pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0110591**
Facility Type	**Industrial**	APS ID	**779581**
Major / Minor	**Major**	Authorization ID	**1371418**

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

Applicant and Facility Information

Applicant Name	**North American Höganäs High Alloys LLC**	Facility Name	**North American Höganäs High Alloys Johnstown Facility**
Applicant Address	101 Bridge Street Johnstown, PA 15902-2904	Facility Address	101 Bridge Street Johnstown, PA 15902-2904
Applicant Contact	David Johnson	Facility Contact	***same as applicant***
Applicant Phone	(814) 361-6861	Facility Phone	***same as applicant***
Applicant Email	David.Johnson@hoganas.com	Facility Email	***same as applicant***
Client ID	236154	Site ID	236407
SIC Code	3399	Municipality	City of Johnstown
SIC Description	Manufacturing - Primary Metal Products, Not Elsewhere Classified	County	Cambria
Date Application Received	September 30, 2021	EPA Waived?	No
Date Application Accepted		If No, Reason	Major Facility
Purpose of Application	Renewal of NPDES permit for discharges of treated powdered metal manufacturing production wastewaters, non-contact cooling water, groundwater, and storm water		

Summary of Review

On September 30, 2021, North American Höganäs High Alloys (NAHHA) submitted an NPDES permit renewal application for existing and proposed discharges from its Johnstown Facility. The current NPDES permit was issued on February 27, 2017 and took effect on March 1, 2017. The permit expired on February 28, 2022. On August 18, 2021, NAHHA requested to extend the permit renewal application due date by 30 days from September 1, 2021 to October 1, 2021. DEP granted NAHHA's extension request by letter dated August 25, 2021. The permit renewal application was received before the revised due date so NAHHA's application is timely, which preserved NAHHA's eligibility for an administrative extension under the terms and conditions of the 2017 NPDES permit after that permit expired on February 28, 2022.

NAHHA reported on the permit application that discharges of blowdown from the facility's boiler go to the Johnstown Sewage Treatment Plant and not to Outfall 003 as previously permitted. NAHHA did not report information about the chemical additives used within the boiler system because that system purportedly does not discharge. However, the line diagram included with the application still shows boiler blowdown going to Outfall 003. On March 22, 2022, DEP requested NAHHA to confirm that boiler blowdown does not discharge to Outfall 003 and update the application accordingly. Or, if the boiler does discharge to Outfall 003, to update the application with information on chemical additives used in the boiler. NAHHA conducted a dye tracer test on April 15, 2022 and reported to DEP on April 22, 2022 that boiler blowdown discharges to Outfall 003. On May 20, 2022, NAHHA submitted information about the chemical additives used in the boiler including Chemical Additives Notification Forms identifying the additives' safe usage rates. The additives (International Chemtex Corporation B-297, B-253, B-283N, and B-2374) are on DEP's Approved List.

NAHHA manufactures metal powders at the Johnstown Facility including stainless steel, nickel alloy, electrolytic iron, and Glidcop® (copper and aluminum). Over the past two years, NAHHA constructed a new three-story production facility adjacent to the existing three-story Alloy production facility. The new facility is called Fine Metal Powders. The products made at the new facility will be the same grades of stainless steel and specialty powders produced in the existing Alloy facility, but the

Approve	Deny	Signatures	Date
X		Ryan C. Decker, P.E. / Environmental Engineer	May 20, 2022
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	May 27, 2022

Summary of Review

powders will be finer. NAHHA began a trial phase at the Fine Metal Powders facility in April 2021 producing between eight to ten 2,000-pound heats per month in an electrical induction melting furnace. To produce a finer material, a significantly higher water pressure is needed for water atomization, so more water will be generated during the atomization process at the Fine Metal Powders facility. NAHHA installed a recirculating system for wastewater generated at the Fine Metal Powders facility so that all wastewater can be reused. If the wastewater cannot be reused, then it will be diverted to the wastewater treatment plant for treatment with other existing wastewater streams. The Fine Metal Powders facility is still being developed. NAHHA must report any production or discharge flow increases to DEP during the permit term so that DEP can determine whether effluent limit modifications are needed.

NAHHA currently discharges wastewater from ten outfalls to the Stonycreek River, numbered sequentially as Outfalls 001 through 010. Outfalls 001, 002, and 003 discharge non-contact cooling water and storm water associated with industrial activities. Outfall 004 discharges vaporizer condensate and storm water associated with industrial activities. The remaining six outfalls (005 – 010) only discharge storm water associated with industrial activities.

With this permit renewal, NAHHA requests that authorization to discharge treated metal powder production wastewaters be maintained at Outfall 101, which is a proposed outfall that was added to the NPDES permit in 2017. Before August 22, 2007, NAHHA's metal powder production wastewaters discharged through Outfall 001 with the non-contact cooling water and storm water that continue to discharge there. Before 2017, production wastewaters were controlled by effluent limits imposed at Internal Monitoring Point 101 (IMP 101) based on production-based Federal Effluent Limitations Guidelines under 40 CFR Part 471. By letter dated August 14, 2007, DEP was notified of NAHHA's intention to discharge production wastewaters to the City of Johnstown's publicly owned sewage treatment plant. Production wastewaters have discharged to the Johnstown STP since August 22, 2007.

Notwithstanding the cessation of direct discharges of production wastewaters to the Stonycreek River, NAHHA explained in 2017 that increasing costs for wastewater treatment by the Johnstown STP may make discharges to the river a financially viable wastewater disposal option again. If NAHHA decides to discharge production wastewaters to the Stonycreek River, then NAHHA plans to install a dedicated outfall pipe for Outfall 101 rather than resuming discharges through IMP 101 and Outfall 001.

Effluent limits based on 40 CFR Part 471 are imposed at Outfall 101 in the renewed permit, which will allow NAHHA to resume direct discharges to the river at its option without presumptively needing to amend the permit. However, NAHHA would need to notify DEP of any changes to the production levels, expected discharge characteristics, or proposed outfall location to ensure that the permit accurately reflects the discharge circumstances.

The Stonycreek River has an impaired aquatic life use resulting from several sources (refer to receiving stream assessment and Total Maximum Daily Load statuses on the following pages). This permit incorporates the requirements of applicable Total Maximum Daily Loads to control and abate pollution in the Stonycreek River.

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.

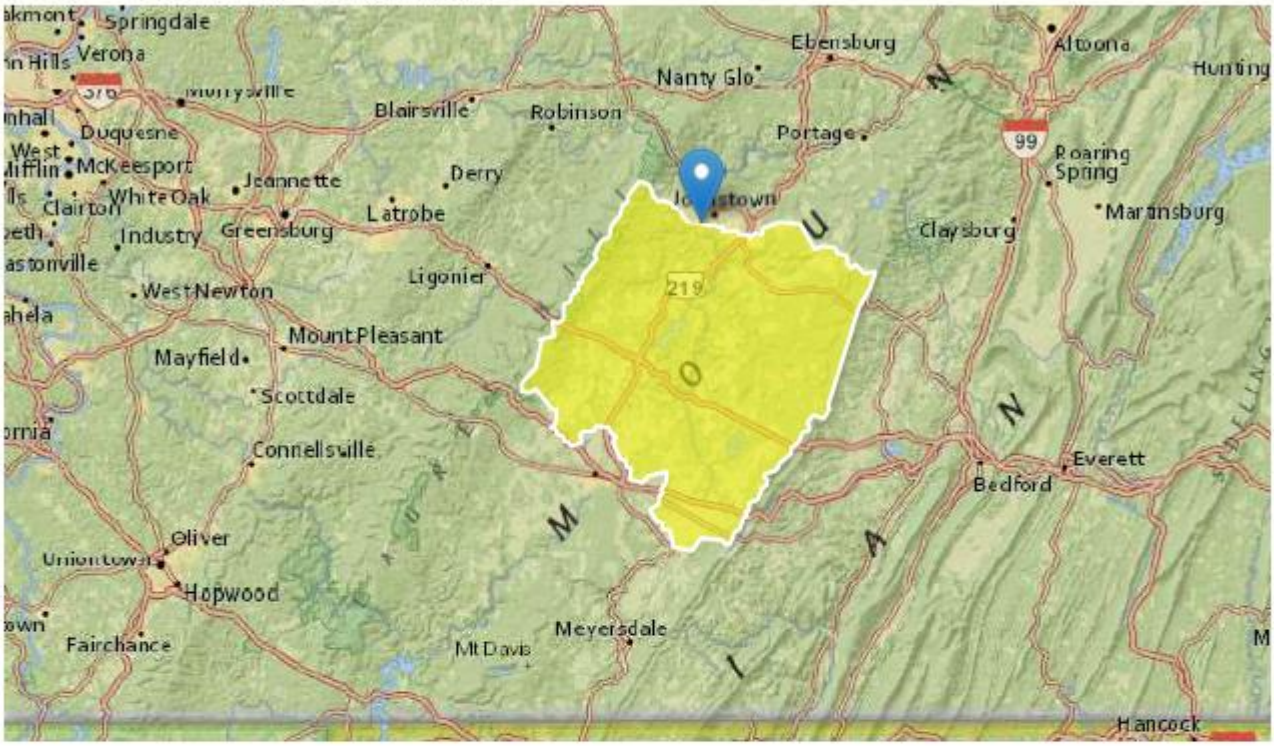
Discharge, Receiving Waters and Water Supply Information			
Outfall No.	101	Design Flow (MGD)	0.047556 (avg.) 0.1266 (max)
Latitude	40° 17' 41.00"	Longitude	-78° 55' 9.00"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Powdered metal manufacturing production wastewaters		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.83
Drainage Area	453 sq. mi.	Yield (cfs/mi^2)	0.081
Q_{7-10} Flow (cfs)	36.5	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,170	Slope (ft/ft)	0.003
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.16

Changes Since Last Permit Issuance: Revised production levels

Other Comments: None

StreamStats Report for Outfall 101 (PA0110591)

Region ID: PA
Workspace ID: PA20220125192136586000
Clicked Point (Latitude, Longitude): 40.29472, -78.91915
Time: 2022-01-25 14:22:01 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	453	square miles
ELEV	Mean Basin Elevation	2158	feet
PRECIP	Mean Annual Precipitation	43	inches

Low-Flow Statistics Parameters [99.9 Percent (453 square miles) Low Flow Region 3]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	453	square miles	2.33	1720
ELEV	Mean Basin Elevation	2158	feet	898	2700
PRECIP	Mean Annual Precipitation	43	inches	38.7	47.9

Low-Flow Statistics Flow Report [99.9 Percent (453 square miles) Low Flow Region 3]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	ASEp
7 Day 2 Year Low Flow	66.2	ft^3/s	43	43
30 Day 2 Year Low Flow	86.1	ft^3/s	38	38
7 Day 10 Year Low Flow	36.5	ft^3/s	54	54
30 Day 10 Year Low Flow	44.6	ft^3/s	49	49
90 Day 10 Year Low Flow	62.5	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/)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.0528 (avg.); 0.1957 (max)
Latitude	40° 17' 41.05"	Longitude	-78° 55' 8.76"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Non-contact cooling water from process equipment including Alloy power supply trim coolers and annealing furnaces and milling equipment in the electrolytic iron department; and storm water runoff from a paved parking and roadway area on the west side of the facility and the roofs of the back warehouses, raw material storage building, and electrolytic iron production areas.		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.80
Drainage Area	454 sq. mi.	Yield (cfs/mi^2)	0.081
Q_{7-10} Flow (cfs)	36.5	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1,170	Slope (ft/ft)	0.003
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.13

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0.0291 (avg.); 0.0321 (max)
Latitude	40° 17' 39.07"	Longitude	-78° 55' 8.37"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Non-contact cooling water from the Glidcop department process equipment including power supply trim coolers, dryer unit, ball mill, and two annealing furnaces; and storm water runoff from Glidcop production facility roof drains, the electrolytic iron production area and paved and unpaved areas adjacent to the south ends of Buildings #1 and #2.		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.82
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.15

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	003	Design Flow (MGD)	0.0122 (avg.); 0.0194 (max)
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Non-contact cooling water from the Alloy department process equipment including power supply trim cooler, two annealing furnaces, and a vacuum unit cooling system; and storm water runoff from Building #3 roof drainage and paved an unpaved areas adjacent to Building #3, roof drainage from Building #5 (Finished Good Storage) and paved areas near the facility shipping/receiving docks.		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	004	Design Flow (MGD)	Variable
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the upper paved parking lot area and a small amount of vaporizer condensate from the nitrogen and hydrogen cryogenic tanks		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	005	Design Flow (MGD)	Variable
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the roof over an electrolytic iron cell operation		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	006	Design Flow (MGD)	Variable
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the roof over the iron electroplating operation, cathode sheet deposit stripping area, and rectifier vault		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	007	Design Flow (MGD)	Variable
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the roof over the welding area for the electrolytic iron operation and a maintenance supply storage area		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	008	Design Flow (MGD)	Variable
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the roof over the maintenance storage area, facility maintenance shop, and a welding area for copper cylinders		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	009	Design Flow (MGD)	Variable
Latitude	40° 17' 38"	Longitude	-78° 55' 7"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the roof over the facility maintenance shop, hot water heater room, and main lunch, locker, and restrooms		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.84
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Discharge, Receiving Waters and Water Supply Information

Outfall No.	010	Design Flow (MGD)	Variable
Latitude	40° 17' 38.05"	Longitude	-78° 55' 7.94"
Quad Name	Johnstown	Quad Code	1614
Wastewater Description:	Storm water runoff from the roof over the facility laboratory and front office locations		
Receiving Waters	Stonycreek River (WWF)	Stream Code	45084
NHD Com ID	123720428	RMI	3.83
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	18-E	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	(1) Cause Unknown; (2) Nutrients/siltation; (3) Metals, pH, siltation, suspended solids		
Source(s) of Impairment	(1) Source Unknown; (2) Urban runoff; (3) Abandoned mine drainage		
TMDL (1) Status	Pending	Name	N/A
TMDL (2) Status	Final, 03/29/2004	Name	Nutrient & Sediment TMDL for Stonycreek River (sediment TMDL superseded by Kiski-Conemaugh TMDL)
TMDL (3) Status	Final, 01/29/2010	Name	Kiskiminetas-Conemaugh River Watersheds TMDL
Nearest Downstream Public Water Supply Intake	Municipal Authority of Buffalo Township – Freeport		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	29.4	Distance from Outfall (mi)	84.17

Changes Since Last Permit Issuance: None

Other Comments: None

Treatment Facility & Water Quality Management (WQM) Permit Summary

Treatment Facility: NAHHA Waste Water Treatment Plant – NAHHA has melting operations in both the Alloy Department and the Glidcop Department. The Alloy Department utilizes high pressure water atomization during the pour process to make specialty Alloy powders. The Glidcop Department uses high pressure gas atomization to make a specialty copper power. Contact process water is sent to decant tanks where solids are settled and the water is sent to two equalization tanks. More settling occurs in these tanks and the water is sent to the Waste Water Treatment Plant (WWTP). The first tank is the neutralization tank where the water is air sparged and lime is added for metal precipitation. Next phase is a flocculation tank where polymer is added for coagulation. The water then proceeds to the primary settling tank where solids are settled to the base of the tank to maintain a bed of about 24". Excess solids are pumped to a holding tank and then filter pressed. The sludge is disposed of as F006 waste. The overflow from the primary clarifier goes into floor Sump #1 and then is pumped through a dual sand filter for filtration. After sand filtering water proceeds to a pH adjustment tank where small amounts of sulfuric acid are to maintain compliance pH. Water then overflows to the final clarifier. The water from the final clarifier overflows into a floor Sump #2 and then is pumped from there to discharge point. In addition, water from the electrolytic iron process is sent to the EI Waste Holding Tank. This water is weened into the neutralization via a timed pump system at short intervals due to the higher ammonia concentration. Normal is approximately 1 minute every 6 minutes but adjustments can be made when needed.

WQM Permit No.	Issuance Date	Purpose
567I012	February 1, 1968	Permit issued to SCM Corporation, Metals Group, Glidden-Durkee Division by the Sanitary Water Board for a gas separation tank, flocculation tank with flocculant addition, a diatomaceous earth filter, and a circulation tank to treat wastewaters from a venturi scrubber used to recover airborne metallic particles. Filtered wastewaters in the circulation tank were mostly reused, but there was a maximum 10 gpm discharge from the tank to the Stonycreek River that was also permitted by this WQM permit.
567I012 A-1	February 27, 1987	Permit amendment issued to SCM Metal Products by the Department of Environmental Resources for a second clarifier (11'-10" diameter × 7'-6" deep, 6,160-gallons) and an ammonia air stripping tower.
567I012 T-1	August 2, 2004	Transfer from SCM Metal Products Inc. to North American Höganäs High Alloys LLC.
1169203	November 14, 1969	Permit issued to SCM Corporation, Glidden-Durkee Division by the Sanitary Water Board for a treatment system for water from a Chemico Venturi Scrubber and electrolyte washings from electrolytic iron production. The system consisted of a ten-foot diameter Dorr-Oliver flocculation tank with flocculant addition, a three-foot diameter polymer solution tank, a three-foot diameter soda ash solution tank, a vacuum filter, and a filtercake holding hopper.
1170201	July 31, 1970	Permit issued to SCM Corporation, Glidden-Durkee Division by the Sanitary Water Board to add a precipitation tank to the existing treatment system for cell room wash water using an excess of soda ash, aeration, and a flocculant to precipitate soluble iron. Also added a precipitation tank with heater, aeration, and dry lime feeder for copper plant decant water.
1173203	November 29, 1973	Permit issued to SCM Corporation, Glidden-Durkee Division by the Department of Environmental Resources for a 15,000-gallon flow equalization tank for all wastewaters; increased height of the precipitation tank by 3-1/2" to increase retention; provided a stirred flocculation tank between the precipitation tank and the Dorr thickener; provided a filtrate receiver for the wet copper process and a pump to discharge the filtrate into the decant holding tank; and provided a horizontal bowl centrifuge.
1173203 T-1	October 28, 1977	Permit transferred from SCM Corporation, Glidden-Durkee Division to SCM Corporation, Chemical/Metallurgical Division by the Department of Environmental Resources.
1173203 T-2	August 2, 2004	Permit transferred from SCM Metal Products Inc. to North American Höganäs High Alloys LLC by the Department of Environmental Protection.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial	Primary	Flow equalization, neutralization, flocculation, primary clarification, acid addition, secondary clarification	N/A	N/A

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal

Changes Since Last Permit Issuance: The various WQM permits issued to this facility appear to authorize parts of the same system.

Compliance History

DMR Data for Outfall 001 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Average Monthly	0.06795	0.0681	0.0688	0.0807	0.08465	0.071	0.0419	0.05344	0.0547	0.0389	0.0367	0.0404
Flow (MGD) Daily Maximum	0.1836	0.1411	0.2149	0.1646	0.2064	0.2012	0.1434	0.1054	0.0963	0.1955	0.175	0.1499
pH (S.U.) Minimum	6.4	6.7	7.1	7.2	7.3	7.2	7.1	7.0	7.1	6.9	6.9	7.0
pH (S.U.) Maximum	7.3	7.6	7.5	7.7	7.9	7.8	8.8	7.5	7.6	7.9	7.6	7.8
TSS (mg/L) Daily Maximum	2	2	< 2	2	12	< 2	< 2	< 2	40	< 2	< 2	< 2
Total Aluminum (lbs/day) Average Monthly	< 0.07	< 0.03	< 0.05	< 0.05	< 0.06	< 0.07	< 0.03	< 0.07	< 0.03	< 0.03	< 0.0008	< 0.03
Total Aluminum (lbs/day) Daily Maximum	< 0.08	0.03	< 0.05	< 0.08	< 0.1	< 0.08	< 0.04	< 0.08	< 0.06	< 0.04	< 0.001	< 0.05
Total Aluminum (mg/L) Average Monthly	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aluminum (mg/L) Daily Maximum	0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Chromium (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.02
Total Copper (mg/L) Daily Maximum	0.04	0.04	0.02	0.02	0.06	< 0.01	0.01	< 0.01	0.01	0.01	0.01	0.01
Total Iron (lbs/day) Average Monthly	0.2	< 0.02	0.2	0.06	0.3	0.2	0.08	0.08	0.05	0.05	0.002	0.07
Total Iron (lbs/day) Daily Maximum	0.3	0.02	0.2	0.10	0.6	0.4	0.1	0.08	0.09	0.1	0.004	0.10
Total Iron (mg/L) Average Monthly	0.27	< 0.06	0.43	0.12	0.34	0.35	0.30	0.11	0.16	0.16	0.18	0.42
Total Iron (mg/L) Daily Maximum	0.46	0.06	0.61	0.12	0.54	0.46	0.46	0.11	0.16	0.24	0.30	0.57
Total Lead (mg/L) Daily Maximum	< 0.02	< 0.02	< 0.02	< 0.02	0.01	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Total Manganese (lbs/day) Average Monthly	< 0.01	< 0.006	0.005	< 0.005	0.02	0.02	0.005	< 0.007	< 0.03	< 0.003	< 0.00008	0.008

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Total Manganese (lbs/day) Daily Maximum	0.02	0.009	0.005	0.008	0.05	0.02	0.007	< 0.008	< 0.006	< 0.004	< 0.0001	0.01
Total Manganese (mg/L) Average Monthly	< 0.02	< 0.02	0.01	< 0.01	0.03	0.03	0.02	< 0.01	< 0.01	< 1.0	< 0.01	0.03
Total Manganese (mg/L) Daily Maximum	0.03	0.03	0.01	0.01	0.04	0.03	0.03	< 0.01	< 0.01	< 1.0	< 0.01	0.03
Total Nickel (mg/L) Daily Maximum	0.02	0.02	< 0.01	< 0.01	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.09
Total Zinc (mg/L) Daily Maximum	0.32	0.23	0.28	0.28	0.16	0.21	0.25	0.23	0.22	0.24	0.23	0.26

