total Residual Chlorine	XXX	XXX	XXX	0.5	1.6	XXX
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX
CBOD5	XXX	XXX	XXX	25	50	XXX
NH_3-N	XXX	XXX	XXX	25	50	XXX
Total Nitrogen	XXX	XXX	XXX	Report	Report	XXX
Total Phosphorous	XXX	XXX	XXX	Report	Report	XXX
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	1,000	XXX
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000	10,000	XXX

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.

Effective Period: Permit Effective Date through Permit Expiration Date.

Table 5. Proposed Draft Permit Limits - 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	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	0.015	XXX	XXX	XXX	XXX	1/week	Measured
Total Suspended Solids	XXX	XXX	XXX	30.0	60.0	XXX	2/month	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	Daily	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/month	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/month	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	Daily	Grab
Dissolved Oxygen	XXX	XXX	4.0	XXX	XXX	XXX	Daily	Grab
CBOD5	XXX	XXX	XXX	25	50	XXX	2/month	Grab
NH_3-N	XXX	XXX	XXX	25	50	XXX	2/month	Grab
Total Nitrogen	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Total Phosphorous	XXX	XXX	XXX	Report	Report	XXX	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200	1,000	XXX	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000	10,000	XXX	2/month	Grab

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	003	Design Flow (MGD)	3.5
Latitude	40º 24' 11"	Longitude	-79º 01' 54"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Non-contact cooling tower blowdown		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721874	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Technology-Based Limitations

Outfall 003 discharges untreated cooling tower blowdown. This wastewater is a categorical waste that is regulated by the Environmental Protection Agency under 40 CFR 423.13(d)(1). Typically, for pollutants regulated under this sub-category, the quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the concentration listed in **Table 6**. At the permitting authority's discretion however, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of any mass-based limitations specified in 40 CFR 423.13(d)(1). Concentration limitations shall be those concentrations specified in **Table 2**. The Federal Effluent Limitation Guidelines also prohibit the discharge of any detectible concentrations of the 126 priority pollutants contained in chemicals added for cooling tower maintenance with the exception of chromium and zinc. A list of the 126 priority pollutants is attached to the end of this report (**Attachment E**). A flow optimization program implemented at Seward has resulted in reduced Conemaugh River withdrawals. Between 2017 and 2021, Seward's AIF was 5.402 cfs, 70.5% below DIF. Since flow reductions are equivalent to entrainment reductions, entrainment has been further reduced by 70.5%.

Table 6. Technology-Based Effluent Limitations - Outfall 003

Parameter	Effluent Limitation Guidelines (mg/L)	
	Average Monthly	Maximum Daily
Free Available Chlorine	0.2	0.5
Total Chromium	0.2	0.2
Total Zinc	0.8	1.0

*** Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.**

Water Quality-Based Limitations

The Department of Environmental Protection has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The TMS is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The TMS is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 003

Discharges from Outfall 003 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the TMS. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the TMS. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion. The TMS is run with the discharge and receiving stream characteristics shown in **Table 8**. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL.

Effluent limitations recommended by the Toxics Management Spread Sheet are shown in **Table 9.** The Output from the TMS is included in **Attachment F**.

Table 8. TMS Inputs for Outfall 003

Discharge Information	
Parameter	**Value**
River Mile Index	41.73
Discharge Flow (MGD)	3.5
Basin/Stream Information	
Parameter	**Value**
Drainage Area (mi^2)	724
Q_{7-10} (cfs)	150
Low-flow yield (cfs/mi^2)	0.0967
Elevation (ft)	2089
Slope (ft/ft)	0.0677

Table 9. WQBELs from TMS

Parameter	Monthly Avg (lbs/day)	Daily Max (lbs/day)
Total Aluminum	Report	Report
Dissolved Iron	Report	Report
Total Iron	Report	Report

Discharges from Outfall 003 were evaluated for thermal effluent limitations using the Department's Thermal Discharge Limit spreadsheet. The Department's Thermal Discharge Limit Calculation Spreadsheet is a water quality modeling program that applies a heat transfer equation to calculate monthly and semi-monthly water quality-based effluent limitations for temperature. The results of that evaluation indicated that seasonal thermal limits are not necessary for protection of the receiving stream. In accordance with the Department's "Implementation Guidance for Temperature Criteria", temperature-based permit limits for discharges to waters of the Commonwealth may not exceed 110°F at any point accessible to the public. The results of this spreadsheet are shown in **Attachment G**. The inputs for this spreadsheet were taken from the supplied Wastewater Flow Diagram from the permittee. The Intake (Stream) tab is the total intake from the Conemaugh River (11.8 MGD), and the Consumptive Loss is the flow loss from Evaporation (7 MGD) and Intake Screen Backwash (1 MGD), totaling 8 MGD.

During the last permit cycle, the TDS monitoring initiative in 25 Pa. Code § 92a.61 was active, which implemented monitoring in NPDES permits for TDS, chloride, bromide and sulfate. This initiative is no longer active, and these parameters are not a water quality concerned based on the results of the Toxic Management Spreadsheet. Monitoring for total dissolved solids, chloride, bromide, and sulfate are no longer necessary.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits below in **Table 10** are from the current permit.

Table 10. Current Permit Effluent Limits - Outfall 003

Parameters	Mass (lb/day)		Concentration (mg/L)			
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX
Temperature (Fahrenheit)	XXX	XXX	XXX	XXX	XXX	110
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Free Available Chlorine	XXX	XXX	XXX	0.2	0.5	XXX
Total Suspended Solids	XXX	XXX	XXX	30.0	100.0	XXX
Oil and Grease	XXX	XXX	XXX	15	20	30
Total Cobalt	XXX	XXX	XXX	0.27	0.53	9.0
Total Nickel	XXX	XXX	XXX	0.45	0.9	XXX
Total Chromium	XXX	XXX	XXX	0.2	0.2	XXX
Total Zinc	XXX	XXX	XXX	0.8	1.0	XXX
Dissolved Iron	XXX	XXX	XXX	Report	Report	XXX
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX
Total Dissolved Solids	XXX	XXX	XXX	Report	Report	XXX
Chloride	XXX	XXX	XXX	Report	Report	XXX
Bromide	XXX	XXX	XXX	Report	Report	XXX
Sulfate	XXX	XXX	XXX	Report	Report	XXX

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.

Effective Period: Permit Effective Date through Permit Expiration Date.

Table 11. Proposed Draft Permit Limits - Outfall 003

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Total Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/day	Measured
Temperature (Fahrenheit)	XXX	XXX	XXX	XXX	XXX	110	1/day	I-S
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/week	Grab
Free Available Chlorine	XXX	XXX	XXX	0.2	0.5	XXX	1/week	Grab
Total Suspended Solids	XXX	XXX	XXX	30.0	100.0	XXX	1/week	Grab
Oil and Grease	XXX	XXX	XXX	15	20	30	1/week	Grab
Total Cobalt	XXX	XXX	XXX	0.27	0.53	XXX	1/week	Grab
Total Nickel	XXX	XXX	XXX	0.45	0.9	XXX	1/week	Grab
Total Chromium	XXX	XXX	XXX	0.2	0.2	XXX	1/week	Grab
Total Zinc	XXX	XXX	XXX	0.8	1.0	XXX	1/week	Grab
Dissolved Iron	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	1/week	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	1/week	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	1/week	Grab

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	---
Latitude	40º 24' 15"	Longitude	-79º 02' 10"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Emergency Stormwater Overflow from E&S Control Basin #1		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721874	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Other Comments
Outfall 004 discharges emergency overflow wastewater from Erosion and Sedimentation Control Basin. Outfall 004 did not discharge during the current permit cycle and therefore analytical modules were not included in the application. Due to the rare discharge frequency, the permit sampling frequency will continue to be twice per discharge.

Anti-Backsliding
Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits below in **Table 12** are from the current permit.

Table 12. Current Permit Effluent Limits – Outfall 004

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/discharge	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Suspended Solids	XXX	XXX	XXX	35.0	70.0	XXX	2/discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/discharge	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/discharge	Grab

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.

Effective Period: Permit Effective Date through Permit Expiration Date.

Table 13. Proposed Draft Permit Limits - Outfall 004

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/discharge	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	2/discharge	Grab
Total Suspended Solids	XXX	XXX	XXX	35.0	70.0	XXX	2/discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/discharge	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/discharge	Grab

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	---
Latitude	40º 23' 49"	Longitude	-79º 02' 19"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Emergency Stormwater Overflow from E&S Control Basin #2		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721874	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Other Comments

Outfall 005 discharges emergency overflow wastewater from Erosion and Sedimentation Control Basin 2. Outfall 005 did not discharge during the current permit cycle and therefore analytical modules were not included in the application. Due to the rare discharge frequency, the permit sampling frequency will continue to be twice per discharge.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits below in **Table 14** are from the current permit.

Table 14. Current Permit Effluent Limits – Outfall 005

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/discharge	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Suspended Solids	XXX	XXX	XXX	35.0	70.0	XXX	2/discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/discharge	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/discharge	Grab

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.

Effective Period: Permit Effective Date through Permit Expiration Date.

Table 15. Proposed Draft Permit Limits - Outfall 005

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/discharge	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/discharge	Grab
Total Suspended Solids	XXX	XXX	XXX	35.0	70.0	XXX	2/discharge	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	2/discharge	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	2/discharge	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/discharge	Grab

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	006	Design Flow (MGD)	0.22
Latitude	40º 24' 14"	Longitude	-79º 01' 52"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Effluent from the groundwater collection and treatment system		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721874	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH, TOTAL SUSPENDED SOLIDS (TSS)		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Technology-Based Limitations

Outfall 006 discharges 0.22 MGD of treated groundwater from the Groundwater Treatment System. The parameters of concern are pH, iron, aluminum, manganese, and thallium. In accordance with Section 304(b) of the Federal Clean Water Act (CWA), and the EPA's anti-backsliding requirements, the previous permit limits are retained.

