pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

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

Application Type	**DEP-Initiated Major Amendment**	Application No.	**PA0094510 A-1**
Facility Type	**Industrial**	APS ID	**1067063**
Major / Minor	**Major**	Authorization ID	**1402507**

Applicant and Facility Information

Applicant Name	**United States Steel Corporation**	Facility Name	**Mon Valley Works, Edgar Thomson Plant**
Applicant Address	13th Street and Braddock Avenue	Facility Address	13th & Braddock Avenues
	Braddock, PA 15104		Braddock, PA 15104
Applicant Contact	Coleen Davis	Facility Contact	Coleen Davis
Applicant Phone	412-273-4730	Facility Phone	412-273-4730
Client ID	80062	Site ID	241988
SIC Code	3312	Municipality	Braddock Borough
SIC Description	Manufacturing - Blast Furnaces and Steel Mills	County	Allegheny
EPA Waived?	No	If No, Reason	Major Facility

Purpose of Application: DEP Initiated Amendment

Summary of Review

This is a DEP initiated amendment to modify the Cooling Water Intake Structure(S) – Clean Water Act § 316(B) Part C condition of the December 20, 2021 Mon Valley Works Edgar Thomson Plant NPDES permit.

The Edgar Thomson Plant is a steel mill with operations consisting of two blast furnaces, two basic oxygen furnaces, one vacuum degasser, one ladle metallurgy facility and one, two-strand continuous caster. The site has an SIC code of 3312, Steel Mills. The site is considered a Major Facility with less than 250 MGD wastewater discharges. The site discharges to the Monongahela River, designated in 25 PA Code Chapter 93 as a Warm Water Fishery (WWF). The site has two cooling water intake structures (CWIS), the #2 Power House (#2PH) and the New Blue. Both structures are located in the upriver wall of the US Army Corp. of Engineers Braddock Lock #2 along ET's shoreline on the Monongahela River. 99% of the intake from both of the intake structures are used for cooling.

Unite States Steel Corporation (USS) filed an Appeal of the December 20, 2021 NPDES permit on January 18, 2022. US Steel appealed the NPDES permit due to conditions related to the Cooling Water Intake Structure(S) – Clean Water Act § 316(B) Part C condition. In its appeal, USS argued that the original Part C language failed to allow for adequate time needed to conduct aquatic surveys and implement corrective actions if so prescribed. The Department has agreed to revise the Part C condition to clarify the compliance period duration. In light of resolving the Appeal, the Department and US Steel have entered into a Consent Order and Agreement, and the Department has agreed to Amend the December 20, 2021 NPDES permit to modify the 316(b) Part C condition.

The only changes that are being proposed are changes to the Cooling Water Intake Structures Part C condition. No other changes were made to the December 20, 2021 NPDES permit.

Approve	Deny	Signatures	Date
X		Adam Olesnanik / Project Manager	2/10/2023
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	2/10/2023

Summary of Review

Clean Water Act § 316(b) – Cooling Water Intake Structures

On August 15, 2014, EPA promulgated Clean Water Act Section 316(b) regulations applicable to cooling water intake structures. The regulations established best technology available ("BTA") standards to reduce impingement mortality and entrainment of all life stages of fish and shellfish at existing power generating and manufacturing facilities. The Final Rule took effect on October 14, 2014. Regulations implementing the 2014 Final Rule (and the previously promulgated Phase I Rule) are provided in 40 CFR Part 125, Subparts I and J for new facilities and existing facilities, respectively. Associated NPDES permit application requirements for facilities with cooling water intake structures are provided in 40 CFR Part 122, Subpart B – Permit Application and Special NPDES Program Requirements (§ 122.21(r)).

Edgar Thomson is an "existing facility" as defined in 40 CFR § 125.92(k). As an existing facility, Edgar Thompson is subject to 40 CFR Part 125, Subpart J – Requirements Applicable to Cooling Water Intake Structures for Existing Facilities Under Section 316(b) of the Clean Water Act (§§ 125.90 – 125.99) if the facility meets the rule's applicability criteria. Pursuant to the applicability criteria given by § 125.91(a), Edgar Thompson is subject to the requirements of §§ 125.94 – 125.99 if:

(1) The facility is a point source;

(2) The facility uses or proposes to use one or more cooling water intake structures with a cumulative design intake flow (DIF) of greater than 2 million gallons per day (mgd) to withdraw water from waters of the United States; and

(3) Twenty-five percent or more of the water the facility withdraws on an actual intake flow basis is used exclusively for cooling purposes.