DMR Data for Outfall 002 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Average Monthly	0.0326	0.0317	0.03246	0.03295	0.032851	0.032447	0.0304	0.0358	0.035742	0.032101	0.030748	0.02840
Flow (MGD) Daily Maximum	0.0422	0.0414	0.042598	0.03965	0.038071	0.048898	0.0417	0.0445	0.043898	0.042585	0.040174	0.03823
pH (S.U.) Minimum	6.4	6.6	7.0	7.0	6.9	7.2	6.8	7.0	6.9	7.0	7.0	7.1
pH (S.U.) Maximum	7.2	7.3	7.4	7.6	7.6	7.8	8.1	7.3	7.2	7.2	7.3	7.3
TSS (mg/L) Daily Maximum	12	38	< 2	4	7.0	< 2	< 2	5	88	5	< 2	< 2
Total Aluminum (lbs/day) Average Monthly	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.02	< 0.03	< 0.03	< 0.03	< 0.02	< 0.02	< 0.03
Total Aluminum (lbs/day) Daily Maximum	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	0.03	< 0.04	< 0.04	< 0.02	< 0.03	< 0.03
Total Aluminum (mg/L) Average Monthly	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aluminum (mg/L) Daily Maximum	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Chromium (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01	0.02	0.01	< 0.01	< 0.01
Total Copper (mg/L) Average Monthly	0.030	0.095	0.040	0.040	0.050	0.050	0.040	0.030	0.040	0.030	0.050	< 0.020

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Total Copper (mg/L) Daily Maximum	0.030	0.150	0.050	0.040	0.060	0.050	0.050	0.030	0.040	0.030	0.060	< 0.030
Total Iron (lbs/day) Average Monthly	< 0.01	< 0.1	< 0.020	< 0.01	< 0.01	< 0.05	< 0.01	< 0.02	< 0.02	< 0.01	< 0.01	< 0.01
Total Iron (lbs/day) Daily Maximum	< 0.01	< 0.30	0.02	< 0.01	< 0.01	< 0.05	< 0.02	< 0.02	< 0.02	< 0.01	< 0.01	< 0.02
Total Iron (mg/L) Average Monthly	< 0.05	< 0.5	< 0.05	< 0.05	< 0.05	0.010	< 0.05	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Total Iron (mg/L) Daily Maximum	< 0.05	0.94	0.05	0.05	< 0.05	0.020	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Manganese (lbs/day) Average Monthly	< 0.003	< 0.02	< 0.003	< 0.003	0.009	< 0.002	< 0.003	< 0.003	< 0.003	< 0.002	0.004	< 0.003
Total Manganese (lbs/day) Daily Maximum	< 0.003	0.03	< 0.003	0.003	0.010	< 0.003	< 0.003	< 0.004	< 0.004	< 0.002	0.005	< 0.003
Total Manganese (mg/L) Average Monthly	< 0.01	< 0.06	< 0.01	< 0.1	0.04	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	< 0.02	< 0.01
Total Manganese (mg/L) Daily Maximum	< 0.01	0.11	< 0.01	0.01	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.05	0.02	< 0.01
Total Zinc (mg/L) Daily Maximum	0.50	0.44	0.80	0.84	0.19	1.43	0.61	0.52	9.19	0.51	0.24	0.23

DMR Data for Outfall 003 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Average Monthly	0.0269	0.0242	0.02561	0.0245	0.02664	0.0276	0.03092	0.03858	0.021892	0.01887	0.012528	0.019526
Flow (MGD) Daily Maximum	0.085	0.041	0.04251	0.0376	0.04251	0.0435	0.056	0.06215	0.095	0.075	0.0221	0.032
pH (S.U.) Minimum	6.5	6.7	7.0	7.1	7.2	7.3	6.8	7.0	7.1	6.9	6.9	7.0
pH (S.U.) Maximum	7.1	7.3	7.4	7.5	7.5	7.8	8.4	7.40	7.6	7.3	7.7	7.50
TSS (mg/L) Daily Maximum	< 2	< 2	< 2	< 2	1	< 2	< 2	< 2	4	< 2	< 2	< 2
Total Aluminum (lbs/day) Average Monthly	0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.04	< 0.03	< 0.01	< 0.02	< 0.01	< 0.01
Total Aluminum (lbs/day) Daily Maximum	< 0.03	< 0.03	< 0.03	0.03	< 0.03	< 0.04	< 0.04	< 0.04	< 0.01	< 0.02	< 0.01	< 0.01

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Total Aluminum (mg/L) Average Monthly	< 0.10	< 0.10	< 0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Aluminum (mg/L) Daily Maximum	< 0.10	< 0.10	0.10	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Chromium (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	0.02	0.005	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Total Copper (mg/L) Average Monthly	0.040	0.040	0.070	0.020	0.050	0.020	< 0.006	0.010	< 0.040	< 0.070	0.190	0.030
Total Copper (mg/L) Daily Maximum	0.040	0.040	0.090	0.020	0.070	0.020	0.008	0.010	0.060	0.120	0.330	0.030
Total Iron (lbs/day) Average Monthly	0.06	< 0.01	0.20	0.02	0.08	0.04	0.05	0.05	0.050	0.03	0.03	< 0.01
Total Iron (lbs/day) Daily Maximum	0.07	< 0.01	0.40	0.03	0.1	0.04	0.05	0.06	0.090	0.04	0.03	0.02
Total Iron (mg/L) Average Monthly	0.19	< 0.05	0.83	0.09	0.28	0.12	0.12	0.15	0.42	0.15	0.29	< 0.08
Total Iron (mg/L) Daily Maximum	0.23	< 0.05	1.52	0.11	0.36	0.12	0.13	0.15	0.74	0.23	0.30	0.11
Total Manganese (lbs/day) Average Monthly	0.005	0.008	0.020	0.003	0.01	< 0.003	< 0.006	0.003	< 0.002	< 0.04	0.003	< 0.003
Total Manganese (lbs/day) Daily Maximum	0.006	0.008	0.040	0.003	0.02	< 0.004	0.008	0.004	0.004	0.07	0.003	0.004
Total Manganese (mg/L) Average Monthly	0.02	< 0.03	0.08	0.01	0.05	< 0.1	< 0.02	0.01	< 0.02	< 0.008	0.03	< 0.02
Total Manganese (mg/L) Daily Maximum	0.02	< 0.03	0.12	0.01	0.07	< 0.1	0.02	0.01	0.03	0.01	0.03	0.03
Total Zinc (mg/L) Daily Maximum	0.32	0.27	0.30	0.27	0.22	0.28	0.26	0.22	0.89	0.23	0.28	0.27

DMR Data for Outfall 004 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.01754	0.001654	0.004963	0.008603	0.02978	0.01373	0.004963	0.007611	0.002813	0.003474	0.003143	0.008934
pH (S.U.) Daily Maximum	7.90	7.89	9.46	7.56	7.54	8.41	9.21	7.48	8.39	8.91	7.51	8.83

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
TSS (mg/L) Daily Maximum	194	< 2	< 2	4	2	6	5	16	6	18	80	728
Nitrate-Nitrite (mg/L) Daily Maximum	< 5.63	< 0.16	< 2.08	< 0.11	0.17	< 0.63	< 0.56	< 0.27	< 0.20	< 1.36	< 0.10	< 2.00
Total Aluminum (mg/L) Daily Maximum	1.1	0.20	0.1	0.1	0.1	0.1	0.1	0.1	0.1	< 0.1	0.50	2.8
Total Aluminum (lbs) Total Monthly	0.427	0.176974	0.017938	0.10444	0.122866	0.067749	0.0044963	0.120628	0.1206	0.12304	0.271448	0.539284
Total Aluminum (lbs) Total Annual	2.573	2.223	2.176	4.0787	4.118238	4.069	4.2409	4.26	4.196	4.162	4.144996	4.032789
Total Chromium (mg/L) Daily Maximum	0.02	< 0.01	0.02	< 0.01	0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03
Total Copper (mg/L) Daily Maximum	0.06	< 0.01	0.08	0.03	0.005	0.04	0.02	0.03	0.03	0.22	0.03	0.11
Total Iron (mg/L) Daily Maximum	1.00	0.13	0.06	< 0.05	0.10	0.07	0.12	0.13	0.11	< 0.05	0.59	3.95
Total Iron (lbs) Total Monthly	0.463	0.184338	0.010763	0.147144	0.311401	0.1062	0.074014	0.104603	0.18198	0.3581	0.370282	0.763732
Total Iron (lbs) Total Annual	4.076	3.7835	3.7147	6.8646	6.8405	6.710	7.344	6.747	6.699	6.5667	6.311994	6.149527
Total Manganese (mg/L) Daily Maximum	0.12	0.03	0.02	0.01	0.03	0.04	0.04	0.04	0.04	0.02	0.13	0.79
Total Manganese (lbs) Total Monthly	0.0153	0.03467	0.003588	0.014406	0.046135	0.04349	0.024671	0.025936	0.0447	0.051291	0.067974	0.14797
Total Manganese (lbs) Total Annual	0.668	0.6549	0.6538	1.746	1.07727	1.759	1.8400	1.839	1.83056	1.8033	1.787008	1.746214
Total Nickel (mg/L) Daily Maximum	0.01	< 0.01	< 0.01	< 0.01	0.005	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.03
Total Zinc (mg/L) Daily Maximum	0.23	< 0.01	0.15	0.20	0.005	0.14	0.11	0.15	0.12	0.16	0.16	0.36

DMR Data for Outfall 005 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.002543	0.00024	0.00072	0.001247	0.004318	0.001991	0.00072	0.001103	0.000408	0.003474	0.000456	0.001295
pH (S.U.) Daily Maximum	7.79	7.83	7.93	8.15	6.30	7.94	7.20	6.59	7.18	7.25	7.35	7.85
TSS (mg/L) Daily Maximum	10	< 2	6	< 2	3	16	4	< 2	5	18	12	4

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Nitrate-Nitrite (mg/L) Daily Maximum		< 1.34			0.27			< 0.10			< 0.14	
Total Aluminum (mg/L) Daily Maximum	0.10	< 0.1	0.2	< 0.1	0.05	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Aluminum (lbs) Total Monthly	0.005181	0.008182	0.005201	0.007762	< 0.001	0.009822	0.008942	0.005261	0.008962	0.039877	0.000676	0.002701
Total Chromium (mg/L) Daily Maximum	< 0.01	< 0.01	0.02	< 0.01	0.005	< 0.1	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01
Total Copper (mg/L) Daily Maximum	0.10	0.07	0.19	0.12	0.77	0.05	0.02	0.04	0.17	0.22	0.05	0.08
Total Iron (mg/L) Daily Maximum	0.38	< 0.05	0.75	0.006209	0.30	0.14	0.50	0.09	0.68	< 0.05	0.20	0.32
Total Iron (lbs) Total Monthly	0.01969	0.004091	0.019505	0.006209	0.004074 9	0.013751	0.04471	0.004735	0.060942	0.019938	0.013523	0.008642
Total Manganese (mg/L) Daily Maximum	0.03	0.02	0.07	0.04	0.03	0.02	0.06	0.02	0.05	0.02	0.03	0.02
Total Manganese (lbs) Total Monthly	0.001554	0.001636	0.07	0.003105	0.004075	0.001964	0.005365	0.001052	0.004481	0.007975	0.002028	0.00054
Total Nickel (mg/L) Daily Maximum	0.02	< 0.01	0.04	< 0.01	0.005	< 0.01	0.03	0.07	0.02	< 0.01	< 0.01	< 0.01
Total Zinc (mg/L) Daily Maximum	0.10	0.16	0.12	0.06	0.12	0.25	0.13	0.02	0.11	0.16	0.10	0.12

DMR Data for Outfall 006 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.002649	0.00025	0.00075	0.001247	0.004498	0.002074	0.00075	0.00115	0.000425	0.000504	0.000475	0.001349
pH (S.U.) Daily Maximum	7.08	8.01	7.60	7.18	5.71	7.65	6.61	6.57	6.65	7.25	6.78	7.16
TSS (mg/L) Daily Maximum	4	5	< 2	3	5	10	54	< 2	2	12	5	2
Nitrate-Nitrite (mg/L) Daily Maximum		< 0.13			0.39			< 0.21			< 0.14	
Total Aluminum (mg/L) Daily Maximum	< 0.1	< 0.1	< 0.1	< 0.1	0.1	0.1	1.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1
Total Aluminum (lbs) Total Monthly	0.005398	0.008524 2	0.002709 4	0.00809	0.01415	0.01023	0.10248	0.00548	0.009337	0.017344	0.007044 5	0.002813 6

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Total Chromium (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	< 0.1	0.02	< 0.01	0.37	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Copper (mg/L) Daily Maximum	0.07	0.15	0.14	0.09	0.49	0.12	1.01	0.03	0.11	0.44	0.03	0.06
Total Iron (mg/L) Daily Maximum	0.21	0.23	0.14	< 0.05	0.31	0.09	4.62	0.06	0.13	0.88	0.09	0.17
Total Iron (lbs) Total Monthly	0.01134	0.0196057	0.0037932	0.004043	0.0438696	0.00921	0.43041	0.003289	0.012138	0.0530045	0.00634	0.0047832
Total Manganese (mg/L) Daily Maximum	0.02	0.07	0.06	< 0.01	0.02	0.03	0.22	0.01	0.04	0.12	< 0.01	0.01
Total Manganese (lbs) Total Monthly	0.0011	0.005967	0.0016256	0.00081	0.0028303	0.00307	0.0205	0.000548	0.0037348	0.0072279	0.0007044	0.0002814
Total Nickel (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	< 0.01	0.02	< 0.01	0.31	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Total Zinc (mg/L) Daily Maximum	0.16	0.10	0.26	0.07	0.14	0.22	0.38	0.02	0.19	0.25	0.11	0.13

DMR Data for Outfall 007 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.002675	0.000252	0.000757	0.001312	0.004543	0.002095	0.000757	0.006638	0.000429	0.00053	0.00048	0.001363
pH (S.U.) Daily Maximum	8.26	7.40	7.48	6.89	5.75	7.35	6.44	6.78	6.55	6.96	6.65	6.56
TSS (mg/L) Daily Maximum	18	14	7	3	2	< 2	45	6	6	< 2	6	< 2
Nitrate-Nitrite (mg/L) Daily Maximum		< 0.18			0.42			< 0.12			< 0.16	
Total Aluminum (mg/L) Daily Maximum	0.1	< 0.1	0.3	< 0.1	< 0.05	< 0.1	0.6	0.2	< 0.1	0.1	< 0.1	< 0.1
Total Aluminum (lbs) Total Monthly	0.005452	0.008609	0.008209	0.008167	< 0.01	0.010335	0.056453	0.011072	0.00943	0.006083	0.007115	0.002842
Total Chromium (mg/L) Daily Maximum	0.02	0.01	0.01	0.01	0.02	< 0.01	0.04	0.07	< 0.01	0.03	0.02	< 0.01
Total Copper (mg/L) Daily Maximum	0.10	0.32	0.36	0.27	0.21	0.04	0.24	0.09	0.08	0.35	0.05	0.09
Total Iron (mg/L) Daily Maximum	0.41	0.72	1.37	0.94	0.38	< 0.05	1.10	0.63	0.18	0.80	0.30	0.11
Total Iron (lbs) Total Monthly	0.0224	0.061985	0.037488	0.07677	0.05431	0.005168	0.103497	0.03488	0.016974	0.048665	0.021344	0.003126

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Total Manganese (mg/L) Daily Maximum	0.03	0.04	0.06	0.03	0.03	0.02	0.23	0.10	0.02	0.09	0.02	0.01
Total Manganese (lbs) Total Monthly	0.001636	0.003444	0.001642	0.00245	0.004288	0.002067	0.02164	0.005536	0.001886	0.005475	0.001423	0.000284
Total Nickel (mg/L) Daily Maximum	0.02	0.02	0.03	0.02	0.02	< 0.01	0.05	0.03	< 0.01	0.09	0.01	< 0.01
Total Zinc (mg/L) Daily Maximum	0.15	0.19	0.27	0.10	0.17	0.21	0.33	0.06	0.11	0.25	0.15	0.13

DMR Data for Outfall 008 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.003183	0.0003	0.000901	0.001561	0.005405	0.002492	0.000901	0.001381	0.00051	0.000631	0.000571	0.001621
pH (S.U.) Daily Maximum	6.76	7.74	7.34	6.69	5.75	7.34	6.21	6.72	6.59	6.89	6.47	6.19
TSS (mg/L) Daily Maximum	11	< 2	4	< 2	2	3	31	3	6	6	5	< 2
Nitrate-Nitrite (mg/L) Daily Maximum		< 0.19			0.26			< 0.18			0.30	
Total Aluminum (mg/L) Daily Maximum	0.1	< 0.1	0.4	< 0.1	0.05	< 0.1	0.6	< 0.1	< 0.1	0.1	< 0.1	< 0.1
Total Aluminum (lbs) Total Monthly	0.006486	0.010243	0.013022	0.009717	< 0.01	0.01296	0.067147	0.006586	0.011219	0.007237	0.008633	0.003381
Total Chromium (mg/L) Daily Maximum	0.02	< 0.01	< 0.01	< 0.01	0.005	< 0.01	0.11	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Copper (mg/L) Daily Maximum	0.06	0.05	0.29	0.04	0.17	0.07	0.37	0.02	0.04	0.24	0.09	0.07
Total Iron (mg/L) Daily Maximum	0.36	0.06	0.72	0.07	0.36	0.10	1.73	< 0.05	0.11	0.95	0.38	0.18
Total Iron (lbs) Total Monthly	0.02335	0.006146	0.02344	0.006802	0.06122	0.012296	0.1937	0.003293	0.012341	0.068755	0.01036	0.006085
Total Manganese (mg/L) Daily Maximum	0.03	0.03	0.12	< 0.01	0.03	0.03	0.23	< 0.01	0.07	0.06	0.02	0.01
Total Manganese (lbs) Total Monthly	0.001946	0.003073	0.003907	0.000972	0.005101	0.003689	0.025747	0.000659	0.007853	0.06	0.000863	0.000338
Total Nickel (mg/L) Daily Maximum	0.02	< 0.01	0.01	< 0.01	0.005	< 0.01	0.17	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Total Zinc (mg/L) Daily Maximum	0.09	0.11	0.33	0.05	0.09	0.16	0.22	0.02	0.10	0.27	0.06	0.09

DMR Data for Outfall 009 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.003246	0.000306	0.000919	0.001593	0.005513	0.002542	0.000919	0.001409	0.000521	0.000643	0.000582	0.001654
pH (S.U.) Daily Maximum	7.58	7.65	7.30	0.050	5.64	7.05	6.29	6.70	6.74	6.84	6.47	6.00
TSS (mg/L) Daily Maximum	6	< 2	< 2	11	2	10	26	< 2	6	6	< 2	6
Nitrate-Nitrite (mg/L) Daily Maximum		< 0.16			0.15			< 0.17			< 0.15	
Total Aluminum (mg/L) Daily Maximum	0.1	0.20	0.00332	< 0.1	0.05	< 0.1	0.3	< 0.1	< 0.1	0.1	< 0.1	< 0.1
Total Aluminum (lbs) Total Monthly	0.006615	0.020893	0.00332	0.00991	0.008671	0.012541	0.03425	0.006717	0.011442	0.007381	0.008633	0.003448
Total Chromium (mg/L) Daily Maximum	0.02	< 0.01	< 0.01	< 0.01	0.005	0.08	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total Copper (mg/L) Daily Maximum	0.08	0.06	0.05	0.05	0.05	0.07	0.06	0.02	0.03	0.27	0.02	0.08
Total Iron (mg/L) Daily Maximum	0.32	0.11	0.10	0.18	0.05	0.11	0.58	< 0.05	< 0.05	0.58	0.12	0.17
Total Iron (lbs) Total Monthly	0.021169	0.011491	0.00332	0.017838	0.008671	0.01379	0.06612	0.003359	0.005721	0.042812	0.01036	0.005862
Total Manganese (mg/L) Daily Maximum	0.02	0.02	0.02	0.01	0.01	0.03	0.12	0.01	< 0.01	0.08	0.01	0.02
Total Manganese (lbs) Total Monthly	0.001323	0.002089	0.000664	0.000991	0.001734	0.003762	0.0137	0.000672	0.001144	0.005905	0.000863	0.00069
Total Nickel (mg/L) Daily Maximum	0.02	< 0.01	< 0.01	< 0.01	< 0.005	< 0.01	0.03	< 0.01	< 0.01	0.01	< 0.01	< 0.01
Total Zinc (mg/L) Daily Maximum	0.14	0.18	0.17	0.05	0.08	0.18	0.13	0.05	0.05	0.22	0.11	0.11

DMR Data for Outfall 010 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Daily Maximum	0.002379	0.000224	0.000673	0.001167	0.004039	0.001863	0.000673	0.001032	0.000381	0.000471	0.000426	0.001212
pH (S.U.) Daily Maximum	7.23	8.20	7.19	6.57	5.53	7.01	6.17	6.85	6.64	6.73	6.32	6.80
TSS (mg/L) Daily Maximum	6	< 2	< 2	6	2	< 2	40	20	6	6	< 2	9

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Nitrate-Nitrite (mg/L) Daily Maximum		< 0.10			0.13			0.75			< 0.14	
Total Aluminum (mg/L) Daily Maximum	< 0.1	< 0.10	< 0.1	< 0.1	0.05	< 0.1	0.6	1.0	< 0.1	0.5	< 0.1	< 0.1
Total Aluminum (lbs) Total Monthly	0.004847	0.007654	0.002433	0.007261	0.006354	0.009189	0.050194	0.04922	0.008384	0.027043	0.006326	0.002527
Total Chromium (mg/L) Daily Maximum	< 0.01	< 0.01	< 0.01	< 0.01	0.005	< 0.01	0.02	< 0.01	< 0.01	0.02	< 0.01	< 0.01
Total Copper (mg/L) Daily Maximum	0.05	0.04	0.07	0.07	0.09	0.05	0.33	0.22	0.05	0.45	0.04	0.06
Total Iron (mg/L) Daily Maximum	0.17	0.10	0.10	0.12	0.07	< 0.05	0.85	0.16	0.07	1.24	0.18	0.12
Total Iron (lbs) Total Monthly	0.00824	0.007654	0.002433	0.008714	0.008895	0.004595	0.071107	0.007875	0.005869	0.067067	0.011386	0.003032
Total Manganese (mg/L) Daily Maximum	0.02	0.02	0.03	< 0.01	< 0.005	0.02	0.17	0.06	0.01	0.12	0.01	0.05
Total Manganese (lbs) Total Monthly	0.000969	0.001531	0.00073	0.000726	< 0.01	0.001838	0.014221	0.002953	0.000838	0.00649	0.000633	0.000505
Total Nickel (mg/L) Daily Maximum	0.02	< 0.01	< 0.01	0.02	0.005	< 0.01	0.08	0.07	< 0.01	0.03	< 0.01	0.09
Total Zinc (mg/L) Daily Maximum	0.13	0.19	0.18	0.10	0.07	0.15	0.35	0.19	0.11	0.25	0.21	0.26

Development of Effluent Limitations

Outfall No. 101 **Design Flow (MGD)** 0.047556 (avg.); 0.1266 (max)
Latitude 40° 17' 41.00" **Longitude** -78° 55' 9.00"
Wastewater Description: Powdered metal manufacturing production wastewaters

When the NPDES permit was renewed in 2017, NAHHA indicated that infrastructure changes would need to be made at the facility to resume discharges of production wastewaters to the Stonycreek River. NAHHA concluded that it would be easier to install a dedicated discharge pipe for those wastewaters rather than reconnect to the discharge line leading to Outfall 001. Outfall 101 was created to authorize separate discharges of production wastewaters. Outfall 101 will be maintained in the renewed permit pursuant to NAHHA's request.