The Outfall 006 treatment system is designed for a flow of up to 0.243 MGD (greater than the permitted design flow) and receives intermittent flow from the old Outfall 012 (an existing contaminated groundwater seep) and the stormwater basin; however, the primary flow to the treatment plant is from the groundwater collection trenches. In general, the untreated groundwater is acidic, and contains variable concentrations of iron, aluminum, and manganese. Groundwater treatment begins with influent collection in an equalization tank. First stage treatment includes pH adjustment, aeration, mixing with an anionic polymer, clarification, and sand filtration. Second state treatment repeats the sequence of first stage treatment. A final pH adjustment occurs prior to water entering the final discharge tank. Compliant water is discharged to surface water and non-compliant water is recirculated to wastewater basins. The existing groundwater treatment system is authorized under Water Quality Management permit #3274203.

Water Quality-Based Limitations

The Department of Environmental Protection has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The TMS is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The TMS is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by

computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the TMS recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 006

Discharges from Outfall 006 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the TMS. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the TMS. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion. The TMS is run with the discharge and receiving stream characteristics shown in **Table 17**. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL.

No effluent limitations were recommended by the Toxics Management Spread Sheet. These results are shown in **Attachment H**.

Table 17. TMS Inputs for Outfall 006

Discharge Information	
Parameter	**Value**
River Mile Index	41.73
Discharge Flow (MGD)	0.22
Basin/Stream Information	
Parameter	**Value**
Drainage Area (mi^2)	724
Q_{7-10} (cfs)	150
Low-flow yield (cfs/mi^2)	0.0967
Elevation (ft)	2089
Slope (ft/ft)	0.0677

During the last permit cycle, the TDS monitoring initiative in 25 Pa. Code § 92a.61 was active, which implemented monitoring in NPDES permits for TDS, chloride, bromide and sulfate. This initiative is no longer active, and these parameters are not a water quality concerned based on the results of the Toxic Management Spreadsheet. Monitoring for total dissolved solids, chloride, bromide, and sulfate are no longer necessary.

Anti-Backsliding

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The limits below in **Table 18** are from the current permit.

Table 18. Current Permit Effluent Limits - Outfall 006

Parameters	**Mass (lb/day)**		**Concentration (mg/L)**			
	Average Monthly	**Daily Maximum**	**Instant. Minimum**	**Average Monthly**	**Daily Maximum**	**Instant. Maximum**
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0
Total Suspended Solids	XXX	XXX	XXX	35.0	70.0	XXX
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX
Oil and Grease	XXX	XXX	XXX	Report	Report	XXX

Table 18. Current Permit Effluent Limits - Outfall 006

Parameters	Mass (lb/day)		Concentration (mg/L)			
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Total Dissolved Solids	XXX	XXX	XXX	Report	Report	XXX
Chloride	XXX	XXX	XXX	Report	Report	XXX
Bromide	XXX	XXX	XXX	Report	Report	XXX
Sulfate	XXX	XXX	XXX	Report	Report	XXX
Total Zinc	XXX	XXX	XXX	Report	Report	XXX

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.

Effective Period: Permit Effective Date through Permit Expiration Date

Table 19. Proposed Draft Permit Limits - Outfall 006

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/week	Grab
TSS	XXX	XXX	XXX	35.0	70.0	XXX	1/week	Grab
Oil and Grease	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab
Total Aluminum	XXX	XXX	XXX	0.75	0.75	XXX	1/week	Grab
Total Iron	XXX	XXX	XXX	1.5	3.0	XXX	1/week	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	1/week	Grab
Total Zinc	XXX	XXX	XXX	Report	Report	XXX	1/week	Grab

Discharge, Receiving Waters and Water Supply Information

Outfall No.	007, 013, 022	Design Flow (MGD)	Varies
	40º 23' 29"		-79º 03' 01"
	40º 23' 30"		-79º 02' 44"
Latitude	40º 23' 34"	Longitude	-79º 02' 48"
Quad Name	New Florence	Quad Code	1513
Wastewater Description:	Uncontaminated stormwater runoff from closed ash disposal site.		
Receiving Waters	Conemaugh River (WWF)	Stream Code	43832
NHD Com ID	123721918	RMI	41.73
Drainage Area	724 mi^2	Yield (cfs/mi^2)	0.0967
Q_{7-10} Flow (cfs)	150	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	2089	Slope (ft/ft)	0.0677
Watershed No.	18-D	Chapter 93 Class.	WWF
Assessment Status	Impaired		
Cause(s) of Impairment	METALS, PH		
Source(s) of Impairment	ACID MINE DRAINAGE, ACID MINE DRAINAGE		
TMDL Status	Final	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Buffalo Township Municipal Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	
PWS RMI	29.4	Distance from Outfall (mi)	>50

Other Comments

Outfall 007, Outfall 013, and Outfall 022 consist of stormwater runoff from the closed ash disposal area. These ash piles were closed in the 1970's and capped with clean fill under a Department approved closure plan. There are no leachate underdrains and the area is vegetated. Discharges from this area occur only when stormwater collection ponds overflow. There have been no such discharges in over 20 years.

Additional Considerations:

Total Maximum Daily Load ("TMDL") Considerations – Kiskiminetas-Conemaugh Watershed

Wastewater discharges from Seward Generating Station are located within the Kiskiminetas-Conemaugh River watershed for which the Environmental Protection Agency has developed a TMDL. The TMDL was finalized on January 29, 2010 and establishes waste load allocations for the discharge of aluminum, iron and manganese within the Conemaugh River watershed. Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (codified at Title 40 of the *Code of Federal Regulations* Part 130) require states to develop a TMDL for impaired water bodies. A TMDL establishes the amount of a pollutant that a water body can assimilate without exceeding the water quality criteria for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and non-point sources in order to restore and maintain the quality of the state's water resources (USEPA 1991a). Stream reaches within the Conemaugh River watershed are included in the state's 2008 Section 303(d) list because of various impairments, including metals, pH, and sediment. The TMDL includes consideration for each river and tributary within the target watershed and its impairment sources. Stream data is then used to calculate minimum pollutant reductions that are necessary to attain water quality criteria levels. Target instream concentrations published in the TMDL were based on established water quality criteria of 0.750 $^{mg}/_{L}$ total recoverable aluminum, 1.5 $^{mg}/_{L}$ total recoverable iron based on a 30-day average, and 1.0 $^{mg}/_{L}$ total recoverable manganese. The reduction needed to meet the minimum water quality standards is then divided between each known point and non-point pollutant source in the form of a watershed allocation. TMDLs prescribe allocations that minimally achieve water quality criteria (i.e., 100 percent use of a stream's assimilative capacity).

The discharges from Seward Generating Station fall within sub-watersheds 4069 and 4065. The Kiskiminetas TMDL provides wasteload allocations (in the form of both concentrations and yearly pollutant loads) for Seward's Outfall's 002, 003, 004, and 005. For a detailed explanation of the TMDL requirements, please refer to the Kiskiminetas-Conemaugh TMDL.

In accordance with 40 CFR 130.2(i), TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure, such as concentration. When establishing effluent limitations, under 40 CFR 122.44(1)(d)(vii)(b) it states that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, must be consistent with the assumptions and requirements of any available wasteload allocation for a discharge approved by EPA pursuant to 40 CFR 130.7 For the Kiski-Conemaugh TMDL, the annual load allocations were developed based on the allocated concentrations. This provides DEP flexibility in its approach to implementing the WLAs contained in the Kiski-Conemaugh TMDL because is not necessary to impose both the load and concentration to comply with the TMDL WLAs.

Seward's TMDL concentration allocations for Outfalls, 002, 003, 004, and 005 are imposed as effluent limitations and listed in **Table 15**. These effluent limitations will also ensure compliance with water quality standards under any facility loading scenario. The Department's rationale imposing these criteria as average monthly and daily maximum concentration limits is detailed below.

Aluminum: The specific water quality criterion for aluminum is expressed as an acute or maximum daily in 25 Pa. Code Chapter 93. Discharges of aluminum may only be authorized to the extent that they will not cause or contribute to any violation of the water quality standards. Therefore, the water quality criterion for aluminum (0.75 mg/L) is imposed and a maximum daily effluent limit (MDL). Whenever the most stringent criterion is selected for the MDL, the Department should also impose an average monthly limit (AML) and instantaneous maximum limit (IMAX) if applicable. The imposition of an AML that is more stringent than the MDL is typically not appropriate because the water quality concerns have already been fully addressed by setting the MDL equal to the most stringent applicable criterion. Therefore, where the MDL is set at the value of the most stringent applicable criterion, the AML should be set equal to the MDL. The proposed aluminum limits are shown in **Table 20**.

Iron: The specific water quality criterion for iron is expressed as a 30-day average of 1.5 $^{mg}/_{L}$ in 25 Pa. Code § 93.7(a). The criterion is based on the protection of aquatic life and is associated with chronic exposure. There are no other criteria for total iron. Since the duration of the total iron criterion coincides with the 30-day duration of the AML, the 30-day average criterion for total iron is set equal to the AML.

In addition, because the total iron criterion is associated with chronic exposure, the MDL (representing acute exposure) and the IMAX may be made less stringent according to established procedures described in Section III.C.3.h on Page 13 of the Water Quality Toxics Management Strategy (Doc. # 361-0100-003). These procedures state that a MDL and IMAX may be set at 2 times and 2.5 times the AML, respectively, or there is the option to use multipliers from EPA's Technical Support Document for Water Quality-based Toxics Control, if data are available to support the use of alternative multipliers. The proposed iron limits are shown in **Table 20**.

Manganese: The specific water quality criterion for manganese is expressed as an acute or maximum daily of 1.0 mg/L in 25 Pa. Code § 93.7(a). The criterion is based on the protection of human health and is associated with chronic exposure associated with a potable water supply (PWS). Since no duration is given in Chapter 93 for the manganese criterion, a duration of 30 days is used based on the water quality criteria duration for Threshold Human Health (THH) criteria given in 25 Pa. Code 93.8(c) Table 5. The 30-day duration for THH criteria coincides with the 30-day duration of an AML, which is why the manganese criterion is set equal to the AML for a "permitting at criteria" scenario.

Because the manganese criterion is interpreted as having chronic exposure, the manganese MDL and IMAX may be made less stringent according to procedures established in Section III.C.2.h., of the Water Quality Toxics Management Strategy (AML multipliers of 2.0 and 2.5 for the MDL and IMAX respectively). Accordingly, TMDL manganese limits are retained for Outfall 006. The proposed manganese limits are shown in **Table 20**.

