pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0032352**
Facility Type	**Non-Municipal**	APS ID	**1046887**
Major / Minor	**Minor**	Authorization ID	**1368046**

Applicant and Facility Information

Applicant Name	**Williamsport Area School District**	Facility Name	**Hepburn-Lycoming Primary School WWTF**
Applicant Address	1400 West Third Street	Facility Address	355 State Route 973 East
	Williamsport, PA 17701-7898		Cogan Station, PA 17728-9345
Applicant Contact	Dale Crans	Facility Contact	Dale Crans
Applicant Phone	570-326-0282 X4851	Facility Phone	570-326-0282 X4851
Client ID	126968	Site ID	241322
Ch 94 Load Status	N/A	Municipality	Hepburn Township
Connection Status	N/A	County	Lycoming
Date Application Received	August 31, 2021	EPA Waived?	Yes
Date Application Accepted	October 21, 2021	If No, Reason	N/A
Purpose of Application	Renewal of NPDES Permit		

Summary of Review

INTRODUCTION

The applicant, Williamsport Area School District (WASD), has applied to renew its existing National Pollution Discharge Elimination System (NPDES) permit which authorizes the discharge from the wastewater treatment facility (WWTF) serving the Hepburn-Lycoming Primary School located in Cogan Station, PA.

APPLICATION

The WASD submitted the *NPDES Application for Individual Permit to Discharge Sewage Effluent from Minor Sewage Facilities* (DEP #3800-PMBPNPSM0342b). The application was received by the Department on August 31, 2021 and considered administratively complete on October 21, 2021. The client and site contact is Dale Crans, Director of Maintenance & Facility Operations for the WASD. His contact information is (phone) 570-326-0282 X4851, (FAX) 570-326-0675 and (email) dcrans@wasd.org. The application consultant for this application is Victor Derr, Project Manager with Derr Wastewater Operations, LLC of Muncy, PA. His contact information is (phone) 570-971-1774 and (email) vderr69@yahoo.com.

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.

The case-file, permit application package and draft permit will be available for public review at Department's Northcentral Regional Office. The address for this office is 208 West Third Street, Suite 101, Williamsport, PA 17701. An appointment can be made to review these materials during the comment period by calling the file coordinator at 570-327-3636.

CONTINUED on the next page.

Approve	Deny	Signatures	Date
X		Jeffrey J. Gocek, EIT — Project Manager	10/05/2022
X		Nicholas W. Hartranft, PE — Environmental Engineer Manager	10/05/2022

DISCHARGE, RECEIVING WATERS AND WATER SUPPLY INFORMATION

Outfall No.	001	Design Flow (MGD)	0.0026
Latitude	41° 17' 59.59"	Longitude	-77° 03' 32.14"
Quad Name	Cogan Station	Quad Code	41077
Wastewater Description:	Sewage Effluent from primary school		
Receiving Waters	Lycoming Creek (EV (existing use))	Stream Code	20501
NHD Com ID	66913937	RMI	6.6
Drainage Area	238	Yield (cfs/mi^2)	0.0439
Q_{7-10} Flow (cfs)	10.45	Q_{7-10} Basis	USGS #01550000
Elevation (ft)	578	Slope (ft/ft)	N/A
Watershed No.	10-A	Chapter 93 Class.	WWF
Existing Use	EXCEPTIONAL VALUE (EV)	Existing Use Qualifier	RBP - Antidegradation
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	N/A		
Source(s) of Impairment	N/A		
TMDL Status	Final	Name	Lycoming Creek
Nearest Downstream Public Water Supply Intake	Pennsylvania-American Water Company		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	679.73
PWS RMI	10.66	Distance from Outfall (mi)	38.0

$Q_{7,10}$ DETERMINATION

The $Q_{7,10}$ is the lowest seven consecutive days of flow in a 10-year period and is used for modeling wastewater treatment plant discharges. 25 PA § 96.1 defines $Q_{7,10}$ as "*the actual or estimated lowest 7 consecutive day average flow that occurs once in 10 years for a stream with unregulated flow, or the estimated minimum flow for a stream with regulated flow*".

