pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0261637**
Facility Type	**Industrial**	APS ID	**3953**
Major / Minor	**Minor**	Authorization ID	**1159964**

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

Applicant and Facility Information

Applicant Name	**NGK Metals Corp**	Facility Name	**NGK Metals Manufacturing**
Applicant Address	917 U S Highway 11 South Sweetwater, TN 37874	Facility Address	150 Tuckerton Road Reading, PA 19612-3367
Applicant Contact	Lynne Woodside	Facility Contact	Pete Huha
Applicant Phone	(423) 351-0376	Facility Phone	(423) 351-0376
Client ID	42881	Site ID	450709
SIC Code	9999	Municipality	Muhlenberg Township
SIC Description	Public Admin. - Nonclassifiable Establishment	County	Berks
Date Application Received	October 3, 2016	EPA Waived?	Yes
Date Application Accepted	November 28, 2016	If No, Reason	
Purpose of Application	Permit renewal for discharge of treated ground water		

Summary of Review

1.1 Background Information

This factsheet supports the renewal of an existing NPDES permit for a discharge of a ground water treatment system (GWTS) for a Resource Conservation and Recovery Act (RCRA) site owned by NGK Metals Corp. The site is located on 65 acres in Muhlenberg Township. The site has been used by various companies since 1935 to extract beryllium with sodium fluoride from imported ores to produce beryllium containing alloys such as strip, sheet, plate, bar rod and tubing. The extraction of beryllium from ore resulted in a waste material called “Red Mud” which was deposited in unlined lagoons, ponds, impoundments and waste piles on the property until the mid-1960s. These areas were eventually closed with the materials remaining in place. As a result, there were groundwater impacts by beryllium, chromium, 1, 1-dichloroethylene, fluoride, trichloroethylene and other metals. The facility was purchased by NGK in 1986. Beginning in 1988, EPA and NGK entered into an Administrative Order on Consent to conduct RCRA Facility Investigation and Corrective measures Study. The primary constituents of concern were beryllium, chromium and fluoride because they exceeded the Department’s residential used-aquifer medium specific concentrations (MSCs) 4 µg/l, 100 µg/l and 4,000 µg/l, respectively. The source of fluoride was hydrofluoric acid used to extract beryllium. After submission of a Corrective Measures Implementation Work Plan by NGK to EPA in 1993, EPA issued a Final Administrative Order on June 29, 1994. The Order closed the disposal area and set forth the requirements for the design, construction, and operation of a GWTS under RCRA. Manufacturing operations ceased at the facility in the year 2000. A GWTS was designed and constructed primarily for beryllium, hexavalent chromium and fluoride removal and became operational in May 2002. The NPDES permit issued originally contained effluent limits for the discharge of 0.36MDG treated industrial wastewater from the GWTS through outfall 001. It also included monitoring of storm water at outfalls 201, 301 and 401. Construction of an impermeable cap over the source areas at the facility was finalized in June of 2006. NGK turned off the four groundwater extraction wells for the GWTS on June 4, 2007. NGK terminated its NPDES permit (PA0086703 @ 0.36 MGD) effective August 31, 2007. The wells and treatment system were turned off to allow NGK to perform a study to determine if the groundwater plume would remain stabilized (such that contaminated ground water is expected to remain within the existing area of contaminated groundwater) during non-pumping conditions. The final groundwater monitoring report was

Approve	Deny	Signatures	Date
X		*J. Pascal Kwedza* J. Pascal Kwedza, P.E. / Environmental Engineer	May 29, 2021
X		Daniel W. Martin Daniel W. Martin, P.E. / Environmental Engineer Manager	June 3, 2021

Summary of Review

submitted in November 2009. The data showed that off-site movement of fluoride did occur, predominantly to the south. This is in the direction of the former Berks Products Quarry which is a possible future water supply for the Muhlenberg Township Municipal Authority. An ecological evaluation was also performed in September 2009 per the existing Consent Order. The evaluation included surface water quality, sediment quality and biota sampling to determine if historical operations impacted the biological communities in Laurel Run. The conclusions accepted by EPA on January 22, 2010 were that there were no apparent direct impacts and no further ecological evaluation are necessary. However, EPA has determined that the NGK should restart the groundwater wells and ground water treatment plant to mitigate the migration of the groundwater pollution plume.