The Daily Maximum concentration limits for each of the evaluated parameters are derived using the variability ratio of two (2) found in DEP document number 362-0400-001, "Technical Guidance for the Development and Specification of Effluent Limitations", Chapter 2, Page 16.

The discharges from Outfall 006 were not provided an allocation in the TMDL. Under this circumstance, concentration limits could be imposed at criteria to ensure compliance with the goals of the TMDL. In this case however, the Outfall has already (during previous permit review) been assigned aluminum, iron, and manganese effluent limits at criteria. These criteria limits will remain in effect and are consistent with the requirements of the TMDL.

Discharges from Outfalls 007, 013, & 022 consist of uncontaminated stormwater runoff. The TMDL did not provide a waste load allocation for these three outfalls. According to company representatives however, these outfalls have not discharged in over 20 years. Effluent limitations are not recommended for Outfalls 007, 013, and 022 at this time.

Table 20. TMDL Allocations for Outfalls 002, 003, 004, 005, & 006

Outfall	Parameter	Allocated Load	Allocated Concentration (mg/L)	
		Pounds per Year	Average Monthly	Daily Maximum
002	Aluminum, Total	34	0.75	0.75
	Iron, Total	69	1.50	3.0
	Manganese, Total	46	1.0	2.0
003	Aluminum, Total	7.997	0.75	0.75
	Iron, Total	15.994	1.50	3.0
	Manganese, Total	10.663	1.00	2.0
004	Aluminum, Total	34	0.75	0.75
	Iron, Total	69	1.50	3.0
	Manganese, Total	46	1.00	2.0
005	Aluminum, Total	268	0.75	0.75
	Iron, Total	535	1.50	3.0
	Manganese, Total	357	1.00	2.0
006	Aluminum, Total	-	0.75	0.75
	Iron, Total	-	1.50	3.0
	Manganese, Total	-	1.00	2.0

Chapter 95.10 Effluent Standards – Total Dissolved Solids (TDS)

The provisions of Chapter 95.10 were adopted on August 20, 2010 and became effective August 21, 2010. Chapter 95.10 of the Department's regulations establishes the effluent standards applicable to new and expanding discharges of TDS. Under the provisions of this regulation, dischargers that are subject to the requirements of 95.10 must be identified; discharges that are exempt from any treatment requirements under this chapter must be identified; the existing mass loadings of TDS that are exempt from the treatment requirements must be identified and quantified; and discharges of new and expanding mass loadings of TDS must be evaluated.

Integral to the implementation of Chapter 95.10 is the principle that existing, authorized mass loadings of TDS are exempt from any treatment requirements under these provisions. Existing mass loadings of TDS up to and including the maximum daily discharge loading for any existing discharge, provided that the loading was authorized prior to August 21, 2010 are exempt. Generally, no permit actions are required until an NPDES permit is issued, renewed, or amended. Discharge loadings of TDS authorized by the Department are typically exempt from the treatment requirements of Chapter 95.10 until the net TDS loading is increased, an existing discharge proposes a hydraulic expansion or there is a change in the waste stream. If there are existing mass or production-based TDS effluent limits, then these are used as the basis for the existing mass loading.

The provisions of Chapter 95.10 generally apply only to the final discharge of process wastewater, not intermediate or internal points, except that process wastewater may not be diluted with storm water or ambient water in order to meet the treatment requirements of Chapter 95.10. In addition, the provisions of Chapter 95.10 and the "Policy and Procedure for NPDES Permitting of Discharges of Total Dissolved Solids" (Doc# 385-2100-002) generally apply only to TDS loadings that originate in industrial or municipal wastewater that result from treatment processes (including chemical additions and reactions). The requirements of 95.10 generally do not apply to non-contact cooling water, or stormwater that does not come into contact with industrial materials and activities as described in 92a.32(b). For stormwater that does come into contact with industrial material, the provisions of §95.10 are applicable only to the extent that the stormwater has the potential to exceed 2,000 mg/L TDS.

Based upon these guidelines, TDS limitations are not appropriate for Outfall 003. Additionally, the discharges from Outfalls 002, 004, and 005 were authorized, and existed prior to August 21, 2010. Therefore, the discharge is considered to be an existing, authorized mass loading of TDS and is exempt from any treatment requirements.

The maximum mass loading contained in the NPDES permit application for Outfall 002 is 111 $^{lb}/_{day}$.

The maximum mass loading contained in the NPDES permit application for Outfall 006 is 1,905 $^{lb}/_{day}$.

Both of these outfalls discharge less than 2,000 $^{mg}/_{L}$ and 5,000 $^{Lb.}/_{day}$ measured as an average daily discharge, over the course of a calendar year, otherwise known as an annual average daily load. Therefore, effluent limitations for TDS are not proposed and these discharges are exempt from any treatment requirements under §95.10.

Example Calculation: Outfall 002 – Total Dissolved Solids

$(888\ ^{mg}/_{L})(2.205 \times 10^{-6}\ ^{lb}/_{mg})(3.785\ ^{L}/_{gal})(15{,}000\ ^{gal}/_{day}) =$

$(888\ ^{\cancel{mg}}/_{\cancel{L}})(8.345 \times 10^{-6}\ ^{lb\ -\ \cancel{L}}/_{\cancel{mg}\ \cancel{gal}})(15{,}000\ ^{\cancel{gal}}/_{day}) = \boxed{111\ ^{lb}/_{day}}$

Compliance History

Table 21. Effluent Violations for Outfall 002, from: September 2023 to September 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	July 2025	Average Monthly	410	mg/L	200	mg/L
Fecal Coliform	August 2025	Average Monthly	410	mg/L	200	mg/L
Fecal Coliform	July 2025	Daily Max	1550	mg/L	1000	mg/L
Fecal Coliform	August 2025	Daily Max	1553	mg/L	1000	mg/L

Comments: There were no effluent violations from September 2023 to September 2025 for Outfall 003, Outfall 004, Outfall 005, and Outfall 006.

Summary of Inspections: A compliance evaluation was conducted June 29, 2016 and July 31, 2024. No violations were noted

Tools and References Used to Develop Permit	
☐	WQM for Windows Model
☒	Toxics Management Spreadsheet
☒	TRC Model Spreadsheet
☐	Temperature Model Spreadsheet
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☐	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☐	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☒	SOP: New and Reissuance Industrial Waste and Industrial Stormwater Individual NPDES Permit Applications
☒	Other: USGS Stream Stats (See **Attachment B**)

Attachments

Attachment A: Ash Disposal Records
Attachment B: USGS Stream Stats
Attachment C: TRC - Outfall 002
Attachment D: TMS - Outfall 002
Attachment E: 126 Priority Pollutants
Attachment F: TMS - Outfall 003
Attachment G: Thermal Spreadsheet - Outfall 003
Attachment H: TMS - Outfall 006
Attachment I: Outfall Site Map
Attachment J: Design and Engineering Calculations – Cooling Water System Data

Attachment A:
Ash Disposal Records

Seward Ash Disposal Sites for 2023

Site	Permit Number	Municipality	County	Conditioned Tons
Mine #33	11733701	Cambria Township	Cambria	3,979.12
Lancashire #25	11743703	Barr & West Carroll Township	Cambria	651.83
Dilltown	32733709	Brush Valley Township	Indiana	1,288,644.26
Sonman	11860701	Portage Township	Cambria	52,159.81
Shade	56900701	Shade Township	Somerset	39,423.22
Charles	32040202	East Wheatfield Township	Indiana	38,979.38
Benscreek North	11110201	Portage Township	Cambria	1,719.75
Barrett	32051301	Buffington Township	Indiana	1,082.97
Crooked Creek	32131303	Washington Township	Indiana	378.53
Harmony	17071301	Burnside Township	Clearfield	46.56
Heilwood	32061303	Pine Township	Indiana	239.56
Lucerne	32950202	Center Township	Indiana	147,533.36
Kocjancic	33071302	Snyder Township	Jefferson	87.62
Laurel Plant	56140702	Shade Township	Somerset	740.02
Nanty Glo East	11070202	Nanty Glo Borough	Cambria	157.22
Ernest	32950201	White Township	Indiana	41.616.58
Seward	(1)	East Wheatfield Township	Indiana	105.25
			Total:	**1,617,545.04**

