Pennsylvania Department of Environmental Protection

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0102628**
Facility Type	**Municipal**	APS ID	**1095595**
Major / Minor	**Minor**	Authorization ID	**1452163**

Applicant and Facility Information

Applicant Name	**Henderson Township Municipal Authority**	Facility Name	**Henderson Township STP**
Applicant Address	PO Box 56 121 Fourth Street Stump Creek, PA 15863-0056	Facility Address	First Street Stump Creek, PA 15863
Applicant Contact	Michael Masisak	Facility Contact	Kenneth Caldwell
Applicant Phone	(814) 590-6751	Facility Phone	(814) 553-1824
Applicant Email	mike@hendersontma.comcastbiz.net	Facility Email	caldwellws1@outlook.com
Client ID	36230	Site ID	259125
Ch 94 Load Status	Not Overloaded	Municipality	Henderson Township
Connection Status	No Limitations	County	Jefferson
Date Application Received	August 13, 2023	EPA Waived?	Yes
Date Application Accepted	July 25, 2025	If No, Reason	

Purpose of Application: NPDES Permit Renewal for a Municipal Sewage Treatment Plant

Summary of Review

This is a NPDES Permit Renewal for a Municipal Sewage Treatment Plant for an Existing Design Flow of 0.04 MGD.

Proposed is increasing in Dissolved Oxygen sampling frequency from 3/week to 1/day.

Act 14 – Proof of Notification was submitted and received.

This facility is currently using eDMR system.

SPECTIAL CONDITIONS: NONE

There are **20** open violations in WMS for the subject Client ID (36230) as of August 1, 2025.

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		Aeshah Shameseldin Aeshah Shameseldin / Project Manager	August 1, 2025
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	August 5, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.04
Latitude	41º 0' 38.71"	Longitude	-78º 49' 51.71"
Quad Name	Du Bois	Quad Code	41078A7
Wastewater Description:	Sewage Effluent		

Receiving Waters	Stump Creek (CWF)	Stream Code	47922
NHD Com ID	123857030	RMI	3.57
Drainage Area	22.8 square miles	Yield (cfs/mi^2)	0.048
Q_{7-10} Flow (cfs)	1.094	Q_{7-10} Basis	Calculated
Elevation (ft)	1314	Slope (ft/ft)	---
Watershed No.	17-D	Chapter 93 Class.	CWF
Existing Use	---	Existing Use Qualifier	---
Exceptions to Use	---	Exceptions to Criteria	---
Assessment Status	Impaired		
Cause(s) of Impairment	Siltation		
Source(s) of Impairment	Acid Mine Drainage		
TMDL Status	Final	Name	Stump Creek Watershed

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°F)	68	Default
Hardness (mg/L)	100	Default
Other:		

Nearest Downstream Public Water Supply Intake	PA American Water Company - Kittanning District		
PWS Waters	Allegheny River	Flow at Intake (cfs)	987
PWS RMI	45.6	Distance from Outfall (mi)	78.0

Changes Since Last Permit Issuance: None.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Henderson Township STP

WQM Permit No.	Issuance Date
3377402	

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Stabilization Lagoon	Hypochlorite	0.04

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.04	68	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None.

Other Comments: Treatment under Water Quality Management Permit No. 3377402 consists of: Comminution with a bypass bar screen, two parallel 400,000-gallon aerated lagoons with 30 mil PVC liners, a final sedimentation pond with a 30 mil PVC liner, and tablet chlorine disinfection with a 2,150-gallon contact tank.

Compliance History

DMR Data for Outfall 001 (from June 1, 2024, to May 31, 2025)