101.A. Technology-Based Effluent Limitations (TBELs)

Production wastewaters discharging through Outfall 101 are subject to Federal Effluent Limitations Guidelines (ELG). The applicable ELG for all production wastewaters at the Johnstown Facility is 40 CFR Part 471 – Non-ferrous Metals Forming and Metal Powders Point Source Category. To calculate TBELs based on that ELG, production rates are required. The following table shows the production lines and corresponding maximum production rates from the last five years based on data reported on the application. The corresponding ELG for each production process is also shown.

Table 1. Production Lines, Maximum Production Rates, and Applicable ELGs

Product	Highest Annual Avg. Daily Production Rate (off-pounds/day)†	Highest Production Year	Applicable Effluent Limitations Guidelines
Alloy Bay 1			
Nickel	32,993	2018	40 CFR Part 471 Subpart C – § 471.32(p)
Stainless Steel	50,000	N/A††	40 CFR Part 471 Subpart J – §§ 471.101(a) and 102(a)
Alloy Bay 2			
Nickel	28,280	2018	40 CFR Part 471 Subpart C – § 471.32(p)
Stainless Steel	32,497	2018	40 CFR Part 471 Subpart J – §§ 471.101(a) and 102(a)
Copper Powder Production (Glidcop® – Copper & Aluminum)			
Glidcop®	8,707	2018	40 CFR Part 471 Subpart J – §§ 471.101(a) and 102(a)
Electroplating Operation			
Electrolytic Iron	4,349	2018	40 CFR Part 471 – Best Professional Judgement

† An "off-pound" is defined in 40 CFR 471 as "the mass of metal or metal alloy removed from a forming operation at the end of a process cycle for transfer to a different machine or process."

†† The highest annual average daily production rate for Stainless Steel at Alloy Bay 1 was 49,016 off-pounds/day in 2018. NAHHA expects a slight increase in average annual production to 50,000 off-pounds/day over the next five years. The higher anticipated production rate is used consistent with guidance in EPA's NPDES Permit Writers' Manual (Sept. 2010, Section 5.2.2.5, p.5-30).

The highest annual average daily production rates from the past five years are used as reasonable measures of actual production. Those selections are consistent with the EPA guidance document "Production Basis for NPDES Permits," which states that limits can be developed based on a facility's highest annual production rates from the last five years. In addition to production-based mass limits, concentration limits also are imposed even though they are not required by the ELG. Concentration limits ensure that the ELG is being implemented as intended during times of low production because when production is low, mass limits may be met even without treatment. By imposing concentration limits that apply across all production levels, proper operation of the treatment system is ensured, and the level of treatment system performance required by the ELG is achieved—provided the permittee complies with both mass and concentration limits. Imposing both mass and concentration limits is a simplified substitute for tiered limits, under which the permittee would calculate and report monthly mass limits based on the specific production operations that were conducted during a given month.

NAHHA did not provide any estimates for powder production from the new Fine Metal Powders facility. NAHHA should report expected production from that facility to DEP when the new production facility begins operating regularly and starts contributing to normal, baseline production levels from the Johnstown Facility.

Nickel Powder Production – Alloy Bay 1 – Limits are developed based on 40 CFR Part 471 Subpart C – Nickel-Cobalt Forming Subcategory § 471.32(p) Metal Power Production Atomization Wastewater (BAT). The production-based limitations of the ELG are shown in Table 2. TBELs are calculated using the maximum production rate for nickel powder in Alloy Bay 1 as given in Table 1.

Table 2. 40 CFR § 471.32(p) – Metal powder production atomization wastewater

Pollutant	Maximum for monthly average (pounds per million off-pounds)	Maximum for any 1 day (pounds per million off-pounds)
Chromium	0.393	0.970
Nickel	0.970	1.44
Fluoride	69.2	156

Example Calculations for Chromium Limits:

$$\text{Average Monthly} = \frac{32{,}993 \text{ off-pounds Ni}}{\text{day}} \times \frac{0.393 \text{ pounds Cr}}{1{,}000{,}000 \text{ off-pounds Ni}} = \frac{0.013 \text{ pounds Cr}}{\text{day}}$$

$$\text{Daily Maximum} = \frac{32{,}993 \text{ off-pounds Ni}}{\text{day}} \times \frac{0.970 \text{ pounds Cr}}{1{,}000{,}000 \text{ off-pounds Ni}} = \frac{0.032 \text{ pounds Cr}}{\text{day}}$$

BCT requirements must be examined in addition to BAT. Following the previous permit's effluent limitations rationale, BAT limits assume the use of lime, settle, and filter (LS&F) treatment technology. Therefore, limits for Total Suspended Solids (TSS) and Oil and Grease (O&G), which are identified as pollutants of concern for nickel powder production atomization wastewater under § 471.31(p) (BPT), should be calculated using the same LS&F technology basis. However, BCT limits for conventional pollutants have not been promulgated and BPT represents only lime and settle (L&S) treatment technology. Therefore, to calculate TSS and O&G limits using BAT representing LS&F technology, Best Professional Judgment is used. EPA's "Development Document for Effluent Limitations Guidelines and Standards for the Nonferrous Metals Forming and Metal Powders Point Source Category" (ELG Development Document) describes how the BAT mass limits of 40 CFR Part 471 were developed. The same procedure will be used to calculate limits for TSS and O&G.

Tables VII-21 and VII-22 (p.1414-1415) in Volume III of the ELG Development Document summarize the treatment effectiveness of L&S and LS&F systems for various pollutants. For TSS and O&G, One-Day Maximum, 10-Day Average, and 30-Day Average pollutant concentrations achieved by both treatment technologies are provided. TSS and O&G limits can be calculated by using the attainable LS&F effluent concentrations in combination with the facility's production rates and the normalized BAT discharge flows for metal powder production operations from the ELG Development Document. The normalized flows for metal powder production given in the ELG Development Document are 629 gallons/ton for the Nickel-Cobalt Forming Subcategory (Table X-28) and 1,210 gallons/ton for the Metal Powders Subcategory (Table X-42).

Calculations for TSS Limits:

$$\text{Average Monthly}^{1} = \frac{12 \text{ mg TSS}}{\text{liter}} \times \frac{3.7854 \text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6} \text{ pounds TSS}}{\text{mg TSS}} \times \frac{629 \text{ gallons}}{\text{off-ton Ni}}$$
$$\times \frac{1 \text{ off-ton Ni}}{2{,}000 \text{ off-pounds Ni}} \times \frac{32{,}993 \text{ off-pounds Ni}}{\text{day}} = \mathbf{\frac{1.039 \text{ pounds TSS}}{\text{day}}}$$

$$\text{Daily Maximum} = \frac{15 \text{ mg TSS}}{\text{liter}} \times \frac{3.7854 \text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6} \text{ pounds TSS}}{\text{mg TSS}} \times \frac{629 \text{ gallons}}{\text{off-ton Ni}}$$
$$\times \frac{\text{off-ton Ni}}{2{,}000 \text{ off-pounds Ni}} \times \frac{32{,}993 \text{ off-pounds Ni}}{\text{day}} = \mathbf{\frac{1.299 \text{ pounds TSS}}{\text{day}}}$$

Calculations for O&G Limits:

$$\text{Average Monthly} = \frac{10 \text{ mg O\&G}}{\text{liter}} \times \frac{3.7854 \text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6} \text{ pounds O\&G}}{\text{mg O\&G}} \times \frac{629 \text{ gallons}}{\text{off-ton Ni}}$$

[1] The 10-day average concentration on the treatment effectiveness table is used to calculate the average monthly limits because it "provides a reasonable basis for a monthly average limitation and is typical of the sampling frequency required by existing permits." EPA also uses 10-day averages to develop average monthly limits for ELGs. (see p.1342 of ELG Development Document)

$$\times \frac{1 \text{ off-ton Ni}}{2{,}000 \text{ off-pounds Ni}} \times \frac{32{,}993 \text{ off-pounds Ni}}{\text{day}} = \mathbf{\frac{0.866 \text{ pounds O\&G}}{\text{day}}}$$

$$\text{Daily Maximum} = \frac{10 \text{ mg O\&G}}{\text{liter}} \times \frac{3.7854 \text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6} \text{ pounds O\&G}}{\text{mg O\&G}} \times \frac{629 \text{ gallons}}{\text{off-ton Ni}}$$

$$\times \frac{\text{off-ton Ni}}{2{,}000 \text{ off-pounds Ni}} \times \frac{32{,}993 \text{ off-pounds Ni}}{\text{day}} = \mathbf{\frac{0.866 \text{ pounds O\&G}}{\text{day}}}$$

Note that the procedure above was used to calculate TSS and O&G limits for nickel powder production in previous permits issued to NAHHA and all values (treatment effectiveness concentrations and normalized flows) except NAHHA's production figures are the same, so the six factors that are to be considered as part of developing case-by-case effluent limits were already evaluated when the methodology of using LS&F treatment effectiveness to calculate TSS and O&G limits for nickel powder production was first applied.

Limits for pH are based on those given by 40 CFR § 471.31(p) for the application of BPT. Other BPT limits are equivalent to or less stringent than those derived based on the application of BAT, so the BAT limits will control at Outfall 101. The TBELs calculated for nickel powder production in Alloy Bay 1 are given in Table 3.

Table 3. TBELs for nickel powder production in Alloy Bay 1.

Pollutant	Average Monthly (lbs/day)	Daily Maximum (lbs/day)
Chromium	0.013	0.032
Nickel	0.032	0.048
Fluoride	2.28	5.14
Total Suspended Solids	1.039	1.299
Oil & Grease	0.866	0.866
pH (S.U.)	Within the range of 7.5 to 10.0 at all times	

Stainless Steel Powder Production – Alloy Bay 1 – TBELs are developed based on 40 CFR 471 Subpart J – Metals Powders Subcategory § 471.101(a) Metal Powder Production Atomization Wastewater (BPT) and § 471.102(a) Metal Powder Production Atomization Wastewater (BAT). BCT effluent limits have not been promulgated so BPT is used to develop limits for conventional pollutants. Both BAT and BPT limits under the Metals Powders Subcategory were developed by EPA based on the use of L&S treatment technology so no limit adjustments are necessary to account for the use of LS&F technology. As stated above, the normalized flow for general metal powder production is 1,210 gallons/ton and the maximum monthly rate of production for stainless steel in Bay 1 is 57,282 off-pounds/day (see Table 1). The applicable production-based limits are shown in Table 4.

Table 4. 40 CFR §§ 471.101(a) & 471.102(a) – Metal powder production atomization wastewater

Pollutant	Maximum for monthly average (pounds per million off-pounds)	Maximum for any 1 day (pounds per million off-pounds)
Copper†	5.04	9.58
Cyanide†	0.605	1.46
Lead†	1.01	2.12
Oil and Grease	60.5	101
TSS	98.3	207
pH (S.U.)	Within the range of 7.5 to 10.0 at all times	

† BPT and BAT limits for this pollutant are the same due to the common L&S treatment basis.

Example Calculations for Copper Limits:

$$\text{Average Monthly} = \frac{50{,}000 \text{ off-pounds SS}}{\text{day}} \times \frac{5.04 \text{ pounds Cu}}{1{,}000{,}000 \text{ off-pounds SS}} = \mathbf{\frac{0.252 \text{ pounds Cu}}{\text{day}}}$$

$$\text{Daily Maximum} = \frac{50{,}000 \text{ off-pounds SS}}{\text{day}} \times \frac{9.58 \text{ pounds Cu}}{1{,}000{,}000 \text{ off-pounds SS}} = \mathbf{\frac{0.479 \text{ pounds Cu}}{\text{day}}}$$

Iron Limits for Stainless Steel Powder Production – Alloy Bay 1 – Although iron is not limited by the ELG, the stainless steel powder production processes have the potential to contribute sizeable quantities or iron to the process wastewater stream.

This is important because wastewaters from the Electrolytic Iron powder production process (described later) are combined with wastewaters from all other powder production bays prior to treatment. Since iron limits are calculated for wastewaters from the Electrolytic Iron powder production process (described later), an allowance is granted for iron contributions to the effluent stream from the stainless steel powder production processes. This same allowance was granted in previous permits so the six factors that are to be considered for the development of case-by-case limits have already been evaluated.

Iron limits for stainless steel production are calculated based on the use of treatment effectiveness concentrations from Table VII-21 of the ELG Development Document in a manner similar to the calculation of TSS and O&G limits for nickel powder production. L&S concentrations for iron from Table VII-21 of the ELG Development Document are used to calculate iron limits to be consistent with the other TBELs calculated for stainless steel production (recall that both BAT and BPT limits for the Metals Powders Production Subcategory were developed based on the use of L&S technology).

Calculations for Iron Limits (Bay 1 Stainless Steel)

$$\text{Average Monthly} = \frac{0.61 \text{ mg Fe}}{\text{liter}} \times \frac{3.7854 \text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6} \text{ pounds Fe}}{\text{mg Fe}} \times \frac{1{,}210 \text{ gallons}}{\text{off-ton SS}}$$

$$\times \frac{1 \text{ off-ton SS}}{2{,}000 \text{ off-pounds SS}} \times \frac{50{,}000 \text{ off-pounds SS}}{\text{day}} = \mathbf{\frac{0.154 \text{ pounds Fe}}{\text{day}}}$$

$$\text{Daily Maximum} = \frac{1.2 \text{ mg Fe}}{\text{liter}} \times \frac{3.7854 \text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6} \text{ pounds Fe}}{\text{mg Fe}} \times \frac{1{,}210 \text{ gallons}}{\text{off-ton SS}}$$

$$\times \frac{1 \text{ off-ton SS}}{2{,}000 \text{ off-pounds SS}} \times \frac{50{,}000 \text{ off-pounds SS}}{\text{day}} = \mathbf{\frac{0.303 \text{ pounds Fe}}{\text{day}}}$$

The TBELs calculated for stainless steel powder production in Alloy Bay 1 are given in Table 5.

Table 5. TBELs for stainless steel powder production in Alloy Bay 1.

Pollutant	Average Monthly (lbs/day)	Daily Maximum (lbs/day)
Copper	0.252	0.479
Cyanide	0.030	0.073
Lead	0.051	0.106
Total Suspended Solids	4.91	10.3
Oil & Grease	3.02	5.05
Iron, Total	0.154	0.303
pH (S.U.)	Within the range of 7.5 to 10.0 at all times	

Nickel Powder Production – Alloy Bay 2 – TBELs are developed based on 40 CFR Part 471 Subpart C – Nickel-Cobalt Forming Subcategory § 471.32(p) Metal Power Production Atomization Wastewater (BAT). The same calculations described for Nickel Powder Production in Alloy Bay 1 are applied for Nickel Powder Production in Alloy Bay 2 except that a production rate of 28,280 off-pounds/day (see Table 1) is used. The calculated TBELs are shown in Table 6.

Table 6. TBELs for nickel powder production in Alloy Bay 2.

Pollutant	Average Monthly (lbs/day)	Daily Maximum (lbs/day)
Chromium	0.011	0.027
Nickel	0.027	0.041
Fluoride	1.95	4.41
Total Suspended Solids	0.891	1.113
Oil & Grease	0.742	0.742
pH (S.U.)	Within the range of 7.5 to 10.0 at all times	

Stainless Steel Powder Production – Alloy Bay 2 – TBELs are developed based on 40 CFR Part 471 Subpart J – Metals Powders Subcategory § 471.101(a) Metal Powder Production Atomization Wastewater (BPT) and § 471.102(a) Metal Powder Production Atomization Wastewater (BAT) and BPJ for iron limitations. The same calculations described for Stainless Steel Powder Production in Alloy Bay 1 are applied for Alloy Bay 2 except that a production rate of 32,497 off-pounds/day (see Table 1) is used. The calculated TBELs are shown in Table 7.

Table 7. TBELs for stainless steel powder production in Alloy Bay 2.

Pollutant	Average Monthly (lbs/day)	Daily Maximum (lbs/day)
Copper	0.164	0.311
Cyanide	0.020	0.047
Lead	0.033	0.069
Total Suspended Solids	3.194	6.727
Oil & Grease	1.966	3.282
Iron, Total	0.100	0.197
pH (S.U.)	Within the range of 7.5 to 10.0 at all times	

Copper Powder Production – Glidcop® – TBELs are developed based on 40 CFR Part 471 Subpart J – Metals Powders Subcategory § 471.101(a) Metal Powder Production Atomization Wastewater (BPT) and § 471.102(a) Metal Powder Production Atomization Wastewater (BAT). The same calculations described for Stainless Steel Powder Production in Alloy Bay 1 are applied for the Glidcop process except that a production rate of 8,707 off-pounds/day (see Table 1) is used and no allowance for iron contributions to the wastewater stream is included. The calculated TBELs are shown in Table 8.

Table 8. TBELs for copper (Glidcop) powder production.

Pollutant	Average Monthly (lbs/day)	Daily Maximum (lbs/day)
Copper	0.044	0.083
Cyanide	0.005	0.013
Lead	0.009	0.018
Total Suspended Solids	0.856	1.80
Oil & Grease	0.527	0.879
pH (S.U.)	Within the range of 7.5 to 10.0 at all times	

Electrolytic Iron (EI) Powder Production – High purity EI powder is produced through an electroplating operation whereby iron is electrodeposited onto a cathode in an electrolytic cell containing an iron anode and an aqueous solution (electrolyte) of ammonium and ferrous sulfates. The plated cathodes are rinsed and the electrodeposited iron is then stripped from the cathodes and ground into a fine powder through dry processes. Small dendritic growths or "trees" on the cathodes are broken off, washed, and ground into powder.

The EI powder production process ("EI process") was previously determined to be covered by 40 CFR Part 471. The applicability section of Part 471 under § 471.01 states the following:

(a) …This part applies to:

(1) Forming operations, including rolling (both hot and cold), extruding, forging, drawing, swaging, cladding, and tube reducing, and

(2) Ancillary operations performed as an integral part of the forming of these metals, including casting for subsequent forming, heat treatment, surface treatment, alkaline cleaning, solvent degreasing, product testing, surface coating, sawing, grinding, tumbling, burnishing, and wet air pollution control.

(b) This part also applies to discharges of pollutants to waters of the United States and introduction of pollutants into a publicly owned treatment works from mechanical metal powder production operations, forming of parts from metal powders, and associated ancillary operations (listed in paragraph (a)(2) of this section) of:

(1) Iron, copper, and aluminum, and their alloys; and

(2) The nonferrous metals and their alloys described in paragraph (a) of this section. This part does not regulate the production of metal powders by chemical means such as precipitation. The production of metal powder as the final step in refining metal is regulated under the Nonferrous Metals Manufacturing Point Source Category regulation, 40 CFR part 421.

(c) Surface treatment includes any chemical or electrochemical treatment applied to the surface of the metal. For the purposes of this regulation, surface treatment of metals is considered to be an integral part of the forming of metals whenever it is performed at the same plant site at which the metals are formed. Such surface treatment operations are not regulated under the Electroplating or Metal Finishing Point Source Category regulations, 40 CFR part 413 or 433, respectively.

During DEP's and EPA's development of the original 1986 NPDES permit issued to this facility, it was determined based on the applicability sections of 40 CFR Part 471 reproduced above that the EI process is an ancillary operation covered by Part 471. DEP also determined that no specific subpart of Part 471 applies to the EI process's wastewaters because 1) the ELG limits are production-based and 2) the amount of EI powder produced at the facility is largely independent of the amount of wastewater generated from the production process (e.g., some process waters like the electrolyte or the rinse waters can be reused). Essentially, effluent loading cannot be tied to a specific production rate of EI powder. Therefore, TBELs for pollutant contributions to the effluent stream from the EI process are developed based on Best Professional Judgment.

The pollutants in the EI process's wastewaters that were previously identified for regulation include TSS, oil and grease, chromium, ammonia, and total iron and were identified as such due to their presence in the EI process's wastewaters in significant/treatable concentrations. TBELs are calculated using the L&S values from the ELG Development Document's treatment effectiveness tables (Tables VII-21 and VII-22) and the effluent flow rate from the EI process. The EI process is not classified under any specific subcategory so the generalized Metals Powders Production Subcategory of Part 471 is used as a guide for which technology option should be selected when developing limits. Since both BAT and BPT limits for the Metal Powders Production Subcategory are based on the application of L&S technology, the L&S values from Tables VII-21 and VII-22 are used to develop TBELs for the EI process's wastewaters.

The effluent flow rate from the EI process is calculated by summing the flow rates for the process's individual wastewater contributors as reported on the line diagram submitted with the renewal application:

200 gpd [Lab] + 740 gpd [Tree Washer] [2] + 2,700 gpd [Cold Rinse] + 1,200 gpd [Hot Rinse] = 4,840 gpd

Due to elevated ammonia concentrations, EI process wastewater flows are collected in a dedicated wastewater holding tank and are bled into the wastewater treatment system at a pre-determined dosing rate.

Example Calculation for EI Process TBELs:

$$\text{Avg. Monthly TSS} = \frac{19.5\text{ mg TSS}}{\text{liter}} \times \frac{3.7854\text{ liters}}{\text{gallon}} \times \frac{2.2046 \times 10^{-6}\text{ lb}}{\text{mg}} \times \frac{4{,}840\text{ gallons}}{\text{day}} = \mathbf{\frac{0.788\text{ lb TSS}}{\text{day}}}$$

Summation of Individual Production Mass Limits[3] – Based on an agreement reached during previous permitting actions, final mass TBELs are the summation of the highest limits from Bays 1 and 2 (stainless steel powder production limits for TSS, O&G, copper, cyanide, lead, and iron; nickel powder production limits for chromium, nickel and fluoride) and the limits for the Glidcop and EI processes. The cumulative mass limits are shown in Table 9.

Table 9. Mass TBELs for Outfall 101 based on 40 CFR Part 471 and BPJ.