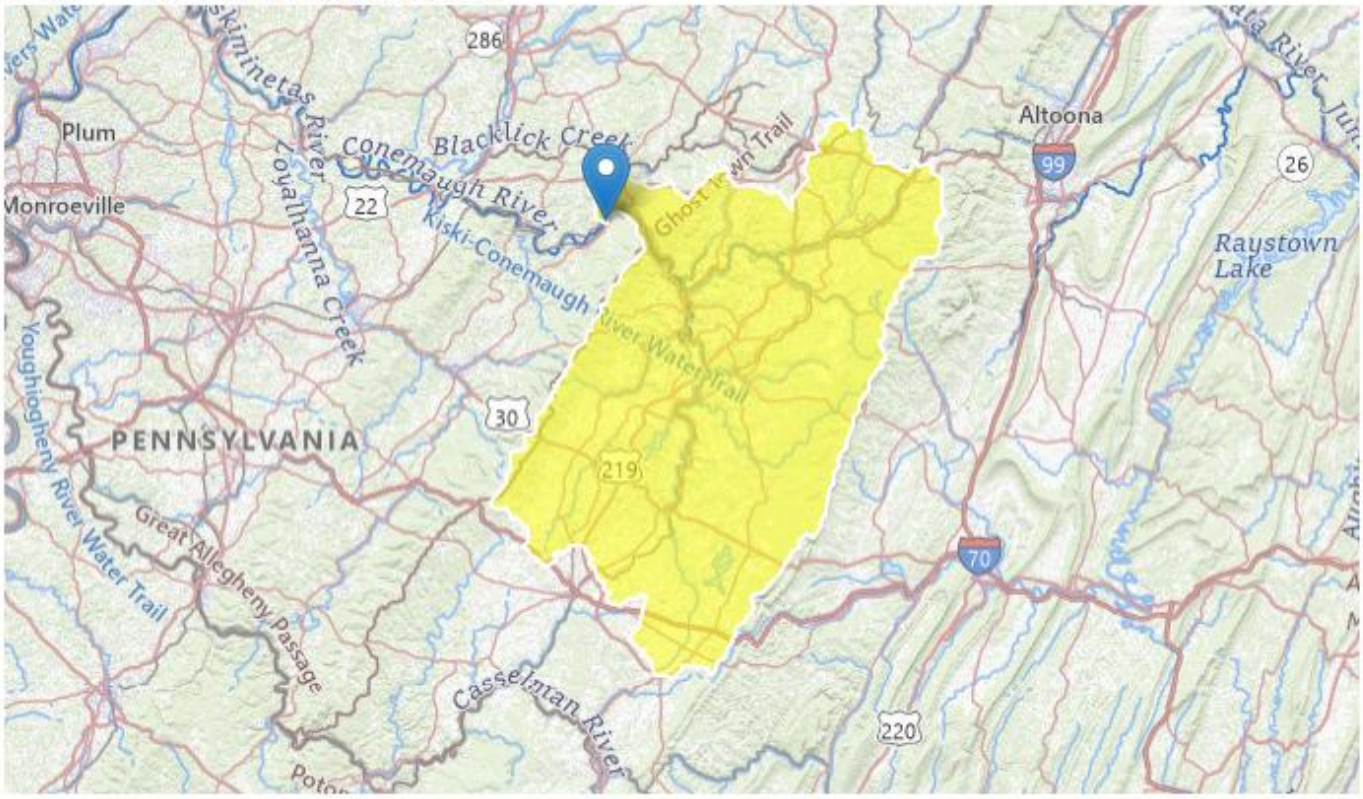
Seward Ash Disposal Sites for 2024

Site	Permit Number	Municipality	County	Conditioned Tons
Mine #33	11733701	Cambria Township	Cambria	1,507.62
Dilltown	32733709	Brush Valley Township	Indiana	1,475,719.61
Sonman	11860701	Portage Township	Cambria	117,421.19
Shade	56900701	Shade Township	Somerset	2,127.38
Bird	56120201	Conemaugh Township	Somerset	1,568.26
Charles	32040202	East Wheatfield Township	Indiana	53,875.83
Benscreek North	11110201	Portage Township	Cambria	9,066.44
Barrett	32051301	Buffington Township	Indiana	624.78
Heilwood	32061303	Pine Township	Indiana	334.52
Lucerne	32950202	Center Township	Indiana	64,134.46
Laurel Plant	56140702	Shade Township	Somerset	340.06
Nanty Glo East	11070202	Nanty Glo Borough	Cambria	2,499.42
Ernest	32950201	White Township	Indiana	15,239.85
Colver Green Energy	(1)	Barr Township	Cambria	73.40
			Total:	**1,744,532.82**

Attachment B:
USGS Stream Stats

StreamStats Report

Region ID: PA
Workspace ID: PA20250917143819565000
Clicked Point (Latitude, Longitude): 40.40422, -79.03011
Time: 2025-09-17 10:38:45 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	6.7655	degrees
DRNAREA	Area that drains to a point on a stream	724	square miles
ELEV	Mean Basin Elevation	2089	feet
FOREST	Percentage of area covered by forest	70.0431	percent
PRECIP	Mean Annual Precipitation	45	inches
URBAN	Percentage of basin with urban development	5.396	percent

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	724	square miles	2.33	1720
ELEV	Mean Basin Elevation	2089	feet	898	2700
PRECIP	Mean Annual Precipitation	45	inches	38.7	47.9

Low-Flow Statistics Flow Report [Low Flow Region 3]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	116	ft^3/s	43	43
30 Day 2 Year Low Flow	152	ft^3/s	38	38
7 Day 10 Year Low Flow	69.7	ft^3/s	54	54
30 Day 10 Year Low Flow	83.6	ft^3/s	49	49
90 Day 10 Year Low Flow	115	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Attachment C:
TRC – Outfall 002

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

150	= Q stream (cfs)	0.5	= CV Daily
0.015	= 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 = 2062.075	1.3.2.iii	WLA cfc = 2010.354
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 768.378	5.1d	LTA_cfc = 1168.725

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**

Attachment D:
TMS – Outfall 002

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions | Discharge | Stream

Facility: **Seward Generating Station** NPDES Permit No.: **PA0002054** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated sanitary wastewater**

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
0.015	60.5	9						

					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		778									
	Chloride (PWS)	mg/L		154									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		53.7									
	Fluoride (PWS)	mg/L	<	0.09									
Group 2	Total Aluminum	µg/L		510									
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	mg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L		600									
	Total Lead	µg/L											
	Total Manganese	µg/L		30									
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	mg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2025

Stream / Surface Water Information

Seward Generating Station, NPDES Permit No. PA0002054, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Conemaugh River**

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	043832	41.73	2089	724	0.0677		Yes
End of Reach 1	043832	41.63	2050	724.1	0.0677		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	41.73	0.0967			10							100	7		
End of Reach 1	41.63	0.0967			10										

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	41.73														
End of Reach 1	41.63														

Model Results

Seward Generating Station, NPDES Permit No. PA0002054, Outfall 002

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

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
41.73	70.01		70.01	0.023	0.068	1.966	19.656	10.	0.557	0.011	0.738
41.63	70.02		70.02047					10.000			

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
41.73	304.55		304.55	0.023	0.068	3.753	19.656	5.237	1.269	0.005	0.28
41.63	304.59		304.59								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.738 PMF: 1 Analysis Hardness (mg/l): 99.987 Analysis pH: 7.00

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	2,263,543	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 0.738 PMF: 1 Analysis Hardness (mg/l): 99.987 Analysis pH: 7.00

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 Iron	0	0		0	1,500	1,500	4,527,085	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 0.738 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 Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	3,018,057	

☑ ***CRL*** CCT (min): 0.280 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 Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

Pollutants	*Mass Limits*		*Concentration Limits*				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

☑ ***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 Aluminum	1,450,839	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	4,527,085	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	3,018,057	µg/L	Discharge Conc ≤ 10% WQBEL

Attachment E:
126 Priority Pollutants

Appendix D - 126 Priority Pollutants
001 Acenaphthene
002 Acrolein
003 Acrylonitrile
004 Benzene
005 Benzidine
006 Carbon tetrachloride (tetrachloromethane)
007 Chlorobenzene
008 1,2,4-trichlorobenzene
009 Hexachlorobenzene
010 1,2-dichloroethane
011 1,1,1-trichloreothane
012 Hexachloroethane
013 1,1-dichloroethane
014 1,1,2-trichloroethane
015 1,1,2,2-tetrachloroethane
016 Chloroethane
018 Bis(2-chloroethyl) ether
019 2-chloroethyl vinyl ether (mixed)
020 2-chloronaphthalene
021 2,4, 6-trichlorophenol
022 Parachlorometa cresol
023 Chloroform (trichloromethane)
024 2-chlorophenol
025 1,2-dichlorobenzene
026 1,3-dichlorobenzene
027 1,4-dichlorobenzene
028 3,3-dichlorobenzidine
029 1,1-dichloroethylene
030 1,2-trans-dichloroethylene
031 2,4-dichlorophenol
032 1,2-dichloropropane
033 1,2-dichloropropylene (1,3-dichloropropene)
034 2,4-dimethylphenol
035 2,4-dinitrotoluene
036 2,6-dinitrotoluene
037 1,2-diphenylhydrazine
038 Ethylbenzene
039 Fluoranthene
040 4-chlorophenyl phenyl ether
041 4-bromophenyl phenyl ether
042 Bis(2-chloroisopropyl) ether
043 Bis(2-chloroethoxy) methane
044 Methylene chloride (dichloromethane)
045 Methyl chloride (dichloromethane)
046 Methyl bromide (bromomethane)
047 Bromoform (tribromomethane)
048 Dichlorobromomethane
051 Chlorodibromomethane
052 Hexachlorobutadiene
053 Hexachloromyclopentadiene

054	Isophorone
055	Naphthalene
056	Nitrobenzene
057	2-nitrophenol
058	4-nitrophenol
059	2,4-dinitrophenol
060	4,6-dinitro-o-cresol
061	N-nitrosodimethylamine
062	N-nitrosodiphenylamine
063	N-nitrosodi-n-propylamin
064	Pentachlorophenol
065	Phenol
066	Bis(2-ethylhexyl) phthalate
067	Butyl benzyl phthalate
068	Di-N-Butyl Phthalate
069	Di-n-octyl phthalate
070	Diethyl Phthalate
071	Dimethyl phthalate
072	1,2-benzanthracene (benzo(a) anthracene
073	Benzo(a)pyrene (3,4-benzo-pyrene)
074	3,4-Benzofluoranthene (benzo(b) fluoranthene)
075	11,12-benzofluoranthene (benzo(b) fluoranthene)
076	Chrysene
077	Acenaphthylene
078	Anthracene
079	1,12-benzoperylene (benzo(ghi) perylene)
080	Fluorene
081	Phenanthrene
082	1,2,5,6-dibenzanthracene (dibenzo(,h) anthracene)
083	Indeno (,1,2,3-cd) pyrene (2,3-o-pheynylene pyrene)
084	Pyrene
085	Tetrachloroethylene
086	Toluene
087	Trichloroethylene
088	Vinyl chloride (chloroethylene)
089	Aldrin
090	Dieldrin
091	Chlordane (technical mixture and metabolites)
092	4,4-DDT
093	4,4-DDE (p,p-DDX)
094	4,4-DDD (p,p-TDE)
095	Alpha-endosulfan
096	Beta-endosulfan
097	Endosulfan sulfate
098	Endrin
099	Endrin aldehyde
100	Heptachlor
101	Heptachlor epoxide (BHC-hexachlorocyclohexane)
102	Alpha-BHC
103	Beta-BHC
104	Gamma-BHC (lindane)

