pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0232840**
Facility Type	**Industrial**	APS ID	**1059327**
Major / Minor	**Minor**	Authorization ID	**1389344**

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

Applicant and Facility Information

Applicant Name	**Renovo Energy Center LLC**	Facility Name	**Renovo Energy Center LLC**
Applicant Address	12011 Sunset Hills Road, Suite 110	Facility Address	114 Industrial Park Road
	Reston, VA 20190-5919		Renovo, PA 17764
Applicant Contact	Dan Lee	Facility Contact	TBD (not constructed)
Applicant Phone	(571) 392-6721	Facility Phone	TBD (not constructed)
Client ID	322163	Site ID	810551
NAICS Code	221112	Municipality	Renovo Borough
NAICS Description	Fossil Fuel Electric Power Generation	County	Clinton
Date Application Received	March 14, 2022	EPA Waived?	No
Date Application Accepted	March 25, 2022	If No, Reason	DEP Discretion

Purpose of Application: Renewal of an existing NPDES permit for a proposed discharge from the proposed Renovo Energy Center; a two-unit, gas-fired power plant with expected net output of approximately 950 megawatts.

Public Participation

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

Approve	Deny	Signatures	Date
X		*Derek S. Garner* Derek S. Garner / Project Manager	December 19, 2022
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	December 28, 2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	**001**	Design Flow (MGD)	0.395
Latitude	41º 19' 24.92"	Longitude	-77º 45' 18.73"
Quad Name	Renovo West	Quad Code	0823
Wastewater Description:	Low volume wastes		

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61115129	RMI	97.14
Drainage Area	2,970	Yield (cfs/mi^2)	0.085
Q_{7-10} Flow (cfs)	252	Q_{7-10} Basis	Streamgage No. 01545500
Elevation (ft)	636	Slope (ft/ft)	0.0007
Watershed No.	9-B	Chapter 93 Class.	WWF, MF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna Watershed

Nearest Downstream Public Water Supply Intake	PA American Water Company		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	668
PWS RMI	10.64	Distance from Outfall (mi)	86.50

Outfall No.	**002**	Design Flow (MGD)	n/a
Latitude	41º 19' 27.43"	Longitude	-77º 45' 30.31"
Quad Name	Renovo West	Quad Code	0823

Wastewater Description: Stormwater

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61115129	RMI	97.33
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	9-B	Chapter 93 Class.	WWF, MF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a

Assessment Status: Impaired
Cause(s) of Impairment: Metals
Source(s) of Impairment: Abandoned Mine Drainage
TMDL Status: Final Name: West Branch Susquehanna Watershed

Nearest Downstream Public Water Supply Intake: PA American Water Company

PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	668
PWS RMI	10.64	Distance from Outfall (mi)	86.69

Outfall No.	**003**	Design Flow (MGD)	n/a
Latitude	41º 19' 27.38"	Longitude	-77º 44' 58.96"
Quad Name	Renovo West	Quad Code	0823
Wastewater Description:	Stormwater		

Receiving Waters	West Branch Susquehanna River	Stream Code	18668
NHD Com ID	61115129	RMI	96.36
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	9-B	Chapter 93 Class.	WWF, MF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Metals		
Source(s) of Impairment	Abandoned Mine Drainage		
TMDL Status	Final	Name	West Branch Susquehanna Watershed

Nearest Downstream Public Water Supply Intake	PA American Water Company		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	668
PWS RMI	10.64	Distance from Outfall (mi)	85.72

Facility Summary

The proposed Renovo Energy Center is a 950 MW two-unit, gas-fired power plant located on a 68-acre parcel in Renovo, PA. Wastewater generated at the facility will be mainly comprised of low-volume waste, including; equipment wash downs, evaporative cooler blowdown, demineralizer system concentrate, steam cycle blowdown, sampling losses, and filter press dewatering waste. Each waste stream will be conveyed to a common wastewater collection tank where the comingled wastewater is allowed to cool to under 110 °F. After reaching a suitable temperature for discharge, the wastewater passes through a final filter and is ultimately discharged to the West Branch Susquehanna River via Outfall 001.

Onsite stormwater will be drained to one of two stormwater basins situated on the West and East sides of the property. The West basin drains 5,880,600 sq. ft. of which 6.4% is impervious. The East basin drains 8,494,200 sq. ft. of which 3.6% is impervious. The West basin discharges to an existing storm sewer via Outfall 002 and the East basin discharges to an existing storm sewer via Outfall 003.