Parameter	MAY-25	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24
Flow (MGD) Average Monthly	0.018554	0.019655	0.019902	0.019813	0.023168	0.022873	0.019151	0.018296	0.0177	0.017998	0.0171	0.017319
Flow (MGD) Daily Maximum	0.019587	0.021111	0.024143	0.024143	0.17991	0.018041	0.0219	0.019527	0.0192	0.01934	0.0197	0.018241
pH (S.U.) Instantaneous Minimum	7.21	7.19	7.31	7.61	7.18	7.34	7.24	7.22	6.81	7.22	7.15	7.11
pH (S.U.) Instantaneous Maximum	7.39	7.81	8.04	8.04	7.81	7.75	7.63	7.44	7.75	7.39	7.39	7.44
DO (mg/L) Daily Minimum	4.22	4.30	4.15	4.15	4.22	4.39	4.49	4.44	4.20	4.15	4.19	4.2
TRC (mg/L) Average Monthly	0.33	0.1	0.12	0.12	0.12	0.38	0.33	0.31	0.28	0.27	0.23	0.24
TRC (mg/L) Instantaneous Maximum	0.45	0.1	0.15	0.15	0.19	0.39	0.3	0.35	0.31	0.35	0.35	0.38
CBOD5 (lbs/day) Average Monthly	2.8	2.0	3.3	6.1	7.3	3.5	9.0	0.7	0.5	< 0.7	< 1.0	1.0
CBOD5 (lbs/day) Weekly Average	3.2	2.2	4.1	7.4	8.2	3.8	16.9	0.7	1.0	< 0.9	1.1	1.4
CBOD5 (mg/L) Average Monthly	18.0	13.0	20	39.0	50.0	24.0	57.0	4.56	< 3.2	< 5.0	< 7.0	7.0
CBOD5 (mg/L) Weekly Average	20.0	14.0	26	48.0	56.1	26.0	107.0	4.62	< 6.3	< 6.0	7.92	10.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	17.0	23.0	27.0	22.0	34.0	10.0	41.0	30.0	58.4	24.0	30.0	42.0
BOD5 (mg/L) Raw Sewage Influent Average Monthly	111.4	147.0	165.0	142.3	236.0	66.7	260.0	191.0	380	152.0	218.0	305.0
TSS (lbs/day) Average Monthly	2.0	14.0	2.0	5.0	6.0	2.0	34.0	1.0	< 0.8	0.9	2.0	0.8

TSS (lbs/day) Raw Sewage Influent Average Monthly	16.0	19.0	25.0	5.0	27.0	2.0	1.0	1.0	53.2	6.0	8.0	8.0
TSS (lbs/day) Weekly Average	3.0	19.0	3.0	7.0	10.0	3.0	39.0	1.0	< 1.6	1.0	2.0	1.0
TSS (mg/L) Average Monthly	16.0	2.0	12.0	29.0	42	17.0	218	6.0	< 5.0	6.0	12.0	6.0
TSS (mg/L) Raw Sewage Influent Average Monthly	106.0	121.0	152.0	29.0	186.0	17.0	8.0	6.0	346	36.0	60.0	11.0
TSS (mg/L) Weekly Average	20.0	3.0	17.0	44.0	67	17.0	248	8.0	< 10.0	7.0	17.0	8.0
Fecal Coliform (No./100 ml) Geometric Mean	34218	12539	4089	24196	24196	12098	7651	3413.0	259	118	69	1607
Fecal Coliform (No./100 ml) Instantaneous Maximum	48392	12997	24196	24196	24196	12098	12098	4839.2	263	284.2	581.0	1986.3
Total Nitrogen (lbs/day) Annual Average						4.761						
Total Nitrogen (mg/L) Annual Average						4.761						
Ammonia (lbs/day) Average Quarterly			11.96			E			0.1			1.0
Ammonia (mg/L) Average Quarterly			11.96			E			0.7			7.542
Total Phosphorus (lbs/day) Annual Average						5.41						
Total Phosphorus (mg/L) Annual Average						5.41						
Total Aluminum (lbs/day) Annual Average						0.100						
Total Aluminum (mg/L) Annual Average						0.100						
Total Iron (lbs/day) Annual Average						0.210						

Total Iron (mg/L) Annual Average						0.210						
Total Manganese (lbs/day) Annual Average						0.116						
Total Manganese (mg/L) Annual Average						0.116						