Edgar Thomson is a point source as defined in 40 CFR § 122.2. Edgar Thomson used two cooling water intake structures with a cumulative Design Intake Flow greater than 2 MGD (192.2 MGD). And Edgar Thomson uses 99% of the water it withdraws for cooling purposes, which exceeds the 25% applicability threshold. Thus, Edgar Thomson is subject to the requirements of §§ 125.94 – 125.99.

Each CWIS operates 7 days per week, 24 hours per day. The New Blue pump house has 3 pumps each with a nameplate capacity of 30,000 gpm. Under normal circumstances, one of these pumps are in operation continually. The other two are standby spares. There is no seasonal change in capacity at New Blue. The design intake flow (DIF) and actual intake flow (AIF) are approximately 43.2 MGD. The #2PH pump house has multiple pumps; 3 generator pumps rated at 22,500 gpm each with all operating continuously, 3 blower pumps rated at 18,000 gpm each with only one operating in the winter and two operating in the summer, 1 electric B.F. low pressure pump related at 8,000 gpm which only operates when tailwater pumps are out of service, 2 backup service water pumps rated at 2,000 gpm each which only operates if New Blue service water pressure drops,1 steamer pump rated at 8,000 gpm which only operates as a spare if the electric B.F. low pressure pump is out of service and 2 fire pumps, one rated 2,800 gpm and the other 1,000 gpm, which only operates under emergency conditions. In the wintertime, only one blower pump operates, while in the summer two blower pumps operate. This results in an approximate 26 MGD swing between summer and winter months. The DIF and AIF for #2PH is approximately 149 MGD in the summertime and 123.1 MGD in the wintertime.

The New Blue provides NCCW to the blast furnaces as well as providing service water throughout the facility. The #2PH provides NCCW to the generator and turbo blower condensers, boiler feedwater, and provides service water throughout the facility. The cooling water systems are in operations 24 hour a day, 7 days a week, 365 days a year. In the wintertime, only one blower pump operates, while in the summer two blower pumps operate. The plant has 9 recycle systems equaling a combined recirculating flow of approximately 105 MGD to reduce the volume of water required to be withdrawn from the Monongahela River.

Both intake structures are submerged shoreline (lock wall) openings with trash bars, equalization cross connection and traveling screens. The New Blue has one submerged intake opening 9' wide by 13' 8' high. After the intake opening, there is a set of trash bars that span an area of 13' 5/8" wide and are comprised of 0.75' thick bars spaced 5.5" on center that gives a 4.75" clear opening between bars. The #2PH has 4 intake openings 9' 6.25" wide by 12' high. After each intake opening, there is a set of trash bars that span an area 9' 6.25" wide and are comprised of 0.75' thick bars spaced 5.5" on center that gives 4.75" clear opening between bars. After the trash bars, the #2PH and New Blue intakes are cross connected via an equalizing channel to evenly distribute flow between the two intakes. After the cross connection, New Blue conveys that water through a 6' diameter pipe to a set of traveling screens. New Blue has two dual flow screens prior to the pump well. The screens panels are made of 14-gauge wire mesh with 3/8" openings. The screen panels are 3' wide. #2PH conveys water through an 8'

Summary of Review

diameter pipe to a set of traveling screens. #2PH also has two dual flow screens prior to the forebay (pump well). The screens panels are made of 14-gauge wire mesh with 3/8" openings. The screen panels are 7'10" wide.

No impingement or entrainment studies have been conducted by the facility in the last 10 years. No physical studies were performed to determine the intake area of influence (AOI) within the waterbody. A desktop analysis was performed to calculate the approximate AOI within the 0.5 feet per second velocity contour. EPA considers a velocity of 0.5 fps to be a de minimis value relative to significant impingement concerns because fish have the swimming ability to overcome this velocity and avoid impingement. Based on the physical dimensions of the CWISs, ET's DIFs, 5-year minimum AIFs, and assuming that the intakes are fully submerged, velocities have been computed at the face of each CWIS. The velocity at the face of the #2PH intake is approximately 0.5 fps and the AOI does not extend into the water body past the face of the intake. The velocity at the face of the New Blue intake is approximately 0.54 fps and the AOI extends less than 1 foot into the water body, assuming a rectangular AOI in front of the CWIS. No impingement or entrainment data have been collected at the ET plant intakes. However, fisheries information is available from the Braddock Pool of the Monongahela River and impingement and entrainment data are available from other facilities withdrawing from the Monongahela River nearby. These sources were used to identify taxa in the vicinity of the CWISs and those most susceptible to impingement and entrainment. ET and Clairton both withdraw from the Braddock Pool and have a shoreline CWIS, trash racks/bars, and traveling water screens. Elrama Generating Station and Mitchell Power Station withdraw from the Elizabeth Pool, directly upstream of the Braddock Pool. The results of the impingement and entrainment studies at these facilities indicate the species abundant in the Monongahela River that are susceptible to impingement or entrainment. However, design and actual intake flows differ among the facilities and the raw numbers are not necessarily representative of the magnitude of impingement or entrainment at ET.

