Pennsylvania Department of Environmental Protection

Northeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0070041**
Facility Type	**Municipal**	APS ID	**545477**
Major / Minor	**Major**	Authorization ID	**1165911**

Applicant and Facility Information

Applicant Name	**Mahanoy City Sewer Authority**	Facility Name	**Mahanoy City Sewer Authority WWTP**
Applicant Address	215 West Centre Street Mahanoy City, PA 17948	Facility Address	10 Golden Bear Drive Mahanoy City, PA 17948
Applicant Contact	Peter Gutsie	Facility Contact	Matthew Lawrence
Applicant Phone	(570) 773-2518	Facility Phone	(570) 773-0899
Client ID	148294	Site ID	257467
Ch 94 Load Status	Not Overloaded	Municipality	Mahanoy City Borough Mahanoy Township
Connection Status	No Prohibitions	County	Schuylkill
Date Application Received	December 30, 2016	EPA Waived?	No
Date Application Accepted	December 30, 2016	If No, Reason	Major Facility, Significant CB Discharge

Purpose of Application: Renewal of NPDES permit.

Summary of Review

The applicant is requesting renewal of an NPDES permit to discharge an average flow of 1.38 MGD of treated sewage to Mahanoy Creek, a WWF/MF designated receiving stream in state water plan basin 06-B (Mahanoy – Shamokin Creeks). As per the Department's current existing use list, the receiving stream does not have an existing use classification that is more protective than its designated use. DEP's 2024 Integrated Water Quality Report lists Mahanoy Creek as impaired for aquatic life due to acid mine drainage upstream and downstream of the discharge. The report also lists the creek as impaired by pathogens downstream of the discharge.

The NPDES permit renewal application was received in December 2016 and review of the application was put on hold after receipt of WQM permit application 5417402 for upgrades to the WWTP. WQM application 5217402 was ultimately returned to the permittee in October 2021. No WQM applications for the WWTP have been received since then, and the NPDES permit renewal process is moving forward to include milestones for some of the issues discussed below.

Limitations and Monitoring Requirements

A Total Maximum Daily Load (TMDL) for the Mahanoy Creek Watershed was approved by the EPA on April 4, 2001. The TMDL addresses metals (Iron, Manganese, and Aluminum) and depressed pH associated with acid mine drainage (AMD). The TMDL load allocations apply to nonpoint sources of pollution; there are no Wasteload Allocations (WLAs). Quarterly monitoring requirements for Total Iron, Total Manganese, and Total Aluminum are continued in the permit to monitor these pollutants of concern.

The pH, Total Suspended Solids (TSS), $CBOD_5$, Total Residual Chlorine, and Fecal Coliform limits are technology-based limits carried over from the previous permit.

Approve	Deny	Signatures	Date
X		Brian Burden, E.I.T. / Project Manager	October 22, 2025
X		Edward Dudick, P.E. / Environmental Engineer Manager	October 23, 2025

Summary of Review

WQM 7.0 modeling recommended water quality-based limitations for Ammonia-N (4.0 mg/L monthly average summertime). eDMR data shows the facility has generally been discharging Ammonia-N in concentrations below the recommended limitations, however, there have been several recent results that would be in violation of the new limitations. The new limitations will come into effect three years after the permit effective date to allow time for any WWTP process adjustments needed to ensure consistent compliance with the limitations. A compliance schedule is included in Part C.V with milestones in accordance with the requirements of 40 CFR 122.47. The standard 3x limitation multiplier is applied for the wintertime months. Monitoring and reporting requirements are included in the permit until the limitations come into effect.

DEP's Toxics Management Spreadsheet (TMS) was used to model the Pollutant Group sampling results submitted with the renewal application. The TMS made the following recommendations:

- Total Copper: The maximum discharge concentration was 5.3 µg/L and the governing WQBEL was calculated to be 24.5 µg/L. Since the discharge concentration is greater than 10% of the WQBEL, monitoring requirements were recommended. Quarterly monitoring/reporting requirements are included in the permit for Total Copper.

- Total Zinc: The maximum discharge concentration was 96.9 µg/L and the governing WQBEL was calculated to be 204 µg/L. Since the discharge concentration is greater than 10% of the WQBEL, monitoring requirements were recommended. Quarterly monitoring/reporting requirements are included in the permit for Total Zinc.