Pollutant	Average Monthly (lbs/day)	Maximum Daily (lbs/day)
Total Suspended Solids	10.0	21.0
Oil & Grease	6.0	10.0
Copper	0.46	0.90
Cyanide	0.06	0.13
Lead	0.09	0.19
Chromium	0.03	0.07
Nickel	0.06	0.09
Fluoride	4.2	10.0
Ammonia	2.4	5.4
Iron, Total	0.28	0.55
pH	Within the range of 7.5 and 10.0 at all times	

[2] The tree washer is operated approximately once per week.
[3] For reference, a breakdown of the production-based mass limits for each production line is summarized in Attachment A.

Concentration Limits – Concentration limits are imposed to ensure compliance with ELG's performance standards during periods of low production. The concentration limits recommended by EPA are the L&S and LS&F treatment standards listed in Tables VII-21 and VII-22 "Summary of Treatment Effectiveness" from the ELG Development Document—the same standards used in conjunction with normalized flows to compute mass limits. Even though the standards constitute the best-expected level of treatment for L&S and LS&F technology, the permittee has consistently met more stringent concentration limits. The stricter limits are the result of the company's appeal of the 1996 NPDES permit in which the applicability of the concentration limits from the ELG Development Document were contested. The result of the appeal was that concentration limits were to be calculated from mass limits using site-specific water usage rates from a 1997 study of the facility. The resultant concentration limits are generally more stringent than EPA's recommended limits from the Development Document for Part 471 (Tables VII-21 and VII-22). Table 10 compares these limits:

Table 10. Concentration TBELs Comparison for Outfall 101

Pollutant	Site-Specific Concentration Limits		Tables VII-21 & VII-22 of ELG Development Document	
	Average Monthly (mg/L)	Maximum Daily (mg/L)	Average Monthly (mg/L)	Maximum Daily (mg/L)
TSS	12.0	15.0	12.0	15.0
Oil & Grease	10.0	10.0	10.0	10.0
Copper	0.54	1.0	0.61	1.28
Cyanide	0.07	0.16	0.08	0.20
Lead	0.11	0.23	0.13	0.28
Chromium	0.06	0.14	0.15	0.37
Nickel	0.07	0.11	0.37	0.55
Fluoride	5.1	11.5	26.4	59.5
Iron, Total	0.31	0.61	0.61	1.20
Ammonia-N	—	—	58.6	133.3

In accordance with EPA's antibacksliding regulation (40 CFR § 122.44(l)) [4], the concentration limits imposed in the previous permit will be maintained in the renewed permit. Concentration limits for ammonia-nitrogen were not imposed in NAHHA's previous NPDES permits and they will not be imposed for this renewal. Ammonia-nitrogen is only expected to be present in wastewaters from the EI process and since those wastewaters commingle with other, non-ammonia-bearing wastewaters prior to treatment, dilution of the ammonia-nitrogen concentrations in the EI process wastewaters is likely to occur. As a result, any ammonia-nitrogen concentrations reported at Outfall 101 would not reflect the treatment system's performance. The ammonia-nitrogen mass limits calculated for Outfall 101 are based solely on the EI process's wastewater flow rate so compliance with the ELG's performance standards is still required for ammonia-nitrogen.

Before NAHHA redirected production wastewaters to the Johnstown STP, the facility consistently achieved the prior permit's concentration limits—often by one to two orders of magnitude more than required. Given NAHHA's history of compliance with the existing concentration TBELs, it is expected that NAHHA will be able to achieve the same concentration TBELs in the renewed permit if NAHHA transitions back to stream discharges for its production wastewaters.

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1). Effluent standards for pH (6.0 to 9.0 s.u.) are imposed on industrial wastes pursuant to 25 Pa. Code § 92a.48(a)(2) and § 95.2(1). The pH limits of § 95.2(1) are different than what is allowed by Part 471 (7.5 to 10.0 s.u.). The existing pH limits based on § 95.2(1) will be maintained at Outfall 101.

Section 95.2(2) specifies a daily average limit of 15 mg/L and an instantaneous maximum limit of 30 mg/L for oil and grease in addition to a narrative oil and grease limitation. The oil and grease concentration limits in the existing permit are more stringent than those in § 95.2(2), so the existing oil and grease limits will be maintained. The narrative oil and grease limit is included as a condition of the permit.

101.B. Water Quality-Based Effluent Limitations (WQBELs)

[4] *Reissued permits.* (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under § 122.62.)

Total Maximum Daily Load for the Kiskiminetas-Conemaugh River Watershed

The Stonycreek River is part of the Kiskiminetas-Conemaugh River Watershed. A Total Maximum Daily Load (TMDL) was finalized for the Kiskiminetas-Conemaugh River Watershed (Kiski-Conemaugh TMDL) on January 29, 2010 to control acid mine drainage pollutants including aluminum, iron, manganese, sediment, and pH. The Kiski-Conemaugh TMDL superseded a previous TMDL finalized on August 9, 2004 for acid mine drainage pollutants in the Stonycreek Watershed. In accordance with 40 CFR § 122.44(d)(1)(vii)(B), when developing WQBELs, the permitting authority shall ensure that effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation (WLA) for the discharge prepared by the State and approved by EPA pursuant to 40 CFR § 130.7.

The Kiski-Conemaugh TMDL assigned WLAs for iron, aluminum, and manganese to ten of the Johnstown Facility's outfalls. No WLAs were developed for sediment and pH in the TMDL because a surrogate approach was used for both of those constituents whereby reductions of in-stream concentrations of aluminum, iron, and manganese would result in acceptable reductions of sediment and mitigation of acidic pH. Outfall 101 was not included in the TMDL because the outfall was created after the Kiski-Conemaugh TMDL was finalized in 2010. However, NAHHA's production wastewaters were given WLAs for aluminum, iron, and manganese as part of the WLAs assigned to Outfall 001. Since the production wastewaters would be discharged separately from Outfall 001, some of the waste load allocated to Outfall 001 could be transferred to the new outfall. DEP considered calculating flow-weighted annual loads to split Outfall 001's allocated loads between Outfalls 001 and 101. However, since NAHHA currently discharges production wastewaters to the Johnstown STP, any load transferred from Outfall 001 to Outfall 101 would be unusable because the metals loading currently discharges from the Johnstown STP. To simplify the implementation of the TMDL, DEP will impose TMDL concentration limits on NAHHA's continuous discharges (Outfalls 101, 001, 002 and 003).

Imposing only concentration limits for the TMDL's pollutants of concern is consistent with the assumptions and requirements of the TMDL's available WLAs (pursuant to 40 CFR § 122.44(d)(1)(vii)(B)) because the TMDL's annual mass WLAs were developed based on the achievement of end-of-pipe concentration limits at criteria levels. Since the TMDL's allocated concentrations are equivalent to water quality criteria, NAHHA's compliance with concentration limits for aluminum, iron, and manganese will not result in excursions above water quality criteria in the Stonycreek River. Therefore, the TMDL's annual load limits do not need to be imposed at Outfalls 101, 001, 002, and 003.

The methods used to implement water quality criteria are described in 25 Pa. Code §§ 96.3 and 96.4. Also, DEP's "Water Quality Toxics Management Strategy" [Doc. No. 361-2000-003] addresses design conditions in detail (Table 1 in that document), including the appropriate durations to assign to water quality criteria. The design duration for Criteria Maximum Concentration (CMC) criteria is 1 hour (acute). The design duration for Criteria Continuous Concentration (CCC) criteria is 4 days (chronic). The design duration for Threshold Human Health (THH) criteria is 30 days (chronic). The design duration for Cancer Risk Level (CRL) criteria is 70 years (chronic).

The 750 µg/L aluminum criterion in 25 Pa. Code § 93.8c is a CMC (acute) criterion. Therefore, 750 µg/L is imposed as a maximum daily limit. There is no CCC criterion for aluminum necessitating the imposition of a more stringent average monthly limit. Imposing 750 µg/L as both a maximum daily and average monthly limit is protective of water quality uses.

The 1.5 mg/L iron criterion is given as a 30-day average in 25 Pa. Code § 93.7(a). Therefore, 1.5 mg/L is imposed as an average monthly limit and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit based on DEP's "Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits" [Doc. No. 362-0400-001, Chapter 3, pp. 15, 16].

The 1 mg/L potable water supply criterion for manganese in 25 Pa. Code § 93.7(a) is a human health criterion (chronic). Per Table 1 of DEP's "Water Quality Toxics Management Strategy", the duration for a THH criterion is 30 days. Therefore, an average monthly effluent limit of 1 mg/L is imposed, and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit consistent with the technical guidance cited above for iron.

The TMDL concentration limits are as follows:

Table 11. TMDL Effluent Limits for Outfall 101

Pollutant	Concentration (mg/L)		
	Average Monthly	Daily Maximum	Instant Maximum
Aluminum, Total	0.75	0.75	0.75
Iron, Total	1.5	3.0	3.75
Manganese, Total	1.0	2.0	2.5

Toxics Management Spreadsheet Water Quality Modeling Program and Procedures for Evaluating Reasonable Potential

WQBELs are developed pursuant to Section 301(b)(1)(C) of the Clean Water Act and, per 40 CFR § 122.44(d)(1)(i), are imposed to "control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality." The Department of Environmental Protection developed the DEP Toxics Management Spreadsheet (TMS) to facilitate calculations necessary to complete a reasonable potential (RP) analysis and determine WQBELs for discharges of toxic and some nonconventional pollutants.

The TMS is a single discharge, mass-balance water quality modeling program for Microsoft Excel® that considers mixing, first-order decay, and other factors to determine WQBELs for toxic and nonconventional pollutants. Required input data including stream code, river mile index, elevation, drainage area, discharge flow rate, low-flow yield, and the hardness and pH of both the discharge and the receiving stream are entered into the TMS to establish site-specific discharge conditions. Other data such as reach dimensions, partial mix factors, and the background concentrations of pollutants in the stream also may be entered to further characterize the discharge and receiving stream. The pollutants to be analyzed by the model are identified by inputting the maximum concentration reported in the permit application or Discharge Monitoring Reports, or by inputting an Average Monthly Effluent Concentration (AMEC) calculated using DEP's TOXCONC spreadsheet for datasets of 10 or more effluent samples. Pollutants with no entered concentration data and pollutants for which numeric water quality criteria in 25 Pa. Code Chapter 93 have not been promulgated are excluded from the modeling. Ammonia-nitrogen, CBOD-5, and dissolved oxygen are analyzed separately using DEP's WQM 7.0 model.

The TMS evaluates each pollutant by computing a wasteload allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following RP thresholds:

- Establish limits in the permit where the maximum reported effluent concentration or calculated AMEC equals or exceeds 50% of the WQBEL. Use the average monthly, maximum daily, and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS (or, if appropriate, use a multiplier of 2 times the average monthly limit for the maximum daily limit and 2.5 times the average monthly limit for IMAX).
- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated AMEC is between 10% - 50% of the WQBEL.

In most cases, pollutants with effluent concentrations that are not detectable at the level of DEP's Target Quantitation Limits are eliminated as candidates for WQBELs and water quality-based monitoring.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Table 12. TMS Inputs for 101

Parameter	**Value**
River Mile Index	3.83
Discharge Flow (MGD)	0.047556
Discharge Hardness (mg/L)	183
Discharge pH (s.u.)	8.7
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	453
Q_{7-10} (cfs)	36.5
Low-flow yield (cfs/mi^2)	0.081
Elevation (ft)	1,170
Slope	0.003

Discharges from Outfall 101 are evaluated based on the maximum concentrations reported in the permit application. The TMS model is run for Outfall 101 with the modeled discharge and receiving stream characteristics shown in Table 12. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

The modeled discharge flow is the average flow during production as reported on the NPDES permit application. The Q_{7-10} flow of the Stonycreek River is estimated using USGS's StreamStats web application. StreamStats estimates flow statistics for ungaged sites using streamflow data from gaged sites and regression equations that account for the characteristics of the delineated drainage basin at the ungaged site. The slope is estimated using a topographic map. Hardness is the average hardness reported on the permit application and pH is the minimum long-term average pH reported on the permit application.

Output from the TMS model run is included in **Attachment B**. As explained previously, the TMS compares the input discharge concentrations to the calculated WQBELs using DEP's Reasonable Potential thresholds to evaluate the need to impose WQBELs or monitoring requirements in the permit. Based on the results of the TMS modeling, the permit requirements listed in Table 13 apply at Outfall 101.

Table 13. Water Quality-Based Requirements for Outfall 101

Parameter	Most Stringent WQBELs (WQBEL Basis)	WQBEL Evaluation Parameter		Permit Requirement
		Maximum Discharge Concentration (µg/L)	RP%	
Copper, Total	Avg. Mo.: 901 µg/L Max Daily: 1,405 µg/L (Acute Fish Criterion)	117	117 ÷ 901 = 12.98%	**Report** (10% < RP% < 50%)

DEP notes that the less stringent WQBELs (versus previous copper WQBELs) were calculated primarily due to a decreased process wastewater flow rate (0.047556 MGD for this renewal versus 0.118915 MGD used in the 2017 permit).

Outfall 101 was previously subject to WQBELs for copper. Those WQBELs will be removed pursuant to the exceptions to anti-backsliding given in sections 402(o) and 303(d)(4)(b) of the Clean Water Act. Outfall 101's existing copper WQBELs (420 µg/L average monthly and 840 µg/L maximum daily) were established pursuant to section 301(b)(1)(C) of the Clean Water Act because the WQBELs were based on state water quality standards. Chapter 7 of the NPDES Permit Writers' Manual provides a detailed discussion of how the anti-backsliding provisions are to be applied. The Permit Writers' Manual explains that for state WQBELs, relaxation of limits is allowed in either case of a section 402(o)(2) exception being satisfied or if water quality provisions of section 303(d)(4) are satisfied—satisfying either provision allows for backsliding.

Section 303(d)(4) is divided between: (A) waters where the applicable water quality standard has not been attained, and (B) waters where the "quality of such waters equals or exceeds levels necessary to protect the designated use for such waters or otherwise required by applicable water quality standards." Section 303(d)(4)(A) is the relevant requirement because the receiving stream—the Stonycreek River—is currently not attaining its designated uses. Section 303(d)(4)(B) states:

> For waters identified under paragraph (1)(A) where the applicable water quality standard has not yet been attained, any effluent limitation based on a total maximum daily load or other waste load allocation established under this section may be revised only if (i) the cumulative effect of all such revised effluent limitations based on such total maximum daily load or waste load allocation will assure the attainment of such water quality standard, or (ii) the designated use which is not being attained is removed in accordance with regulations established under this section."

Removing the copper WQBELs and re-imposing the slightly less stringent copper TBELs will not contribute to the Stonycreek River's nonattainment status because copper is not understood to be the cause of the river's impairment. Furthermore, the concentration TBELs for copper in Outfall 101's discharges are more stringent than the most stringent copper WQBELs calculated for Outfall 101's discharges, so the TBELs will control copper at a lower level than what is required to prevent adverse impacts in the Stonycreek River.

The water quality-based reporting requirement for boron from the previous permit will be removed from Outfall 101 based on the boron concentrations reported by NAHHA on the NPDES permit application and DEP's reasonable potential analysis conducted for this permit renewal that shows boron is not a pollutant of concern.

Total Residual Chlorine

To determine if WQBELs are required for discharges containing 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 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 TRC_CALC program include flow rates and chlorine demands for the receiving stream and the discharge (default chlorine demands of 0.3 and 0.0, respectively), 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 waste load allocations 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 those average monthly TRC limits is recommended by the spreadsheet.

The stream flow and discharge flow entered in the TRC_CALC spreadsheet are 36.5 cfs and 0.047556 MGD, respectively. A PMF of 0.247 is input for the acute criteria based on the TMS analysis of Outfall 001 and a PMF of 1.0 is input for the chronic criteria. The results of the analysis included in **Attachment D** indicate that no TRC WQBELs are required.

NAHHA does not use chlorine-based additives at the facility. Since the 0.5 mg/L limit from 25 Pa. Code § 92a.48(b)(2) applies to facilities using chlorination and WQBELs for TRC do not apply, no TRC limits are imposed at Outfall 101.

101.C. Effluent Limitations and Monitoring Requirements for Outfall 101

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 25 Pa. Code § 92a.44 and 40 CFR § 122.44(l), effluent limits at Outfall 101 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements, and effluent limits and monitoring requirements at Outfall 101 maintained from the previous permit. Water quality-based reporting for total copper is superseded by technology-based limits for total copper.

In addition to the average monthly and maximum daily concentration limits, instantaneous maximum concentration limits also are included in the permit. Instantaneous maximum limits are for compliance monitoring use by DEP personnel and do not need to be reported on monthly DMRs unless grab samples are taken in place of 24-hour composite samples. The magnitudes of the instantaneous maximum limits are calculated by multiplying the average monthly limits by 2.5 in accordance with the multipliers listed in Chapter 2, Section C of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations." Outfall 101 limits and monitoring requirements are summarized in the table below.

Table 14. Effluent Limits and Monitoring Requirements for Outfall 101

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(d)(1)
Total Suspended Solids	10.0	21.0	12.0	15.0	24.0	40 CFR § 471.101(a)
Oil and Grease	6.0	10.0	10.0	10.0	20.0	40 CFR § 471.101(a)
Ammonia-Nitrogen	2.4	5.4	—	—	—	25 Pa. Code § 92a.48 & 40 CFR § 125.3 (BPJ)
Aluminum, Total	Report	Report	0.75	0.75	0.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Chromium, Total	0.03	0.07	0.06	0.14	0.15	40 CFR § 471.32(p)
Copper, Total	0.46	0.90	0.54	1.00	1.35	40 CFR § 471.102(a)
Cyanide, Total	0.06	0.13	0.07	0.16	0.18	40 CFR § 471.102(a)
Fluoride, Total	4.2	10.0	5.10	11.5	12.8	40 CFR § 471.32(p)
Iron, Total	0.28	0.55	0.31	0.61	0.78	25 Pa. Code § 92a.48 & 40 CFR § 125.3 (BPJ)
Lead, Total	0.09	0.19	0.11	0.23	0.28	40 CFR § 471.102(a)
Manganese, Total	Report	Report	1.0	2.0	2.5	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Nickel, Total	0.06	0.09	0.07	0.11	0.18	40 CFR § 471.32(p)
pH	within the range of 6.0 to 9.0					25 Pa. Code § 92a.48(a)(2) & 95.2(1)

Flow monitoring is required in accordance with 25 Pa. Code § 92a.61(d)(1). Flow monitoring is also necessary to calculate effluent mass loadings.

Monitoring frequencies and sample types are imposed in accordance with Chapter 6, Table 6-4 of DEP's "Technical Guidance for the Development and Specification of Effluent Limitations" ("Permit Writer's Manual"), DEP's "Standard Operating Procedure (SOP) for Clean Water Program New and Reissuance Industrial Waste and Industrial Stormwater Individual NPDES Permit Applications" ("IW NPDES SOP"), and the previous permit.

The IW NPDES SOP states that "for existing facilities in which there are effluent violations in the past two years, and existing monitoring frequencies are less stringent than Table 6-4, the monitoring frequencies for parameters with violations should be increased to match those in Table 6-4." Table 6-4 of the Permit Writer's Manual requires metered monitoring for flow, daily grab sampling for oil and grease and pH, and weekly 24-hour composite sampling for all other pollutants. The existing monitoring frequencies for flow, total suspended solids, and pH are equivalent to those required by Table 6-4, but all other monitoring frequencies are less stringent with weekly monitoring for oil and grease and twice per month monitoring for all other pollutants at Outfall 101.

Since process wastewaters were directed to the Johnstown STP in 2007, no effluent data are available from which to evaluate compliance with the existing permit limits. Therefore, the existing monitoring frequencies will be maintained.

Development of Effluent Limitations

Outfall No.	001	**Design Flow (MGD)**	0.0528 (avg.); 0.1957 (max)
Latitude	40° 17' 41.05"	**Longitude**	-78° 55' 8.76"
Wastewater Description:	Non-contact cooling water from process equipment including Alloy power supply trim coolers and annealing furnaces and milling equipment in the electrolytic iron department; and storm water runoff from a paved parking and roadway area on the west side of the facility and the roofs of the back warehouses, raw material storage building, and electrolytic iron production areas.		

Outfall 001 receives non-contact cooling water that is used to cool process equipment including Alloy power supply trim coolers and annealing furnaces and milling equipment in the electrolytic iron department. Outfall 001 also receives storm water runoff from paved parking and roadway areas on the west side of the facility and roof discharges from the back warehouses, raw material storage building, and electrolytic iron production areas.

001.A. Technology-Based Effluent Limitations (TBELs)

There are no Federal Effluent Limitations Guidelines (ELGs) that apply to Outfall 001's discharges. In the absence of applicable ELGs, TBELs, if warranted, are developed based on Best Professional Judgment (BPJ). Applicable regulatory effluent standards and monitoring requirements also are imposed.

Non-Contact Cooling Water (NCCW)

In accordance with the recommendations given in Chapter 6, Table 6-4 of DEP's Permit Writers' Manual, self-monitoring requirements for NCCW discharges should include the following parameters: flow, pH, and temperature. Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b). Limits for pH (6.0 minimum and 9.0 maximum) will be imposed at Outfall 001 based on 25 Pa. Code § 92a.48(a)(2) and § 95.2(1).

No TBELs are developed to control temperature. When thermal WQBELs do not apply to a heated discharge (refer to Section 001.B below), DEP's "Implementation Guidance for Temperature Criteria" recommends the imposition of a maximum temperature limit of 110°F for public safety purposes. However, as a result of a prior permit appeal, the 110°F limit that was previously imposed at Outfall 001 was removed. Pursuant to that decision, the 110°F temperature limit will not be imposed at Outfall 001.

Storm Water

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in DEP's PAG-03 NPDES General Permit for Discharges of Stormwater Associated with Industrial Activity will be applied to NAHHA's storm water discharges. Based on NAHHA's SIC Code of 3399, the facility would be classified under Appendix B – Primary Metals Industry Facilities of the PAG-03 General Permit.[5] To ensure that there is consistency across the state for all primary metals industry facilities that discharge storm water associated with their industrial activities, the monitoring requirements of Appendix B of the PAG-03 will be imposed at this outfall. The Appendix B monitoring requirements are shown in Table 15.