All sanitary waste will be conveyed to the existing sewer.

Clean Water Act § 316(b)

This is a proposed facility that has not yet been constructed. There have been no changes to the proposal since the permit was issued in 2017. The previous § 316(b) determination is still applicable and is as follows:

Requirements applicable to cooling water intake structures for new facilities under Section 316(b) of the Clean Water Act are implemented under 40 CFR Part 125, Subpart I. A facility is subject to this subpart if it; 1) is a point source that uses or proposes to use a cooling water intake structure, 2) has at least one cooling water intake structure that uses at least 25 percent of the water it withdraws for cooling purposes, and 3) has a design intake flow greater than 2 MGD. Since this facility will have a design intake flow less than 2 MGD it is not subject to the requirements. However, 40 CFR § 125.80(c) still requires that new facilities that do not meet the threshold requirements must still meet requirements determined on a case-by-case, best professional judgment basis.

During normal operations water will be withdrawn from the West Branch Susquehanna River through wedge wire T-12 Johnson screens, or equivalent, with air burst capabilities. During extreme low water levels in the River, or if a blockage of flow through the screens occurs, an engineered 40' x 20' infiltration bed, also with back flushing capabilities, located at the deepest part of the River in the vicinity of the intake structure will be used. Water withdrawn from the West Branch Susquehanna River through the intakes will be minimized by the use of air cooled condensers.

DEP believes the design of the intake structures and use of closed-cycle air cooled condensers satisfies best technology available (BTA). Accordingly, all requirements under 40 CFR § 125.98(f) are satisfied by the proposed technology.

Compliance History

This is a proposed facility so there is no compliance history to summarize. There are currently no open violations associated with the permittee.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.395
Latitude 41º 19' 27.08" **Longitude** -77º 45' 19.71"
Wastewater Description: Low-volume wastes

Technology-Based Limitations ("TBELs")

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
pH (1)	6.0 – 9.0 S.U.	Min – Max	423.15(b)(1)	95.2(1)
Total PCBs (µg/l) (2)	1.75	IMAX	423.15(b)(2)	
Total Suspended Solids (3)	30	Avg Mo	423.15(b)(3)	
	100	Daily Max	423.15(b)(3)	
Oil and Grease (4)	15	Avg Mo	423.15(b)(3)	95.2(2)
	20	Daily Max	423.15(b)(3)	
	30	IMAX		95.2(2)
Dissolved Iron (5)	7.0	IMAX		95.2(4)

(1) A pH range of 6.0 to 9.0 is required by both federal steam electric power generating new source performance standards (NSPS) and state industrial waste regulations.

(2) 40 CFR § 423.15(b)(2) explicitly prohibits the discharge of PCB compounds. In order to satisfy this condition DEP has proposed to establish an instantaneous maximum of 1.75 µg/l, which mirrors the Bureau of Laboratories recommended quantification limit; the lowest concentration that can be reliably achieved by accredited laboratories. By demonstrating PCB compounds are not present at a concentration higher than 1.75 µg/l, it can be reasonably assumed that they are not present in the effluent.

(3) The NSPS require Total Suspended Solids effluent limits for low volume wastes.

(4) Oil and Grease limits are required by both the federal NSPS and state industrial waste regulations.

(5) Maximum Dissolved Iron concentrations are expected to be 0.8 mg/l; well below the technology-based effluent limit (TBEL) required by 25 PA § 95.2(4). Since there is no reasonable potential to approach the TBEL no limitations or monitoring requirements are proposed.

Per email confirmation dated February 21, 2017 (attached) metal cleaning wastes will not be discharged from the facility. HRSG chemical cleaning waste will be used, but it will be trucked off site. Combustion turbine off line wash water will also be trucked off-site after use. The following condition is proposed to be included in Part C of the permit:

The discharge of metal cleaning wastes and combustion turbine off line wash waters is prohibited. Any proposed discharge of these waste streams shall require a permit amendment per 25 Pa. Code § 92a.24(a).