In accordance with 40 CFR 125.95(a)(2), an alternate schedule for the submission of the information required in 40 CFR 122.21(r) and an Interim BTA requirement will be incorporated in the Permit Amendment. The following modified cooling water intake structure requirements will be included in Part C of the Draft permit:

COOLING WATER INTAKE STRUCTURE(S) – Clean Water Act § 316(b)

A. Based upon information provided by the permittee, the Department has made a determination that the permittee operates interim Best Technology Available (BTA) to comply with the impingement and entrainment mortality standard based upon available information at the time of permit issuance. This interim BTA determination may be revised upon submission of additional information by the permittee with the NPDES permit renewal application. Revisions to the BTA determination shall be effective only through amendment or renewal of the NPDES permit.

   To comply with the interim BTA determination, U.S. Steel shall under normal operating conditions 1) Operate the New Blue Pumphouse with a maximum actual through screen velocity of 0.7 fps; and 2) Operate the #2 Power House Pump Station with a maximum actual through screen velocity of 1.5 fps. To document compliance with the interim BTA determination for this permit term, cooling water intake flow and through screen velocity (if applicable) will be calculated in the Cooling Water Intake Monitoring Supplemental Report (3800-FM-BCW0010) by U.S. Steel once per month and submitted to the Department along with the monthly eDMR. If U.S. Steel reports an interim BTA through screen velocity greater than 0.7 fps for the New Blue Pumphouse or greater than 1.5 fps for the #2 Power House Pump Station, and contends that such through screen velocity occurred under non-normal operating conditions, then U.S. Steel shall provide the Department, along with the monthly eDMR, with an explanation as to why the through screen velocity was greater than the identified interim BTA stated above, what the non-normal operating condition was, why that condition is non-normal, how frequently that condition is expected to reoccur, and why that condition caused such a velocity.

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

C. Technology and operational measures currently employed at the cooling water intake structures must be operated in a way that minimizes impingement mortality and entrainment to the fullest extent practicable.

D. The location, design, construction or capacity of the intake structure(s) may not be altered without prior approval of DEP.

E. In accordance with 40 CFR § 125.95(a)(2), an alternate schedule is provided for the permittee to submit the information required by 40 CFR § 122.21(r).The permittee shall submit the information specified below with its permit renewal application due 180 days prior to the permit expiration date of the permit.

Summary of Review

1. Source water physical data.
2. Cooling water intake structure data.
3. Source water biological baseline characterization data.
4. Cooling water system data.
5. Chosen method(s) of compliance with impingement mortality standard from 40 CFR § 125.94(c).
6. Entrainment performance studies.
7. Operational status.

F. If the facility covered by this permit withdraws greater than 125 MGD on an Actual Intake Flow basis as defined in 40 CFR § 125.92, the permittee must submit the applicable information in 40 CFR §122.21(r)(9) – (r)(13) with the subsequent permit renewal application, as follows:

1. Entrainment Characterization Study.
2. Comprehensive Technical Feasibility and Cost Evaluation Study (including, but not limited to, evaluations of closed-cycle recirculating cooling, fine mesh screens with a mesh size of 2 mm or less, alternate sources of cooling water, water reuse, variable speed pumps, variable frequency drives, and seasonal flow reductions).
3. Benefits Valuation Study.
4. Non-Water Quality Environmental and Other Impacts Study.
5. Peer Review, completed by peer reviewer(s) approved by DEP.

G. If the facility covered by this permit withdraws less than or equal to 125 MGD on an Actual Intake Flow basis as defined in 40 CFR § 125.92, the permittee must submit an entrainment reduction technology evaluation with the subsequent permit renewal application, which must include at a minimum, an evaluation of the feasibility, cost estimates, and environmental impacts of reducing intake flow using alternate sources of cooling water, water re-use, closed-cycle recirculating cooling; and fine mesh screens.

H. If DEP requests additional information to make a BTA determination, the permittee shall submit information within 30 days unless a different time frame is approved by DEP.

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

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

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

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

Summary of Review

Public Participation

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

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☐	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other: