Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0114553**
Facility Type	**Sewage**	APS ID	**1090736**
Major / Minor	**Minor**	Authorization ID	**1443768**

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

Applicant and Facility Information

Applicant Name	**Millheim Borough Centre County**	Facility Name	**Millheim Borough Sewer System STP**
Applicant Address	PO Box 421	Facility Address	645 Tattletown Road
	Millheim, PA 16854-0421		Coburn, PA 16832
Applicant Contact	Katie Blume	Facility Contact	Justin Kerstetter
Applicant Phone	(570) 713-8085	Facility Phone	(814) 360-0995
Client ID	75094	Site ID	245358
SIC Code	4952	Municipality	Penn Township
SIC Description	Trans. & Utilities - Sewerage Systems	County	Centre
Date Application Received	June 12, 2023	EPA Waived?	Yes
Date Application Accepted	June 21, 2023	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit.

Summary of Review

The subject facility is a Publicly Owned Treatment Works (POTW) serving Millheim Borough in Centre County. A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's sludge is sent to other treatment plants for further processing. Per the application 9.5 dry tons were removed in the prior year before submittal.

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
✓		Keith C. Allison / Project Manager	June 9, 2025
✓		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	June 10, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.1
Latitude	40º 53' 0.73"	Longitude	-77º 28' 1.50"
Quad Name	Millheim, PA	Quad Code	1126
Wastewater Description:	Sewage Effluent		
Receiving Waters	Elk Creek (EV)	Stream Code	18244
NHD Com ID	54965193	RMI	1.52
Drainage Area	48.6 mi^2	Yield (cfs/mi^2)	0.125
Q_{7-10} Flow (cfs)	6.08	Q_{7-10} Basis	USGS Gage 01555000, Penns Creek @ Penns Creek (1931-2008)
Elevation (ft)	1055	Slope (ft/ft)	0.00411
Watershed No.	6-A	Chapter 93 Class.	EV
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	PATHOGENS		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status	Pending	Name	
Nearest Downstream Public Water Supply Intake	Suez Water near Dauphin, PA		
PWS Waters	Susquehanna River	Distance from Outfall (mi)	~78

Changes Since Last Permit Issuance: The stream and drainage characteristics from the previous review listed above are adequate.

Other Comments: The discharge predates the EV designation of Elk Creek. The facility has not expanded or increased its discharge loadings to the stream. Therefore, no anti-degradation analysis is required for the discharge.

No draft TMDL has yet been developed for the above-listed impairment to Elk Creek for pathogens. The permittee generally meets its current Fecal Coliform Limitations. The limits are consistent with the former in-stream criteria for Fecal Coliform in 25 Pa. Code 93. E. Coli monitoring will be required at this time. Therefore, no additional limits should be necessary at this time.

This discharge is not expected to affect any downstream water supply at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Millheim Borough Council

WQM Permit No.	Issuance Date	Permit Approved:
1406411	Amendment 2/26/08	Removal of phosphorus removal.
	Orig. Issuance 8/13/07	Membrane Bioreactor treatment system
1493406	Minor amendment 8/20/03	Installation of dechlorination
	Orig. Issuance 6/16/93	Former Trickling Filter plant including still-used chlorination

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary With Total Nitrogen Reduction	MBR	Hypochlorite	0.1

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1	200	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: None

Other Comments: The treatment plant as permitted consists of fine screens, anoxic tank, recycle tank, two aerated membrane tanks, chlorination with two contact tanks, dechlorination, and two sludge holding tanks.