Water Quality-Based Limitations ("WQBELs")

The first step in the WQBEL analysis was to collect background concentration levels for toxic pollutants from the Water Quality Network. The nearest stream gage to the proposed discharge is Station ID No. WQN0448 near Jersey Shore, PA. Data from the previous five years was used for the analysis.

The next step is to enter all data including expected discharge characteristics, stream background concentrations, and receiving water characteristics into the Toxics Management Spreadsheet v1.3 ("TMS"). Based on the input data, TMS makes recommendations for each pollutant; effluent limits, reporting requirements, or no action. The recommendations are as follows:

	Mass Limits		*Concentration Limits*						
Pollutants	**AML (lbs/day)**	**MDL (lbs/day)**	**AML**	**MDL**	**IMAX**	**Units**	**Governing WQBEL**	**WQBEL Basis**	**Comments**
Total Aluminum	3.7	5.77	1,123	1,751	2,806	µg/L	1,123	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	206	AFC	Discharge Conc > 10% WQBEL (no RP)
Osmotic Pressure	XXX	XXX	580	905	1,451	mOs/kg	580	AFC	Discharge Conc ≥ 50% WQBEL (RP)

Total Dissolved Solids ("TDS") Treatment Requirements

This facility is classified as Unaffected regarding the TDS treatment requirements of 25 Pa. Code § 95.10. As stated in the preamble to the final rulemaking, Section 95.10 applies only to net loadings. Since the primary source of TDS in the blowdown is natural (i.e., ambient stream concentration), and the closed-cycle cooling system will only further concentrate the existing TDS, a net increase in TDS is not expected.

Thermal Considerations

The application states that out of the various waste streams to be collected at the wastewater collection tank only one, the HRSG blowdown, is anticipated to be above ambient temperatures. The HRSG blowdown will have a maximum temperature of 140 °F and comprises roughly 54% of the total expected flows during normal operating conditions. As stated in the Facility Description, the blended waste streams in the wastewater collection tank will be allowed to cool to under 110 °F before being discharged. The expected thermal loading to the River was analyzed using the Thermal Discharge Analysis spreadsheet (attached). The acute partial mixing factor (PMF) generated in TMS was applied to the discharge to build in an extra amount of conservancy. The spreadsheet indicates that a maximum discharge temperature of 110 °F at all times of the year will not negatively impact the River.

Best Professional Judgment ("BPJ")

The previous permit established an average monthly total residual chlorine limit of 0.2 mg/l and an instantaneous maximum of 0.5 mg/l. The justification used is as follows:

While there are no technology-based effluent limitations for chlorine in low-volume wastes at 40 CFR Part 423, a residual is expected to be present in the effluent based on expected wastewater characteristics included with the application. Since chlorine will be present in the effluent, per § 92a.48(b)(1) DEP must still establish a limit even if EPA has not promulgated an applicable effluent limit guideline for chlorine. NSPSs at Part 423 do require chlorine limitations of 0.2 mg/l

average concentration and 0.5 mg/l maximum concentration for a similar waste stream; cooling tower blowdown. The expected effluent characteristics indicate that the permittee will be able to comply with these limits, and modeling output indicates these limits are protective of the receiving surface water.

Since there has been no proposed changes to the discharge characteristics regarding total residual chlorine, DEP recommends the existing BPJ determination remains in place.

West Branch Susquehanna River Watershed TMDL Considerations

The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL addresses the three primary metals associated with abandon mine drainage: iron, aluminum, and manganese and acidity. Since the Renovo Energy Center is a proposed discharge it is not assigned a waste load allocation (WLA) in the TMDL. Generally, when a WLA has not been assigned to a discharge DEP establishes limits at the applicable Chapter 93 water quality criterion so that there is no reasonable potential for the criterion to be exceeded. However, in this case the discharge will not be adding to the net loading of iron, aluminum, or manganese in the River. The facility water system will only concentrate the existing loading with minimal consumptive losses. Accordingly, the TMDL will not impact how the limits are established at Outfall 001.

Chesapeake Bay TMDL Considerations

Like TDS, the Chesapeake Bay TMDL is concerned with net loadings. Since the primary source of Total Nitrogen (TN) and Phosphorus (TP) in the discharge is natural, a net increase in TN or TP loading is not anticipated. Accordingly, no nutrient monitoring or limits are proposed.

Anti-Backsliding

No limits are proposed to be made less stringent.