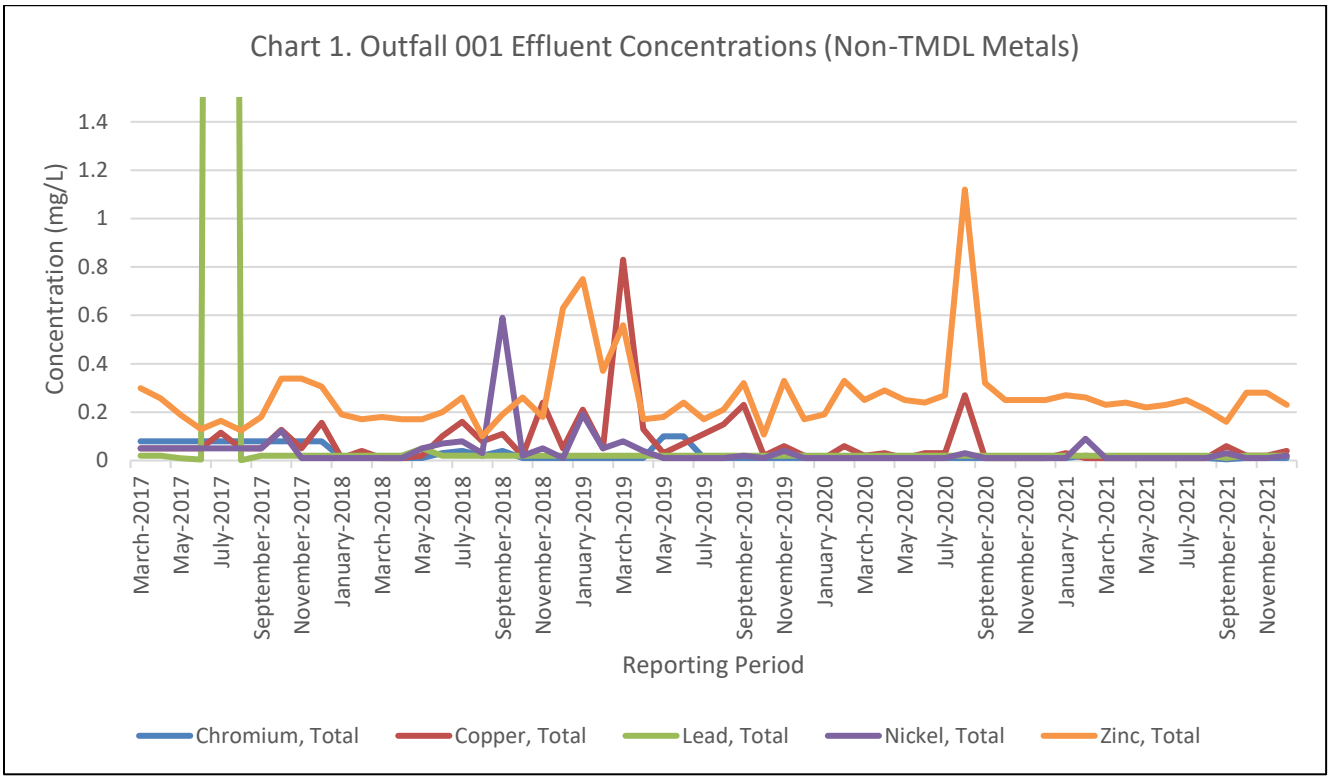
Table 15. PAG-03 Appendix B – Minimum Monitoring Requirements

Discharge Parameter	Units	Sample Type	Appendix B Measurement Frequency
Total Suspended Solids	mg/L	1 Grab	1/6 months
Aluminum, Total	mg/L	1 Grab	1/6 months
Copper, Total	mg/L	1 Grab	1/6 months
Iron, Total	mg/L	1 Grab	1/6 months
Lead, Total	mg/L	1 Grab	1/6 months
Zinc, Total	mg/L	1 Grab	1/6 months

Reporting for total chromium and total nickel also was required in the previous permit because those are pollutants of concern for NAHHA's facility. NAHHA reported metals concentrations at Outfall 001 monthly throughout the previous permit term. Based on that dataset, DEP finds cause of reduce the sampling frequencies. The concentrations of TSS, chromium, lead, nickel, and zinc generally have remained low or not detectable, apart from a few outliers (see Chart 1 below).

[5] The determination of which of the PAG-03 General Permit's appendices applies to a facility is based on a facility's SIC Code.

The semi-annual sampling frequency of PAG-03, Appendix B is intended for just storm water discharges. The current permit requires samples to be collected when storm water is actively discharging through Outfall 001 because NAHHA cannot readily separate storm water from non-contact cooling water at Outfall 001. Since Outfall 001's discharges do not consist solely of storm water, the 1/month sampling frequency specified in NAHHA's current permit for those parameters will be reduced to 2/quarter (i.e., less frequent than monthly and more frequent than semi-annually). Copper is discussed further in Section 001.B.



001.B. Water-Quality Based Effluent Limitations (WQBELs)

Table 16. TMS Inputs for 001

Parameter	Value
River Mile Index	3.80
Discharge Flow (MGD)	0.0528
Discharge Hardness (mg/L)	75.8
Discharge pH (s.u.)	6.9
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	454
Q_{7-10} (cfs)	36.5
Low-flow yield (cfs/mi^2)	0.081
Elevation (ft)	1,181
Slope	0.003

Discharges from Outfall 001 are evaluated based on the maximum concentrations reported on the permit application or the average monthly effluent concentrations and calculated daily coefficients of variation using DEP's TONCONC spreadsheet for datasets consisting of long-term DMR data. The TMS model is run for Outfall 001 with the modeled discharge and receiving stream characteristics shown in Table 16. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

The modeled discharge flow is the average flow during production as reported on the NPDES permit application. The Q_{7-10} flow of the Stonycreek River is estimated using USGS's StreamStats web application. StreamStats estimates flow statistics for ungaged sites using streamflow data from gaged sites and regression equations that account for the characteristics of the delineated drainage basin at the ungaged site. The slope is estimated using a topographic map. Hardness is the average hardness reported on the permit application and pH is the median of the minimum pH results reported on Outfall 001's DMRs.

Output from the TMS model run is included in **Attachment B**. As explained previously, the TMS compares the input discharge concentrations to the calculated WQBELs using DEP's Reasonable Potential thresholds to evaluate the need to impose WQBELs or monitoring requirements in the permit. Based on the results of the TMS modeling, the permit requirements listed in Table 17 apply at Outfall 001.

Table 17. Water Quality-Based Requirements for Outfall 001

Parameter	Most Stringent WQBELs [WQBEL Basis]	WQBEL Evaluation Parameter		Permit Requirement
		Average Monthly Effluent Concentration (µg/L) and Daily CV	RP%	
Copper, Total	Avg. Mo.: 2,212 µg/L Max Daily: 3,893 µg/L [Acute Fish Criterion]	292.595 † 1.9205 †	292.595 ÷ 2,212 = 13.22%	**Report** (10% < RP% < 50%)

† Calculated using DMR data and DEP's TOXCONC Spreadsheet

Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

DEP previously evaluated the need for thermal WQBELs on discharges from Outfall 001 using a DEP program called the "Thermal Discharge Limit Calculation Spreadsheet". The program calculates temperature WLAs through the application of a heat transfer equation, which takes two forms in the program depending on the source of the facility's cooling water. In Case 1, intake water to a facility is from the receiving stream. In Case 2, intake water is from a source other than the receiving stream (e.g., a municipal water supply). The determination of which case applies to a given discharge is determined by the input data which include the receiving stream flow rate (Q_{7-10} or the minimum regulated flow for large rivers), the stream intake flow rate, external source intake flow rates, consumptive flow rates and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures.

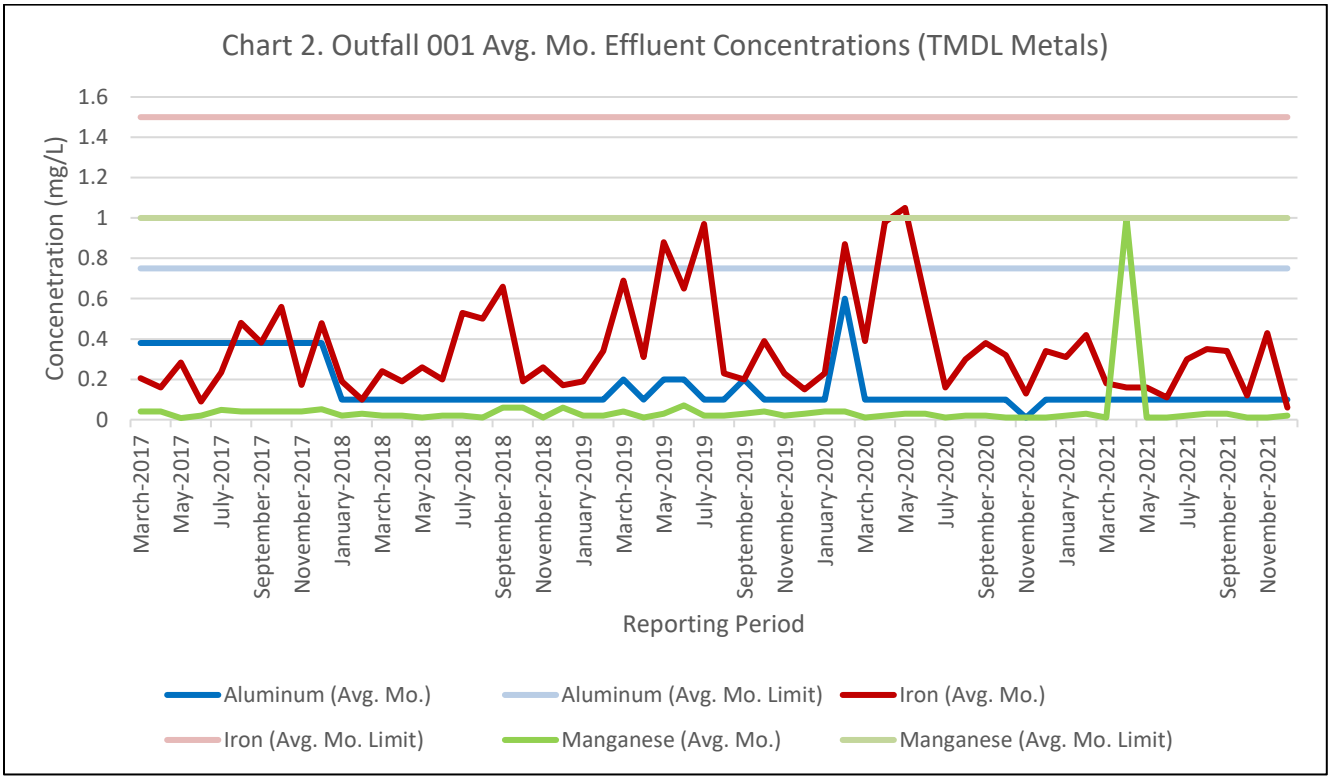
Since the temperature criteria from 25 Pa. Code Chapter 93.7(a) are expressed on monthly and semi-monthly bases for three different aquatic life uses—cold water fishes, warm water fishes, and trout stocking—the program generates monthly and semi-monthly limits for each use. DEP selects the output that corresponds to the aquatic life use of the receiving stream and consequently which limits apply to the discharge. Temperature WLAs are bounded by an upper limit of 110°F (as discussed in Section 001.A) for the safety of sampling personnel and anyone who may come into contact with the heated discharge where it enters the receiving water. If no WLAs below 110°F are calculated, an instantaneous maximum limit of 110°F is recommended by the program.

DEP's previous evaluation determined that no thermal WQBELs were needed for Outfall 001's non-contact cooling water. To confirm that result for Outfall 001's discharges and for NAHHA's other non-contact cooling water discharges from Outfalls 002 and 003, the Thermal Discharge Limit Calculation Spreadsheet is run for this renewal using the combined design discharge flow rates for Outfalls 001, 002, and 003. This effectively treats all three non-contact cooling water discharges as a single discharge at the maximum possible combined flow rate. The combined flow rate is: 0.25 MGD + 0.13 MGD + 0.08 MGD = 0.46 MGD. The combined discharge is classified as Case 2 because NAHHA's water is obtained from the local municipal supply. DEP's "Implementation Guidance for Temperature Criteria" directs permit writers to assume instantaneous complete mixing of the discharge with the receiving stream when calculating thermal effluent limits unless adverse factors exist. DEP is not aware of any adverse factors, so the full Q_{7-10} flow of the Stonycreek River is used for modeling.

No thermal WQBELs are calculated at a discharge flow rate of 0.46 MGD. Since the theoretical combined discharge of all three outfalls is not subject to thermal WQBELs, each outfall making up the combined discharge is not subject to thermal WQBELs. As explained previously, the 110°F temperature limit will not be imposed at Outfall 001 in the absence of water quality-based temperature limits.

Kiskiminetas-Conemaugh River Watershed Total Maximum Daily Loads

As described in Section 101.B of this Fact Sheet, NAHHA's continuous discharges will be subject to concentration WQBELs for the TMDL's pollutants of concern (see Table 11). Similar to other parameters at Outfall 001, TMDL metals are generally present in low concentrations as depicted in Chart 2 below.



The monitoring frequencies for aluminum, iron, and manganese will be reduced to 2/quarter as a performance-based reduction of those pollutants' monitoring frequencies given NAHHA's demonstrated compliance with TMDL WQBELs at Outfall 001.

Total Residual Chlorine

The TRC_CALC spreadsheet is used to determine if WQBELs for TRC are needed for Outfall 001's discharges. The stream flow and discharge flow entered in the TRC_CALC spreadsheet are 36.5 cfs and 0.0528 MGD, respectively. A PMF of 0.246 is input for the acute criteria based on the TMS analysis of Outfall 001 and a PMF of 1.0 is input for the chronic criteria. The results of the analysis included in **Attachment D** indicate that no TRC WQBELs are required.

NAHHA does not use chlorine-based additives at the facility. Since the 0.5 mg/L limit from 25 Pa. Code § 92a.48(b)(2) applies to facilities using chlorination and WQBELs for TRC do not apply, no TRC limits are imposed at Outfall 001.

001.C. Effluent Limitations and Monitoring Requirements for Outfall 001

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 25 Pa. Code § 92a.44 and 40 CFR § 122.44(l), effluent limits at Outfall 001 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal and effluent limits and monitoring requirements at Outfall 001 maintained from the previous permit.

Table 18. Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Quarterly	Maximum Daily	Average Quarterly	Maximum Daily	Instant Maximum	
Flow (MGD)	Report (Avg. Mo)	Report	—	—	—	25 Pa. Code § 92a.61(b)
Total Suspended Solids	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
Aluminum, Total	Report	Report	0.75	0.75	0.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Chromium, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(h)

Table 18 (continued). Effluent Limits and Monitoring Requirements for Outfall 001

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Quarterly	Maximum Daily	Average Quarterly	Maximum Daily	Instant Maximum	
Copper, Total	—	—	Report (Avg. Mo)	Report	—	PAG-03, App. B; § 92a.61(b)
Iron, Total	Report	Report	1.5	3.0	3.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Lead, Total	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
Manganese, Total	Report	Report	1.0	2.0	2.5	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Nickel, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(h)
Zinc, Total	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
pH (s.u.)	within the range of 6.0 to 9.0					25 Pa. Code § 95.2(1)

Flow must be measured daily, and pH weekly based, in part, on Table 6-4 of DEP's Permit Writer's Manual. Copper must be sampled 2/month using grab samples. All other parameters except flow and pH must be sampled 2/quarter using grab samples. NAHHA will be required to sample Outfall 001's discharges for TSS, chromium, lead, nickel, and zinc while storm water is being discharged because storm water is the likely source of those metals per Appendix B of the PAG-03.

Development of Effluent Limitations

Outfall No.	002	**Design Flow (MGD)**	0.1187
Latitude	40° 17' 39.07"	**Longitude**	-78° 55' 8.37"
Wastewater Description:	Non-contact cooling water from the Glidcop department process equipment including power supply trim coolers, dryer unit, ball mill, and two annealing furnaces; and storm water runoff from Glidcop production facility roof drains, the electrolytic iron production area and paved and unpaved areas adjacent to the south ends of Buildings #1 and #2.		

Outfall 002 receives non-contact cooling water from the Glidcop department process equipment including power supply trim coolers, dryer unit, ball mill, and two annealing furnaces. Outfall 002 also receives storm water runoff from the roof discharges above the Glidcop production facility, electrolytic iron production area and paved and unpaved areas that are adjacent to the south ends of Buildings #1 and #2.

002.A. Technology-Based Effluent Limitations (TBELs)

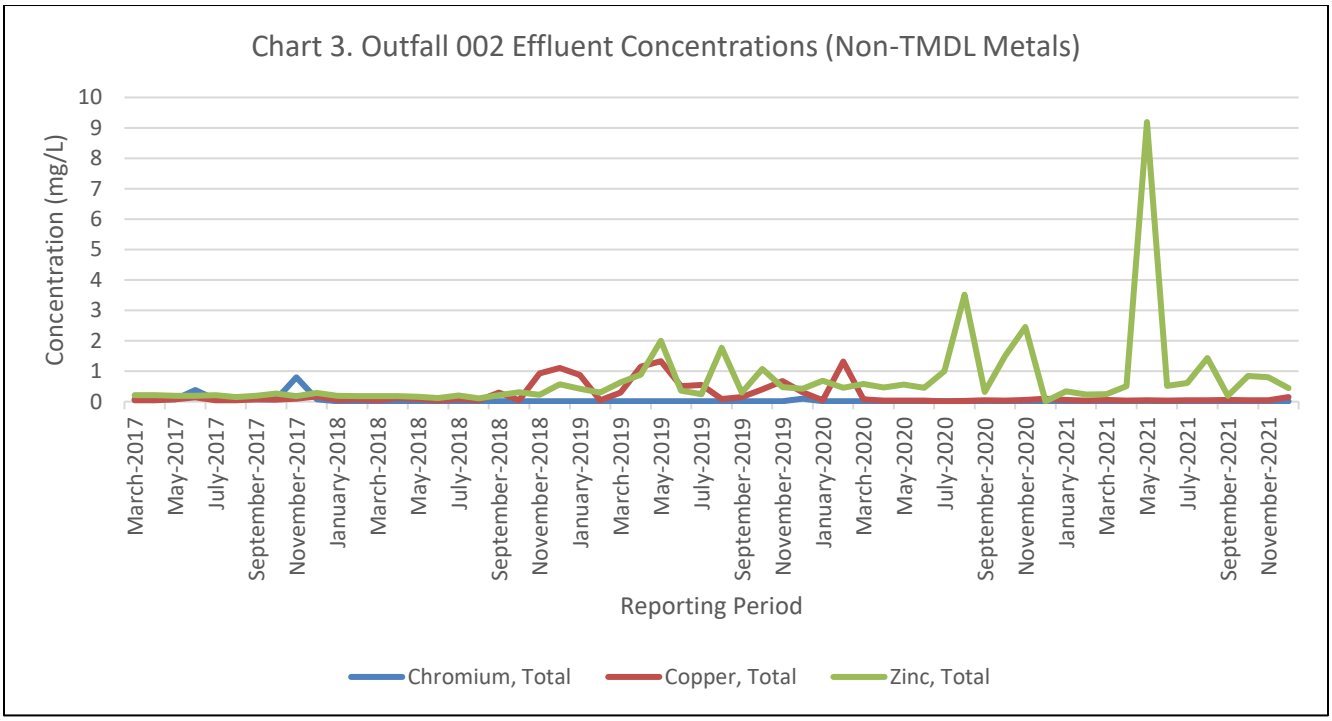
There are no Federal Effluent Limitations Guidelines (ELGs) applicable to Outfall 002's discharges. In the absence of applicable ELGs, TBELs, if warranted, are developed based on Best Professional Judgment (BPJ). Applicable regulatory effluent standards and monitoring requirements also are imposed.

Non-Contact Cooling Water (NCCW)

In accordance with the recommendations given in Chapter 6, Table 6-4 of DEP's Permit Writers' Manual, self-monitoring requirements for NCCW discharges should include the following parameters: flow, pH, and temperature. Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b). Limits for pH (6.0 minimum and 9.0 maximum) will be imposed at Outfall 002 based on 25 Pa. Code § 92a.48(a)(2) and § 95.2(1). As a result of a prior permit appeal, DEP's 110°F temperature effluent standard is not imposed at this outfall.

Storm Water

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in the PAG-03 (see Table 15) will be applied to Outfall 002's discharges excluding lead, which was not detected at Outfall 002. Outfall 002 also is subject to total chromium reporting, which will be maintained. The concentrations of TSS, chromium, copper, and zinc generally have remained low or not detectable apart from a few outliers (see Chart 3). Based on the results, the monitoring frequencies for TSS, chromium, copper, and zinc will be reduced to 2/quarter.



002.B. Water-Quality Based Effluent Limitations (WQBELs)

Table 19. TMS Inputs for 002

Parameter	Value
River Mile Index	3.82
Discharge Flow (MGD)	0.0291
Discharge Hardness (mg/L)	32.17
Discharge pH (s.u.)	6.63
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	454
Q_{7-10} (cfs)	36.5
Low-flow yield (cfs/mi^2)	0.081
Elevation (ft)	1,181
Slope	0.003

Discharges from Outfall 002 are evaluated based on the maximum concentrations reported on the permit application or the average monthly effluent concentrations and daily coefficients of variation calculated using DEP's TONCONC spreadsheet for datasets consisting of long-term DMR data. The TMS model is run for Outfall 002 with the modeled discharge and receiving stream characteristics shown in Table 19. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

The modeled discharge flow is the average flow during production as reported on the NPDES permit application. The Q_{7-10} flow of the Stonycreek River is estimated using USGS's StreamStats web application. The slope is estimated using a topographic map. Hardness is the average hardness reported on the permit application and pH is the median of the minimum pH reported on Outfall 002's DMRs.

Output from the TMS model run is included in **Attachment B**. Based on the results of the TMS modeling, the permit requirements listed in Table 20 apply at Outfall 002.