Basin characteristics, for a watershed based on the discharge location, were obtained from the *USGS StreamStats* webpage. Based on those characteristics, a nearby stream gage was selected as a reference (originally chosen during the 2011 permit issuance). The selected gage is USGS #01550000 (Lycoming Creek near Trout Run, PA). A $Q_{7,10}$ and drainage area for this gage were obtained from *Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania* (USGS Open Files Report 2011-1070). The drainage area at the point of discharge (238 mi^2) was calculated by the *USGS Pennsylvania StreamStats* application. Knowing the drainage area at the discharge (238 mi^2) and both the drainage area (173 mi^2) and $Q_{7,10}$ (7.60 CFS) at the reference gage, the $Q_{7,10}$ at the discharge was calculated to be 10.45 CFS.

See Attachment 01 for the $Q_{7,10}$ determination.

CONTINUED on the next page.

TREATMENT FACILITY SUMMARY

The WWTF serves approximately 420 persons (students and staff) at the Hepburn-Lycoming Primary School located in Cogan Station, PA. This school is located in the WASD. The WWTF consists of a manual bar screen, an aerated equalization tank (3,000 gallons), a sequencing batch reactor (SBR), a 1,300-gallon sludge holding tank, an ultraviolet disinfection system and an effluent discharge line to Lycoming Creek. The SBR is a 4,590-gallon tank which houses the following stages of treatment; react, settle and decant. The equalization tank includes two grinder pumps. A grease trap is employed for wastewater from the cafeteria.

The characteristics of the WWTF are as follows.

Waste Type	Degree of Treatment	Process Type	Disinfection	Average Annual Flow (MGD)
Sewage	Secondary with Ammonia Reduction	Extended Aeration	Hypochlorite	0.0026
Hydraulic Capacity (MGD)	**Organic Capacity (lbs BOD5/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.006	13.5	Not Overloaded	Aerobic Digestion	Other WWTF

The WWTF has an annual average design flow (AADF) of 0.0026 MGD and a hydraulic capacity of 0.006 MGD. The organic design capacity is 13.5 lb BOD_5/day. The annual average flow for the year prior to the submission of the application was 0.0019 MGD. The highest month of flow during that year was 0.0032 MGD and occurred in February.

The current WWTF design, construction and operation was approved by Water Quality Management (WQM) permit #4104401, issued May 10, 2004. This permit was first amended June 06, 2014 as #4104401 A-1 to include a flow meter and an equalization tank. This permit was again amended on May 16, 2017 as #4104401 A-2 to convert liquid chlorine disinfection to erosion tablet disinfection. This permit was amended for the third time on August 28, 2018 as #4104401 A-3 to convert erosion tablet disinfection to ultraviolet disinfection.

The NPDES permit was last renewed on May 16, 2017. This permit was amended on August 28, 2018 as #PA0032352 A-1 to convert the Total Residual Chlorine effluent limitation (mg/L) to an Ultraviolet Light Intensity monitoring requirement ($\mu W/cm^2$).

Sewage sludge is stored in the sludge holding tank until it is hauled to another WWTF for disposal.

See Attachment 02 for a map of the WWTF location.

COMPLIANCE HISTORY

The WMS Query *Open Violations by Client Report* revealed no unresolved violations for the WASD.

The most recent Department inspection, a Compliance Evaluation Inspection (CEI), was performed October 14, 2021. During this inspection, all treatment units were online and operable. A clear effluent trickle was observed. There was no evidence of impact to the receiving stream.

For the period of September 2021 through July 2022, one effluent limitation exceedance occurred. The specifics are listed below.

Parameter	Date	SBC	DMR Value	Limit Value	Units
TSS	04/30/22	IMAX	64.4	60.0	mg/L

The following is Discharge Monitoring Report (DMR) data from the WWTF for the period of August 2021 through July 2022.

CONTINUED on the next page.