Compliance History

Effluent Violations for Outfall 001, from: July 1, 2024, To: May 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	11/30/24	Avg Mo	9.0	lbs/day	8.3	lbs/day
CBOD5	11/30/24	Wkly Avg	16.9	lbs/day	12.4	lbs/day
CBOD5	11/30/24	Avg Mo	57.0	mg/L	25	mg/L
CBOD5	02/28/25	Avg Mo	39.0	mg/L	25	mg/L
CBOD5	01/31/25	Avg Mo	50.0	mg/L	25	mg/L
CBOD5	11/30/24	Wkly Avg	107.0	mg/L	40	mg/L
CBOD5	01/31/25	Wkly Avg	56.1	mg/L	40	mg/L
CBOD5	02/28/25	Wkly Avg	48.0	mg/L	40	mg/L
TSS	11/30/24	Avg Mo	34.0	lbs/day	10	lbs/day
TSS	04/30/25	Avg Mo	14.0	lbs/day	10	lbs/day
TSS	04/30/25	Wkly Avg	19.0	lbs/day	15	lbs/day
TSS	11/30/24	Wkly Avg	39.0	lbs/day	15	lbs/day
TSS	11/30/24	Avg Mo	218	mg/L	30	mg/L
TSS	01/31/25	Avg Mo	42	mg/L	30	mg/L

TSS	01/31/25	Wkly Avg	67	mg/L	45	mg/L
TSS	11/30/24	Wkly Avg	248	mg/L	45	mg/L
Fecal Coliform	01/31/25	Geo Mean	24196	No./100 ml	2000	No./100 ml
Fecal Coliform	11/30/24	Geo Mean	7651	No./100 ml	2000	No./100 ml
Fecal Coliform	10/31/24	Geo Mean	3413.0	No./100 ml	2000	No./100 ml
Fecal Coliform	09/30/24	Geo Mean	259	No./100 ml	200	No./100 ml
Fecal Coliform	04/30/25	Geo Mean	12539	No./100 ml	2000	No./100 ml
Fecal Coliform	03/31/25	Geo Mean	4089	No./100 ml	2000	No./100 ml
Fecal Coliform	05/31/25	Geo Mean	34218	No./100 ml	200	No./100 ml
Fecal Coliform	02/28/25	Geo Mean	24196	No./100 ml	2000	No./100 ml
Fecal Coliform	12/31/24	Geo Mean	12098	No./100 ml	2000	No./100 ml
Fecal Coliform	04/30/25	IMAX	12997	No./100 ml	10000	No./100 ml
Fecal Coliform	05/31/25	IMAX	48392	No./100 ml	1000	No./100 ml
Fecal Coliform	12/31/24	IMAX	12098	No./100 ml	10000	No./100 ml
Fecal Coliform	02/28/25	IMAX	24196	No./100 ml	10000	No./100 ml
Fecal Coliform	03/31/25	IMAX	24196	No./100 ml	10000	No./100 ml
Fecal Coliform	11/30/24	IMAX	12098	No./100 ml	10000	No./100 ml
Fecal Coliform	01/31/25	IMAX	24196	No./100 ml	10000	No./100 ml

Summary of Inspections: An inspection of the facility was conducted on January 22, 2025. The inspection report listed the following violation:

1- **25 Pa. Code 92a.41(a)(12):** Failure to submit monitoring reports or properly complete monitoring reports. eDMR's have not been correctly submitted for October, November, and December of 2024.
2- **25 Pa. Code 92a.41(a)(5):** Failure to properly operate and maintain all facilities. Little to no maintenance and upkeep is being performed throughout the plant. The blower building lights do not work, the headworks area has been partially filled with dirt and rocks (suspected from groundhogs digging) near the comminutor, vegetation around the ponds has not been maintained, and the chlorine contact tank continues to need cleaned. There is a strong sewage smell inside the chlorine contact tank building. Insulation is needed as thick ice has formed inside the tank that is possibly affecting the chlorine tablets from contacting water, flows from being read correctly, and sampling issues (frozen lines to composite sampler).
3- **25 Pa. Code 92a.41(c):** NPDES - Discharge contained floating materials, scum, sheen, foam, oil, grease or substances that produced an observable change or resulted in deposits in receiving waters for NPDES permitted activities Sphaerotilus growth and malodor near outfall discharge.
4- **25 Pa. Code 92a.44:** NPDES - Violation of effluent limits in Part A of permit Fecal violations have occurred in 15 out of the last 21 months.