Table 20. Water Quality-Based Requirements for Outfall 002

Parameter	Most Stringent WQBELs [WQBEL Basis]	WQBEL Evaluation Parameter		Permit Requirement
		Average Monthly Effluent Concentration (µg/L) & Daily CV	RP%	
Copper, Total	Avg. Mo.: 4,012 µg/L Max Daily: 7,049 µg/L [Acute Fish Criterion]	880.6755 † 1.9348 †	880.6755 ÷ 4,012 = 21.95%	**Report** (10% < RP% < 50%)
Zinc, Total	Avg. Mo.: 28,286 µg/L Max Daily: 51,728 µg/L [Acute Fish Criterion]	2940.0 † 1.5221 †	2940.0 ÷ 28,286 = 10.4%	**Report** (10% < RP% < 50%)

† Calculated using DMR data and DEP's TOXCONC Spreadsheet

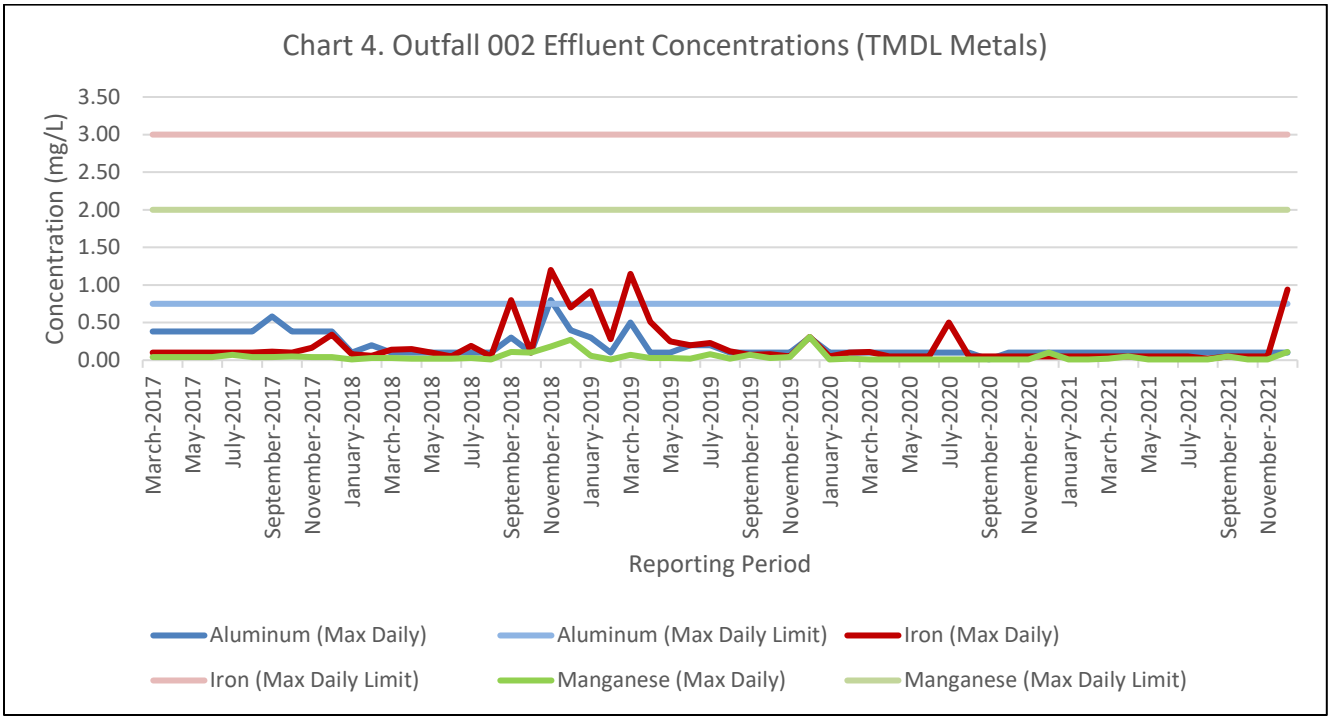
Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

Based on the combined discharge modeling discussed in Section 001.B of this Fact Sheet, no thermal WQBELs apply at Outfall 002. Also, as explained previously, the 110°F temperature limit will not be imposed at Outfall 002 in the absence of water quality-based temperature limits.

Kiskiminetas-Conemaugh River Watershed Total Maximum Daily Loads

As described in Section 101.B of this Fact Sheet, NAHHA's continuous discharges will be subject to concentration WQBELs for the TMDL's pollutants of concern (see Table 11). Similar to other parameters at Outfall 002, TMDL metals are generally present in low concentrations as depicted in Chart 4.

The monitoring frequencies for aluminum, iron, and manganese will be reduced to 2/quarter as a performance-based reduction of those pollutants' monitoring frequencies given NAHHA's demonstrated compliance with TMDL WQBELs at Outfall 002.



Total Residual Chlorine

The TRC_CALC spreadsheet is used to determine if WQBELs for TRC are needed for Outfall 002's discharges. The stream flow and discharge flow entered in the TRC_CALC spreadsheet are 36.5 cfs and 0.0291 MGD, respectively. A PMF of 0.246 is input for the acute criteria based on the TMS analysis of Outfall 002 and a PMF of 1.0 is input for the chronic criteria. The results of the analysis included in **Attachment D** indicate that no TRC WQBELs are required.

NAHHA does not use chlorine-based additives at the facility. Since the 0.5 mg/L limit from 25 Pa. Code § 92a.48(b)(2) applies to facilities using chlorination and WQBELs for TRC do not apply, no TRC limits are imposed at Outfall 002.

002.C. Effluent Limitations and Monitoring Requirements for Outfall 002

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 25 Pa. Code § 92a.44 and 40 CFR § 122.44(l), effluent limits at Outfall 002 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal and effluent limits and monitoring requirements at Outfall 002 maintained from the previous permit.

Table 21. Effluent Limits and Monitoring Requirements for Outfall 002

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Quarterly	Maximum Daily	Average Quarterly	Maximum Daily	Instant Maximum	
Flow (MGD)	Report (Avg. Mo)	Report	—	—	—	25 Pa. Code § 92a.61(b)
Total Suspended Solids	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
Aluminum, Total	Report	Report	0.75	0.75	0.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Chromium, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(h)
Copper, Total	—	—	Report (Avg. Mo)	Report	—	PAG-03, App. B; § 92a.61(b)
Iron, Total	Report	Report	1.5	3.0	3.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Manganese, Total	Report	Report	1.0	2.0	2.5	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Zinc, Total	—	—	Report (Avg. Mo)	Report	—	PAG-03, App. B; § 92a.61(b)
pH (s.u.)	within the range of 6.0 to 9.0					25 Pa. Code § 95.2(1)

Flow must be measured daily, and pH weekly based, in part, on Table 6-4 of DEP's Permit Writer's Manual. Copper and zinc must be sampled 2/month using grab samples. All other parameters except flow and pH must be sampled 2/quarter using grab samples. NAHHA will be required to sample Outfall 002's discharges for TSS, chromium, copper, and zinc while storm water is being discharged because storm water is the likely source of those metals per Appendix B of the PAG-03.

Development of Effluent Limitations

Outfall No.	003	**Design Flow (MGD)**	0.0122 (avg.); 0.0194 (max)
Latitude	40° 17' 41.03"	**Longitude**	-78° 55' 0.00"
Wastewater Description:	Non-contact cooling water from the Alloy department process equipment including power supply trim cooler, two annealing furnaces, and a vacuum unit cooling system; and storm water runoff from Building #3 roof drainage and paved an unpaved areas adjacent to Building #3, roof drainage from Building #5 (Finished Good Storage) and paved areas near the facility shipping/receiving docks.		

Outfall 003 receives non-contact cooling water from the Alloy department including power supply trim cooling water, two annealing furnaces, and a vacuum unit cooling system. Outfall 003 also receives storm water runoff from Building 3 roof drainage and paved and unpaved areas located adjacent to Building #3, rooftop drainage from Building #5 (Finished Goods Storage) and paved areas near the facility shipping/receiving docks.

003.A. Technology-Based Effluent Limitations (TBELs)

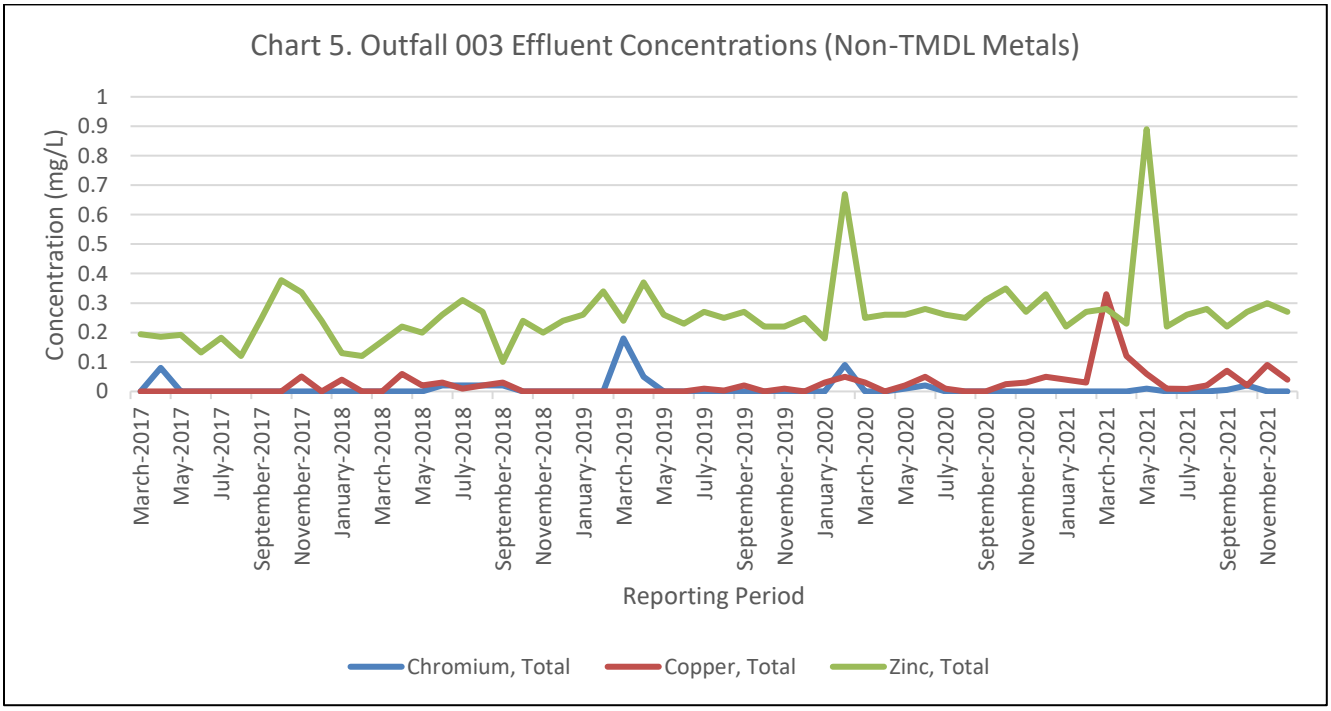
There are no Federal Effluent Limitations Guidelines (ELGs) applicable to Outfall 003's discharges. In the absence of applicable ELGs, TBELs, if warranted, are developed based on Best Professional Judgment (BPJ). Applicable regulatory effluent standards and monitoring requirements also are imposed.

Non-Contact Cooling Water (NCCW)

In accordance with the recommendations given in Chapter 6, Table 6-4 of DEP's Permit Writers' Manual, self-monitoring requirements for NCCW discharges should include the following parameters: flow, pH, and temperature. Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b). Limits for pH (6.0 minimum and 9.0 maximum) will be imposed at Outfall 002 based on 25 Pa. Code § 92a.48(a)(2) and § 95.2(1). No TBELs are developed to control temperature. As a result of a prior permit appeal, the 110°F limit that was previously imposed at Outfall 003 was removed and will not be imposed at Outfall 003.

Storm Water

Consistent with 25 Pa. Code § 92a.61(h) and DEP's policy for permitting storm water discharges associated with industrial activities, minimum standards described in the PAG-03 (see Table 15) will be applied to Outfall 003's discharges, excluding lead, which was not detected at Outfall 003. Outfall 002 also is subject to total chromium reporting, which will be maintained. The concentrations of TSS, chromium, copper, and zinc generally have remained low or not detectable apart from a few outliers (see Chart 5). Based on the results, the monitoring frequencies for TSS, chromium, copper, and zinc will be reduced to 2/quarter.



003.B. Water-Quality Based Effluent Limitations (WQBELs)

Table 22. TMS Inputs for 003

Parameter	Value
River Mile Index	3.84
Discharge Flow (MGD)	0.0122
Discharge Hardness (mg/L)	31.2
Discharge pH (s.u.)	6.14
Basin/Stream Characteristics	
Parameter	**Value**
Drainage Area (sq. mi.)	454
Q_{7-10} (cfs)	36.5
Low-flow yield (cfs/mi^2)	0.081
Elevation (ft)	1,181
Slope	0.003

Discharges from Outfall 003 are evaluated based on the maximum concentrations reported on the permit application or the average monthly effluent concentrations and daily coefficients of variation calculated using DEP's TONCONC spreadsheet for datasets consisting of long-term DMR data. The TMS model is run for Outfall 003 with the modeled discharge and receiving stream characteristics shown in Table 22. Pollutants for which specific water quality criteria have not been promulgated (e.g., TSS, oil and grease, etc.) are excluded from the modeling.

The modeled discharge flow is the average flow during production as reported on the NPDES permit application. The Q_{7-10} flow of the Stonycreek River is estimated using USGS's StreamStats web application. The slope is estimated using a topographic map. Hardness is the average hardness reported on the permit application and pH is the median of the minimum pH reported on Outfall 003's DMRs.

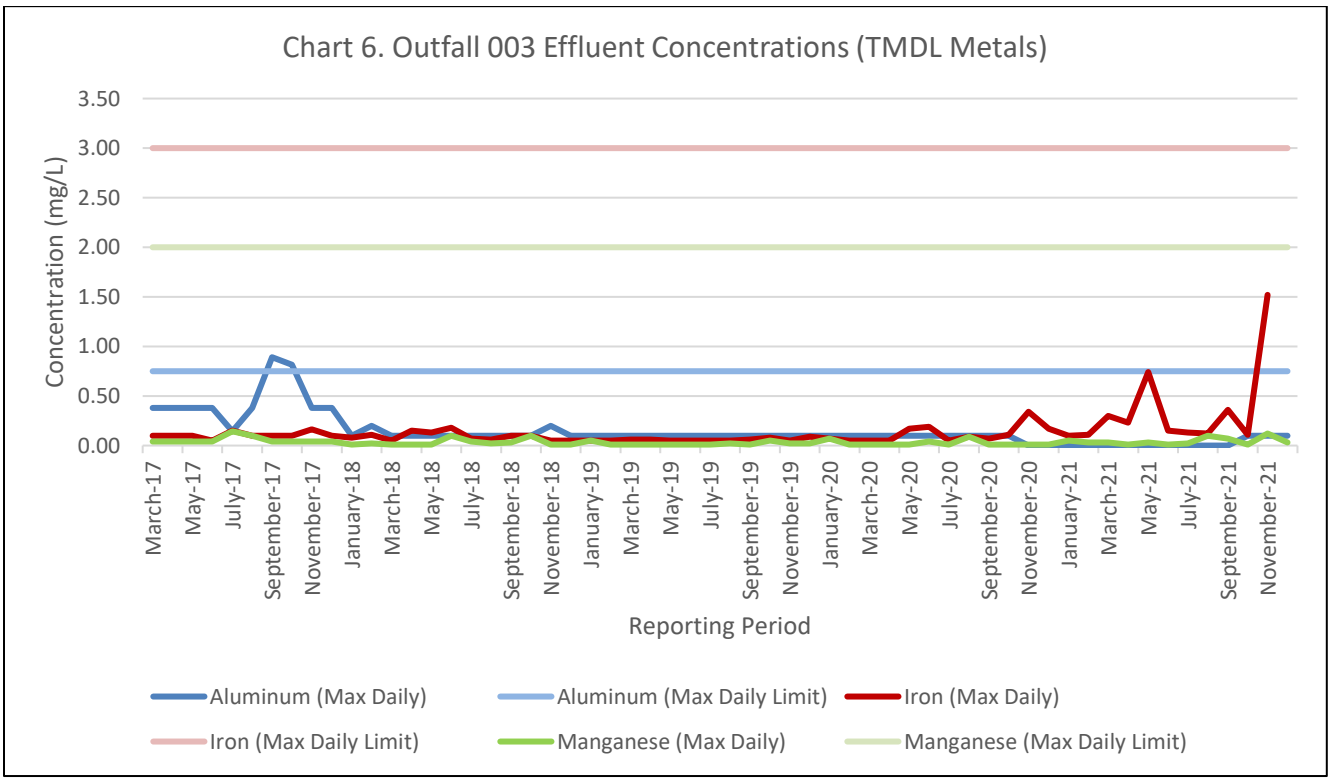
Output from the TMS model run is included in **Attachment B**. Based on the results of the TMS modeling, no WQBELs or water quality-based reporting requirements will be imposed at Outfall 003. WQBELs for copper previously imposed at Outfall 003 are removed pursuant to anti-backsliding exception of Section 303(d)(4)(B) of the Clean Water Act.

Thermal WQBELs for Heated Discharges (Non-Contact Cooling Water)

Based on the combined discharge modeling discussed in Section 001.B of this Fact Sheet, no thermal WQBELs apply at Outfall 003. Also, as explained previously, the 110°F temperature limit will not be imposed at Outfall 003 in the absence of water quality-based temperature limits.

Kiskiminetas-Conemaugh River Watershed Total Maximum Daily Loads

As described in Section 101.B of this Fact Sheet, NAHHA's continuous discharges will be subject to concentration WQBELs for the TMDL's pollutants of concern (see Table 11). Similar to other parameters at Outfall 003, TMDL metals are generally present in low concentrations as depicted in Chart 6.



The monitoring frequencies for aluminum, iron, and manganese will be reduced to 2/quarter as a performance-based reduction of those pollutants' monitoring frequencies given NAHHA's demonstrated compliance with TMDL WQBELs at Outfall 003.

Total Residual Chlorine

The TRC_CALC spreadsheet is used to determine if WQBELs for TRC are needed for Outfall 003's discharges. The stream flow and discharge flow entered in the TRC_CALC spreadsheet are 36.5 cfs and 0.0122 MGD, respectively. A PMF of 0.246 is input for the acute criteria based on the TMS analysis of Outfall 003 and a PMF of 1.0 is input for the chronic criteria. The results of the analysis included in **Attachment D** indicate that no TRC WQBELs are required.

NAHHA does not use chlorine-based additives at the facility. Since the 0.5 mg/L limit from 25 Pa. Code § 92a.48(b)(2) applies to facilities using chlorination and WQBELs for TRC do not apply, no TRC limits are imposed at Outfall 003.

003.C. Effluent Limitations and Monitoring Requirements for Outfall 003

In accordance with 25 Pa. Code §§ 92a.12 and 92a.61 and anti-backsliding requirements under 25 Pa. Code § 92a.44 and 40 CFR § 122.44(l), effluent limits at Outfall 003 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements developed for this permit renewal and effluent limits and monitoring requirements at Outfall 003 maintained from the previous permit.

Table 23. Effluent Limits and Monitoring Requirements for Outfall 003

Parameter	Mass (pounds/day)		Concentration (mg/L)			Basis
	Average Quarterly	Daily Maximum	Average Quarterly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report	Report	—	—	—	25 Pa. Code § 92a.61(b)
Total Suspended Solids	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
Aluminum, Total	Report	Report	0.75	0.75	0.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Chromium, Total	—	—	Report	Report	—	25 Pa. Code § 92a.61(h)
Copper, Total	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
Iron, Total	Report	Report	1.5	3.0	3.75	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Manganese, Total	Report	Report	1.0	2.0	2.5	40 CFR § 122.44(d)(1)(vii)(B); TMDL WQBELs
Zinc, Total	—	—	Report	Report	—	PAG-03, App. B; § 92a.61(h)
pH (s.u.)	within the range of 6.0 to 9.0					25 Pa. Code § 95.2(1)

Flow must be measured daily, and pH weekly based, in part, on Table 6-4 of DEP's Permit Writer's Manual. All parameters except flow and pH must be sampled 2/quarter using grab samples. NAHHA will be required to sample Outfall 003 for TSS, chromium, copper, and zinc while storm water is being discharged because storm water is the likely source of those metals per Appendix B of the PAG-03.

Development of Effluent Limitations

Outfall Nos. 004 – 010 **Design Flow (MGD)** Variable

Wastewater Description: Storm water runoff from raw material storage, roof tops and loading/unloading areas, groundwater and vaporizer condensate

SWO.A. Technology-Based Effluent Limitations (TBELs)

Discharges from Outfalls 004 through 010 consist of storm water associated with industrial activities. There are no Federal Effluent Limitations Guidelines (ELGs) that apply to those discharges. Therefore, the minimum storm water monitoring requirements listed in Table 15 based on Appendix B of DEP's PAG-03 General Permit will be imposed at Outfalls 004 through 010 (excluding lead, which was not detectable in NAHHA's storm water discharges).

To the extent that effluent limits would be necessary to ensure that storm water Best Management Practices (BMPs) are adequately implemented, effluent limits are developed for industrial storm water discharges based on a determination of Best Available Technology (BAT) using Best Professional Judgment (BPJ). BPJ of BAT typically involves the evaluation of end-of-pipe wastewater treatment technologies, but DEP considers the use of BMPs to be BAT for storm water outfalls unless effluent concentrations indicate that BMPs provide inadequate pollution control

NAHHA is currently subject to more stringent requirements at those outfalls including monthly reporting for flow, pH, TSS, aluminum, chromium, copper, iron, manganese, nickel, and zinc; monthly reporting of nitrate-nitrite as N at Outfall 004; and quarterly reporting of nitrate-nitrite as N at Outfalls 005 through 010. The monitored parameter list includes parameters from Appendix B of the PAG-03 plus chromium and nickel, which are pollutants of concern for NAHHA's process wastewaters, and manganese, which is regulated in NAHHA's discharges along with aluminum and iron as pollutants of concern under the Kiski-Conemaugh TMDL. Outfalls 004 through 010 also are subject to total annual load limits for aluminum, iron, and manganese based on the Kiski-Conemaugh TMDL. The TMDL load limits are imposed as aggregate total annual load limits (12-month rolling totals) at Outfall 004 and represent the allowable aggregate loading of aluminum, iron, and manganese to the Stonycreek River from Outfalls 004 through 010.

Table 24 summarizes the long-term average concentrations of the pollutants at Outfalls 004 through 010 based on monthly and quarterly DMR data reported by NAHHA between March 2017 and December 2021. Benchmark values representing effluent goals for industrial storm water also are shown along with the basis for those values. Appendix B of the PAG-03 only identifies one benchmark value of 100 mg/L for TSS. Other benchmark values shown in Table 24 are based on acute water quality criteria since storm water discharges are most likely to exhibit acute, short-term impacts on receiving waters. Highlighted values in the table exceed corresponding benchmark values.