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** n/a
Latitude 41º 19' 39.26" **Longitude** -77º 45' 33.16"
Wastewater Description: Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations (WQBELs)

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment (BPJ)

Parameter	Limit (mg/l)	Basis
pH	Report	PAG-03 Appendix H
Total Suspended Solids	Report	PAG-03 Appendix H
Oil & Grease	Report	PAG-03 Appendix H
Total Aluminum	Report	TMDL
Total Iron	Report	PAG-03 Appendix H, TMDL
Total Manganese	Report	TMDL

Monitoring requirements for the stormwater discharge at Outfall 002 are based on Appendix H of the PAG-03 NPDES General Permit for Discharges of Industrial Stormwater which establishes monitoring and benchmark values for steam electric generating facilities similar in nature to the proposed REC and the West Branch Susquehanna River TMDL. The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL addresses the three primary metals associated with abandon mine drainage; iron, aluminum, and manganese and acidity. DEP believes it is appropriate to assign monitoring frequencies for the three metals (iron, aluminum, and manganese) to collect data so that a future determination can be made if the discharge is contributing to the River's impairment.

Anti-Backsliding

No limits are proposed to be made less stringent.

Development of Effluent Limitations

Outfall No. 003 **Design Flow (MGD)** n/a
Latitude 41º 19' 45.32" **Longitude** -77º 45' 3.25"
Wastewater Description: Stormwater

Technology-Based Limitations

There are no applicable technology-based effluent limitations for industrial stormwater.

Water Quality-Based Limitations (WQBELs)

A water quality analysis for a stormwater discharge is not appropriate.

Best Professional Judgment (BPJ)

Parameter	Limit (mg/l)	Basis
pH	Report	PAG-03 Appendix H
Total Suspended Solids	Report	PAG-03 Appendix H
Oil & Grease	Report	PAG-03 Appendix H
Total Aluminum	Report	TMDL
Total Iron	Report	PAG-03 Appendix H, TMDL
Total Manganese	Report	TMDL

Monitoring requirements for the stormwater discharge at Outfall 003 are based on Appendix H of the PAG-03 NPDES General Permit for Discharges of Industrial Stormwater, which establishes monitoring and benchmark values for steam electric generating facilities similar in nature to the proposed REC, and the West Branch Susquehanna River TMDL. The West Branch Susquehanna River is impaired for metals and low pH resulting from drainage of abandoned coal mines. To address the impairments, a TMDL was developed for segments in the River's watershed. The TMDL addresses the three primary metals associated with abandon mine drainage; iron, aluminum, and manganese and acidity. DEP believes it is appropriate to assign monitoring frequencies for the three metals (iron, aluminum, and manganese) to collect data so that a future determination can be made if the discharge is contributing to the River's impairment.

Anti-Backsliding

No limits are proposed to be made less stringent.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.2	XXX	0.5	1/day	Grab
Temperature (deg F) (ºF)	XXX	XXX	XXX	XXX	110	XXX	Continuous	Metered
Total Suspended Solids	95	325	XXX	30.0	100.0	125	1/week	24-Hr Composite
Oil and Grease	XXX	XXX	XXX	15	20	30	1/week	Grab
Aluminum, Total	18.41	18.41	XXX	5.59	5.59	5.59	1/week	24-Hr Composite
Iron, Total	6.58	13.17	XXX	2.00	4.00	5.00	1/week	24-Hr Composite
Copper, Total	0.09	0.19	XXX	0.03	0.06	0.07	1/week	24-Hr Composite
PCBs, Total (µg/L)	XXX	XXX	XXX	XXX	XXX	1.75	1/month	Grab

Compliance Sampling Location: Outfall 001

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Manganese, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 002

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Suspended Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Aluminum, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Iron, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Manganese, Total	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 003

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
TRC	XXX	XXX	XXX	0.2	XXX	0.5	1/day	Grab
Temperature (ºF)	XXX	XXX	XXX	XXX	110	XXX	Continuous	Metered
TSS	125	420	XXX	30.0	100.0	125	1/week	24-Hr Composite
Osmotic Pressure (mOs/kg)	XXX	XXX	XXX	462	721	1155	1/week	24-Hr Composite
Oil and Grease	XXX	XXX	XXX	15.0	20.0	30	1/week	Grab
Total Aluminum (ug/L)	4.14	6.45	XXX	984.0	1535.0	2460	1/week	24-Hr Composite
Total Copper	Report	Report	XXX	Report	Report	XXX	1/week	24-Hr Composite
Total PCBs (ug/L)	XXX	XXX	XXX	XXX	XXX	1.75	1/month	Grab