Compliance History

DMR Data for Outfall 001 (from May 1, 2024 to April 30, 2025)

Parameter	APR-25	MAR-25	FEB-25	JAN-25	DEC-24	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24
Flow (MGD) Average Monthly	0.0489	0.0586	0.0403	0.0396	0.0387	0.0393	0.0412	0.0564	0.0637	0.0417	0.0445	0.0485
Flow (MGD) Weekly Average	0.0637	0.0777	0.044	0.0403	0.0409	0.0399	0.0534	0.0952	0.0749	0.0446	0.0499	0.0556
pH (S.U.) Instantaneous Minimum	6.5	6.4	6.6	6.5	6.7	6.7	6.7	6.7	6.5	6.7	6.7	6.8
pH (S.U.) Instantaneous Maximum	6.9	6.8	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	7.0	6.9
DO (mg/L) Instantaneous Minimum	6.7	6.7	6.7	6.8	6.7	6.7	6.8	6.7	6.8	6.7	6.7	6.8
TRC (mg/L) Average Monthly	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
TRC (mg/L) Instantaneous Maximum	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
CBOD5 (lbs/day) Average Monthly	11	< 2	< 2	< 1	1	< 1	< 1	< 3	1	1	3	8
CBOD5 (lbs/day) Weekly Average	21	3	2	< 1	1	2	< 1	5	2	1	5	9
CBOD5 (mg/L) Average Monthly	27	< 5	< 5	< 3.0	< 4	< 4	< 3.0	6	3.0	3.0	9	21
CBOD5 (mg/L) Weekly Average	51	7.57	8	< 3.0	5	6	< 3.0	6.18	3.0	3.0	15	23
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	211	125	89	74	110	110	87	113	77	87	73	84
BOD5 (mg/L) Raw Sewage Influent Average Monthly	485	294	270	228	334	371	255	229	160	243	206	221
TSS (lbs/day) Average Monthly	< 21	2	< 5	3	< 0.6	< 3	< 0.6	< 0.9	0.9	0.6	3	5
TSS (lbs/day) Raw Sewage Influent Average Monthly	178	95	77	87	74	92	107	93	91	82	54	74
TSS (lbs/day) Weekly Average	42	3	9	5	0.6	5	< 0.6	< 1	1	0.6	6	7
TSS (mg/L) Average Monthly	52	6	< 17	10	< 2	< 8	< 1.6	< 2	< 2	2	10	14

TSS (mg/L) Raw Sewage Influent Average Monthly	413	224	238	265	227	313	314	210	193	231	152	194
TSS (mg/L) Weekly Average	100	9.2	30	16.4	2	15	< 1.6	< 2	< 2	2	18	19
Fecal Coliform (No./100 ml) Geometric Mean	18	< 6	< 29	54	39	26	12	698	6	2	< 98	2051
Fecal Coliform (No./100 ml) Instantaneous Maximum	78.5	10	82	290.9	58.3	93.3	13.2	9678	20.3	4	9678.4	2419.6
Ammonia (lbs/day) Average Monthly	< 0.4	< 1	< 0.3	0.4	0.1	< 0.3	0.9	1	0.05	0.04	3	< 0.3
Ammonia (mg/L) Average Monthly	< 1	< 0.4	< 0.938	1.17	< 0.3912	< 0.961	2.8	1.4	0.1	0.1	9.572	0.675

Compliance History

Effluent Violations for Outfall 001, from: May 1, 2024 to April 30, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	09/30/24	Geo Mean	698	No./100 ml	200	No./100 ml
Fecal Coliform	09/30/24	IMAX	9678	No./100 ml	1000	No./100 ml
Fecal Coliform	06/30/24	IMAX	9678.4	No./100 ml	1000	No./100 ml
CBOD5	04/30/25	Avg Mo	27	mg/L	25	mg/L
CBOD5	04/30/25	Wkly Avg	51	mg/L	40	mg/L
TSS	04/30/25	Wkly Avg	42	lbs/day	38	lbs/day
TSS	04/30/25	Avg Mo	52	mg/L	30	mg/L
TSS	04/30/25	Wkly Avg	100	mg/L	45	mg/L

Compliance History	
Summary of Inspections:	The most recent full inspection of the facility by the department on June 26, 2024 identified no violations at the time of inspection. A follow-up inspection on August 2, 2024 identified eDMR effluent violations.
Other Comments:	A query in WMS found an open violation in eFACTS for Millheim Borough for Failure to Implement a Filter Bed Evaluation Program from the Department's Safe Drinking Water Program.