Table 24. Long-Term Average Concentrations at Outfalls 004 through 010

Parameter	Long-Term Average Concentrations (mg/L) [pH in standard units] †							Benchmark Value	Benchmark Basis
	Outfall 004	Outfall 005	Outfall 006	Outfall 007	Outfall 008	Outfall 009	Outfall 010		
Aluminum, Total	0.43	0.165	0.161	0.159	0.160	0.140	0.24	0.75	Acute Fish Criterion
Iron, Total	0.587	0.478	0.282	0.395	0.441	0.383	0.303	1.5	30-day Average Criterion
Manganese, Total	0.187	0.104	0.067	0.052	0.058	0.044	0.064	1.0	Maximum Human Health Criterion
Chromium, Total	0.008	0.004	0.009	0.009	0.012	0.009	0.005	0.470	Acute Fish Criterion for Chromium (III)
Copper, Total	0.047	0.160	0.126	0.129	0.146	0.113	0.102	0.01077 ‡	Acute Fish Criterion at Hardness 79.1 mg/L
Nickel, Total	0.156	0.011	0.008	0.012	0.018	0.014	0.017	0.3839 ‡	Acute Fish Criterion at Hardness 79.1 mg/L
Nitrate-Nitrite as N	0.096	0.765	0.740	0.771	0.723	0.711	0.781	10.0	Maximum Human Health Criterion
pH ††	8.14	7.58	7.165	7	6.815	6.79	6.735	6.0 to 9.0	25 Pa. Code §95.2(1)
TSS	35.9	9.10	6.83	6.47	6.29	5.66	5.95	100	PAG-03, Appendix B
Zinc, Total	0.106	0.151	0.204	0.167	0.129	0.126	0.194	0.096 ‡	Acute Fish Criterion at Hardness 79.1 mg/L

† Long-term averages are calculated based on lognormal and delta-lognormal distributions of DMR results.
†† Median pH values are shown because pH values are logarithmic and arithmetic means would not be appropriate.
‡ Hardness-dependent criteria are calculated based on the 79.1 mg/L stream hardness reported by NAHHA on the permit application.

Most pollutant concentrations are less than benchmark values. Chromium, nickel, nitrate-nitrite as N, and TSS are present in the discharges, but generally at low concentrations. Therefore, the monitoring frequencies for those pollutants will be reduced to 1/6 months consistent with the monitoring frequencies identified in Appendix B of the PAG-03.

Copper and zinc are present in elevated concentrations compared to the benchmark values. Copper concentrations are four to sixteen times greater than the acute water quality criterion for copper in the Stonycreek River calculated using NAHHA's reported Stonycreek River hardness of 79.1 mg/L. Zinc concentrations exceed the criteria-based benchmark value by factors of about two or less. The monthly monitoring frequencies for copper and zinc will be reduced to 1/6 months, but benchmark values will be identified for those pollutants. The benchmark value for copper will be 0.013 mg/L, which is the acute fish criterion for copper from 25 Pa. Code § 93.8c using a hardness value of 100 mg/L. A default hardness of 100 mg/L is used to derive the criterion value used as the benchmark because NAHHA's reported hardness value of 79.1 mg/L for the Stonycreek River was based on one instantaneous result, which may not represent normal ambient background hardness levels in the river. The benchmark value for zinc will be 0.112 mg/L, which is the acute fish criterion for zinc from 25 Pa. Code § 93.8c using a hardness value of 100 mg/L.

The benchmark values are not effluent limitations and exceedances do not constitute permit violations. However, if sampling demonstrates exceedances of benchmark values for two consecutive monitoring periods (i.e., two exceedances per year), NAHHA must submit a corrective action plan within 90 days of the end of the monitoring period triggering the plan. The corrective action plan requirement and the benchmark values will be specified in a condition in Part C of the permit.

TMDL parameters are discussed in the following section.

SWO.B. Water-Quality Based Effluent Limitations (WQBELs)

Generally, DEP does not develop numerical WQBELs for storm water discharges. Pursuant to 25 Pa. Code § 96.4(g), mathematical modeling used to develop WQBELs must be performed at Q_{7-10} low flow conditions. Precipitation-induced discharges generally do not occur at Q_{7-10} design conditions because the precipitation that causes a storm water discharge also will increase the receiving stream's flow and that increased stream flow will provide additional assimilative capacity during a storm event. However, that does not preclude the development of WQBELs for storm water discharges to prevent adverse impacts from intermittent exposures or the imposition of WQBELs based on a TMDL's waste load allocations.

Even though no mathematical modeling is performed, conditions in Part C of the permit will ensure compliance with water quality standards through a combination of best management practices including pollution prevention and exposure minimization, good housekeeping, erosion and sediment control, and spill prevention and response.

Kiskiminetas-Conemaugh River Watershed TMDL

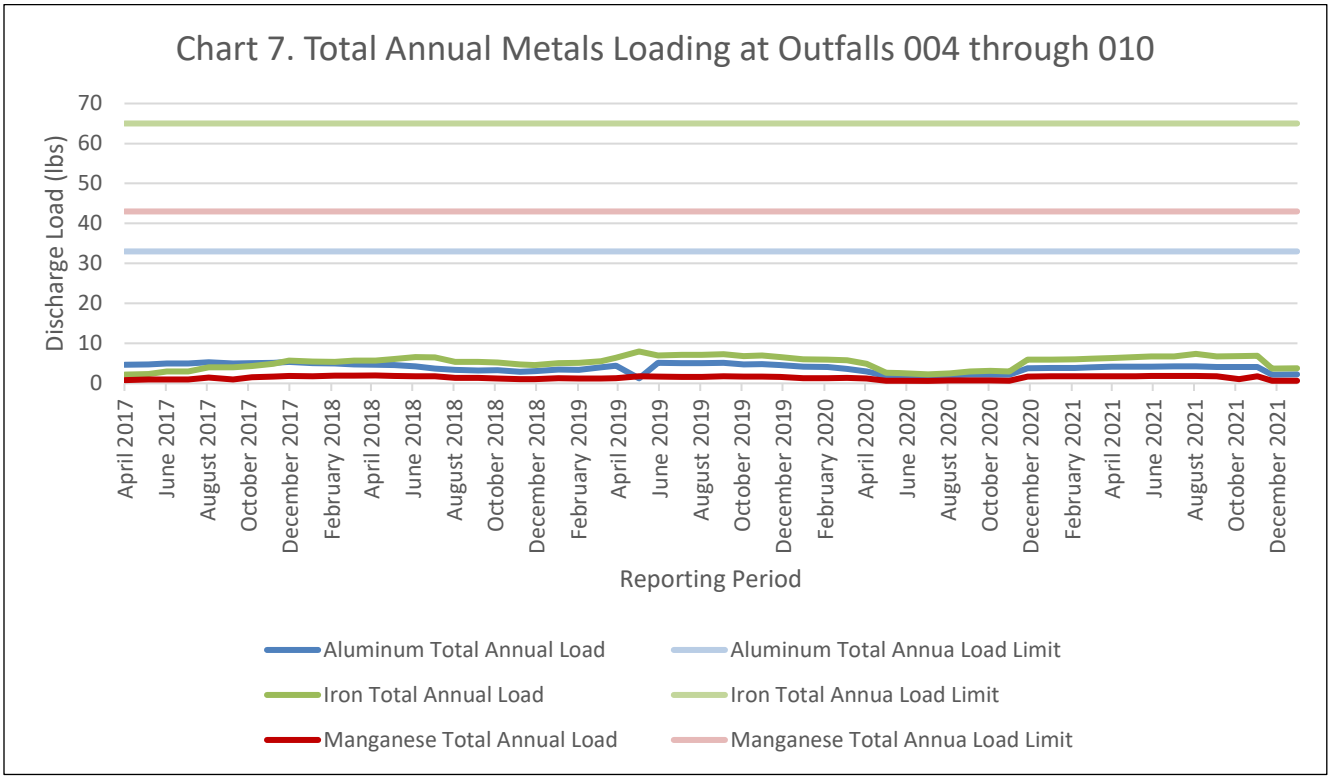
Pursuant to 40 CFR § 122.44(d)(1)(vii)(B) regarding the need for effluent limits to be consistent with TMDL waste load allocations, NAHHA will be required to calculate discharge loads for aluminum, iron, and manganese at each storm water outfall using reported concentration data, known runoff areas contributing to each storm water outfall, and publicly available precipitation data (e.g., monthly precipitation totals are available from NOAA's National Climatic Data Center).

Based on NAHHA's reported aluminum, iron, and manganese results (see Table 24 and Chart 7), the monitoring frequencies for aluminum, iron, and manganese will be reduced to 2/quarter as a performance-based reduction of those monitoring frequencies. The aggregate total annual loads for those metals at Outfalls 004 through 010 will remain in effect as calendar-year annual totals (switching from a rolling 12-month total in the previous permit). More frequent sampling/precipitation information may be collected at NAHHA's discretion to better represent discharge loading.

TMDL Compliance

TMDL compliance will be evaluated using the summation of the total quarterly discharge loading for each metal at each storm water outfall for the four quarters that make up each calendar year. Total quarterly discharge loading should be calculated using the Rational Method (or similar methodology). The Rational Method generally takes the following form:

Q (peak discharge, cfs) = c (runoff coefficient, dimensionless) × i (rainfall intensity, inch/hr) × A (drainage area, acres)



To demonstrate compliance with the TMDL, NAHHA must estimate the total quarterly volume of precipitation that has discharged from each outfall. That volume and the average quarterly concentration of each metal at each outfall can be used to calculate the total pounds of each metal that discharged during each quarterly monitoring period at each outfall. The sum of those calculated quarterly loadings for aluminum, iron, and manganese at Outfalls 004 through 010 will be limited by the total annual mass limits imposed at Outfall 004 that apply to loads from all those storm water outfalls. The rolling 12-month annual load limits in the previous permit will be replaced by total annual load limits that apply at the end of each calendar year.

DEP anticipates that NAHHA would use a calculation similar to the following:

Total Quarterly Discharge Loading (pounds) = c × P × A × C × Conversion Factors

where c = runoff coefficient: percentage of precipitation that runs off and flows to the outfall; these values should be standardized for each outfall's runoff area (e.g., coefficients for roof runoff are generally within the range of 0.75 – 0.85)
P = total quarterly precipitation; available from NOAA rain gages
A = area draining to each outfall; these values were reported on Module 1 of the permit application
C = average effluent concentration; quarterly analyses of storm water discharges will determine this value

When calculating total quarterly loads, the average quarterly concentrations should be used to mitigate irregular or outlier concentrations. More than two samples may be collected and analyzed each quarter to better manage unusually high effluent concentrations. However, the results of any additional sampling must be reported to DEP as part of the average quarterly values reported on the DMRs). The total quarterly loads and the average quarterly and daily maximum concentrations will be reported each quarter for each TMDL metal parameter at each outfall. The estimated discharge flow rates also must be reported.

SWO.C. Effluent Limitations and Monitoring Requirements for Outfalls 004 – 010

Effluent limits for Outfalls 004 through 010 are the more stringent of TBELs, WQBELs, regulatory effluent standards, and monitoring requirements. No TBELs are imposed at these outfalls (other than BMPs), so TMDL requirements and semi-annual monitoring based on Appendix B of the PAG-03 will control at NAHHA's storm water outfalls.

Table 25. Effluent limits and monitoring requirements for Outfalls 004 – 010

Parameter	Mass (pounds)		Concentration (mg/L)			Basis
	Total Quarterly	Total Annual	Average Quarterly	Daily Maximum	Instant Maximum	
Flow (MGD)	Report Avg. Qrtly	Report Daily Max	—	—	—	25 Pa. Code § 92a.61(h)
Total Suspended Solids	—	—	—	Report	—	PAG-03, App. B; § 92a.61(h)
Nitrate-Nitrite as N	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Aluminum, Total †	Report	33.0	Report	Report	—	TMDL; § 92a.61(h)
Chromium, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Copper, Total*	—	—	—	Report	—	PAG-03, App. B; § 92a.61(h)
Iron, Total †	Report	65.0	Report	Report	—	TMDL; § 92a.61(h)
Manganese, Total †	Report	43.0	Report	Report	—	TMDL; § 92a.61(h)
Nickel, Total	—	—	—	Report	—	25 Pa. Code § 92a.61(h)
Zinc, Total	—	—	—	Report	—	PAG-03, App. B; § 92a.61(h)
pH (s.u.)	—	—	—	Report	—	25 Pa. Code § 92a.61(h)

† Mass limits for aluminum, iron and manganese are total (cumulative) loads in pounds. The total annual load specified in the table will be imposed at Outfall 004 but will apply to the sum of the previous four quarters of calculated discharge loads from Outfalls 004 – 010.

Aluminum, iron and manganese will require 2/quarter grab sampling; the total quarterly aggregate discharge loading of aluminum, iron and manganese must be calculated and reported each quarter for each outfall. The aggregate total annual loading from Outfalls 004 through 010 calculated using four quarters of data for each calendar year must be reported on an annual DMR. All other parameters will require 1/6 months grab sampling. Flow should be measured 2/quarter at the time of sampling.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see **Attachment A**)
☒	TRC Model Spreadsheet (see **Attachment D**)
☐	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:

ATTACHMENT A

Effluent Limitations Guidelines and Production-Based Mass Limit Calculations

Nickel-Cobalt Forming Subcategory
40 CFR 471.32(p) Metal Powder Production Atomization Wastewater (BAT)
(pounds / million off pounds)

Pollutant	Maximum for any 1 day	Maximum for monthly average
Chromium	0.970	0.393
Nickel	1.44	0.970
Fluoride	156	69.2

Metal Powders Subcategory
40 CFR 471.101(a) and 40 CFR 471.102(a) Metal Powder Production Atomization Wastewater (BPT & BAT)

Pollutant	Maximum for any 1 day	Maximum for monthly average
Copper	9.58	5.04
Cyanide	1.46	0.605
Lead	2.12	1.01
Oil & Grease	101	60.5
TSS	207	98.3
pH	Within the range of 7.5 to 10.0 at all times.	

Applicable Parameters from Tables VII-21 and VII-22 of EPA's Final ELG Development Document
Summary of Treatment Effectiveness (mg/l)

	L&S Technology		LS&F Technology	
Pollutant	**One-Day Max**	**10-Day Avg.**	**One-Day Max**	**10-Day Avg.**
O&G	20	12	10	10
TSS	41	19.5	15	12
Chromium			0.37	0.15
Ammonia	133.3	58.6	133.3	58.6
Iron	1.2	0.61	1.2	0.61

L&S: Lime and Settle
LS&F: Lime, Settle, and Filter

Table VII-21

SUMMARY OF TREATMENT EFFECTIVENESS (mg/1)

Pollutant Parameter	L&S Technology System Mean	L&S One-Day Maximum	L&S 10-Day Average	L&S 30-Day Average	LS&F Technology System Mean	LS&F One-Day Maximum	LS&F 10-Day Average	LS&F 30-Day Average	Sulfide Precipitation Filtration Mean	Sulfide One-Day Maximum	Sulfide 10-Day Average	Sulfide 30-Day Average
114 Sb	0.70	2.87	1.28	1.14	0.47	1.93	0.86	0.76				
115 As	0.51	2.09	0.93	0.83	0.34	1.39	0.62	0.55				
117 Be	0.30	1.23	0.55	0.49	0.20	0.82	0.37	0.32				
118 Cd	0.079	0.34	0.15	0.13	0.049	0.20	0.08	0.08	0.01	0.04	0.018	0.016
119 Cr	0.084	0.44	0.18	0.12	0.07	0.37	0.15	0.10	0.08	0.21	0.091	0.081
120 Cu	0.58	1.90	1.00	0.73	0.39	1.28	0.61	0.49	0.05	0.21	0.091	0.081
121 CN	0.07	0.29	0.12	0.11	0.047	0.20	0.08	0.08				
122 Pb	0.12	0.42	0.20	0.16	0.08	0.28	0.13	0.11	0.01	0.04	0.018	0.016
123 Hg	0.06	0.25	0.10	0.10	0.036	0.15	0.06	0.06	0.03	0.13	0.0555	0.049
124 Ni	0.74	1.92	1.27	1.00	0.22	0.55	0.37	0.29	0.05	0.21	0.091	0.081
125 Se	0.30	1.23	0.55	0.49	0.20	0.82	0.37	0.33				
126 Ag	0.10	0.41	0.17	0.16	0.07	0.29	0.12	0.10	0.05	0.21	0.091	0.081
127 Tl	0.50	2.05	0.91	0.81	0.34	1.40	0.61	0.55				
128 Zn	0.33	1.46	0.61	0.45	0.23	1.02	0.42	0.31	0.01	0.04	0.018	0.016
Al	2.24	6.43	3.20	2.52	1.49	6.11	2.71	2.41				
Co	0.05	0.21	0.09	0.08	0.034	0.14	0.07	0.06				
F	14.5	59.5	26.4	23.5		59.5	26.4	23.5				
Fe	0.41	1.20	0.61	0.50	0.28	1.20	0.61	0.50				
Mn	0.16	0.68	0.29	0.21	0.14	0.30	0.23	0.19				
P	4.08	16.7	6.83	6.60	2.72	11.2	4.6	4.4				
O&G		20.0	12.0	10.0		10.0	10.0	10.0				
TSS	12.0	41.0	19.5	15.5	2.6	15.0	12.0	10.0				

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Table VII-22

SUMMARY OF TREATMENT EFFECTIVENESS FOR SELECTED NONCONVENTIONAL METAL POLLUTANTS (mg/l)

Pollutant Parameter	L&S Technology System Mean	One-Day Maximum	10-Day Average	30-Day Average	LS&F Technology System Mean	One-Day Maximum	10-Day Average	30-Day Average
NH3	32.2	133.3	58.6	52.1	32.2	133.3	58.6	52.1
Cb	**	0.12*	**	**	**	0.12*	**	**
Au	**	0.1	**	**	**	0.1	**	**
Hf	7.28	28.8	13.9	NC	4.81	19.7	9.01	NC
Mg	**	0.1*	**	**	**	0.1*	**	**
Mo	1.83	6.61	3.42	NC	1.23	5.03	2.23	NC
Pt	**	0.1	**	**	**	0.1	**	**
Ta	**	0.45*	**	**	**	0.45*	**	**
Ti	0.19	0.94	0.41	NC	0.13	0.53	0.23	NC
W	1.29	6.96	2.78	NC	0.85	3.48	1.55	NC
U	4.00	6.50	4.73	NC	2.67	4.29	3.12	NC
V	**	0.1*	**	**	**	0.1*	**	**
Zr	7.28	28.8	13.9	NC	4.81	19.7	9.01	NC

**None established.

*Limits of detection.

NC - Not calculated.

Table X-28

BAT REGULATORY FLOWS FOR THE
PRODUCTION OPERATIONS - NICKEL-COBALT FORMING SUBCATEGORY

Operation	Waste Stream	Normalized BAT Discharge l/kkg	Normalized BAT Discharge gal/ton	Production Normalizing Parameter
Rolling	Spent neat oils	0	0	
	Spent emulsions	170	40.9	Mass of nickel-cobalt rolled with emulsions
	Contact cooling water	75.4	18.1	Mass of nickel-cobalt rolled with water
Tube Reducing	Spent lubricants	0	0	
Drawing	Spent neat oils	0	0	
	Spent emulsions	95.4	22.9	Mass of nickel-cobalt drawn with emulsions
Extrusion	Spent lubricants	0	0	
	Press or solution heat treatment contact cooling water	83.2	20.0	Mass of nickel-cobalt extruded or heat treated and subsequently cooled with water
	Press hydraulic fluid leakage	232	55.6	Mass of nickel-cobalt extruded
Forging	Spent lubricants	0	0	
	Contact cooling water	47.4	11.4	Mass of forged nickel-cobalt cooled with water
	Equipment cleaning wastewater	4.00	0.957	Mass of nickel-cobalt forged on equipment requiring cleaning with water
	Press hydraulic fluid leakage	187	44.8	Mass of nickel-cobalt forged
Metal Powder Production	Atomization wastewater	2,620	629	Mass of nickel-cobalt metal powder produced by wet atomization
Stationary Casting	Contact cooling water	1,210	290	Mass of nickel-cobalt cast with stationary casting methods

Table X-42

PRODUCTION OPERATIONS - METAL POWDERS SUBCATEGORY

Operation	Waste Stream	Normalized BAT Discharge		Production Normalizing Parameter
		l/kkg	gal/ton	
Metal Powder Production	Atomization wastewater	5,040	1,210	Mass of powder produced by wet atomization
Tumbling, Burnishing or Cleaning	Wastewater	4,400	1,050	Mass of powder metallurgy parts tumbled, burnished or cleaned with water-based media
Sawing or Grinding	Spent neat oils	0	0	
	Spent emulsions	18.1	4.33	Mass of powder metallurgy parts sawed or ground with emulsions
	Contact cooling water	1,620	389	Mass of powder metallurgy parts sawed or ground with contact cooling water
Sizing	Spent neat oils	0	0	
	Spent emulsions	14.6	3.50	Mass of powder sized using emulsions
Steam Treatment Wet Air Pollution Control	Blowdown	792	190	Mass of powder metallurgy parts steam treated
Oil-Resin Impregnation	Spent neat oils	0	0	
Degreasing	Spent solvents	0	0	
Hot Pressing	Contact cooling water	8,800	2,110	Mass of powder cooled with water after pressing
Mixing Wet Air Pollution Control	Blowdown	7,900	1,890	Mass of powder mixed

Production Rate (off pounds/day)

Production Line	Nickel	Other	Copper
Alloy Bay #1	32,993	50,000	-
Alloy Bay #2	28,280	32,497	0
Copper Alloy	-	-	0
GlidCop	-	-	8,707

EPA Standardized Flows (gal/ton)

Nickel	629
Other (Stainless Steel)	1210
Copper	1210

Flow Independent of Production (gal/day)

Electrolytic Iron	4840

Conversion Factors

2000	pounds per ton
3.7854	liters per gallon
2.2E-06	pounds per milligram
8.34	(lb/milliongallons)/(mg/L)

Mass Limits by Production Line (lbs/day)

= Limit Used in Summation of Monthly Mass Limits

= Limit Used in Summation of Daily Mass Limits

	Bay #1 - Nickel		Bay #1 - Other		Bay #2 - Nickel		Bay #2 - Other		Copper Alloy		GlidCop		Electrolytic Iron	
Pollutant	Average Monthly	Max Daily	Average Monthly	Max Daily	Average Monthly	Max Daily	Average Monthly	Max Daily	Average Monthly	Max Daily	Average Monthly	Max Daily	Average Monthly	Max Daily
Suspended Solids	1.039	1.299	4.915	10.350	0.891	1.113	3.194	6.727	0.000	0.000	0.856	1.802	0.788	1.656
Oil & Grease	0.866	0.866	3.025	5.050	0.742	0.742	1.966	3.282	0.000	0.000	0.527	0.879	0.485	0.808
Copper			0.252	0.479			0.164	0.311	0.000	0.000	0.044	0.083		
Cyanide			0.030	0.073			0.020	0.047	0.000	0.000	0.005	0.013		
Lead			0.051	0.106			0.033	0.069	0.000	0.000	0.009	0.018		
Chromium	0.013	0.032			0.011	0.027							0.006	0.015
Nickel	0.032	0.048			0.027	0.041								
Fluoride	2.283	5.147			1.957	4.412								
Ammonia													2.367	5.384
Iron, Total			0.154	0.303			0.100	0.197					0.025	0.048

Expected Flow for Production Lines

	Production (ton/day)	Expct Flow (gal/ton)	Expct Flow(gal/day)
Alloy Bay #1	25.00	1533.00	38,325
Alloy Bay #2	16.25	1533.00	24,909
Copper Alloy	0.00	4000.00	0
GlidCop	4.35	249.00	1,084
Electrolytic Iron	-	-	4,840
	Total Expected Flow		69,158

Final mass limits are determined by summing the highest mass limits for each pollutant from each of the five production lines.