105	Delta-BHC (PCB-polychlorinated biphenyls)
106	PCB-1242 (Arochlor 1242)
107	PCB-1254 (Arochlor 1254)
108	PCB-1221 (Arochlor 1221)
109	PCB-1232 (Arochlor 1232)
110	PCB-1248 (Arochlor 1248)
111	PCB-1260 (Arochlor 1260)
112	PCB-1016 (Arochlor 1016)
113	Toxaphene
114	Antimony
115	Arsenic
116	Asbestos
117	Beryllium
118	Cadmium
119	Chromium
120	Copper
121	Cyanide, Total
122	Lead
123	Mercury
124	Nickel
125	Selenium
126	Silver
127	Thallium
126	Silver
128	Zinc
129	2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)

Appendix F:
TMS Outfall – Outfall 003

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions | Discharge | Stream

Facility: **Seward Generating Station** NPDES Permit No.: **PA0002054** Outfall No.: **003**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Non-contact cooling tower blowdown**

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
3.5	1930	8.59						

					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		3350									
	Chloride (PWS)	mg/L		563									
	Bromide	mg/L	<	1									
	Sulfate (PWS)	mg/L		2720									
	Fluoride (PWS)	mg/L		1.69									
Group 2	Total Aluminum	µg/L		941									
	Total Antimony	µg/L	<	0.7									
	Total Arsenic	µg/L		4.8									
	Total Barium	µg/L		330									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		300									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		25									
	Hexavalent Chromium	µg/L		9.7									
	Total Cobalt	µg/L		14									
	Total Copper	mg/L		0.0174									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		1470									
	Total Iron	µg/L		5120									
	Total Lead	µg/L		0.2									
	Total Manganese	µg/L		359									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		50									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L		4									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	mg/L		0.03									
	Total Molybdenum	µg/L		7.5									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	0.5									
	Benzene	µg/L	<	0.2									
	Bromoform	µg/L	<	0.5									

Group 3	Carbon Tetrachloride	µg/L	<	0.2									
	Chlorobenzene	µg/L	<	0.2									
	Chlorodibromomethane	µg/L	<	0.4									
	Chloroethane	µg/L	<	0.2									
	2-Chloroethyl Vinyl Ether	µg/L	<	0.5									
	Chloroform	µg/L		4									
	Dichlorobromomethane	µg/L	<	0.2									
	1,1-Dichloroethane	µg/L	<	0.2									
	1,2-Dichloroethane	µg/L	<	0.2									
	1,1-Dichloroethylene	µg/L	<	0.2									
	1,2-Dichloropropane	µg/L	<	0.2									
	1,3-Dichloropropylene	µg/L	<	0.2									
	1,4-Dioxane	µg/L	<	0.2									
	Ethylbenzene	µg/L	<	0.2									
	Methyl Bromide	µg/L	<	0.5									
	Methyl Chloride	µg/L	<	0.2									
	Methylene Chloride	µg/L	<	0.2									
	1,1,2,2-Tetrachloroethane	µg/L	<	0.2									
	Tetrachloroethylene	µg/L	<	0.4									
	Toluene	µg/L	<	0.2									
	1,2-trans-Dichloroethylene	µg/L	<	0.5									
	1,1,1-Trichloroethane	µg/L	<	0.2									
	1,1,2-Trichloroethane	µg/L	<	0.5									
	Trichloroethylene	µg/L	<	0.2									
	Vinyl Chloride	µg/L	<	0.2									
Group 4	2-Chlorophenol	µg/L	<	0.2									
	2,4-Dichlorophenol	µg/L	<	0.2									
	2,4-Dimethylphenol	µg/L	<	0.2									
	4,6-Dinitro-o-Cresol	µg/L	<	1									
	2,4-Dinitrophenol	µg/L	<	1									
	2-Nitrophenol	µg/L	<	0.5									
	4-Nitrophenol	µg/L	<	0.5									
	p-Chloro-m-Cresol	µg/L	<	0.2									
	Pentachlorophenol	µg/L	<	0.5									
	Phenol	µg/L	<	0.2									
	2,4,6-Trichlorophenol	µg/L	<	0.2									
Group 5	Acenaphthene	µg/L	<	0.2									
	Acenaphthylene	µg/L	<	0.2									
	Anthracene	µg/L	<	0.2									
	Benzidine	µg/L	<	0.5									
	Benzo(a)Anthracene	µg/L	<	0.2									
	Benzo(a)Pyrene	µg/L	<	0.2									
	3,4-Benzofluoranthene	µg/L	<	0.2									
	Benzo(ghi)Perylene	µg/L	<	0.2									
	Benzo(k)Fluoranthene	µg/L	<	0.2									
	Bis(2-Chloroethoxy)Methane	µg/L	<	0.2									
	Bis(2-Chloroethyl)Ether	µg/L	<	0.2									
	Bis(2-Chloroisopropyl)Ether	µg/L	<	0.2									
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	1.7									
	4-Bromophenyl Phenyl Ether	µg/L	<	0.2									
	Butyl Benzyl Phthalate	µg/L	<	1									
	2-Chloronaphthalene	µg/L	<	0.2									
	4-Chlorophenyl Phenyl Ether	µg/L	<	0.2									
	Chrysene	µg/L	<	0.2									
	Dibenzo(a,h)Anthrancene	µg/L	<	0.2									
	1,2-Dichlorobenzene	µg/L	<	0.2									
	1,3-Dichlorobenzene	µg/L	<	0.2									
	1,4-Dichlorobenzene	µg/L	<	0.2									
	3,3-Dichlorobenzidine	µg/L	<	0.5									
	Diethyl Phthalate	µg/L	<	1									
	Dimethyl Phthalate	µg/L	<	1									
	Di-n-Butyl Phthalate	µg/L	<	1									
	2,4-Dinitrotoluene	µg/L	<	0.2									

	2,6-Dinitrotoluene	µg/L	<	0.2									
	Di-n-Octyl Phthalate	µg/L	<	1									
	1,2-Diphenylhydrazine	µg/L	<	0.2									
	Fluoranthene	µg/L	<	0.2									
	Fluorene	µg/L	<	0.2									
	Hexachlorobenzene	µg/L	<	0.2									
	Hexachlorobutadiene	µg/L	<	0.2									
	Hexachlorocyclopentadiene	µg/L	<	0.5									
	Hexachloroethane	µg/L	<	0.2									
	Indeno(1,2,3-cd)Pyrene	µg/L	<	0.2									
	Isophorone	µg/L	<	0.2									
	Naphthalene	µg/L	<	0.2									
	Nitrobenzene	µg/L	<	0.2									
	n-Nitrosodimethylamine	µg/L	<	0.2									
	n-Nitrosodi-n-Propylamine	µg/L	<	0.2									
	n-Nitrosodiphenylamine	µg/L	<	0.2									
	Phenanthrene	µg/L	<	0.2									
	Pyrene	µg/L	<	0.2									
	1,2,4-Trichlorobenzene	µg/L	<	0.2									
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2025

Stream / Surface Water Information

Seward Generating Station, NPDES Permit No. PA0002054, Outfall 003

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Conemaugh River**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	043832	41.73	2089	724	0.0677		Yes
End of Reach 1	043832	41.63	2050	724.1	0.0677		Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	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	41.73	0.0967			10							100	7		
End of Reach 1	41.63	0.0967			10										

Q_h

Location	RMI	LFY (cfs/mi²)	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	41.73														
End of Reach 1	41.63														

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Toxics Management Spreadsheet
Version 1.4, May 2025

Model Results

Seward Generating Station, NPDES Permit No. PA0002054, Outfall 003

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

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
41.73	70.01		70.01	5.415	0.068	1.989	19.885	10.	0.581	0.011	0.64
41.63	70.02		70.02047					10.000			

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
41.73	304.55		304.55	5.415	0.068	3.703	19.885	5.369	1.281	0.005	0.282
41.63	304.59		304.59								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.640 PMF: 1 Analysis Hardness (mg/l): 231.37 Analysis pH: 7.03

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	10,448	
Total Antimony	0	0		0	1,100	1,100	15,323	
Total Arsenic	0	0		0	340	340	4,736	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	292,535	
Total Boron	0	0		0	8,100	8,100	112,835	
Total Cadmium	0	0		0	4.549	5.0	69.7	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	1132.558	3,584	49,927	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	227	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	1,323	
Total Copper	0	0		0	29.622	30.9	430	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	158.843	238	3,309	Chem Translator of 0.669 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	22.9	Chem Translator of 0.85 applied
Total Nickel	0	0		0	952.065	954	13,289	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	13.615	16.0	223	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	905	
Total Zinc	0	0		0	238.523	244	3,397	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	41.8	
Acrylonitrile	0	0		0	650	650	9,055	
Benzene	0	0		0	640	640	8,915	
Bromoform	0	0		0	1,800	1,800	25,074	
Carbon Tetrachloride	0	0		0	2,800	2,800	39,005	
Chlorobenzene	0	0		0	1,200	1,200	16,716	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	250,744	
Chloroform	0	0		0	1,900	1,900	26,467	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	208,954	
1,1-Dichloroethylene	0	0		0	7,500	7,500	104,477	
1,2-Dichloropropane	0	0		0	11,000	11,000	153,233	
1,3-Dichloropropylene	0	0		0	310	310	4,318	
Ethylbenzene	0	0		0	2,900	2,900	40,398	
Methyl Bromide	0	0		0	550	550	7,662	
Methyl Chloride	0	0		0	28,000	28,000	390,047	
Methylene Chloride	0	0		0	12,000	12,000	167,163	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	13,930	
Tetrachloroethylene	0	0		0	700	700	9,751	
Toluene	0	0		0	1,700	1,700	23,681	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	94,726	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	41,791	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	47,363	
Trichloroethylene	0	0		0	2,300	2,300	32,040	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	7,801	
2,4-Dichlorophenol	0	0		0	1,700	1,700	23,681	
2,4-Dimethylphenol	0	0		0	660	660	9,194	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	1,114	
2,4-Dinitrophenol	0	0		0	660	660	9,194	
2-Nitrophenol	0	0		0	8,000	8,000	111,442	
4-Nitrophenol	0	0		0	2,300	2,300	32,040	
p-Chloro-m-Cresol	0	0		0	160	160	2,229	
Pentachlorophenol	0	0		0	9.004	9.0	125	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	6,408	