A follow up inspection was conducted on May 28, 2025. The inspection report listed the following violations:

1- **25 Pa. Code 92a.41(a)(12):** Failure to submit monitoring reports or properly complete monitoring reports. eDMR's continue to be submitted late.
2- **25 Pa. Code 92a.41(a)(12):** Failure to submit monitoring reports or properly complete monitoring reports. Influent process control supplemental reports not submitted.
3- **25 Pa. Code 92a.41(a)(12):** Failure to submit a required DMR supplemental report.
4- **25 Pa. Code 92a.41(a)(5):** Failure to properly operate and maintain all facilities which are installed or used by the permittee to achieve compliance Flow recorder does not appear to be working.
5- **25 Pa. Code 92a.41(a)(5):** Failure to maintain permitted treatment units in operable condition Chlorine tablet feeder base has corroded to the point that it is not functioning properly, and wastewater is not in contact with chlorine tablets.
6- **25 Pa. Code 92a.41(a)(5):** Failure to properly operate and maintain all facilities. Chlorine tablet feeder not operable, headworks area needs cleaned out (dirt and rocks from groundhogs digging), flow recorder doesn't appear to be operating and hasn't been calibrated in 3 years.
7- **25 Pa. Code 92a.41(a)(8):** Failure to provide information or records required by the permit or otherwise needed to determine compliance. No bench sheets present for pH, DO, and TRC analysis.
8- **25 Pa. Code 92a.46:** Violation of Part C permit condition - Solids Management Sludge blanket depth has not been measured annually as required by Part C.II.A of the NPDES Permit.
9- **94.12(A):** Wasteload Management - Failure to submit a timely Chapter 94 report. Chapter 94 report is due annually on March 31st.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .04
Latitude 41º 0' 39.80" **Longitude** -78º 50' 0.78"
Wastewater Description: Sewage Effluent

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)
E. Coli	Report (No./100 ml)	IMAX	-	§ 92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

CBOD5, Ammonia, and DO are evaluated using WQM 7.0 (Attachment 1). TRC is evaluated using the Department's TRC evaluation spreadsheet (Attachment 2). Total Aluminum, Total Iron, and Total Manganese were evaluated using the Department's TMS (Attachment 3).

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

Parameter	Limit (mg/l)	SBC	Model
Dissolved Oxygen	4.0	Daily Min.	WQM 7.0
CBOD5	25	Average Monthly	WQM 7.0
	50	IMAX	
Ammonia Nitrogen (May 1 – Oct 31)	25	Average Monthly	WQM 7.0
	50	IMAX	
TRC	0.5	Average Monthly	TRC evaluation spreadsheet

Comments: WQM modeling did not calculate a more stringent average monthly Ammonia Nitrogen limit under perennial flow conditions. A review of the eDMR data for Ammonia Nitrogen over the past five years indicates consistent compliance with the limits of 25 mg/L (monthly average) and 50 mg/L (daily maximum) at a 100% rate. Therefore, the current monitoring requirements for Ammonia Nitrogen will be retained.

The TRC evaluation spreadsheet didn't calculate more stringent average monthly TRC limit at perennial conditions using the plant design flow. The technology-based limitations established in previous permits are attainable and will be retained.

The parameters associated with Acid Mine Drainage (Aluminum, Magnesium, and Iron) were evaluated using the Department's TMS and were found to be below the criteria established in Chapter 93. This discharge was not addressed in the Stump Creek Watershed Total Maximum Daily Load (TMDL). Due to the existence of the TMDL and the absence of sufficient effluent data for the parameters identified therein, the US EPA recommended monitoring for Total Aluminum, Total Iron, and Total Manganese during the 2013 NPDES permit renewal. As a result, the existing monitoring requirements for these parameters will be maintained under the current permit renewal in order to verify future discharge levels and support any potential future revisions to the TMDL, if necessary.

During the previous permit renewal cycle, the permittee requested a reduction in the DO monitoring frequency from 1/day to 3/week, due to the lack of available funding for a DO meter. In response, the Department approved a temporary reduction in the DO monitoring frequency to 3/week and notified the permittee that the original monitoring requirement of 1/day will take effect with the next permit renewal.

Best Professional Judgment (BPJ) Limitations

Comments: Monitoring for Total Nitrogen and Total Phosphorus are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits." Per the SOP, the monitoring frequency can be reduced for discharges to waters not impaired for nutrients. Therefore, the current monitoring requirements for N and P will be retained.

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" (386-0400-001), SOPs and/or BPJ.

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		
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	24-Hr Composite

Compliance Sampling Location: At the STP Influent Location, Prior to Any Treatment.

