pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0020541**
Facility Type	**Municipal**	APS ID	**1000369**
Major / Minor	**Minor**	Authorization ID	**1285525**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Girard Borough**	Facility Name	**Girard Borough STP**
Applicant Address	34 Main Street West	Facility Address	Waterworks Park Drive
	Girard, PA 16417-1612		Girard, PA 16417
Applicant Contact	Robert Stubenbort	Facility Contact	Mark Suscheck
Applicant Phone	(814) 774-9683	Facility Phone	(814) 774-9016
Client ID	51817	Site ID	258300
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Girard Borough
Connection Status	Dept. Imposed Connection Prohibitions	County	Erie
Date Application Received	August 4, 2019	EPA Waived?	Yes
Date Application Accepted	November 13, 2020	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for an existing discharge of treated sewage from a POTW

Summary of Review

This facility is a publicly operated treatment works which treat domestic sewage from the Borough of Girard and a portion of Girard Township. The application notes that the facility has three industrial users.

No changes to discharge quantity or quality were proposed as part of this permit renewal.

There are currently no open violations listed in EFACTS for this permittee (1/22/2021).

Sludge use and disposal description and location(s): Sludge will be dewatered onsite and hauled offsite for disposal in a landfill.

Public Participation

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

Approve	Deny	Signatures	Date
X		Adam Pesek Adam J. Pesek, E.I.T. / Environmental Engineering Specialist	January 21, 2021
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	January 25, 2021

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.996
Latitude	41º 54.44"	Longitude	-80º 19' 56.22"
Quad Name	Albion	Quad Code	0303
Wastewater Description:	Treated domestic sewage		
Receiving Waters	Elk Creek	Stream Code	62491
NHD Com ID	123919817	RMI	4.02
Drainage Area	92.55	Yield (cfs/mi^2)	0.0456
Q_{7-10} Flow (cfs)	4.22	Q_{7-10} Basis	USGS Regression (Streamstats)
Elevation (ft)	625	Slope (ft/ft)	0.00216
Watershed No.	15-A	Chapter 93 Class.	WWF, MF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	8.18	USGS# 04213078 (2019)(July-Aug)(Average)
Temperature (°C)	25	Default
Hardness (mg/L)		
Other:	0.1	Default

Nearest Downstream Public Water Supply Intake		PA/Canadian International Boundary	
PWS Waters	Lake Erie	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	4.02

Changes Since Last Permit Issuance: Outfall coordinates were refined using mapping imagery.

Other Comments:

Treatment Facility Summary

Treatment Facility Name: Girard Municipal Sewer

WQM Permit No.	Issuance Date
2596407 A-1	6/18/2013
2591411	8/18/1992
2587405	3/29/1988
5890	7/22/1932

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary,Secondary With Ammonia Reduction	Rotating Biological Contactors,Trickling Filter With Settling	Gas Chlorine	0.996

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.996	1600	Existing Hydraulic Overload	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: None

Other Comments: Treatment consists of flow equalization, grit settling trough, comminutor, four primary clarifiers, a trickling filter plant utilizing a fixed spray filter bed with gravel medium, two trains of two RBCs, two tertiary clarifiers, and gas chlorination.

Sludge is treated in two aerobic digesters and sent to nine reed drying beds for dewatering.

Compliance History

DMR Data for Outfall 001 (from November 1, 2019 to October 31, 2020)

Parameter	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19
Flow (MGD) Average Monthly	0.334	0.257	0.279	0.335	0.321	0.375	0.389	0.428	0.398	0.416	0.403	0.305
pH (S.U.) Minimum	6.33	6.58	6.45	6.59	6.61	6.33	6.57	6.57	6.5	6.4	6.38	6.58
pH (S.U.) Maximum	7.07	7.33	7.22	7.0	7.13	7.37	7.23	7.47	7.26	7.57	7.39	7.25
DO (mg/L) Minimum	6.48	6.17	6.25	6.72	7.23	7.59	9.03	8.84	9.55	9.1	9.07	8.17
TRC (mg/L) Average Monthly	< 0.03	< 0.03	< 0.02	< 0.02	< 0.03	0.04	< 0.03	< 0.03	< 0.02	< 0.02	< 0.01	< 0.04
TRC (mg/L) Instantaneous Maximum	0.09	0.14	0.1	0.06	0.06	0.4	0.1	0.09	0.05	0.07	0.16	0.3
CBOD5 (lbs/day) Average Monthly	< 9	< 7	< 7	< 9	< 14	< 11	< 10	< 17	< 14	< 13	< 15	< 9
CBOD5 (lbs/day) Weekly Average	12	< 12	< 9	11	21	15	< 17	25	20	< 23	14	13
CBOD5 (mg/L) Average Monthly	< 3	< 3	< 3	4	< 6	< 4	< 3	< 5	< 4	< 4	< 4	< 4
CBOD5 (mg/L) Weekly Average	4	3	< 3	4	8	5	< 4	6	< 6	< 6	5	6
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	493	419	455	356	363	528	924	394	451	366	1738	545
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	605	7.17	644	519	623	623	2286	518	505	432	6166	764
BOD5 (mg/L) Raw Sewage Influent Average Monthly	182	169	187	146	147	171	258	110	126	110	173	217
TSS (lbs/day) Average Monthly	< 14	< 14	< 12	< 12	< 12	< 15	< 17	< 22	19	< 17	< 19	< 13