- Chloroform: The maximum discharge concentration was 6 µg/L and the governing WQBEL was calculated to be 11.5 µg/L. Since the discharge concentration is greater than 50% of the WQBEL, limitations were recommended. The maximum discharge concentration is 52% of the WQBEL and relatively close to the 50% threshold, therefore quarterly monitoring/reporting requirements are included in the permit for Chloroform at this time.

For modeling inputs, drainage areas and elevations were obtained using the USGS StreamStats interactive map. RMIs were obtained from DEP's eMapPA. Since there's no representative stream gage on or near Mahanoy Creek to calculate a low flow yield (LFY) from, the LFY of 0.19 cfs/mi^2 was taken directly from StreamStats at Outfall 001 (2.23 cfs / 11.5 mi^2). For TMS modeling, discharge hardness was input as the average value reported in the Pollutant Group sampling results. As in previous modeling, the point of first aquatic use is assumed to be at the discharge location.

The TRC calculation spreadsheet recommended water quality-based limitations for TRC, however, the WQBELs will not be incorporated into this renewal for the following reasons:

- Mahanoy Creek is severely impaired by acid mine drainage near the discharge and previous stream surveys found very little aquatic life to be present in the creek. Although the point of first aquatic use is assumed to be at the point of discharge for modeling purposes, the actual point of use attainment is much further downstream where more dilution is available.

- Resources that would be needed to adjust processes at the WWTP to meet the more stringent TRC limitations would be better utilized developing an improved Long Term Control Plan for the combined sewer overflows in the collection system (see LTCP discussion below) and other WWTP upgrades.

Weekly influent monitoring requirements for BOD_5 and TSS are added to the permit in accordance with current guidance as well as the addition of monthly monitoring for E. Coli.

To quantify nutrient reduction needs, maximum nutrient loads (cap loads) for each major watershed tributary to the Chesapeake Bay were established. This included allocation of cap loads for Total Nitrogen (TN) and Total Phosphorus (TP) in Pennsylvania for the Potomac and Susquehanna watersheds. Pennsylvania's overall cap loads for TN and TP were further divided into cap loads for point and non-point sources. The method used to allocate the point source portion of the load was developed after DEP conducted an extensive stakeholder process with sewage treatment plants in 2006. The workgroup recommendation made the allocations based on the design annual average daily flow, and concentrations of 6 mg/L TN and 0.8 mg/L TP. Based on this methodology, the allocations for TN and TP for this facility are 25,205 lbs/yr and 3,361 lbs/yr, respectively. Twice per week monitoring requirements for Total Kjeldahl Nitrogen, Nitrate+Nitrite-Nitrogen, and Total Phosphorus are continued in this renewal. Mass limitations for Net Total Nitrogen and Net Total Phosphorus must be reported on an annual basis. Offsets were not requested during this renewal cycle.

Summary of Review

Whole Effluent Toxicity

The permittee was required to conduct Whole Effluent Toxicity (WET) testing within the final 18 months of the previous permit cycle (previous permit expired on June 30, 2017). The previous permit required testing for the following endpoints: chronic *Pimephales promelas* survival, chronic *Pimephales promelas* growth, chronic *Ceriodaphnia dubia* survival, and chronic *Ceriodaphnia dubia* reproduction. All tests used the following dilution series: 14%, 27%, 54%, 77%, and 100%. The results are summarized in the table below:

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
September 2016	77%	77%	>100%	100%	100%	>100%	Yes
September 2017	54%	**27%**	80%	54%	54%	66%	**No**
November 2017	54%	**14%**	68.6%	**27%**	**27%**	**48.3%**	**No**
February 2018	100%	**27%**	>100%	54%	54%	64.5%	**No**

The results indicate there's reasonable potential for the effluent to cause toxicity. As per current guidance, WET limitations will be included in the permit for the three endpoints that failed: Ceriodaphnia dubia reproduction, Pimephales promelas survival, and Pimephales promelas growth. The required dilution series and target in-stream waste concentration (TIWC) were recalculated in accordance with the updated Q_{7-10} stream flow. The permittee shall perform testing using the following dilution series: 12%, 25%, 49%, 75%, and 100% effluent, with a control, where 49% is the facility-specific TIWC. The limitations are input as chronic Toxicity Units (TUc) equal to 1/TIWC (1 / 0.49 = 2.04 TUc).