Other Comments: Monitoring for influent BOD5 and Total Suspended Solids is based on Chapter 92a.61.

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" (386-0400-001), SOPs and/or BPJ.

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

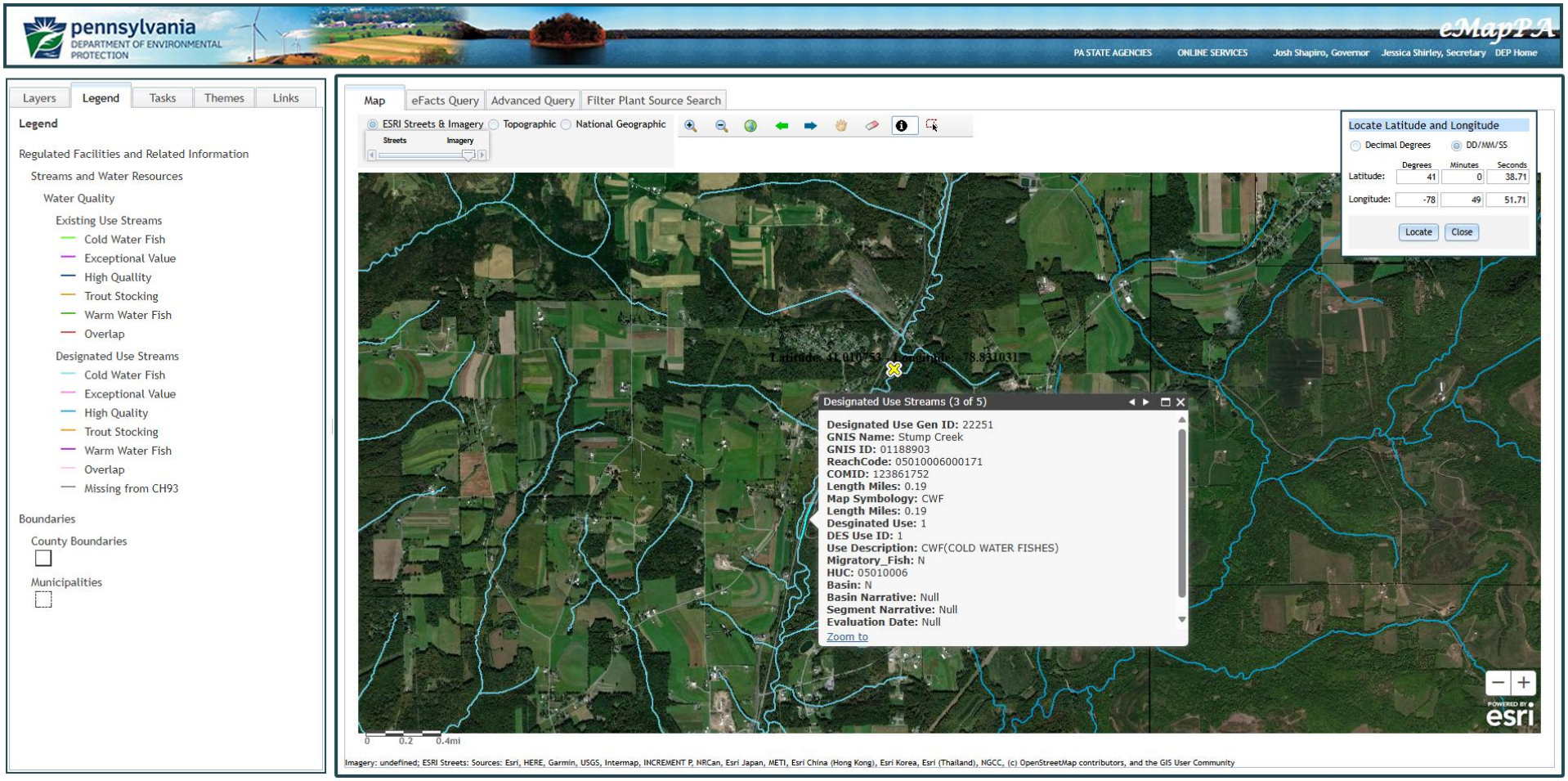
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	8.3	12.4	XXX	25	40	50	2/month	24-Hr Composite
TSS	10	15	XXX	30.0	45.0	60	2/month	24-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Ammonia-Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	24-Hr Composite
Total Phosphorus	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Total Aluminum	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite
Total Iron	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite

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 Manganese	Report Annl Avg	XXX	XXX	Report Annl Avg	XXX	XXX	1/year	24-Hr Composite

Compliance Sampling Location: Outfall 001, after disinfection.