1.2 Treatment System

NGK restarted three of the four wells (0.13 MGD); DW-12 (30 gpm), DW-13 (50 gpm) and DW-32 (10 gpm), to mitigate the migration of fluoride south. The ground water treatment system consists of influent pumping (four individual remediation wells), aerated equalization tank, reactor tank, a flash mixer tank, floc tank, an inclined plate clarifier, 2nd reactor tank, 2nd flash mixer, floc tank, 2nd inclined plate clarifier and sand filter. A sludge holding tank and filter press are provided for solids handling. Chemicals used in the treatment process included ferrous sulfate to reduce hexavalent chromium to trivalent chromium, sodium hydroxide for pH control, aluminum chlorohydrate to provide aluminum ion to react with beryllium to form an insoluble complex and a polymer for precipitation. A new NPDES permit PA026137 was issued to NGK in 2012 for a discharge of 0.17MGD treated industrial waste. The facility was upgraded to install fluoride removal system and started in 2016. The two main waste streams generated at the site are sludge and elevated fluoride regeneration water. Sludge is generated from precipitated metals and polymer and is pumped from the bottom of the clarifier and held in sludge holding tank prior to dewatering in a belt filter press and ultimate disposal off-site. Elevated fluoride regeneration wastewater is generated from cleaning of the fluoride removal system with alternate use of sodium hydroxide and sulfuric acid to remove fluoride from the surface of the activated alumina which produces a concentrated wastewater that is discharged to Reading Wastewater Treatment plant. The facility is not covered by ELG but has water quality based effluent limits(WQBELs) and technology-based treatment requirements developed based on best professional judgement(BPJ). The existing permit was issued on March 30, 2012 with effective date of April 1, 2012 and expiration date of March 31, 2017. The system has been operated intermittently for about two years. EPA approved shut of the GWTS on April 5, 2018 and the system was shut down in December 2018. Currently the pump and treat system is offline but can be reactivated if quarterly groundwater samples indicate treatment is needed. The facility discharges treated industrial wastewater through outfall 002 to Laurel Run which is classified for Warn Water Fishes (WWF) and Migratory Fishes (MF). The permittee did not submit a timely permit renewal application to the Department, but the Department granted administrative extension of the permit in a letter. Topographical map showing discharge location is presented in attachment A

1.3 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.

1.4 Changes to the existing permit

Total Cadmium limit is slightly more stringent .

Summary of Review

1.5 Existing Limits and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/week	Grab
Total Suspended Solids	42.5	85.1	XXX	30	60	75	1/week	24-Hr Composite
Total Dissolved Solids	1,418	2,836	XXX	1,000	2,000	2,500	1/week	24-Hr Composite
Total Beryllium	0.038	0.077	XXX	0.027	0.054	0.067	1/week	24-Hr Composite
Total Cadmium	0.004	0.008	XXX	0.003	0.006	0.007	1/week	24-Hr Composite
Hexavalent Chromium	0.047	0.094	XXX	0.033	0.066	0.082	1/week	24-Hr Composite
Total Copper	0.018	0.037	XXX	0.013	0.026	0.032	1/week	24-Hr Composite
Fluoride	9.4	18.7	XXX	6.6	13.2	16.5	1/week	24-Hr Composite
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/week	Grab
1,1,1-Trichloroethane	Report	Report	XXX	Report	Report	XXX	1/week	Grab
1,1-Dichloroethylene	0.0011	0.0023	XXX	0.0008	0.0016	0.002	1/week	Grab

1.6 Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	.17
Latitude	40º 24' 9.00"	Longitude	-75º 55' 49.00"
Quad Name		Quad Code	
Wastewater Description:	IW Process Effluent without ELG		
Receiving Waters	Laurel Run	Stream Code	
NHD Com ID	133228716	RMI	
Drainage Area		Yield (cfs/mi^2)	
Q_{7-10} Flow (cfs)		Q_{7-10} Basis	
Elevation (ft)		Slope (ft/ft)	
Watershed No.	3-C	Chapter 93 Class.	
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	Habitat alterations and Siltation		
Source(s) of Impairment	Urban Runoff/Storm Swewers		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	Borough of Pottstown Water and Sewer Authority		
PWS Waters	Schuylkill River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	25

Changes Since Last Permit Issuance:

1.5.1 Water Supply Intake

The closest water supply intake is located approximately 25 miles from the discharge. It is owned by the Borough of Pottstown Water and Sewer Authority and is located on the Schuylkill River in West Pottsgrove Township, Chester County. No impact is expected on the intake as a result of this discharge.