The standard Part C condition for Whole Effluent Toxicity with limits is included in this renewal. WET testing shall be conducted quarterly until four tests have been completed. If no endpoint failures occur in the initial four quarterly tests, the permittee may reduce WET monitoring to annually during the period January 1 – December 31. This minimum WET monitoring frequency will remain in place until the permit is reissued, unless more frequent monitoring is triggered (see Part C.IV). The permittee must continue annual WET monitoring, at a minimum, during the permit renewal review period and during any period of administrative extension of this permit.

Combined Sewer Overflows

The permit application identifies one active combined sewer overflow (CSO) in the system, which is identified in Part A of the permit. During wet weather, excess flows not conveyed through the WWTP are conveyed to a flex rake bar screen and CSO Outfall 002 via dual 84-inch screw pumps. CSO 002 was authorized by the 2004-approved LTCP, which required elimination of two Market Street trough CSO discharges.

The permittee also indicates there may be more undiscovered CSOs in the collection system, specifically in the Market Street trough structure. As per the latest Chapter 94 report for this facility, the Authority hires a third-party maintenance subcontractor to inspect the structure when needed. Repairs are made on an as-needed basis with internal staff or outside contractors, however, a summary of the repairs and inspections was not included with the report. The Combined Sewer Overflow Compliance Schedule includes a milestone requiring the permittee to submit a summary of the repairs and inspections previously performed at the Market Street trough structure within three months of the permit effective date.

WQM permit 5479401 documents describe the trough structure as an enclosed ~6,000-foot-long arch with over 900 separate discharge pipes. The trough channels run parallel on both sides of the underground Mahanoy Creek and were installed to collect combined sewer system discharges. Stormwater pipes discharge directly to the creek inside the structure. Combined sewer discharges are conveyed to the end of the arch structure where the channels are combined before entering an interceptor pipe leading to the WWTP. The channels were designed to convey approximately 40.9 MGD of combined sewer flow. The 2013 and 2018 LTCP revisions indicate the Authority suspects the troughs have cutouts with deteriorated wooden bulkheads allowing for Mahanoy Creek to overflow into the troughs and allow for unpermitted CSO discharges into the creek. The plans also discuss the potential for the CSS discharge pipes to overshoot the trough structures.

WQM permit application 5217402 for upgrades to the WWTP was returned to the Authority in October 2021. The application didn't address the undersized influent pump that's unable to convey design flows identified in WQM permit 5405401 for the WWTP (1.38 MGD hydraulic design capacity, 1.68 MGD daily maximum, 2.25 MGD peak instantaneous / hourly flow). The

Summary of Review

Design Engineer's Report for permit 5405401 indicated a 42-inch screw pump was to convey flows through the WWTP, however, the WWTP currently has a 36-inch pump that's only capable of conveying a maximum flow of 1.368 MGD. Within three years of the permit effective date, the permittee shall submit a WQM permit amendment application for upgrades to the WWTP to achieve the permitted hydraulic capacities (see Part C.II.C - LTCP implementation schedule). Note: WQM application 5217402 should have been entered into eFACTS starting with the "54" county code instead of "52".

A revised Long Term Control Plan (LTCP) for CSOs in the collection system was received by PA DEP on October 30, 2018. The plan identified several goals for the permittee to help reduce CSO discharges to Mahanoy Creek. The following milestones from both the Authority and PA DEP are included in the CSO compliance schedule: submit mapping of collection system (within 18 months of permit effective date), submit evaluation of the trough system and creek including photographs / video of the entire system (within 24 months of permit effective date), submit flow study plan (within 30 months of permit effective date), initiate yearlong monitoring of the trough system and creek (within 36 months of permit effective date), submit updated LTCP that includes a routine inspection program for the CSOs discovered in the system (within 54 months of permit effective date). The October 2018 LTCP indicates that the permittee has chosen the presumption approach to attain the water quality standards outlined in EPA's CSO policy but has not yet chosen one of the three criteria of the approach. The updated LTCP shall indicate which of the three criteria of the presumption approach will be chosen for attainment of the water quality standards. A LTCP can't be approved until all CSOs in the system are identified and a specific approach is chosen.