Existing Effluent Limitations and Monitoring Requirements

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	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.02	XXX	0.05	1/day	Grab
CBOD5	21	33	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	25	38	XXX	30	45	60	2/month	8-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
Ammonia	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.1
Latitude 40º 53' 0.00" **Longitude** -77º 28' 4.00"
Wastewater Description: Sewage Effluent

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
$CBOD_5$	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)

Comments: The above limits are applicable and will continue from the existing NPDES permit except for an existing more stringent TRC limit due to the discharge to a special protection watershed as noted below.

Water Quality-Based Limitations

CBOD5, DO, and NH3-N

The WQM7.0 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. WQM7.0 modeling was performed (see Attachment B) for the discharge to Elk Creek and showed that no limitations are necessary beyond the technology-based secondary treatment limits listed above.

TRC

The facility has an existing TRC monthly average limit of 0.02 mg/L due to the discharge to EV waters. Therefore, no TRC modeling has been performed due to the stringent limitation and adequate dilution available.

Toxics Management

No further “Reasonable Potential Analysis” was performed to determine additional toxic parameters as candidates for limitations for this 0.1 MGD sewage treatment facility receiving no industrial influent.

Chesapeake Bay Requirements

According to the Pennsylvania’s Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, this facility is considered a Phase 5 Chesapeake Bay sewage discharger, and as such requires no nutrient loading limits. A summary of the available nutrient data from the previous review found the Total Nitrogen to average 7.3 mg/L and the Total Phosphorus to average 1.5 mg/L. Because the nutrients levels in the discharge have been adequately characterized, Total Nitrogen and Total Phosphorus monitoring will not be included in the draft permit at this time.

Antidegradation

The discharge predates the EV designation of Elk Creek. In addition, the facility has not expanded or increased its discharge loadings to the stream. Therefore, no anti-degradation analyses are required for the discharge at this time.

e. Coli

Quarterly e. coli monitoring will be required at this time due to recent changes to Chapter 93 of the Departments regulations, Department policy, and the impairment to the receiving waters.

Best Professional Judgment (BPJ) Limitations

No additional BPJ limits are needed beyond the technology-based limits noted above.

Anti-Backsliding

No water quality based or BPJ limits were made less stringent consistent with the anti-backsliding requirements of 40 CFR 122.44(l).

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	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.02	XXX	0.05	1/day	Grab
CBOD5	21	33	XXX	25	40	50	2/month	8-Hr Composite
BOD5 Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS Raw Sewage Influent	Report	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
TSS	25	38	XXX	30	45	60	2/month	8-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
Ammonia-Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
e. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