2.0 Treatment Facility Summary

Treatment Facility Name: NGK Metals Corp

WQM Permit No.	Issuance Date

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Industrial			No Disinfection	0.17

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.17				

Changes Since Last Permit Issuance:

Other Comments:

2.1 Compliance History

The facility has been offline since 2018 and there is no current DMR and operational data to review.

3.0 Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** .17
Latitude 40º 24' 9.00" **Longitude** -75º 55' 48.00"
Wastewater Description: IW Process Effluent without ELG

3.1 Basis for Effluent Limitations

In general, the Clean Water Act(AWA) requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit(WQBEL) is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits.

3.2 Technology-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Total Suspended Solids	30	Average Monthly	125.3(d), 133.103(b)	BPJ
	60	Daily Maximum	125.3(d), 133.103(b)	BPJ
	75	IMAX	125.3(d), 133.103(b	BPJ

3.3 Water Quality-Based Limitations

3.3.1 Stream flows

Streamflow flows were determined by correlating with the yield of USGS gage No. 01470500 on Schuylkill River near Berne. The Q_{7-10} and drainage area at the gage is 82. 3 ft^3/s) and 355mi^2 respectively. The resulting yields are as follows:

- Q_{7-10} = (82.3ft^3/s)/355 mi^2 = 0.23$ft^3/s/ mi^2$
- Q_{30-10} / Q_{7-10} = 1.23
- Q_{1-10} / Q_{7-10} = 0.84

The drainage area at the point of discharge calculated using USGS StreamStats (attachment C) = 5.6 mi^2.

The Q_{7-10} at discharge = 5.36 mi^2 x 0.23 $ft^3/s/mi^2$ = 1.23 ft^3/s.

It has been determined based on hydrogeological reports that Laurel Run goes dry at certain locations during certain periods in the year. However, the calculated Q_{7-10} will be used for water quality analysis for protection of aquatic life.

3.3.2 The following input data were used for Toxic Management Spreadsheet (TMS) Analysis:

- Discharge pH = 7.0 (Default.)
- Discharge Temperature = 25 º C (Default)
- Stream pH = 7.0 (Default)
- Stream Temperature = 20 º C (Default)
- Discharge Hardness = 100 mg/l (Default)
- Stream Hardness = 100 mg/l(Default)

3.3.3 Toxics

There was no sampling data in the application since the facility is offline. A reasonable potential (RP) was done for the pollutants in the permit to ensure the limits were still protective of aquatic life in case the system is reactivated. All pollutants in the existing permit were entered into the TMS which combines the logic in the previous Toxics Screening Analysis Spreadsheet and PENTOXSD Model to calculate WQBELs. WQBELs recommended by the TMS are presented in attachment B. The results of the TMS indicates that the existing permit limits in exception to Total Cadmium are more

stringent and are protective of water quality. The recommended limit of 0.002mg/L average monthly limit for Total Cadmium is slightly more stringent than the existing limit and will be written in the permit with maximum monthly limit of 0.004mg/L and instantaneous maximum limit of 0.005mg/L. There are no water quality criteria for Total Suspended Solids, the existing limit based on best professional judgement(BPJ) will remain in the permit. The recommended limitations follow the logic presented in DEPs SOP, to establish limits in the permit where the maximum reported concentration exceeds 50% of the WQBEL, or for non-conservative pollutants to establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL, or to establish monitoring requirements for conservative pollutants where the maximum reported concentration is between 10% - 50% of the WQBEL.

3.3.4 Beryllium

The previous factsheet indicated that Beryllium (Be) was listed by EPA as a priority pollutant and aquatic life criteria was available for Be prior to 2000, but EPA removed the recommended toxicity data used to calculate a Be criterion from their database in the late 1990's for reasons unknown. It continued that during the 2000 triennial review, the DEP removed the criteria for beryllium based on EPA's non supportive toxicity data. The factsheet concluded that the existing limit was locally derived without further details. Since there is no data to conduct water quality analysis, the existing Be limit 0.027 mg/l as an average monthly limit will be carried forward to collect data for evaluation at next renewal if the system is reactivated.