Compliance Sampling Location: Outfall 001

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 002

Outfall 003, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Aluminum	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Iron	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Manganese	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 003

USGS
science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011-1070

U.S. Department of the Interior
U.S. Geological Survey

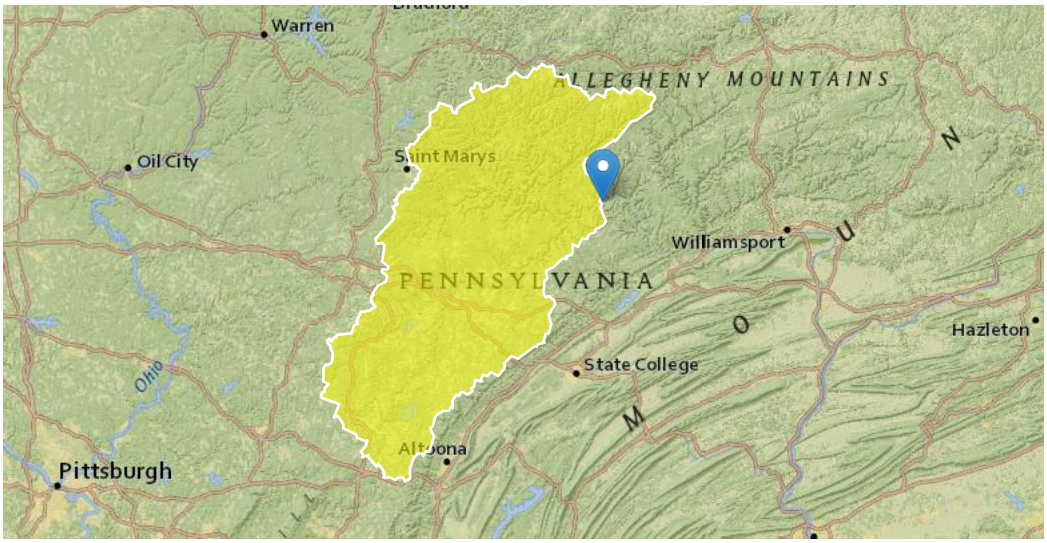
Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi^2, square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi^2)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Renovo Energy Center

Region ID: PA
Workspace ID: PA20221212133450092000
Clicked Point (Latitude, Longitude): 41.32358, -77.75514
Time: 2022-12-12 08:35:13 -0500



Drainage area at Outfall 001

Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLOPD	Mean basin slope measured in degrees	10.1495	degrees
BSLOPDRAW	Unadjusted basin slope, in degrees	10.3844	degrees
BSLPDRPA20	Unadjusted basin slope, in degrees, from PA v1	10.7013	degrees
CARBON	Percentage of area of carbonate rock	0	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	-24400.7857	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	239624.1844	meters
DRN	Drainage quality index from STATSGO	3.3	dimensionless
DRNAREA	Area that drains to a point on a stream	2970	square miles
ELEV	Mean Basin Elevation	1719	feet
ELEVMAX	Maximum basin elevation	2629	feet
FOREST	Percentage of area covered by forest	88.303	percent
GLACIATED	Percentage of basin area that was historically covered by glaciers	0.0008	percent
IMPNLCD01	Percentage of impervious area determined from NLCD 2001 impervious dataset	0.432	percent
LC01DEV	Percentage of land-use from NLCD 2001 classes 21-24	4.256	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	4.3476	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.4695	percent
LONG_OUT	Longitude of Basin Outlet	-77.75515	degrees
MAXTEMP	Mean annual maximum air temperature over basin area from PRISM 1971-2000 800-m grid	56.7	degrees F
OUTLETXA83	X coordinate of the outlet, in NAD_1983_Albers,meters	20496.613	meters

Parameter Code	Parameter Description	Value	Unit
OUTLETYA83	Y coordinate of the outlet, in NAD_1983_Albers, meters	258028.5685	meters
PRECIP	Mean Annual Precipitation	42	inches
ROCKDEP	Depth to rock	4.6	feet
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	0.79	percent
STRDEN	Stream Density -- total length of streams divided by drainage area	1.77	miles per square mile
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	5274.62	miles
URBAN	Percentage of basin with urban development	1.1013	percent