Parameter	JUL-22	JUN-22	MAY-22	APR-22	MAR-22	FEB-22	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21
Flow (MGD) Average Monthly	0.0016	0.0019	0.0037	0.0030	0.0037	0.0033	0.0031	0.0027	0.0030	0.0034	0.0037	0.0017
pH (S.U.) Instantaneous Minimum	7.8	7.0	6.9	7.0	7.0	7.2	7.1	6.9	6.8	6.7	6.9	7.3
pH (S.U.) Instantaneous Maximum	8.5	7.9	7.4	7.7	7.7	7.6	8.0	7.9	7.9	7.5	8.0	8.6
DO (mg/L) Instantaneous Minimum	1.5	3.5	3.1	1.2	2.1	2.8	1.7	1.5	1.7	1.5	2.5	3.8
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.0	< 3.0	< 19.0	< 3.0	< 3.0	< 4.0	< 5.0	< 4.0	3.0	< 3.0	< 3.0
CBOD5 (mg/L) Instantaneous Maximum	< 3.0	3.8	3.0	35.4	< 3.0	3.8	4.49	6.5	4.0	< 3.0	< 3.0	< 3.0
TSS (mg/L) Average Monthly	20.0	5.0	17.0	28.0	13.0	25.0	11.0	9.0	26.0	10.0	13.0	24.0
TSS (mg/L) Instantaneous Maximum	24.8	5.5	19.0	64.4	15.6	33.2	12.4	9.2	47.0	9.6	14.8	26.4
Fecal Coliform (No./100 ml) Geometric Mean	< 3.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Fecal Coliform (No./100 ml) Instantaneous Maximum	11	< 1.0	< 1.0	< 1.0	< 1.0	1.0	< 1.0	< 1.0	1.0	< 1.0	2.0	< 1.0
UV Intensity (µw/cm²) Daily Minimum	374	310	320	379	421	413	445	383	421	344	571	364
Ammonia (mg/L) Average Monthly	< 0.10	< 0.20	2.5	5.3	9.1	4.7	2.4	< 0.30	< 1.0	1.0	< 7.1	< 0.10

EXISTING LIMITATIONS

The following limitations were established at the amendment issuance which occurred August 29, 2018.

Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L, unless noted)				Monitoring Requirements	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	IMAX	Minimum Measurement Frequency	Required Sample Type
Flow	Report						5/Week	Estimate
pH			6.0 Instant Min			9.0	5/Week	Grab
Dissolved Oxygen			Report Instant Min				5/Week	Grab
CBOD5				25		50	2/Month	Grab
TSS				30		60	2/Month	Grab
Fecal Coliform (No./100mL) 05/01-09/30				200 Geo Mean		1,000	2/Month	Grab
Fecal Coliform (No./100mL) 10/01-04/30				2,000 Geo Mean		10,000	2/Month	Grab
Ultraviolet Light Intensity (µW/cm²)			Report Instant Min				5/Week	Grab
Ammonia-Nitrogen				Report			2/Month	Grab

CONTINUED on the next page.

DEVELOPMENT OF EFFLUENT LIMITATIONS

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 Residual Chlorine

At the last renewal in 2017, the Department imposed a Total Residual Chlorine limitation of 0.02 mg/L as an instantaneous maximum (IMAX) in order to comply with 25 PA § 92a.48(b)(3), which requires facilities located in high quality or exceptional value watersheds to cease the use of chlorine disinfection or dechlorinate when social and/or economic justification (SEJ) has not been demonstrated.

The WASD chose to discontinue the use of chorine and installed an ultraviolet light disinfection system. Instead of the previous Total Residual Chlorine (TRC) effluent limitation, the permit was amended in 2018 to instead include a monitoring requirement for Ultraviolet Light Intensity.

$CBOD_5$, NH_3-N and DO

WQM 7.0 for Windows is a DEP computer model used to determine wasteload allocations and effluent limitations for CBOD5, NH3-N and DO for single and multiple point source discharge scenarios. This model simulates two basic processes. The NH3-N module simulates the mixing and degradation of NH3-N in the stream and compares calculated instream NH3-N concentrations to the water quality criteria. The DO module simulates the mixing and consumption of DO in the stream due to degradation of CBOD5 and NH3-N and compares the calculated instream DO concentrations to the water quality criteria. The model then determines the highest pollutant loading the stream can assimilate and still meet water quality under design conditions.

The model recommended the following:

Parameter	Effluent Limitations (mg/L)		
	30 Day Average	Maximum	Minimum
CBOD5	25		
NH3-N	25	50	
DO			3.0

See Attachment 03 for the model output.

CONTINUED on the next page.

Water Quality-Based Limitations

Toxics Screening Analysis

Since flows to this WWTF are from a school, there are no industrial or commercial flows being treated. Because of this, no Toxics Management Screening (TMS) is required. *PENTOXSD for Windows* is a DEP computer model which considers mixing, first-order decay and other factors to determine recommended water quality based effluent limitations (WQBELs).

Best Professional Judgment (BPJ) Limitations

In the absence of applicable effluent guidelines for the discharge or pollutant, permit writers must identify and/or develop needed technology-based effluent limitations (TBELs) TBELs on a case-by-case basis, in accordance with the statutory factors specified in the Clean Water Act. No BPJ limitations have been proposed.