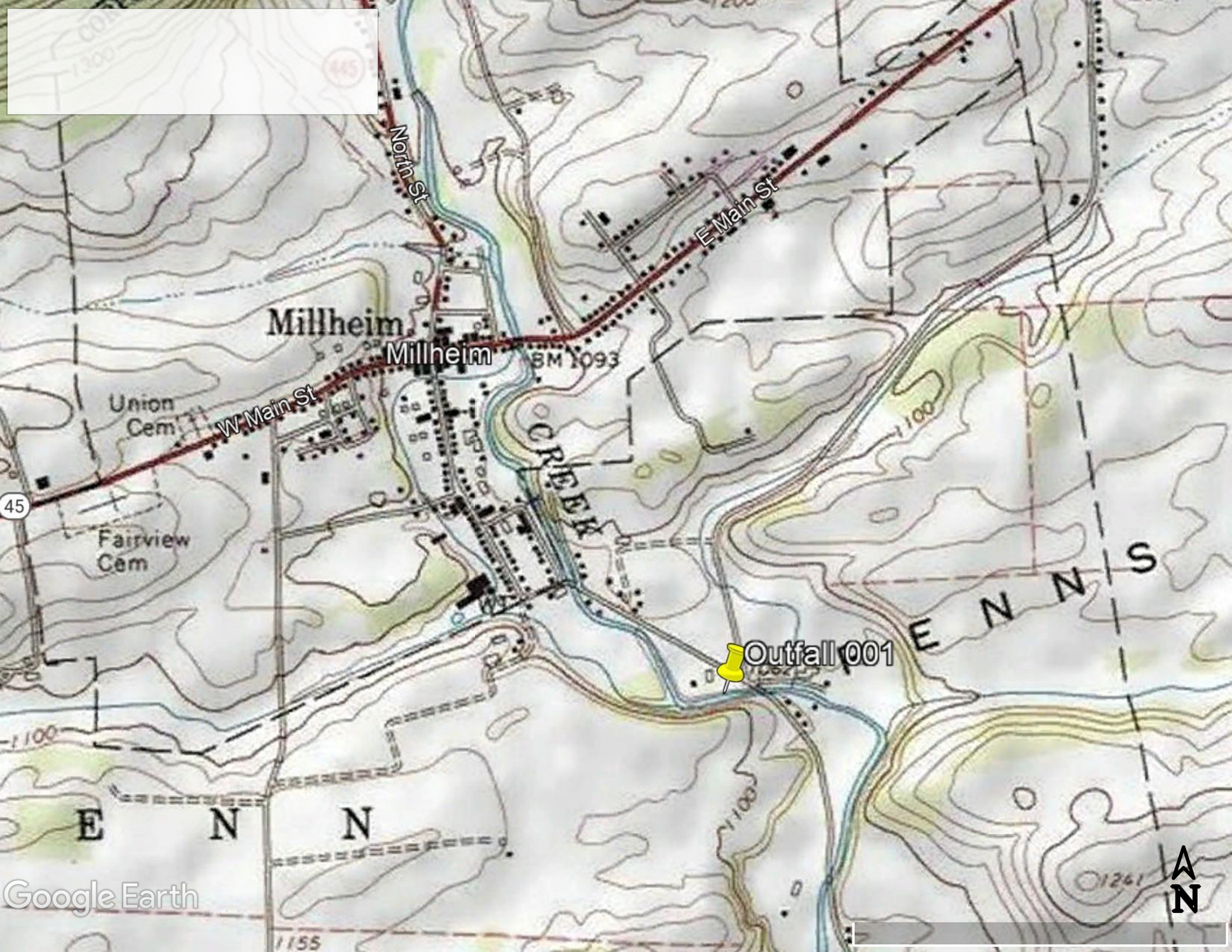
Compliance Sampling Location: Outfall 001

Other Comments: Monitoring for e. coli is new as mentioned above. Due to the generally consistent NH3-N levels in the discharge monthly monitoring is adequate.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☒	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model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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
06A	18244	ELK CREEK	**1.520**	1055.00	48.60	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	0.125	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
Millheim Boro	PA0114553	0.1000	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
06A	18244	ELK CREEK	**0.010**	1022.00	54.80	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	0.125	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 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
06A	18244	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												
1.520	6.07	0.00	6.07	.1547	0.00414	.698	36.39	52.1	0.25	0.376	20.12	7.00
Q1-10 Flow												
1.520	3.89	0.00	3.89	.1547	0.00414	NA	NA	NA	0.19	0.480	20.19	7.00
Q30-10 Flow												
1.520	8.26	0.00	8.26	.1547	0.00414	NA	NA	NA	0.29	0.318	20.09	7.00

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
06A	18244	ELK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
1.520	0.100	20.124	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
36.387	0.698	52.105	0.245
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.57	0.292	0.62	0.707
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.113	9.670	Tsivoglou	6
Reach Travel Time (days)			
0.376			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.038	2.54	0.60	8.22
0.075	2.51	0.59	8.22
0.113	2.49	0.57	8.22
0.151	2.46	0.56	8.22
0.188	2.43	0.54	8.22
0.226	2.41	0.53	8.22
0.263	2.38	0.52	8.22
0.301	2.35	0.50	8.22
0.339	2.33	0.49	8.22
0.376	2.30	0.48	8.22

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
06A	18244	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
1.520	Millheim Boro	16.5	50	16.5	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
1.520	Millheim Boro	1.88	25	1.88	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)		
1.52	Millheim Boro	25	25	25	25	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
06A	18244	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)
1.520	Millheim Boro	PA0114553	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3