Application Version: 4.11.1
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Low-Flow (Q_{7-10}) Calculation

Facility: **Renovo Energy Center**
NPDES Permit No. **PA02321840**

Gage Information

Drainage Area: **2975** mi²
Q_{7-10}: **252** cfs
LFY: **0.085** cfsm

Outfall Information

Drainage Area: **2970** mi²
Q_{7-10}: **252** cfs

Downstream Locations

RMI: **95.68**
Drainage Area: **3000** mi²
Q_{7-10}: **254.1** cfs

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: c s

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: c s

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

RMI:
Drainage Area: mi²
Q_{7-10}: c s

RMI:
Drainage Area: mi²
Q_{7-10}: cfs

Discharge Information

Instructions | Discharge | Stream

Facility: **Renovo Energy Center** NPDES Permit No.: **PA0232840** Outfall No.: **001**

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

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
0.395	215	7						

					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		1040		127							
	Chloride (PWS)	mg/L		103		8.5							
	Bromide	mg/L											
	Sulfate (PWS)	mg/L		760		48							
	Fluoride (PWS)	mg/L		0.4									
Group 2	Total Aluminum	µg/L		3100		702							
	Total Antimony	µg/L											
	Total Arsenic	µg/L		2									
	Total Barium	µg/L		100		32							
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L		30									
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		50									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L		800									
	Total Iron	µg/L		2000		1271							
	Total Lead	µg/L											
	Total Manganese	µg/L		800									
	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	µg/L		100		26							
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L		400		95							
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg		1800		9							

Stream / Surface Water Information

Renovo Energy Center, NPDES Permit No. PA0232840, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **West Branch Susquehanna 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	018668	97.14	636	2970			Yes
End of Reach 1	018668	95.68	634	3000			Yes

Q *7-10*

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	97.14	0.085										100	7		
End of Reach 1	95.68	0.085													

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	97.14														
End of Reach 1	95.68														

Model Results

Renovo Energy Center, NPDES Permit No. PA0232840, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.050 Analysis Hardness (mg/l): 105.26 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)	127000	0		0	N/A	N/A	N/A	
Chloride (PWS)	8500	0		0	N/A	N/A	N/A	
Sulfate (PWS)	48000	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	702	0		0	750	750	1,751	
Total Arsenic	0	0		0	340	340	7,433	Chem Translator of 1 applied
Total Barium	32	0		0	21,000	21,000	458,424	
Total Chromium (III)	0	0		0	594.196	1,880	41,108	Chem Translator of 0.316 applied
Total Copper	0	0		0	14.104	14.7	321	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	1271	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	26	0		0	122.383	125	2,193	Chem Translator of 0.978 applied
Total Strontium	95	0		0	N/A	N/A	N/A	
Osmotic Pressure	9	0		0	50	50.0	905	

☑ ***CFC*** CCT (min): 720 PMF: 0.350 Analysis Hardness (mg/l): 100.79 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)	127000	0		0	N/A	N/A	N/A	
Chloride (PWS)	8500	0		0	N/A	N/A	N/A	
Sulfate (PWS)	48000	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	702	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	150	150	21,830	Chem Translator of 1 applied

Total Barium	32	0		0	4,100	4,100	592,059	
Total Chromium (III)	0	0		0	74.594	86.7	12,623	Chem Translator of 0.86 applied
Total Copper	0	0		0	9.016	9.39	1,367	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	1271	0		0	1,500	1,500	96,107	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	26	0		0	118.929	121	13,796	Chem Translator of 0.986 applied
Total Strontium	95	0		0	N/A	N/A	N/A	
Osmotic Pressure	9	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 720 PMF: 0.350 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)	127000	0		0	500,000	500,000	N/A	
Chloride (PWS)	8500	0		0	250,000	250,000	N/A	
Sulfate (PWS)	48000	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	702	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	10	10.0	1,455	
Total Barium	32	0		0	2,400	2,400	344,653	
Total Chromium (III)	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	43,660	
Total Iron	1271	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	145,533	
Total Zinc	26	0		0	N/A	N/A	N/A	
Total Strontium	95	0		0	4,000	4,000	568,400	
Osmotic Pressure	9	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 720 PMF: 0.538 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)	127000	0		0	N/A	N/A	N/A	
Chloride (PWS)	8500	0		0	N/A	N/A	N/A	
Sulfate (PWS)	48000	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	702	0		0	N/A	N/A	N/A	
Total Arsenic	0	0		0	N/A	N/A	N/A	
Total Barium	32	0		0	N/A	N/A	N/A	
Total Chromium (III)	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	1271	0		0	N/A	N/A	N/A	