Anti-Backsliding

In order to comply with 40 CFR § 122.44(l)(1) (anti-backsliding requirements), the Department must issue a renewed permit with limitations as stringent as that the of the previous permit. No less stringent limitations have been proposed.

DEVELOPMENT OF EFFLUENT MONITORING

Ammonia-Nitrogen

Since the WQM 7.0 model recommended a summer limitation of 25 mg/L for Ammonia-Nitrogen and this is an existing discharge, Department policy requires routine monitoring of Ammonia-Nitrogen in lieu of a numeric effluent limitation. This permit will contain the monitoring requirement.

Dissolved Oxygen

Department policy also requires the monitoring of DO, in order to make sure the effluent is properly oxygenated prior to discharge in Lycoming Creek. This permit will contain the monitoring requirement.

E.coli

The Department is requiring the monitoring of Eschericia coli (E. coli), a pathogenic bacterium normally found in the intestines of healthy people and animals which is used as a fecal contamination indicator in freshwater ecosystems. Section 303(c)(1) of the Clean Water Act requires that Pennsylvania periodically review and revise water quality standards, if necessary. The 2017 triennial review final form rulemaking, published in 2020, has revised the Chapter 93 water quality standards regulations for bacteria to include E. coli. To further characterize fecal contamination of surface waters during the swimming season, the Department is requiring the annual reporting of effluent E. coli effluent values. In accordance with 25 PA § 92a.61, the Department may impose reasonable monitoring requirements on pollutants which could have impact on the quality of the Commonwealth's waters or the quality of waters in other states.

CHESAPEAKE BAY TMDL

Despite 25 years of extensive restoration efforts, the Chesapeake Bay Total Maximum Daily Load (TMDL) was prompted by insufficient progress and continued poor water quality in the Chesapeake Bay and its tidal tributaries. A TMDL is a regulatory term in the US Clean Water Act and describes the maximum amount of a pollutant that a body of water can receive and still meet water quality standards.

This TMDL, required by the Clean Water Act, is the largest ever developed by the Environmental Protection Agency (EPA). This document identifies the necessary pollution reductions of nitrogen, phosphorus and sediment across Delaware, Maryland, New York, Virginia, West Virginia, District of Columbia and Pennsylvania. It also sets pollution limits necessary to meet applicable water quality standards in the Bay, tidal rivers and embayments. Pennsylvania explains how and when it will meet its pollution allocations in its Watershed Implementation Plan (WIP), which is incorporated into the TMDL. Pennsylvania's permitting strategy for significant dischargers has been outlined in the Phase I WIP and incorporated in the Phase II WIP by reference and imposes Total Nitrogen (TN) and Total Phosphorus (TP) cap loads on the significant dischargers.

Because the design of this facility is less than 0.2 MGD, the Department considers this an existing Phase 5 sewage facility for the purposes of implementing the Chesapeake Bay TMDL. This system has a hydraulic design flow of 0.006 MGD (annual average flow of 0.0026 MGD). According to the Department's Wastewater Supplement to Phase III WIP (last revised July 29, 2022), renewed Phase 5 facilities are required to contain monitoring and reporting for TN and TP throughout the permit term at a frequency of no less than annually, unless 1. The facility has already conducted at least two years of nutrient monitoring and 2. A summary of the monitoring results are included in the permit fact sheet.

CONTINUED on the next page.

The required nutrient data, collected from 2008 through 2010, was presented in the 2017 (renewal) Fact Sheet.

RECEIVING STREAM

Stream Characteristics

The receiving stream is Lycoming Creek, identified by Department stream code 20501, is a tributary to the West Branch Susquehanna River. Lycoming Creek, according to 25 PA § 93.9L, is protected for Warm Water Fishes (WWF) and Migratory Fishes (MF). These are the streams Designated Uses, which is defined in 25 PA § 93.1 as "those uses specified in §§ 93.9a – 93.9z for each waterbody or segment whether or not the use is being attained". Designated uses are regulations promulgated by the Environmental Quality Board (EQB) throughout the rulemaking process.

This main stem of the stream currently has an Existing Use (EU) of Exceptional Value (EV). The EU is defined in 25 PA § 93.1 as "those uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards". EV is the Department's highest level of surface water "special protection".

Lycoming Creek is located in (Chapter 93) drainage list L and State Water Plan watershed 10A (Antes and Lycoming Creek).