Acenaphthene	0	0		0	83	83.0	1,156	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	300	300	4,179	
Benzo(a)Anthracene	0	0		0	0.5	0.5	6.97	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	417,907	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	62,686	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	3,761	
Butyl Benzyl Phthalate	0	0		0	140	140	1,950	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	11,423	
1,3-Dichlorobenzene	0	0		0	350	350	4,876	
1,4-Dichlorobenzene	0	0		0	730	730	10,169	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	55,721	
Dimethyl Phthalate	0	0		0	2,500	2,500	34,826	
Di-n-Butyl Phthalate	0	0		0	110	110	1,532	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	22,288	
2,6-Dinitrotoluene	0	0		0	990	990	13,791	
1,2-Diphenylhydrazine	0	0		0	15	15.0	209	
Fluoranthene	0	0		0	200	200	2,786	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	139	
Hexachlorocyclopentadiene	0	0		0	5	5.0	69.7	
Hexachloroethane	0	0		0	60	60.0	836	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	139,302	
Naphthalene	0	0		0	140	140	1,950	
Nitrobenzene	0	0		0	4,000	4,000	55,721	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	236,814	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	4,179	
Phenanthrene	0	0		0	5	5.0	69.7	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	1,811	

☑ ***CFC*** CCT (min): 0.640 PMF: 1 Analysis Hardness (mg/l): 231.37 Analysis pH: 7.03

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	3,065	
Total Arsenic	0	0		0	150	150	2,090	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	57,114	
Total Boron	0	0		0	1,600	1,600	22,288	
Total Cadmium	0	0		0	0.440	0.5	7.02	Chem Translator of 0.874 applied
Total Chromium (III)	0	0		0	147.322	171	2,386	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	145	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	265	
Total Copper	0	0		0	18.340	19.1	266	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	20,895	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	6.190	9.26	129	Chem Translator of 0.669 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	12.6	Chem Translator of 0.85 applied
Total Nickel	0	0		0	105.745	106	1,477	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	69.5	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	181	
Total Zinc	0	0		0	240.474	244	3,397	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	41.8	
Acrylonitrile	0	0		0	130	130	1,811	
Benzene	0	0		0	130	130	1,811	
Bromoform	0	0		0	370	370	5,154	
Carbon Tetrachloride	0	0		0	560	560	7,801	
Chlorobenzene	0	0		0	240	240	3,343	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	48,756	
Chloroform	0	0		0	390	390	5,433	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	43,184	
1,1-Dichloroethylene	0	0		0	1,500	1,500	20,895	
1,2-Dichloropropane	0	0		0	2,200	2,200	30,647	
1,3-Dichloropropylene	0	0		0	61	61.0	850	
Ethylbenzene	0	0		0	580	580	8,080	
Methyl Bromide	0	0		0	110	110	1,532	
Methyl Chloride	0	0		0	5,500	5,500	76,616	
Methylene Chloride	0	0		0	2,400	2,400	33,433	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	2,925	
Tetrachloroethylene	0	0		0	140	140	1,950	
Toluene	0	0		0	330	330	4,597	

1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	19,502	
1,1,1-Trichloroethane	0	0		0	610	610	8,497	
1,1,2-Trichloroethane	0	0		0	680	680	9,473	
Trichloroethylene	0	0		0	450	450	6,269	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	1,532	
2,4-Dichlorophenol	0	0		0	340	340	4,736	
2,4-Dimethylphenol	0	0		0	130	130	1,811	
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	223	
2,4-Dinitrophenol	0	0		0	130	130	1,811	
2-Nitrophenol	0	0		0	1,600	1,600	22,288	
4-Nitrophenol	0	0		0	470	470	6,547	
p-Chloro-m-Cresol	0	0		0	500	500	6,965	
Pentachlorophenol	0	0		0	6.908	6.91	96.2	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	91	91.0	1,268	
Acenaphthene	0	0		0	17	17.0	237	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	59	59.0	822	
Benzo(a)Anthracene	0	0		0	0.1	0.1	1.39	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	83,581	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	12,677	
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	752	
Butyl Benzyl Phthalate	0	0		0	35	35.0	488	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	160	160	2,229	
1,3-Dichlorobenzene	0	0		0	69	69.0	961	
1,4-Dichlorobenzene	0	0		0	150	150	2,090	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	800	800	11,144	
Dimethyl Phthalate	0	0		0	500	500	6,965	
Di-n-Butyl Phthalate	0	0		0	21	21.0	293	
2,4-Dinitrotoluene	0	0		0	320	320	4,458	
2,6-Dinitrotoluene	0	0		0	200	200	2,786	
1,2-Diphenylhydrazine	0	0		0	3	3.0	41.8	
Fluoranthene	0	0		0	40	40.0	557	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	2	2.0	27.9	

Hexachlorocyclopentadiene	0	0		0	1	1.0	13.9	
Hexachloroethane	0	0		0	12	12.0	167	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	2,100	2,100	29,254	
Naphthalene	0	0		0	43	43.0	599	
Nitrobenzene	0	0		0	810	810	11,283	
n-Nitrosodimethylamine	0	0		0	3,400	3,400	47,363	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	59	59.0	822	
Phenanthrene	0	0		0	1	1.0	13.9	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	362	

☑ ***THH*** CCT (min): 0.640 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	78.0	
Total Arsenic	0	0		0	10	10.0	139	
Total Barium	0	0		0	2,400	2,400	33,433	
Total Boron	0	0		0	3,100	3,100	43,184	
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	4,179	
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	13,930	
Total Mercury	0	0		0	0.050	0.05	0.7	
Total Nickel	0	0		0	610	610	8,497	
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	3.34	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	41.8	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	

Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	1,393	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	79.4	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	460	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	
1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A	
Ethylbenzene	0	0		0	68	68.0	947	
Methyl Bromide	0	0		0	100	100.0	1,393	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	N/A	N/A	N/A	
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A	
Tetrachloroethylene	0	0		0	N/A	N/A	N/A	
Toluene	0	0		0	57	57.0	794	
1,2-trans-Dichloroethylene	0	0		0	100	100.0	1,393	
1,1,1-Trichloroethane	0	0		0	10,000	10,000	139,302	
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A	
Trichloroethylene	0	0		0	N/A	N/A	N/A	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	30	30.0	418	
2,4-Dichlorophenol	0	0		0	10	10.0	139	
2,4-Dimethylphenol	0	0		0	100	100.0	1,393	
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	27.9	
2,4-Dinitrophenol	0	0		0	10	10.0	139	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	N/A	N/A	N/A	
Phenol	0	0		0	4,000	4,000	55,721	
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A	
Acenaphthene	0	0		0	70	70.0	975	
Anthracene	0	0		0	300	300	4,179	
Benzidine	0	0		0	N/A	N/A	N/A	
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	2,786	
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	

Butyl Benzyl Phthalate	0	0		0	0.1	0.1	1.39	
2-Chloronaphthalene	0	0		0	800	800	11,144	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	1,000	1,000	13,930	
1,3-Dichlorobenzene	0	0		0	7	7.0	97.5	
1,4-Dichlorobenzene	0	0		0	300	300	4,179	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	600	600	8,358	
Dimethyl Phthalate	0	0		0	2,000	2,000	27,860	
Di-n-Butyl Phthalate	0	0		0	20	20.0	279	
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	279	
Fluorene	0	0		0	50	50.0	697	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	55.7	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	474	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	139	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	279	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	0.98	

☑ ***CRL*** CCT (min): 0.282 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	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	3.43	
Benzene	0	0		0	0.58	0.58	33.2	
Bromoform	0	0		0	7	7.0	401	
Carbon Tetrachloride	0	0		0	0.4	0.4	22.9	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	45.8	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	0.95	0.95	54.4	
1,2-Dichloroethane	0	0		0	9.9	9.9	567	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	51.5	
1,3-Dichloropropylene	0	0		0	0.27	0.27	15.5	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	1,145	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	11.4	
Tetrachloroethylene	0	0		0	10	10.0	572	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	31.5	
Trichloroethylene	0	0		0	0.6	0.6	34.3	
Vinyl Chloride	0	0		0	0.02	0.02	1.14	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	

2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	1.72	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	85.9	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.006	
Benzo(a)Anthracene	0	0		0	0.001	0.001	0.057	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.006	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	0.057	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	0.57	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	1.72	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	18.3	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	6.87	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.006	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	2.86	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	2.86	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	2.86	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	1.72	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.005	
Hexachlorobutadiene	0	0		0	0.01	0.01	0.57	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	5.72	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	0.057	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	0.04	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	0.29	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	189	

Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Aluminum	Report	Report	Report	Report	Report	µg/L	6,697	AFC	Discharge Conc > 10% WQBEL (no RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	4,179	THH	Discharge Conc > 10% WQBEL (no RP)
Total Iron	Report	Report	Report	Report	Report	µg/L	20,895	CFC	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	PWS Not Applicable
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	139	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	33,433	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	22,288	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	7.02	µg/L	Discharge Conc < TQL
Total Chromium (III)	2,386	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	145	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	265	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	0.27	mg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Total Lead	129	µg/L	Discharge Conc ≤ 10% WQBEL

Attachment G:
Thermal Spreadsheet – Outfall 003

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions | Inputs | CLEAR FORM | CALCULATE