Final Limits

	Mass Limits (lb/day)		Conc. Limits (mg/L)		
Pollutant	Average Monthly	Max. Daily	Average Monthly	Max. Daily	Instant Max.
TSS	10	21	12.0	15.0	24.0
Oil & Grease	6.0	10	10.0	10.0	20.0
Copper	0.46	0.9	0.54	1.00	1.35
Cyanide	0.06	0.13	0.07	0.16	0.18
Lead	0.09	0.19	0.11	0.23	0.28
Chromium	0.03	0.07	0.06	0.14	0.15
Nickel	0.06	0.09	0.07	0.11	0.18
Fluoride	4.2	10	5.10	11.5	12.8
Ammonia	2.4	5.4	58.6	133.3	-
Iron, Total	0.28	0.55	0.31	0.61	0.78

ATTACHMENT B

Toxics Management Spreadsheet

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: North American Höganäs High Alloys NPDES Permit No.: PA0110591 Outfall No.: 101

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Powdered metal manufacturing 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
0.047556	183	8.11						

					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		403									
	Chloride (PWS)	mg/L		14.5									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		248									
	Fluoride (PWS)	mg/L	<	0.05									
Group 2	Total Aluminum	µg/L		89.3									
	Total Antimony	µg/L		1.5									
	Total Arsenic	µg/L		4.5									
	Total Barium	µg/L		40.9									
	Total Beryllium	µg/L		0.5									
	Total Boron	µg/L		2810									
	Total Cadmium	µg/L		0.3									
	Total Chromium (III)	µg/L		15.4									
	Hexavalent Chromium	µg/L		3									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		117									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		78									
	Total Iron	µg/L		210									
	Total Lead	µg/L		0.5									
	Total Manganese	µg/L		53.3									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		137									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L		1.8									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L		0.2									
	Total Zinc	µg/L		350									
	Total Molybdenum	µg/L		26.6									
	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												

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 101

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Stonycreek 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	045084	3.83	1170	453	0.003		Yes
End of Reach 1	045084	2.83	1153	457	0.003		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	3.83	0.081										79.1	7		
End of Reach 1	2.83	0.081													

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	3.83														
End of Reach 1	2.83														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 101

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)
3.83	36.69		36.69	0.074	0.003	0.963	96.731	100.46	0.395	0.155	246.83
2.83	37.02		37.017								

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)
3.83	173.15		173.15	0.074	0.003	1.904	96.731	50.792	0.94	0.065	89.018
2.83	174.49		174.49								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.247 Analysis Hardness (mg/l): 79.938 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	92,964	
Total Antimony	0	0		0	1,100	1,100	136,347	
Total Arsenic	0	0		0	340	340	42,144	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	2,602,982	
Total Boron	0	0		0	8,100	8,100	1,004,007	
Total Cadmium	0	0		0	1.620	1.7	211	Chem Translator of 0.953 applied
Total Chromium (III)	0	0		0	474.297	1,501	186,044	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	2,020	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	11,775	
Total Copper	0	0		0	10.883	11.3	1,405	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	50.567	61.4	7,610	Chem Translator of 0.824 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	204	Chem Translator of 0.85 applied
Total Nickel	0	0		0	387.432	388	48,119	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	2.189	2.57	319	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	8,057	
Total Zinc	0	0		0	96.930	99.1	12,285	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 79.308 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	109,946	
Total Arsenic	0	0		0	150	150	74,963	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	2,048,997	
Total Boron	0	0		0	1,600	1,600	799,609	
Total Cadmium	0	0		0	0.209	0.23	114	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	61.298	71.3	35,621	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	5,195	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	9,495	
Total Copper	0	0		0	7.346	7.65	3,824	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	749,633	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.954	2.37	1,184	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	453	Chem Translator of 0.85 applied
Total Nickel	0	0		0	42.744	42.9	21,426	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	2,493	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	6,497	
Total Zinc	0	0		0	97.070	98.4	49,200	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### 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	2,799	
Total Arsenic	0	0		0	10	10.0	4,998	
Total Barium	0	0		0	2,400	2,400	1,199,413	
Total Boron	0	0		0	3,100	3,100	1,549,242	
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	149,927	
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	499,755	
Total Mercury	0	0		0	0.050	0.05	25.0	
Total Nickel	0	0		0	610	610	304,851	
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	120	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 89.018 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
Total Copper	Report	Report	Report	Report	Report	µg/L	901	AFC	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	Discharge Conc < TQL
Total Aluminum	59,586	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	2,799	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	4,998	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	1,199,413	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	643,528	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	114	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	35,621	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	1,294	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	7,548	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	149,927	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	749,633	µg/L	Discharge Conc ≤ 10% WQBEL

Total Lead	1,184	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	499,755	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	25.0	µg/L	Discharge Conc < TQL
Total Nickel	21,426	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	2,493	µg/L	Discharge Conc ≤ 10% WQBEL
Total Silver	205	µg/L	Discharge Conc < TQL
Total Thallium	120	µg/L	Discharge Conc ≤ 10% WQBEL
Total Zinc	7,874	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: North American Höganäs High Alloys NPDES Permit No.: PA0110591 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Non-contact cooling water and storm water

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
0.0528	75.8	6.9						

					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		72									
	Chloride (PWS)	mg/L		14.4									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		10.4									
	Fluoride (PWS)	mg/L	<	0.05									
Group 2	Total Aluminum	µg/L		168									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		47.4									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L	<	20									
	Total Cadmium	µg/L		0.1									
	Total Chromium (III)	µg/L		17			4.0845						
	Hexavalent Chromium	µg/L	<	2									
	Total Cobalt	µg/L		0.2									
	Total Copper	µg/L		292.595			1.9205						
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		258									
	Total Iron	µg/L		748.8									
	Total Lead	µg/L		9.4									
	Total Manganese	µg/L		38			1.4629						
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		117.7			2.7093						
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		426.997			0.444						
	Total Molybdenum	µg/L	<	0.5									
	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												

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Stonycreek 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	045084	3.8	1181	454	0.003		Yes
End of Reach 1	045084	2.83	1153	457	0.003		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	3.8	0.081										79.1	7		
End of Reach 1	2.83	0.081													

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	3.8														
End of Reach 1	2.83														

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Model Results

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 001

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)
3.8	36.77		36.77	0.082	0.003	0.963	96.847	100.546	0.395	0.15	247.19
2.83	37.02		37.017								

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)
3.8	173.49		173.49	0.082	0.003	1.905	96.847	50.846	0.941	0.063	89.205
2.83	174.49		174.49								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.246 Analysis Hardness (mg/l): 79.071 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	83,928	
Total Antimony	0	0		0	1,100	1,100	123,094	
Total Arsenic	0	0		0	340	340	38,047	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	2,349,984	
Total Boron	0	0		0	8,100	8,100	906,422	
Total Cadmium	0	0		0	1.603	1.68	188	Chem Translator of 0.954 applied
Total Chromium (III)	0	0		0	470.076	1,488	166,467	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	1,823	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	10,631	
Total Copper	0	0		0	10.772	11.2	1,256	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	49.966	60.5	6,776	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	184	Chem Translator of 0.85 applied
Total Nickel	0	0		0	383.871	385	43,043	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	2.148	2.53	283	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	7,274	
Total Zinc	0	0		0	96.038	98.2	10,989	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 79.093 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	99,267	
Total Arsenic	0	0		0	150	150	67,682	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	1,849,967	
Total Boron	0	0		0	1,600	1,600	721,938	
Total Cadmium	0	0		0	0.209	0.23	103	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	61.161	71.1	32,089	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	4,690	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	8,573	
Total Copper	0	0		0	7.329	7.63	3,445	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	676,817	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.948	2.36	1,065	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	409	Chem Translator of 0.85 applied
Total Nickel	0	0		0	42.646	42.8	19,300	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	2,251	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	5,866	
Total Zinc	0	0		0	96.847	98.2	44,319	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### 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	2,527	
Total Arsenic	0	0		0	10	10.0	4,512	
Total Barium	0	0		0	2,400	2,400	1,082,908	
Total Boron	0	0		0	3,100	3,100	1,398,756	
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	135,363	
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	451,212	
Total Mercury	0	0		0	0.050	0.05	22.6	
Total Nickel	0	0		0	610	610	275,239	
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	108	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 89.205 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
Total Copper	Report	Report	Report	Report	Report	µg/L	2,212	AFC	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	Discharge Conc < TQL
Total Aluminum	53,794	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	1,082,908	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	580,980	µg/L	Discharge Conc < TQL
Total Cadmium	103	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	32,089	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	1,169	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	6,814	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	135,363	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	676,817	µg/L	Discharge Conc ≤ 10% WQBEL

Total Lead	1,065	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	451,212	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	22.6	µg/L	Discharge Conc < TQL
Total Nickel	19,300	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	2,251	µg/L	Discharge Conc < TQL
Total Silver	181	µg/L	Discharge Conc < TQL
Total Thallium	108	µg/L	Discharge Conc < TQL
Total Zinc	6,658	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

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Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: North American Höganäs High Alloys NPDES Permit No.: PA0110591 Outfall No.: 002

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Non-contact cooling water and storm water

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
0.0291	32.17	6.63						

					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	Strea m CV	Fate Coeff	FOS	Criteri a Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		71									
	Chloride (PWS)	mg/L		14.4									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		10.4									
	Fluoride (PWS)	mg/L	<	0.05									
Group 2	Total Aluminum	µg/L		127									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		46.3									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L	<	20									
	Total Cadmium	µg/L		0.2									
	Total Chromium (III)	µg/L		2.5775									
	Hexavalent Chromium	µg/L		2									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		880.6755			1.9348						
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		10									
	Dissolved Iron	µg/L		66									
	Total Iron	µg/L		54									
	Total Lead	µg/L		0.3									
	Total Manganese	µg/L		7.4									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		2.2									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		2940			1.5221						
	Total Molybdenum	µg/L	<	0.5									
	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												

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 002

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Stonycreek 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	045084	3.82	1181	454	0.003		Yes
End of Reach 1	045084	2.83	1153	457	0.003		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	3.82	0.081										79.1	7		
End of Reach 1	2.83	0.081													

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	3.82														
End of Reach 1	2.83														

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Model Results

North American Höganäs High Alloys, NPDES Permit No. PA0110591, 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)
3.82	36.77		36.77	0.045	0.003	0.963	96.812	100.516	0.395	0.153	247.527
2.83	37.02		37.017								

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)
3.82	173.49		173.49	0.045	0.003	1.905	96.812	50.813	0.941	0.064	89.14
2.83	174.49		174.49								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.246 Analysis Hardness (mg/l): 78.868 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	151,568	
Total Antimony	0	0		0	1,100	1,100	222,300	
Total Arsenic	0	0		0	340	340	68,711	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	4,243,902	
Total Boron	0	0		0	8,100	8,100	1,636,933	
Total Cadmium	0	0		0	1.599	1.68	339	Chem Translator of 0.954 applied
Total Chromium (III)	0	0		0	469.089	1,484	299,995	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	3,293	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	19,199	
Total Copper	0	0		0	10.746	11.2	2,262	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	49.825	60.4	12,196	Chem Translator of 0.826 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	333	Chem Translator of 0.85 applied
Total Nickel	0	0		0	383.038	384	77,563	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	2.138	2.52	508	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	13,136	
Total Zinc	0	0		0	95.829	98.0	19,802	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 79.043 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	179,933	
Total Arsenic	0	0		0	150	150	122,682	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	3,353,303	
Total Boron	0	0		0	1,600	1,600	1,308,606	
Total Cadmium	0	0		0	0.209	0.23	186	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	61.130	71.1	58,136	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	8,502	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	15,540	
Total Copper	0	0		0	7.325	7.63	6,241	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	1,226,818	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.946	2.36	1,929	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	741	Chem Translator of 0.85 applied
Total Nickel	0	0		0	42.623	42.8	34,966	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	4,081	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	10,632	
Total Zinc	0	0		0	96.795	98.2	80,290	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### 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	4,580	
Total Arsenic	0	0		0	10	10.0	8,179	
Total Barium	0	0		0	2,400	2,400	1,962,909	
Total Boron	0	0		0	3,100	3,100	2,535,424	
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	245,364	
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	817,879	
Total Mercury	0	0		0	0.050	0.05	40.9	
Total Nickel	0	0		0	610	610	498,906	
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	196	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 89.140 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
Total Copper	Report	Report	Report	Report	Report	µg/L	4,012	AFC	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	28,286	AFC	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	Discharge Conc < TQL
Total Aluminum	97,149	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	1,962,909	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,049,208	µg/L	Discharge Conc < TQL
Total Cadmium	186	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	58,136	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	2,110	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	12,306	µg/L	Discharge Conc < TQL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	245,364	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	1,226,818	µg/L	Discharge Conc ≤ 10% WQBEL

Total Lead	1,929	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	817,879	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	40.9	µg/L	Discharge Conc < TQL
Total Nickel	34,966	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	4,081	µg/L	Discharge Conc < TQL
Total Silver	326	µg/L	Discharge Conc < TQL
Total Thallium	196	µg/L	Discharge Conc < TQL
Total Molybdenum	N/A	N/A	No WQS

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Toxics Management Spreadsheet
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Discharge Information

Instructions | Discharge | Stream

Facility: North American Höganäs High Alloys NPDES Permit No.: PA0110591 Outfall No.: 003

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Non-contact cooling water and storm water

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
0.0122	31.2	6.14						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	0 if left blank: Stream Conc	0.5 if left blank: Daily CV	0.5 if left blank: Hourly CV	0 if left blank: Strea m CV	0 if left blank: Fate Coeff	0 if left blank: FOS	1 if left blank: Criteri a Mod	1 if left blank: Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		70									
	Chloride (PWS)	mg/L		14.3									
	Bromide	mg/L	<	0.1									
	Sulfate (PWS)	mg/L		10.6									
	Fluoride (PWS)	mg/L		0.3									
Group 2	Total Aluminum	µg/L		162									
	Total Antimony	µg/L	<	0.5									
	Total Arsenic	µg/L	<	0.5									
	Total Barium	µg/L		46.1									
	Total Beryllium	µg/L	<	0.5									
	Total Boron	µg/L	<	20									
	Total Cadmium	µg/L	<	0.1									
	Total Chromium (III)	µg/L		46.5029			3.3254						
	Hexavalent Chromium	µg/L	<	2									
	Total Cobalt	µg/L	<	0.2									
	Total Copper	µg/L		88.5709			1.3893						
	Free Cyanide	µg/L											
	Total Cyanide	µg/L	<	10									
	Dissolved Iron	µg/L		78									
	Total Iron	µg/L		138									
	Total Lead	µg/L		1									
	Total Manganese	µg/L		16.6									
	Total Mercury	µg/L	<	0.1									
	Total Nickel	µg/L		1.5									
	Total Phenols (Phenolics) (PWS)	µg/L	<	5									
	Total Selenium	µg/L	<	0.5									
	Total Silver	µg/L	<	0.1									
	Total Thallium	µg/L	<	0.1									
	Total Zinc	µg/L		390.03478			0.3624						
	Total Molybdenum	µg/L	<	0.5									
	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												

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 003

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Stonycreek 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	045084	3.84	1170	453	0.003		Yes
End of Reach 1	045084	2.83	1153	457	0.003		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	3.84	0.081										79.1	7		
End of Reach 1	2.83	0.081													

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	3.84														
End of Reach 1	2.83														

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Model Results

North American Höganäs High Alloys, NPDES Permit No. PA0110591, Outfall 003

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.246 Analysis Hardness (mg/l): 79 Analysis pH: 6.99

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	359,835	
Total Antimony	0	0		0	1,100	1,100	527,758	
Total Arsenic	0	0		0	340	340	163,125	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	10,075,375	
Total Boron	0	0		0	8,100	8,100	3,886,216	
Total Cadmium	0	0		0	1.601	1.68	805	Chem Translator of 0.954 applied
Total Chromium (III)	0	0		0	469.734	1,486	713,192	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	7,817	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	45,579	
Total Copper	0	0		0	10.763	11.2	5,379	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	49.917	60.5	29,017	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	790	Chem Translator of 0.85 applied
Total Nickel	0	0		0	383.582	384	184,404	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	2.145	2.52	1,210	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	31,186	
Total Zinc	0	0		0	95.966	98.1	47,078	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 79.075 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	427,936	
Total Arsenic	0	0		0	150	150	291,775	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	7,975,176	
Total Boron	0	0		0	1,600	1,600	3,112,264	
Total Cadmium	0	0		0	0.209	0.23	442	Chem Translator of 0.919 applied
Total Chromium (III)	0	0		0	61.150	71.1	138,311	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	20,220	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	36,958	
Total Copper	0	0		0	7.328	7.63	14,848	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	2,917,747	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	1.947	2.36	4,590	Chem Translator of 0.825 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1,762	Chem Translator of 0.85 applied
Total Nickel	0	0		0	42.638	42.8	83,188	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	9,705	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	25,287	
Total Zinc	0	0		0	96.829	98.2	191,022	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): ###### 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	10,893	
Total Arsenic	0	0		0	10	10.0	19,452	
Total Barium	0	0		0	2,400	2,400	4,668,396	
Total Boron	0	0		0	3,100	3,100	6,030,011	
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	583,549	
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	1,945,165	
Total Mercury	0	0		0	0.050	0.05	97.3	
Total Nickel	0	0		0	610	610	1,186,551	
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	467	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 88.923 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

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	PWS Not Applicable
Total Aluminum	230,640	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	4,668,396	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	2,490,908	µg/L	Discharge Conc < TQL
Total Cadmium	442	µg/L	Discharge Conc < TQL
Total Chromium (III)	138,311	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	5,011	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	29,214	µg/L	Discharge Conc < TQL
Total Copper	7,085	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	583,549	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	2,917,747	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	4,590	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	1,945,165	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	97.3	µg/L	Discharge Conc < TQL
Total Nickel	83,188	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	Discharge Conc < TQL
Total Selenium	9,705	µg/L	Discharge Conc < TQL
Total Silver	776	µg/L	Discharge Conc < TQL
Total Thallium	467	µg/L	Discharge Conc < TQL
Total Zinc	26,219	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS

ATTACHMENT C

TOXCONC Calculations

Reviewer/Permit Engineer:	R. Decker
Facility:	North American Hoganas High Alloys
NPDES #:	PA0110591
Outfall No:	001
n (Samples/Month):	4

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Chromium, Tot. (mg/L)	Delta-Lognormal	4.0845343	0.0171804
Copper, Tot. (mg/L)	Delta-Lognormal	1.9204763	0.2925950
Lead, Tot. (mg/L)	Delta-Lognormal	164.6337589	0.5461494
Nickel, Tot. (mg/L)	Delta-Lognormal	2.7093076	0.1177111
Zinc, Tot. (mg/L)	Lognormal	0.4440162	0.4269970

Reviewer/Permit Engineer:	R. Decker
Facility:	North American Hoganas High Alloys
NPDES #:	PA0110591
Outfall No:	002
n (Samples/Month):	4

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Chromium, Tot. (mg/L)	Delta-Lognormal	24759.0929839	0.0025775
Copper, Tot. (mg/L)	Delta-Lognormal	1.9348066	0.8806755
Zinc, Tot. (mg/L)	Lognormal	1.5220558	2.9400276

Reviewer/Permit Engineer:	R. Decker
Facility:	North American Hoganas High Alloys
NPDES #:	PA0110591
Outfall No:	003
n (Samples/Month):	4

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
Chromium, Tot. (mg/L)	Delta-Lognormal	3.3253830	0.0465029
Copper, Tot. (mg/L)	Delta-Lognormal	1.3893324	0.0885709
Zinc, Tot. (mg/L)	Lognormal	0.3623515	0.3903478

ATTACHMENT D

TRC Modeling Results

TRC EVALUATION – Outfall 101

36.5	= Q stream (cfs)	0.5	= CV Daily
0.047556	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.247	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	39.111	**1.3.2.iii**	WLA cfc =	154.308
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	14.574	**5.1d**	LTA_cfc =	89.707

Source	Reference	Effluent Limit Calculations		
PENTOXSD TRG	**5.1f**	AML MULT =	1.720	
PENTOXSD TRG	**5.1g**	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**

TRC EVALUATION – Outfall 001

36.5	= Q stream (cfs)	0.5	= CV Daily
0.0528	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.246	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	35.086	**1.3.2.iii**	WLA cfc =	138.984
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	13.074	**5.1d**	LTA_cfc =	80.799

Source	Reference	Effluent Limit Calculations		
PENTOXSD TRG	**5.1f**	AML MULT =	1.720	
PENTOXSD TRG	**5.1g**	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**

TRC EVALUATION – Outfall 002

36.5	= Q stream (cfs)	0.5	= CV Daily
0.0291	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.246	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	**1.3.2.iii**	WLA afc = 63.645	**1.3.2.iii**	WLA cfc = 252.167
PENTOXSD TRG	**5.1a**	LTAMULT afc = 0.373	**5.1c**	LTAMULT cfc = 0.581
PENTOXSD TRG	**5.1b**	LTA_afc= 23.716	**5.1d**	LTA_cfc = 146.598

Source	Reference	Effluent Limit Calculations		
PENTOXSD TRG	**5.1f**	AML MULT =	1.720	
PENTOXSD TRG	**5.1g**	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**

TRC EVALUATION – Outfall 003

36.5	= Q stream (cfs)	0.5	= CV Daily
0.0122	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.246	= 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)
	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	151.783	**1.3.2.iii**	WLA cfc =	601.466
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	56.558	**5.1d**	LTA_cfc =	349.664

Source	Reference	Effluent Limit Calculations		
PENTOXSD TRG	**5.1f**	AML MULT =	1.720	
PENTOXSD TRG	**5.1g**	AVG MON LIMIT (mg/l) =	0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) =	1.170	

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)**