Data from the 2024 CSO Detailed Outfall Reports was used to estimate the percentage of wet weather flows that are treated at the WWTP. For each day CSO 002 flows were recorded, it was assumed the WWTP treated the maximum influent pump rate for a 24-hour period (1,368,000 gallons). The flows are compared in the Wet Weather Flows attachment, and it was determined that approximately 55% of the known wet weather combined flows are treated at the WWTP (presumption approach criteria requires 85% treated wet weather flows).

Note: A technical deficiency letter for WQM application 5217402 sent to the Authority by James Berger, P.E. (PA DEP Environmental Engineer) on December 17, 2018 included several recommendations for improving the LTCP and Nine Minimum Control plan. A review of the 2018 LTCP revision was done concurrently with the WQM permit application.

The template Part C condition titled "Maximizing Treatment at the Existing POTW" is not included in this renewal since the current 36-inch influent pump capacity doesn't meet the design capacities permitted in WQM permit 5405401. The template condition identifies the maximum flow rate that can safely be handled by the secondary units without washouts based on the facility's design capacity and maximization of flow through the secondary treatment units. The condition also requires primary clarification, solids/floatables removal, and disinfection of the CSO discharges, which the WWTP and CSO Outfall 002 doesn't currently have the capability of achieving. The revised LTCP shall include milestones for ensuring all flows discharged through CSO Outfall 002 receive the minimum treatment described above.

Note: Neither of the previous two Chapter 94 / CSO reports submitted included proof of calibration for CSO Outfall 002 flow meter. To verify the accuracy of information provided in future CSO annual reports and the revised LTCP, the permittee shall ensure the flow meter for CSO Outfall 002 is properly calibrated. Proof of effluent flow meter and CSO Outfall 002 flow meter calibration shall be included as an attachment to the revised LTCP (due 54 months after the permit effective date).

Template Part C condition titled "Combined Sewer Overflows" is adjusted to reflect the incomplete status of the current LTCP. The template Part C condition for Solids Management is added to the permit.

There are no current or projected hydraulic/organic overloads at the WWTP as indicated in the latest Chapter 94 report. The permit renewal application indicates no industrial users are connected to the sewer system. Antibacksliding requirements are met since no limitations were made less stringent or removed from the permit. There is one open violation for failure to submit monitoring report(s) or properly complete monitoring reports (12/3/2021) that may need to be resolved before final permit approval.

Outfalls 001 & 002 are both located in Mahanoy Township. Since they are the only permitted outfalls, the first page of the NPDES permit only identifies Mahanoy Township. If there are unpermitted CSO outfalls discovered in the Market Street trough system in Mahanoy City Borough, they will need to be added to Part A of the permit in the next permit amendment / renewal.

Summary of Review

Sludge use and disposal description and location(s): The permit renewal application indicates 61 dry tons of sludge was generated at the WWTP during the previous year. Sludge is then applied to the on-site reed beds.

WQM Modeling.pdf
TMS PA0070041.pdf
TRC Calculation.pdf
Watershed Information.pdf
WET Dilution Series.pdf
Wet Weather Flows.pdf

Public Participation

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

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	1.38
Latitude	40º 48' 31"	Longitude	-76º 9' 19"
Quad Name	Shenandoah	Quad Code	1236
Wastewater Description:	Sewage Effluent		

Receiving Waters	Mahanoy Creek (WWF, MF)	Stream Code	17556
NHD Com ID	54961271	RMI	49.75
Drainage Area	11.5 mi^2	Yield (cfs/mi^2)	0.19
Q_{7-10} Flow (cfs)	2.23	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1176	Slope (ft/ft)	0.0037
Watershed No.	6-B	Chapter 93 Class.	WWF, MF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	Flow Regime Modification		
Source(s) of Impairment	Acid Mine Drainage		
TMDL Status	Final	Name	Mahanoy Creek