Other Comments: Monitoring for Ammonia-Nitrogen, Total Nitrogen, Total Phosphorus, Total Aluminum, Total Iron, and Total Manganese is based on Chapter 92a.61.

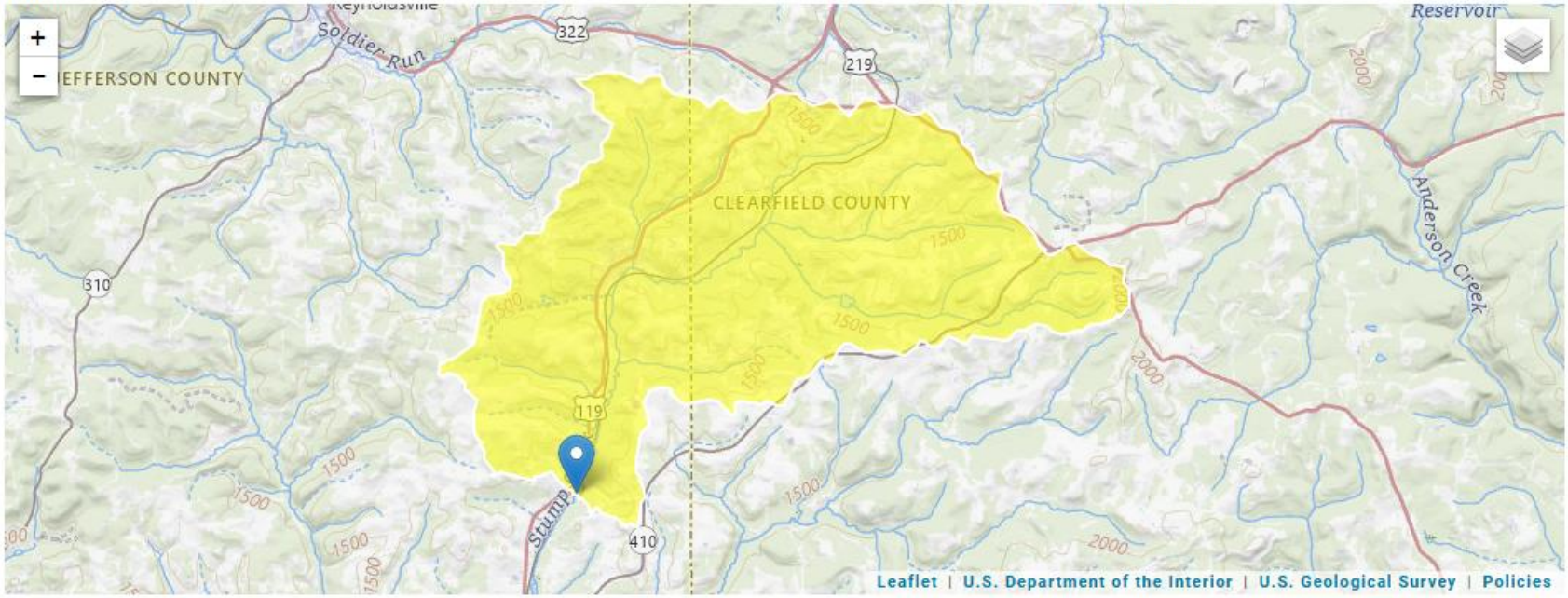
Outfall Location - eMap with Aerial Imagery



Drainage Area Location – StreamStats with Aerial Imagery

StreamStats Report

Region ID:	PA
Workspace ID:	PA20250730152400473000
Clicked Point (Latitude, Longitude):	41.01046, -78.83100
Time:	2025-07-30 11:24:26 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	22.8	square miles

Attachment 1

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17D	47922	STUMP 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)
3.570	Henderson Twp	PA0102628	0.040	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			4