3.3.5 Fluoride

The criteria for Fluoride is for public water supply(PWS) protection .The previous factsheet indicated that since the nearest PWS (Borough of Pottstown Water and Sewer Authority), approximately 26 miles downstream from the NGK discharge and is not expected to be impacted by the discharge. Therefore, a locally derived limit was used without further details on how the limit was derived. Since there is no data to conduct analysis, the existing average monthly fluoride limit of 6.6 mg/l will be carried forward to provide a cleanup measure for the site.

3.3.6 Delaware River Basin Commission (DRBC) Requirements

DRBC regulations and policies are applicable to all NPDES permits for facilities within the Delaware River basin. The requirements of the most recent Docket No. D-1989-053-4 for this facility which was approved on March 15, 2017 with expiration date of March 15, 2027, will be applied to the permit. All parameters required in the Docket were included in the existing permit and will continue during the current permit renewal. Copy of the factsheet and draft permit will be sent to DRBC.

3.3.7 Total Dissolved Solids (TDS)

The existing average monthly limit of 1000mg/l concentration and mass limit of 1418lbs/day for TDS is DRBC requirement and will be continued in the permit.

4.0 Other Requirements

4.1 Anti-backsliding

Not applicable to this permit

4.2 Flow Monitoring

The requirement to monitor the volume of effluent discharged from Outfall 002 is required in accordance with 40 CFR § 122.44(i)(1)(ii).

4.3 Anti-Degradation (93.4)

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No High-Quality Waters are impacted by this discharge. No Exceptional Value Waters are impacted by this discharge.

4.4 Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

4.5 303d Listed Streams

The discharge is located on a 303d listed stream segment as impaired for aquatic life and recreation due to Pathogens, Organic Enrichment/Low D.O. Source of the impairment is Agricultural runoff. TMDL has not been developed and this discharge is not expected to contribute to the impairment. Therefore, no further action is warranted at this time.

4.6 Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs).

4.7 Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

5.0 Proposed Effluent Limitations and Monitoring Requirements

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

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

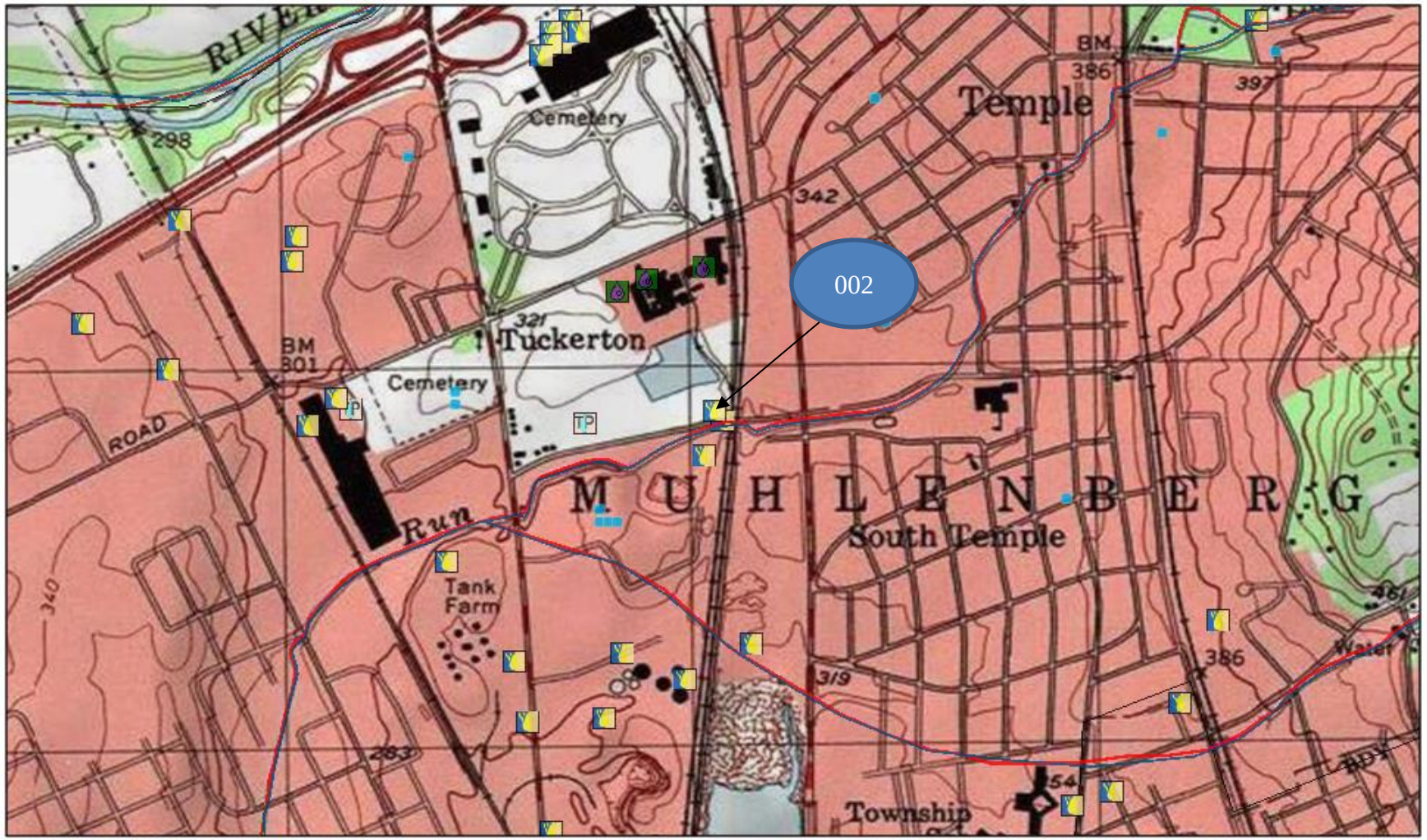
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/week	Grab
TSS	42.5	85.1	XXX	30	60	75	1/week	24-Hr Composite
Total Dissolved Solids	1418	2836	XXX	1000	2000	2500	1/week	24-Hr Composite
Total Beryllium	0.038	0.077	XXX	0.027	0.054	0.067	1/week	24-Hr Composite
Total Cadmium	0.003	0.006	XXX	0.002	0.004	0.005	1/week	24-Hr Composite
Hexavalent Chromium	0.047	0.094	XXX	0.033	0.066	0.082	1/week	24-Hr Composite
Total Copper	0.018	0.037	XXX	0.013	0.026	0.032	1/week	24-Hr Composite
Fluoride	9.4	18.7	XXX	6.6	13.2	16.5	1/week	24-Hr Composite
1,1,1-Trichloroethane	Report	Report	XXX	Report	Report	XXX	1/week	Grab
1,1-Dichloroethylene	0.0011	0.0023	XXX	0.0008	0.0016	0.002	1/week	Grab