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

Nearest Downstream Public Water Supply Intake	Suez Water		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	-
PWS RMI	61.5	Distance from Outfall (mi)	~86

Treatment Facility Summary

Treatment Facility Name: Mahanoy City Municipal Sewer Authority

WQM Permit No.	Issuance Date
5405402	5/24/2005
5492401	3/25/1992
5491401	12/17/1991
5479401	5/22/1979

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Aeration	Chlorine	1.38

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.38	2,301	Not Overloaded	Digester	Site Reed Beds

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.38
Latitude 40º 48' 31" **Longitude** -76º 9' 19"
Wastewater Description: Treated 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
$CBOD_5$	25.0	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40.0	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
	50.0	IMAX	-	-
Total Suspended Solids	30.0	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45.0	Average Weekly	133.102(b)(2)	92a.47(a)(2)
	60.0	IMAX	-	-
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)
	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)
	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
	1.2	IMAX	-	-

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model / Basis
Ammonia-N	4.0	Average Monthly	2025 WQM 7.0
(5/1 – 10/31)	8.0	IMAX	
Ammonia-N	12.0	Average Monthly	
(11/1 – 4/30)	24.0	IMAX	
Chronic Toxicity – Ceriodaphnia Reproduction (TUc)	2.04	Daily Maximum	Most recent WET test results
Chronic Toxicity – Pimephales Survival (TUc)	2.04	Daily Maximum	
Chronic Toxicity – Pimephales Growth (TUc)	2.04	Daily Maximum	

Comments: The Ammonia-N limitations come into effect 3 years after the permit effective date.

Anti-Backsliding

No limitations were removed from the permit or made less stringent.

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Whole Effluent Toxicity (WET)

For Outfall 001, ☐ **Acute** ☒ **Chronic** WET Testing was completed:

☒ For the permit renewal application (4 tests).
☐ Quarterly throughout the permit term.
☐ Quarterly throughout the permit term and a TIE/TRE was conducted.
☐ Other:

The dilution series used for the tests was: 100%, 77%, 54%, 27%, and 14%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: 54%.

Summary of Four Most Recent Test Results

NOEC/LC50 Data Analysis

Test Date	*Ceriodaphnia* Results (% Effluent)			*Pimephales* Results (% Effluent)			Pass? *
	NOEC Survival	NOEC Reproduction	LC50	NOEC Survival	NOEC Growth	LC50	
September 2016	77%	77%	>100%	100%	100%	>100%	Yes
September 2017	54%	27%	80%	54%	54%	66%	No
November 2017	54%	14%	68.6%	27%	27%	48.3%	No
February 2018	100%	27%	>100%	54%	54%	64.5%	No

***** *A "passing" result is that which is greater than or equal to the TIWC value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

☒ **YES** ☐ **NO**

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **1** Chronic Partial Mix Factor (PMFc): **1**

1. **Determine IWC – Acute (IWCa)**:

   $(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

   [(1.38 MGD x 1.547) / ((2.23 cfs x 1) + (1.38 MGD x 1.547))] x 100 = **49%**

   2.134 4.364

   Is IWCa < 1%? ☐ **YES** ☒ **NO**

   If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined:

   N/A

   Type of Test for Permit Renewal: **Chronic**

2. **Determine Target IWCc (If Chronic Tests Required)**

   $(Q_d \times 1.547) / (Q_{7\text{-}10} \times PMFc) + (Q_d \times 1.547)$

   [(1.38 MGD x 1.547) / ((2.23 cfs x 1) + (1.38 MGD x 1.547))] x 100 = **49%**

3. **Determine Dilution Series**

   (NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 75%, 49%, 25%, and 12%.

WET Limits

Has reasonable potential been determined? ☒ YES ☐ NO

Will WET limits be established in the permit? ☒ YES ☐ NO

If WET limits will be established, identify the species and the limit values for the permit (TU).

Chronic Toxicity – Ceriodaphnia Reproduction (TUc)	2.04	Daily Maximum
Chronic Toxicity – Pimephales Survival (TUc)	2.04	Daily Maximum
Chronic Toxicity – Pimephales Growth (TUc)	2.04	Daily Maximum

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

N/A