TSS (lbs/day) Raw Sewage Influent Average Monthly	422	515	578	282	444	463	826	439	493	334	1559	606
TSS (lbs/day) Raw Sewage Influent Daily Maximum	504	744	723	368	941	600	2101	591	572	449	5002	1040
TSS (lbs/day) Weekly Average	< 19	27	< 15	< 13	< 14	< 16	25	37	20	19	24	< 15
TSS (mg/L) Average Monthly	< 5	< 5	5	< 5	< 5	< 5	< 5	< 6	6	< 5	< 5	< 5
TSS (mg/L) Raw Sewage Influent Average Monthly	154	212	241	117	176	150	229	119	138	100	177	239
TSS (mg/L) Weekly Average	< 5	7	< 5	< 5	< 5	< 5	6	7	6	5	6	< 5
Fecal Coliform (CFU/100 ml) Geometric Mean	< 5	< 5	< 6	< 6	< 5	< 5	< 3	< 5	< 6	< 5	< 4	< 5
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	5	< 5	10	10	< 5	5	< 5	5	8	< 5	20	< 5
Total Nitrogen (lbs/day) Average Quarterly		36			45			53			38	
Total Nitrogen (mg/L) Average Quarterly		16.2			15.1			17.1			17.93	
Ammonia (lbs/day) Average Monthly	< 2	< 2	< 2	< 2	< 2	< 2	< 3	< 3	< 3	< 3	< 3	< 1
Ammonia (mg/L) Average Monthly	< 0.8	0.93	< 0.8	< 0.7	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.44
Total Phosphorus (lbs/day) Average Monthly	1.4	1.1	0.9	1.6	0.6	2.0	2.3	1.9	1.0	8.5	1.6	1.1
Total Phosphorus (mg/L) Average Monthly	0.53	0.38	0.35	0.66	0.23	0.64	0.7	0.53	0.29	2.6	0.42	0.42

Compliance History

Effluent Violations for Outfall 001, from: December 1, 2019 To: October 31, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Total Phosphorus	01/31/20	Avg Mo	8.5	lbs/day	8.3	lbs/day
Total Phosphorus	01/31/20	Avg Mo	2.6	mg/L	1.0	mg/L

Summary of Inspections: Last site inspection was conducted on 2/14/2018. An unauthorized discharge (plant overflow) occurred in June 17. The plant also has been experiencing foaming issues throughout the plant.

Other Comments:

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.996
Latitude 41º 59' 54.44" **Longitude** -80º 19' 56.22"
Wastewater Description: Treated domestic sewage

Technology-Based Limitations

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
Total Phosphorus	1.0	Average Monthly	IJC Agreement	

Comments: A phosphorus limit of 1.0 mg/l as an average monthly is in place for discharges to Lake Erie or tributaries to Lake Erie (IJC Agreement).

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached):

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$	20	Average Monthly	WQM 7.0 1.0b
Ammonia Nitrogen (5/1 – 10/31)	3.5	Average Monthly	WQAM 6.3 (previous modeling)
Ammonia Nitrogen* (11/1 – 4/30)	10.5	Average Monthly	WQAM 6.3 (previous modeling)
Total Residual Chlorine	0.14	Average Monthly	TRC Spreadsheet
Total Residual Chlorine	0.5	IMAX	TRC Spreadsheet
Dissolved Oxygen	5	Minimum	WQAM 6.3 (previous modeling)
Total Copper	0.024	Average Monthly	Toxic Management Spreadsheet Ver. 1.1
Total Copper	0.037	Daily Maximum	Toxic Management Spreadsheet Ver. 1.1

Comments: The Toxic Management Spreadsheet (TMS) recommended monitoring for total zinc. Monthly monitoring for zinc will be added to the permit to gather further data to determine if a WQBEL is necessary in the future.