Compliance Sampling Location: At Outfall 002

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

7. Attachment

A. Topographical Map



B. TMS Results

Discharge Information

Instructions | Discharge | Stream

Facility: **NGK METALS INC** NPDES Permit No.: **PA0261637** Outfall No.: **002**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated ground 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
0.17	100	7						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L											
	Chloride (PWS)	mg/L											
	Bromide	mg/L											
	Sulfate (PWS)	mg/L											
	Fluoride (PWS)	mg/L		6600									
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L		27									
	Total Boron	µg/L											
	Total Cadmium	µg/L		3									
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L		33									
	Total Cobalt	µg/L											
	Total Copper	µg/L		13									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L											
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<	0.8									
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<	0.8									
	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	<										

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

NGK METALS INC, NPDES Permit No. PA0261637, Outfall 002

Instructions | Discharge | Stream

Receiving Surface Water Name: **Laurel Run**

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	001981	2.35	319	5.36			Yes
End of Reach 1	001981	2.1	309	5.84			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	2.35	0.23										100	7		
End of Reach 1	2.1	0.23													

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	2.35														
End of Reach 1	2.1														

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

NGK METALS INC, NPDES Permit No. PA0261637, Outfall 002

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ *Hydrodynamics*

☑ *Wasteload Allocations*

☑ ***AFC*** CCT (min): 6.077 PMF: 1 Analysis Hardness (mg/l): 100 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
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	2.014	2.13	12.1	Chem Translator of 0.944 applied
Hexavalent Chromium	0	0		0	16	16.3	92.7	Chem Translator of 0.982 applied
Total Copper	0	0		0	13.439	14.0	79.6	Chem Translator of 0.96 applied
1,1-Dichloroethylene	0	0		0	7,500	7,500	42,657	