Facility: **Seward Generating Station**

Permit No.: **PA0002054**

Stream Name: **Conemaugh River**

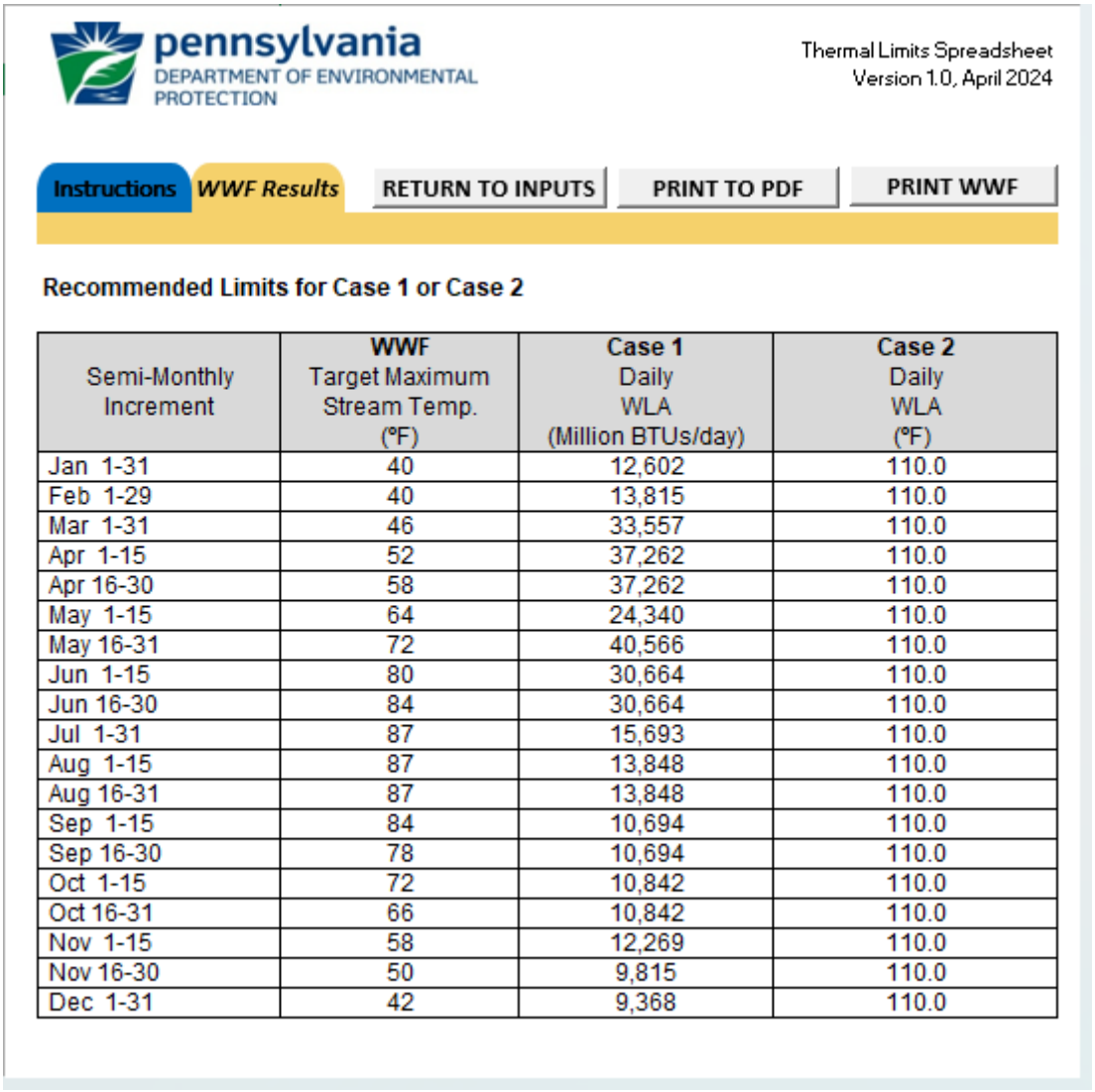
Analyst/Engineer:

Stream Q7-10 (cfs)*: **150.0**

Outfall No.: **003**

Analysis Type*: **WWF**

Facility Flows					Stream Flows				Temperature
Semi-Monthly Increment	Intake (Stream) (MGD)*	Intake (External) (MGD)*	Consumptive Loss (MGD)*	Discharge Flow (MGD)	Q7-10 Multipliers (Default Shown)	PMF	Seasonal Stream Flow (cfs)	Downstream Stream Flow (cfs)	Ambient Stream Temperature (ºF)*
Jan 1-31	11.8		8	3.8	3.2	1.00	480.00	467.62	
Feb 1-29	11.8		8	3.8	3.5	1.00	525.00	512.62	
Mar 1-31	11.8		8	3.8	7	1.00	1050.00	1037.62	
Apr 1-15	11.8		8	3.8	9.3	1.00	1395.00	1382.62	
Apr 16-30	11.8		8	3.8	9.3	1.00	1395.00	1382.62	
May 1-15	11.8		8	3.8	5.1	1.00	765.00	752.62	
May 16-31	11.8		8	3.8	5.1	1.00	765.00	752.62	
Jun 1-15	11.8		8	3.8	3	1.00	450.00	437.62	
Jun 16-30	11.8		8	3.8	3	1.00	450.00	437.62	
Jul 1-31	11.8		8	3.8	1.7	1.00	255.00	242.62	
Aug 1-15	11.8		8	3.8	1.4	1.00	210.00	197.62	
Aug 16-31	11.8		8	3.8	1.4	1.00	210.00	197.62	
Sep 1-15	11.8		8	3.8	1.1	1.00	165.00	152.62	
Sep 16-30	11.8		8	3.8	1.1	1.00	165.00	152.62	
Oct 1-15	11.8		8	3.8	1.2	1.00	180.00	167.62	
Oct 16-31	11.8		8	3.8	1.2	1.00	180.00	167.62	
Nov 1-15	11.8		8	3.8	1.6	1.00	240.00	227.62	
Nov 16-30	11.8		8	3.8	1.6	1.00	240.00	227.62	
Dec 1-31	11.8		8	3.8	2.4	1.00	360.00	347.62	



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Thermal Limits Spreadsheet
Version 1.0, April 2024

Instructions | *WWF Results* | RETURN TO INPUTS | PRINT TO PDF | PRINT WWF

Recommended Limits for Case 1 or Case 2

Semi-Monthly Increment	**WWF** Target Maximum Stream Temp. (°F)	**Case 1** Daily WLA (Million BTUs/day)	**Case 2** Daily WLA (°F)
Jan 1-31	40	12,602	110.0
Feb 1-29	40	13,815	110.0
Mar 1-31	46	33,557	110.0
Apr 1-15	52	37,262	110.0
Apr 16-30	58	37,262	110.0
May 1-15	64	24,340	110.0
May 16-31	72	40,566	110.0
Jun 1-15	80	30,664	110.0
Jun 16-30	84	30,664	110.0
Jul 1-31	87	15,693	110.0
Aug 1-15	87	13,848	110.0
Aug 16-31	87	13,848	110.0
Sep 1-15	84	10,694	110.0
Sep 16-30	78	10,694	110.0
Oct 1-15	72	10,842	110.0
Oct 16-31	66	10,842	110.0
Nov 1-15	58	12,269	110.0
Nov 16-30	50	9,815	110.0
Dec 1-31	42	9,368	110.0

Attachment H:
TMS – Outfall 006

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Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions | Discharge | Stream

Facility: **Seward Generating Station** NPDES Permit No.: **PA0002054** Outfall No.: **006**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Effluent from the groundwater collection ar**

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
0.22	1430	8.23						

					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		2740									
	Chloride (PWS)	mg/L		288									
	Bromide	mg/L		2.8									
	Sulfate (PWS)	mg/L		1640									
	Fluoride (PWS)	mg/L		0.15									
Group 2	Total Aluminum	µg/L		200									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		10.9									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L		50									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L	<	0.5									
	Hexavalent Chromium	µg/L		0.8									
	Total Cobalt	µg/L		1.8									
	Total Copper	mg/L	<	0.0005									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L	<	20									
	Total Iron	µg/L		1250									
	Total Lead	µg/L	<	0.2									
	Total Manganese	µg/L		560									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		4.8									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L		0.9									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L		0.6									
	Total Zinc	mg/L	<	0.01									
	Total Molybdenum	µg/L		0.8									
	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												

Stream / Surface Water Information

Seward Generating Station, NPDES Permit No. PA0002054, Outfall 006

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Conemaugh River**

No. Reaches to Model: **1**

(●) Statewide Criteria
( ) Great Lakes Criteria
( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	043832	41.73	2089	724	0.0677		Yes
End of Reach 1	043832	41.63	2050	724.1	0.0677		Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	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	41.73	0.0967			10							100	7		
End of Reach 1	41.63	0.0967			10										

Q_h

Location	RMI	LFY (cfs/mi²)	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	41.73														
End of Reach 1	41.63														

Model Results

Seward Generating Station, NPDES Permit No. PA0002054, Outfall 006

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

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
41.73	70.01		70.01	0.34	0.068	1.967	19.67	10.	0.558	0.011	0.732
41.63	70.02		70.02047					10.000			

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
41.73	304.55		304.55	0.34	0.068	3.75	19.67	5.245	1.269	0.005	0.28
41.63	304.59		304.59								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 0.732 PMF: 1 Analysis Hardness (mg/l): 106.43 Analysis pH: 7.00

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	155,031	
Total Antimony	0	0		0	1,100	1,100	227,379	
Total Arsenic	0	0		0	340	340	70,281	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	4,340,877	
Total Boron	0	0		0	8,100	8,100	1,674,338	
Total Cadmium	0	0		0	2.140	2.27	470	Chem Translator of 0.941 applied
Total Chromium (III)	0	0		0	599.617	1,898	392,234	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	3,368	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	19,637	
Total Copper	0	0		0	14.252	14.8	3,069	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	69.114	88.4	18,271	Chem Translator of 0.782 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	340	Chem Translator of 0.85 applied
Total Nickel	0	0		0	493.600	495	102,236	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	3.581	4.21	871	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	13,436	
Total Zinc	0	0		0	123.538	126	26,111	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 0.732 PMF: 1 Analysis Hardness (mg/l): 106.43 Analysis pH: 7.00

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	45,476	
Total Arsenic	0	0		0	150	150	31,006	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	847,504	
Total Boron	0	0		0	1,600	1,600	330,733	
Total Cadmium	0	0		0	0.257	0.28	58.6	Chem Translator of 0.906 applied
Total Chromium (III)	0	0		0	77.998	90.7	18,747	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	2,149	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	3,927	
Total Copper	0	0		0	9.446	9.84	2,034	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	310,063	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.693	3.44	712	Chem Translator of 0.782 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	187	Chem Translator of 0.85 applied
Total Nickel	0	0		0	54.824	55.0	11,367	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	1,031	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	2,687	
Total Zinc	0	0		0	124.549	126	26,111	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 0.732 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	1,158	
Total Arsenic	0	0		0	10	10.0	2,067	
Total Barium	0	0		0	2,400	2,400	496,100	
Total Boron	0	0		0	3,100	3,100	640,796	
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	62,013	
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	206,708	
Total Mercury	0	0		0	0.050	0.05	10.3	
Total Nickel	0	0		0	610	610	126,092	
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	49.6	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 0.280 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