Total Manganese	0	0		0	N/A	N/A	N/A	
Total Zinc	26	0		0	N/A	N/A	N/A	
Total Strontium	95	0		0	N/A	N/A	N/A	
Osmotic Pressure	9	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	3.7	5.77	1,123	1,751	2,806	µg/L	1,123	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	206	AFC	Discharge Conc > 10% WQBEL (no RP)
Osmotic Pressure	XXX	XXX	580	905	1,451	mOs/kg	580	AFC	Discharge Conc ≥ 50% WQBEL (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
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Arsenic	1,455	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	293,831	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	12,623	µg/L	Discharge Conc ≤ 10% WQBEL
Dissolved Iron	43,660	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	96,107	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	145,533	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	1,406	µg/L	Discharge Conc ≤ 10% WQBEL
Total Strontium	568,400	µg/L	Discharge Conc ≤ 10% WQBEL

Facility: Renovo Energy Center
Permit Number: PA0232840
Stream Name: West Branch Susquehanna River
Analyst/Engineer: Derek Garner
Stream Q7-10 (cfs): 252

	Facility Flows				Stream Flows			
	Intake (Stream) (MGD)	Intake (External) (MGD)	Consumptive Loss (MGD)	Discharge Flow (MGD)	PMF	Upstream Stream Flow (cfs)	Adjusted Stream Flow (cfs)	Downstream Stream Flow (cfs)
Jan 1-31	0.612	0	0.217	0.395	0.05	778.68	38.89	39.50
Feb 1-29	0.612	0	0.217	0.395	0.05	882.00	44.05	44.66
Mar 1-31	0.612	0	0.217	0.395	0.05	1638.00	81.85	82.46
Apr 1-15	0.612	0	0.217	0.395	0.05	2257.92	112.85	113.46
Apr 16-30	0.612	0	0.217	0.395	0.05	2257.92	112.85	113.46
May 1-15	0.612	0	0.217	0.395	0.05	1280.16	63.96	64.57
May 16-31	0.612	0	0.217	0.395	0.05	1280.16	63.96	64.57
Jun 1-15	0.612	0	0.217	0.395	0.05	745.92	37.25	37.86
Jun 16-30	0.612	0	0.217	0.395	0.05	745.92	37.25	37.86
Jul 1-31	0.612	0	0.217	0.395	0.05	342.72	17.09	17.70
Aug 1-15	0.612	0	0.217	0.395	0.05	350.28	17.47	18.08
Aug 16-31	0.612	0	0.217	0.395	0.05	350.28	17.47	18.08
Sep 1-15	0.612	0	0.217	0.395	0.05	272.16	13.56	14.17
Sep 16-30	0.612	0	0.217	0.395	0.05	272.16	13.56	14.17
Oct 1-15	0.612	0	0.217	0.395	0.05	322.56	16.08	16.69
Oct 16-31	0.612	0	0.217	0.395	0.05	322.56	16.08	16.69
Nov 1-15	0.612	0	0.217	0.395	0.05	456.12	22.76	23.37
Nov 16-30	0.612	0	0.217	0.395	0.05	456.12	22.76	23.37
Dec 1-31	0.612	0	0.217	0.395	0.05	756.00	37.75	38.36

Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.

Version 2.0 -- 07/01/2005 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017

NOTE: The user can only edit fields that are blue.

NOTE: MGD x 1.547 = cfs.