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	6		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17D	47922	STUMP CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
3.570	0.040	20.268	7.014
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
20.184	0.566	35.640	0.101
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.23	0.220	1.43	0.715
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.016	1.081	Tsivoglou	6
Reach Travel Time (days)			
2.151			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.215	3.08	1.23	7.21
0.430	2.94	1.05	6.70
0.645	2.80	0.90	6.41
0.860	2.67	0.77	6.27
1.075	2.54	0.66	6.24
1.290	2.42	0.57	6.30
1.506	2.31	0.49	6.40
1.721	2.20	0.42	6.53
1.936	2.10	0.36	6.69
2.151	2.00	0.31	6.85

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
17D	47922	STUMP CREEK	**3.570**	1314.00	22.80	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	0.048	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
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
Henderson Twp	PA0102628	0.0400	0.0000	0.0000	0.000	25.00	7.40

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	8.24	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
17D	47922	STUMP CREEK	**0.010**	1293.00	28.00	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	0.048	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
17D	47922	STUMP 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
3.570	Henderson Twp	15.9	50	15.9	50	0	0

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
3.570	Henderson Twp	1.86	25	1.86	25	0	0

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)		
3.57	Henderson Twp	25	25	25	25	4	4	0	0

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17D	47922	STUMP 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 (°C)	Analysis pH
Q7-10 Flow												
3.570	1.09	0.00	1.09	.0619	0.00112	.566	20.18	35.64	0.10	2.151	20.27	7.01
Q1-10 Flow												
3.570	0.70	0.00	0.70	.0619	0.00112	NA	NA	NA	0.08	2.716	20.41	7.02
Q30-10 Flow												
3.570	1.49	0.00	1.49	.0619	0.00112	NA	NA	NA	0.12	1.825	20.20	7.01

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

1.09	= Q stream (cfs)	0.5	= CV Daily
0.04	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.683	= 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	1.3.2.iii	WLA afc = 3.857	1.3.2.iii	WLA cfc = 5.489
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.437	5.1d	LTA_cfc = 3.191

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.231	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635	

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)**

Attachment 3

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions | Discharge | Stream

Facility: **Henderson TWP STP** NPDES Permit No.: **PA0102628** Outfall No.: **001**

Evaluation Type **Custom / Additives** Wastewater Description: **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
0.04	100	7.4						

	Discharge Pollutant	Units	Max Discharge Conc		0 if left blank: Trib Conc	Stream Conc	0.5 if left blank: Daily CV	Hourly CV	0 if left blank: Stream CV	Fate Coeff	FOS	1 if left blank: 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		139									
	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											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L		403									
	Total Lead	µg/L											
	Total Manganese	µg/L		128									
	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	<										
	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										

Group 3	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											

For modeling purposes, the Point of Discharge (POD) was assigned an RMI value of 78, representing the distance in miles between the POD and the End of Reach 1 (Public Water Supply) location. This value differs from the actual RMI on Stump Creek, which is 3.57. Similarly, the End of Reach 1 was assigned an RMI value of 0 for modeling consistency, although its actual RMI on the Allegheny River is 45.6 miles.

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Toxics Management Spreadsheet
Version 1.4, May 2025

Stream / Surface Water Information

Henderson TWP STP, NPDES Permit No. PA0102628, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: _____ 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	047922	78	1314	22.8			Yes
End of Reach 1	042122	0	772	8980			Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi²)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	78	0.048										100	7		
End of Reach 1	0	0.086										100	7		

Q_h

Location	RMI	LFY (cfs/mi²)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	78														
End of Reach 1	0														

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Toxics Management Spreadsheet
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Model Results

Henderson TWP STP, NPDES Permit No. PA0102628, 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	Complete Mix Time (min)
78	1.09		1.09	0.062	0.001	0.563	20.025	35.559	0.103	46.488	32.117
0	771.41		771.4136								

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	Complete Mix Time (min)
78	8.04		8.04	0.062	0.001	1.326	20.025	15.099	0.305	15.627	9.768
0	2480.15		2480.15								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.683 Analysis Hardness (mg/l): 100 Analysis pH: 7.02

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	750	750	9,815	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): 32.117 PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.01

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	28,029	WQC = 30 day average; PMF = 1
Total Manganese	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): 32.117 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments

Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	18,686	

☑ ***CRL*** CCT (min): 9.768 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Manganese	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

☑ ***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 Aluminum	6,291	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	28,029	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	18,686	µg/L	Discharge Conc ≤ 10% WQBEL