*-- A seasonal multiplier of 3 is applied for ammonia nitrogen in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

$CBOD_5$ is no longer assigned a seasonal multiplier in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits." Therefore, the WQBEL is applied year-round.

A "Pre-Draft Permit Survey" was sent to the Permittee for the new total copper WQBEL limits. Based on the Permittee's response, it was determined that a compliance schedule in the permit was necessary for the new total copper limits along with a condition in Part C of the permit requiring site specific data collection and a Toxic Reduction Evaluation (TRE). In the interim period, monitoring for copper will be placed in the proposed permit.

Best Professional Judgment (BPJ) Limitations

Comments: Comments: A dissolved oxygen limit of a minimum of 4.0 mg/l and monitoring for total nitrogen was placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Influent monitoring for TSS and BOD5 was placed in the permit in accordance with the Department's SOP entitled "New and Reissuance of Sewage Individual NPDES Permit Applications (SOP No. BCW-PMT-002)."

Anti-Backsliding

N/A

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: Permit Effective Date through January 31, 2026.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	Report	Report Daily Max	XXX	Report	Report Daily Max	XXX	2/month	24-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

Proposed Effluent Limitations and Monitoring Requirements

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

Outfall 001, Effective Period: February 1, 2026 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	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Copper, Total	0.2	0.31 Daily Max	XXX	0.024	0.037 Daily Max	0.06	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

Proposed Effluent Limitations and Monitoring Requirements

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

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.14	XXX	0.5	1/day	Grab
CBOD5	166	249	XXX	20.0	30.0	40	1/week	24-Hr Composite
BOD5 Raw Sewage Influent*	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
TSS	249	374	XXX	30.0	45.0	60	1/week	24-Hr Composite
TSS Raw Sewage Influent*	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Ammonia Nov 1 - Apr 30	87	XXX	XXX	10.5	XXX	21	1/week	24-Hr Composite
Ammonia May 1 - Oct 31	29	XXX	XXX	3.5	XXX	7	1/week	24-Hr Composite

Outfall 001 , Continued (from 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	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Total Phosphorus	8.3	XXX	XXX	1.0	XXX	XXX	1/week	24-Hr Composite
Total Zinc	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/month	24-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

* -- Raw sewage influent sampling should be collected downstream of the point where equalization tank flows meet other inflow.

Discharge Information

Instructions | Discharge | Stream

Facility: **Girard Borough STP** NPDES Permit No.: **PA0020541** Outfall No.: **001**

Evaluation Type **Major Sewage / Industrial Waste** Wastewater Description: **Treated domestic sewage**

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
0.996	100	6.7						

					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											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L		18									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L	<	1									
	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		24									
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

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

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

Stream / Surface Water Information

Girard Borough STP, NPDES Permit No. PA0020541, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Elk Creek**

No. Reaches to Model: **1**

- ◯ Statewide Criteria
- ◉ Great Lakes Criteria
- ◯ ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi²)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	062491	4.02	625	92.55			Yes
End of Reach 1	062491	0	572	97.5		0.001	Yes

Q ***7-10***

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	4.02	0.0456	4.22									100	8.18		
End of Reach 1	0	0.0456										100	8.18		

Q ***h***

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	4.02														
End of Reach 1	0														

Model Results

Girard Borough STP, NPDES Permit No. PA0020541, Outfall 001

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

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.618 Analysis Hardness (mg/l): 100 Analysis pH: 7.11

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 Copper	0	0		0	13.439	14.0	37.7	Chem Translator of 0.96 applied
Total Lead	0	0		0	64.581	81.6	220	Chem Translator of 0.791 applied
Total Zinc	0	0		0	117.180	120	323	Chem Translator of 0.978 applied

☑ ***CFC*** CCT (min): 39.285 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.24

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 Copper	0	0		0	8.956	9.33	34.9	Chem Translator of 0.96 applied
Total Lead	0	0		0	2.517	3.18	11.9	Chem Translator of 0.791 applied
Total Zinc	0	0		0	118.139	120	448	Chem Translator of 0.986 applied

☑ ***THH*** CCT (min): 39.285 THH PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 1

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 Copper	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Zinc	0	0		0	N/A	N/A	N/A	

☑ ***CRL*** CCT (min): 23.163 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 Copper	0	0		0	N/A	N/A	N/A	

Total Lead	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	0.2	0.31	24.2	37.7	60.4	µg/L	24.2	AFC	Discharge Conc ≥ 50% WQBEL (RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	207	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 Lead	N/A	N/A	Discharge Conc < TQL

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
15	62491	ELK CREEK	**4.020**	625.00	92.55	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.046	4.22	0.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	8.18
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Girard Boro STP	PA0020541	0.9960	0.0000	0.0000	0.000	20.00	6.70