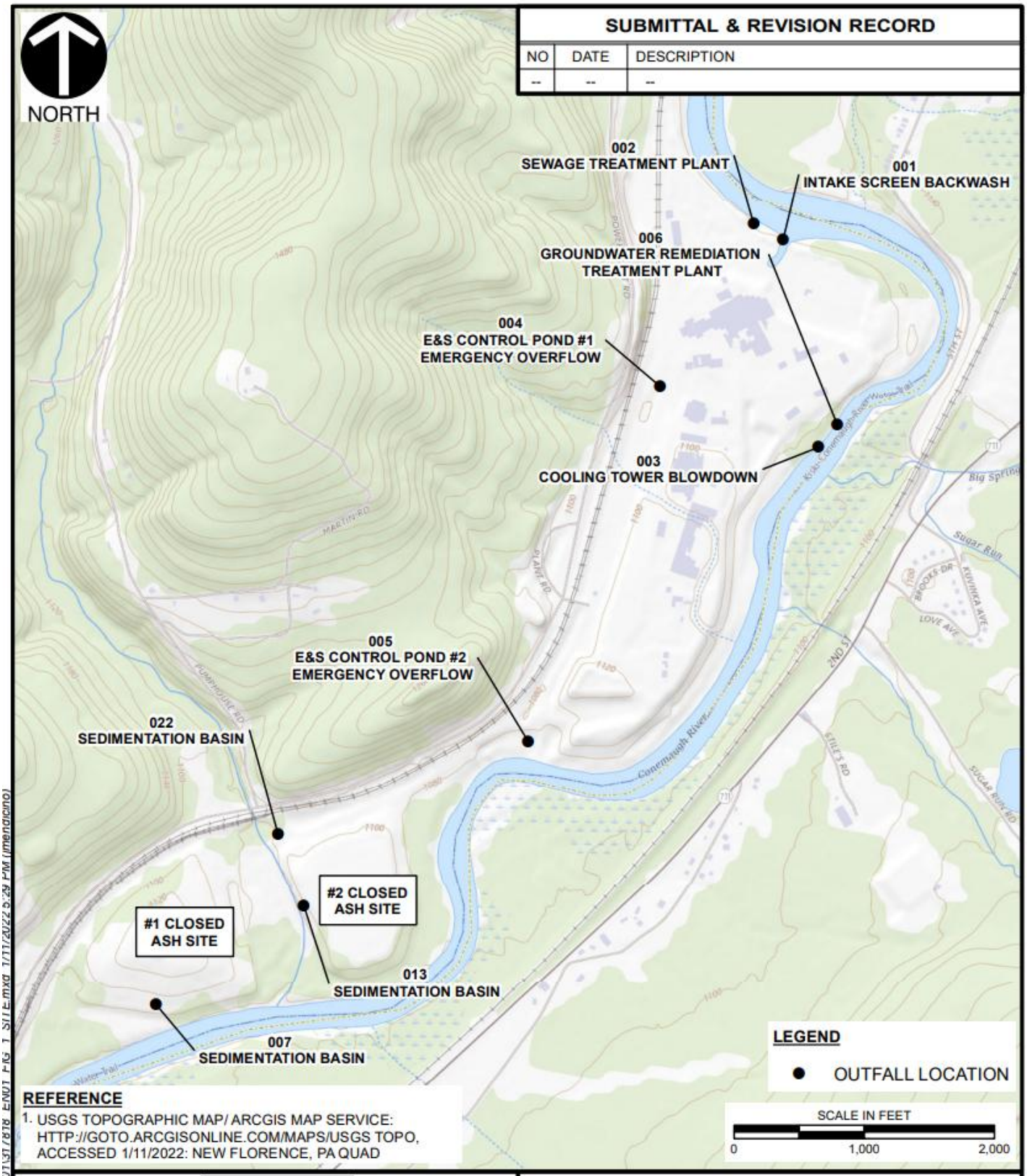
	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments

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

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

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	99,369	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	N/A	N/A	Discharge Conc < TQL
Total Arsenic	N/A	N/A	Discharge Conc < TQL
Total Barium	496,100	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	330,733	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	58.6	µg/L	Discharge Conc < TQL
Total Chromium (III)	18,747	µg/L	Discharge Conc < TQL
Hexavalent Chromium	2,149	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	3,927	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	1.97	mg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	62,013	µg/L	Discharge Conc < TQL
Total Iron	310,063	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	712	µg/L	Discharge Conc < TQL
Total Manganese	206,708	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	10.3	µg/L	Discharge Conc < TQL
Total Nickel	11,367	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	1,031	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	558	µg/L	Discharge Conc < TQL
Total Thallium	49.6	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	16.7	mg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

Attachment I:
Outfall Site Map


SUBMITTAL & REVISION RECORD
NO
DATE
DESCRIPTION
--
--
--
NORTH
002
SEWAGE TREATMENT PLANT
001
INTAKE SCREEN BACKWASH
006
GROUNDWATER REMEDIATION
TREATMENT PLANT
004
E&S CONTROL POND #1
EMERGENCY OVERFLOW
003
COOLING TOWER BLOWDOWN
005
E&S CONTROL POND #2
EMERGENCY OVERFLOW
022
SEDIMENTATION BASIN
#2 CLOSED
ASH SITE
#1 CLOSED
ASH SITE
013
SEDIMENTATION BASIN
007
SEDIMENTATION BASIN
Conemaugh River
LEGEND
OUTFALL LOCATION
SCALE IN FEET
0
1,000
2,000
REFERENCE
1. USGS TOPOGRAPHIC MAP/ ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/USGS TOPO,
ACCESSED 1/11/2022: NEW FLORENCE, PA QUAD
Civil & Environmental Consultants, Inc.
4350 Northern Pike, Suite 141 - Monroeville, PA 15146
724-327-5200 • 800-899-3610
www.cecinc.com
SEWARD GENERATION, LLC
SEWARD GENERATING STATION
SITE LOCATION MAP
DRAWN BY: JDM
CHECKED BY: JMF
APPROVED BY: CLL*
FIGURE NO: 1
* Hand signature on file
DATE: 01/03/2022
SCALE: 1 " = 1,000 '
PROJECT NO: 317-818

Attachment J:
Design and Engineering Calculations – Cooling Water System Data

Design and Engineering Calculations for Seward Generation, LLC

Cooling Water System Data, Question 8

Design Intake Flow (DIF) = 11,800,000 gallons/day (11.8 million gallons per day (MGD) or 18.3 cubic feet per second (cfs)] (2004 to present)

Most process water comes from High Ridge Water Authority. Conemaugh River water is used for cooling tower makeup water (10.8 MGD) and traveling screen wash water (1.0 MGD). Up to 0.9 MGD of cooling tower blowdown water is used for ash wetting, a process use.

Process water (ash wetting, from plant Water Balance): 0.9 MGD.

Process water - percent of DIF: 0.9 mgd/11.8 mgd = 7.6%.

At DIF, non-contact cooling water comprises the remainder of the plant's water withdrawal or 92.4%

Proportion of source water withdrawn on a daily basis for non-contact cooling:

Conemaugh River at Seward, Pennsylvania River Gage, USGS Station 03041500: Mean daily discharge rate = 1,303.1 cfs, averaged annual flows from 1939 through 2020.

DIF / Mean river flow = 18.3 cfs / 1,303.1 cfs = 1.4% of mean river flow.

Conemaugh River withdrawals by month/gallons:

	2017	2018	2019	2020	2021
Jan	128,754,565	126,656,694	108,826,022	90,893,559	105,125,906
Feb	109,579,515	96,998,944	101,361,642	86,689,021	109,202,363
Mar	137,257,924	110,866,798	132,151,997	73,170,371	130,179,874
Apr	61,038,321	69,792,602	101,205,712	78,233,782	18,620,029
May	97,977,008	13,618,588	85,920,292	67,758,847	127,626,472
Jun	124,407,365	118,465,829	123,869,638	69,834,643	127,267,013
Jul	127,832,000	145,374,635	31,770,109	154,297,537	147,556,193
Aug	139,439,345	147,388,821	6,845,214	170,273,331	140,706,247
Sep	140,463,299	134,952,394	9,267,291	142,062,625	119,663,765
Oct	115,668,682	130,896,024	99,970,791	144,266,504	131,805,180
Nov	65,269,766	130,703,561	87,634,303	83,922,987	112,726,731
Dec	124,338,487	107,578,007	92,070,015	117,032,115	139,818,845
Totals:	1,372,026,276	1,333,292,897	980,893,026	1,278,435,322	1,410,298,618

	2017	2018	2019	2020	2021
Daily Average, (gpm)	3,758,976	3,652,857	2,687,378	3,492,993	3,863,832

5-Year Daily Average, Actual Intake Flow (AIF), 2017-2021 (gpm): 3,491,207
5-Year Daily Average, AIF, 2017-2021 (MGD): 3.49
5-Year Daily Average, AIF, 2017-2021 (cfs): 5.402

Through-Screen Velocity Calculations:

Screen Information:

Traveling screen width: 10 feet

Pool level is constant in the screen well at elevation 1074.5 feet. Run-of-river dam located approximately 300 feet downstream from Seward's screenhouse always overtops, setting a constant pool level in the screen well. Bottom of screen well is at elevation 1064.0 feet. Wetted depth of screen is 10.5 feet.

Screen area = 10 feet x 10.5 feet
= 105 ft^2

Screens are 3/8-inch mesh with an open area of 0.61.
Open area of screen = 105 ft^2 x 0.61
= 64.05 ft^2

Maximum flow = 11.8 mgd (18.3 ft^3/sec)

Maximum through-screen velocity = maximum flow/open area of screen
= (18.3 ft^3/sec) / 64.05 ft^2
= 0.29 ft/sec (fps)

Through-screen velocity at 5-year AIF = (5.402 ft^3/sec) / 64.05 ft^2
= 0.08 fps

AIF (5-year, 2017-2021) as a percent of DIF:
= (5.402 ft^3/sec) / (18.3 ft^3/sec) x 100
= 29.5% (a 70.5% reduction)