Facility: **Renovo Energy Center**
Permit Number: PA0232840
Stream: West Branch Susquehanna River

	WWF Criteria (ºF)	**CWF Criteria** (ºF)	**TSF Criteria** (ºF)	**316 Criteria** (ºF)	**Q7-10 Multipliers** (Used in Analysis)	**Q7-10 Multipliers** (Default - Info Only)
Jan 1-31	40	38	40		3.09	3.2
Feb 1-29	40	38	40		3.5	3.5
Mar 1-31	46	42	46		6.5	7
Apr 1-15	52	48	52		8.96	9.3
Apr 16-30	58	52	58		8.96	9.3
May 1-15	64	54	64		5.08	5.1
May 16-31	72	58	68		5.08	5.1
Jun 1-15	80	60	70		2.96	3
Jun 16-30	84	64	72		2.96	3
Jul 1-31	87	66	74		1.36	1.7
Aug 1-15	87	66	80		1.39	1.4
Aug 16-31	87	66	87		1.39	1.4
Sep 1-15	84	64	84		1.08	1.1
Sep 16-30	78	60	78		1.08	1.1
Oct 1-15	72	54	72		1.28	1.2
Oct 16-31	66	50	66		1.28	1.2
Nov 1-15	58	46	58		1.81	1.6
Nov 16-30	50	42	50		1.81	1.6
Dec 1-31	42	40	42		3	2.4

NOTES:
WWF= Warm water fishes
CWF= Cold water fishes
TSF= Trout stocking

Facility: **Renovo Energy Center**
Permit Number: PA0232840
Stream: West Branch Susquehanna River

	WWF Ambient Stream Temperature (ºF) (Default)	Ambient Stream Temperature (ºF) (Site-specific data)	Target Maximum Stream Temp.[1] (ºF)	**WWF** Daily WLA[2] (Million BTUs/day)	**WWF** Daily WLA[3] (ºF)	at Discharge Flow (MGD)	**PMF**
Jan 1-31	35	0	40	1,064	110.0	0.395	0.05
Feb 1-29	35	0	40	1,204	110.0	0.395	0.05
Mar 1-31	40	0	46	2,667	110.0	0.395	0.05
Apr 1-15	47	0	52	3,058	110.0	0.395	0.05
Apr 16-30	53	0	58	3,058	110.0	0.395	0.05
May 1-15	58	0	64	2,088	110.0	0.395	0.05
May 16-31	62	0	72	3,480	110.0	0.395	0.05
Jun 1-15	67	0	80	2,653	110.0	0.395	0.05
Jun 16-30	71	0	84	2,653	110.0	0.395	0.05
Jul 1-31	75	0	87	1,145	110.0	0.395	0.05
Aug 1-15	74	0	87	1,267	110.0	0.395	0.05
Aug 16-31	74	0	87	1,267	110.0	0.395	0.05
Sep 1-15	71	0	84	993	110.0	0.395	0.05
Sep 16-30	65	0	78	993	110.0	0.395	0.05
Oct 1-15	60	0	72	1,080	110.0	0.395	0.05
Oct 16-31	54	0	66	1,080	110.0	0.395	0.05
Nov 1-15	48	0	58	1,260	110.0	0.395	0.05
Nov 16-30	42	0	50	1,008	110.0	0.395	0.05
Dec 1-31	37	0	42	1,034	110.0	0.395	0.05

[1] This is the maximum of the WWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for WWF, or the ambient stream temperature based on site-specific data entered by the user. A minimum of 1ºF above ambient stream temperature is allocated.

[2] The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

[3] The WLA expressed in ºF is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110ºF are displayed as 110ºF.

Garner, Derek

Subject: FW: Renovo Energy Center NPDES IW Application
Attachments: Intake Area Description_21Feb2017.docx; Intake-Discharge System Description.pdf

From: Doug Woolridge [mailto:Doug.Woolridge@KleinschmidtGroup.com]
Sent: Tuesday, February 21, 2017 3:21 PM
To: Garner, Derek <degarner@pa.gov>
Cc: William Bousquet <bousquet.w@gmail.com>
Subject: RE: Renovo Energy Center NPDES IW Application

Hi Derek,

I have responses to the questions that you had for us last week.

Your first question dealt with potential metal cleaning waste discharges. Metal cleaning waste will not be discharged into the waste water collection tank which eventually discharges into the river. HRSG chemical cleaning waste will be used, but it will be trucked off site. Combustion turbine off line wash water will also be trucked off-site after use.

In response to your second question, I have attached an intake/discharge description. Please let us know if you have any additional questions or comments.

Thanks for your assistance.
Doug