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	7.54	0.00	0.00
NH3-N	25.00	0.10	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
15	62491	ELK CREEK	**3.230**	616.00	93.41	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.046	0.00	0.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	8.18
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
15	62491	ELK CREEK	**1.280**	584.00	96.00	0.00000	0.00	☑

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (cfs)	Stream Flow (cfs)	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	Tributary pH	Stream Temp (°C)	Stream pH
Q7-10	0.046	0.00	0.00	0.000	0.000	0.0	0.00	0.00	0.00	0.00	25.00	8.18
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
15	62491	ELK CREEK

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
4.020	Girard Boro STP	7.06	19.25	7.06	19.25	1	0
3.230		NA	NA	7.04	NA	NA	NA

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
4.020	Girard Boro STP	1.2	5.28	1.2	5.28	0	0
3.230		NA	NA	1.19	NA	NA	NA

Dissolved Oxygen Allocations

RMI	Discharge Name	CBOD5		NH3-N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
4.02	Girard Boro STP	22.95	22.95	5.28	5.28	4	4	0	0
3.23		NA	NA	NA	NA	NA	NA	NA	NA

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
15	62491	ELK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
4.020	0.996	23.663	7.235
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
40.995	0.728	56.281	0.193
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
7.60	1.064	1.49	0.928
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
6.593	4.314	Tsivoglou	5
Reach Travel Time (days)			
0.250			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.025	7.37	1.45	6.31
0.050	7.14	1.42	6.07
0.075	6.92	1.39	5.87
0.100	6.70	1.35	5.71
0.125	6.49	1.32	5.57
0.150	6.29	1.29	5.46
0.175	6.10	1.26	5.37
0.200	5.91	1.23	5.31
0.225	5.73	1.21	5.26
0.250	5.55	1.18	5.22

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
3.230	0.996	23.672	7.238
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
40.210	0.724	55.534	0.199
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
5.52	0.863	1.10	0.929
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.244	6.418	Tsivoglou	5
Reach Travel Time (days)			
0.598			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.060	5.20	1.04	5.67
0.120	4.89	0.98	6.00
0.179	4.60	0.93	6.26
0.239	4.33	0.88	6.47
0.299	4.07	0.83	6.64
0.359	3.83	0.79	6.79
0.419	3.60	0.74	6.91
0.479	3.39	0.70	7.02
0.538	3.19	0.67	7.12
0.598	3.00	0.63	7.21

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
15	62491	ELK CREEK

RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
4.020	Girard Boro STP	PA0020541	0.996	CBOD5	22.95		
				NH3-N	5.28	10.56	
				Dissolved Oxygen			4

TRC EVALUATION — Girard Boro STP - Outfall 001

Input appropriate values in B4:B8 and E4:E7

4.22	= Q stream (cfs)	0.5	= CV Daily
0.996	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.714	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC PENTOXSD	1.3.2.iii 5.1a	WLA afc = 0.643 LTAMULT	1.3.2.iii 5.1c	WLA cfc = 0.863 LTAMULT cfc =
TRG PENTOXSD	5.1b	afc = 0.373	5.1d	0.581
TRG		LTA_afc= 0.240		LTA_cfc = 0.502

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231 AVG MON LIMIT (mg/l) =	AFC
PENTOXSD TRG	5.1g	0.295 INST MAX LIMIT (mg/l) = 0.964	

	(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100) EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
WLA afc	wla_afc*LTAMULT_afc
LTAMULT afc	(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)
LTA_afc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5) wla_cfc*LTAMULT_cfc
WLA_cfc	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))
LTAMULT_cfc	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)
LTA_cfc	1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)
AML MULT	
AVG MON LIMIT	
INST MAX LIMIT	

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
15	62491	ELK CREEK

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (ºC)	Analysis pH
Q7-10 Flow												
4.020	4.22	0.00	4.22	1.5408	0.00216	.728	40.99	56.28	0.19	0.250	23.66	7.24
3.230	4.26	0.00	4.26	1.5408	0.00311	.724	40.21	55.53	0.20	0.598	23.67	7.24
Q1-10 Flow												
4.020	2.70	0.00	2.70	1.5408	0.00216	NA	NA	NA	0.16	0.297	23.18	7.12
3.230	2.73	0.00	2.73	1.5408	0.00311	NA	NA	NA	0.17	0.710	23.19	7.12
Q30-10 Flow												
4.020	5.74	0.00	5.74	1.5408	0.00216	NA	NA	NA	0.22	0.220	23.94	7.32
3.230	5.79	0.00	5.79	1.5408	0.00311	NA	NA	NA	0.23	0.525	23.95	7.33