☑ ***CFC*** CCT (min): 6.077 PMF: 1 Analysis Hardness (mg/l): 100 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
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	0.246	0.27	1.54	Chem Translator of 0.909 applied
Hexavalent Chromium	0	0		0	10	10.4	59.1	Chem Translator of 0.962 applied
Total Copper	0	0		0	8.956	9.33	53.1	Chem Translator of 0.96 applied
1,1-Dichloroethylene	0	0		0	1,500	1,500	8,531	

☑ ***THH*** CCT (min): 6.077 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
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	

Total Cadmium	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	188	

☑ ***CRL*** CCT (min): 2.548 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
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	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 Cadmium	0.002	0.003	1.54	2.4	3.85	µg/L	1.54	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Hexavalent Chromium	0.084	0.13	59.1	92.2	148	µg/L	59.1	CFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	51.0	AFC	Discharge Conc > 10% WQBEL (no RP)

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

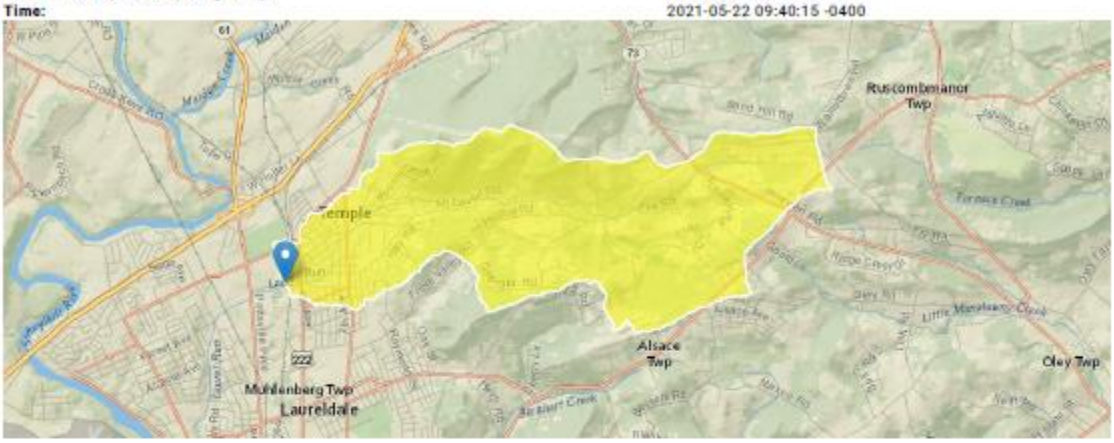
The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive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

Pollutants	Governing WQBEL	Units	Comments
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Beryllium	N/A	N/A	No WQS
1,1-Dichloroethane	N/A	N/A	No WQS
1,1-Dichloroethylene	188	µg/L	Discharge Conc ≤ 25% WQBEL

C. StreamStats Report

NKG StreamStats Report

Region ID:	PA
Workspace ID:	PA20210522133955926000
Clicked Point (Latitude, Longitude):	40.40242, -75.93042
Time:	2021-05-22 09:40:15 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.36	square miles
PRECIP	Mean Annual Precipitation	46	inches
STRDEN	Stream Density -- total length of streams divided by drainage area	1.23	miles per square mile
ROCKDEP	Depth to rock	5.1	feet
CARBON	Percentage of area of carbonate rock	22.38	percent

Low-Flow Statistics Parameters [99.4 Percent (5.33 square miles) Low Flow Region 2]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.36	square miles	4.93	1280
PRECIP	Mean Annual Precipitation	46	inches	35	50.4
STRDEN	Stream Density	1.23	miles per square mile	0.51	3.1
ROCKDEP	Depth to Rock	5.1	feet	3.32	5.65
CARBON	Percent Carbonate	22.38	percent	0	99

Low-Flow Statistics Disclaimers [99.4 Percent (5.33 square miles) Low Flow Region 2]

Weighted flows were not calculated. Users should be careful to evaluate the applicability of the provided estimates. Percentage of area falls outside where region is undefined. Whole estimates have been provided using available regional equations.

Low-Flow Statistics Flow Report [99.4 Percent (5.33 square miles) Low Flow Region 2]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	1.87	ft^3/s	38	38
30 Day 2 Year Low Flow	2.24	ft^3/s	33	33
7 Day 10 Year Low Flow	1.09	ft^3/s	51	51
30 Day 10 Year Low Flow	1.27	ft^3/s	46	46
90 Day 10 Year Low Flow	1.63	ft^3/s	36	36

https://streamstats.usgs.gov/ss/ 5/22/2021