Impairment

According to the Departments Integrated Water Quality and Monitoring Report (Integrated List) data, Lycoming Creek is supporting its designated uses with respect to aquatic life.

A draft TMDL was prepared in 2012 for the Lycoming Creek watershed, to address impairments noted in the 2010 Integrated List. The watershed was listed as impaired for pH (source) due to atmospheric deposition (cause). Since the permit contains appropriate effluent limitations for pH, this TMDL will not impact this permit. This TMDL was approved by EPA in 2014.

Existing Use Protection

DEP has evaluated information indicating that the existing use of the receiving waters is different than the designated use under 25 Pa. Code § 93.9. In developing the draft NPDES permit, DEP is proposing to protect the existing use of the receiving waters. Following DEP's notice of the receipt of the application and the draft permit in the Pennsylvania Bulletin, DEP will accept written comments during the public comment period regarding DEP's tentative determination to protect the existing use. DEP will make a final determination on existing use protection for the receiving waters as part of the final permit action.

ADDITIONAL CONSIDERATIONS

Hauled-In Wastes

The WASD has acknowledged that the WWTF has not received hauled-in wastes during the past three years and does not anticipate receiving hauled-in wastes in the next five years.

Whole Effluent Toxicity (WET) Testing

Since the WWTF does not accept wastewater from industrial or commercial users, a WET test evaluation is not required.

Mass Limits

Mass limits have not been established for this permit.

Limit Multipliers

The instantaneous maximum limitations have been calculated using multipliers of 2.0 (for conventional pollutants) times the monthly average. This practice is in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

CONTINUED on the next page.

Rounding of Limitations

Limitations have been rounded in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001).

Sample Frequencies and Types

The sample type and minimum measurement frequencies are in accordance with the Department's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits* (#362-0400-001). Because this WWTF serves a school without weekend use, the Minimum Measurement Frequency of 5/Week has been authorized.

Standard Operating Procedures (SOPs)

The review of this permit application was in accordance with the Department's *SOP for New and Reissuance Sewage Individual NPDES Permit Applications* (unnumbered) and *SOP for Establishing Effluent Limitations for Individual Sewage Permits* (SOP #BPNPSM-PMT-033).

Special Permit Conditions

Stormwater Prohibition
Approval Contingencies
Proper Waste Disposal
Solids Management (Non-Lagoon Systems)

Supplemental Discharge Monitoring Reports

Daily Effluent Monitoring
Non-Compliance Reporting
Biosolids Production and Disposal
Hauled-in Municipal Waste
Influent and Process Control
Lab Accreditation

CONTINUED on the next page.

PROPOPSED 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.

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

Discharge Parameter	Mass Limits (lb/day)		Concentration Limits (mg/L, unless noted)				Monitoring Requirements	
	Monthly Average	Daily Maximum	Minimum	Monthly Average	Daily Maximum	IMAX	Minimum Measurement Frequency	Required Sample Type
Flow	Report	XXX	XXX	XXX	XXX	XXX	5/Week	Estimate
pH	XXX	XXX	6.0	XXX	XXX	9.0	5/Week	Grab
UV Light Intensity (µW/cm^2)	XXX	XXX	Report	XXX	XXX	XXX	5/Week	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	5/Week	Grab
$CBOD_5$	XXX	XXX	XXX	25	XXX	50	2/Month	Grab
TSS	XXX	XXX	XXX	30	XXX	60	2/Month	Grab
Fecal Coliform (No./100mL) 05/01-09/30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/Month	Grab
Fecal Coliform (No./100mL) 10/01-04/30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/Month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/Month	Grab
E. Coli	XXX	XXX	XXX	XXX	XXX	Report	1/Year	Grab

END of Fact Sheet.

ATTACHMENT 01

Q_{7-10} Analysis	
Facility:	WASD Hepburn-Lycoming WWTP
Outfall:	001

NPDES Permit No.:	PA0032352
RMI at Outfall:	6.60

Reference Stream Gage Information	
Stream Name	Lycoming Creek
Reference Gage	01550000
Station Name	Lycoming Creek near Trout Run, PA
Gage Drainage Area (sq. mi.)	173
Q_{7-10} at gage (cfs)	7.60
Yield Ratio (cfs/mi^2)	0.0439

Q_{7-10} at Outfall	
Drainage Area at site (sq. mi.)	238.00
Q_{7-10} at discharge site (cfs)	10.455
Q_{7-10} at discharge site (mgd)	6.7576

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

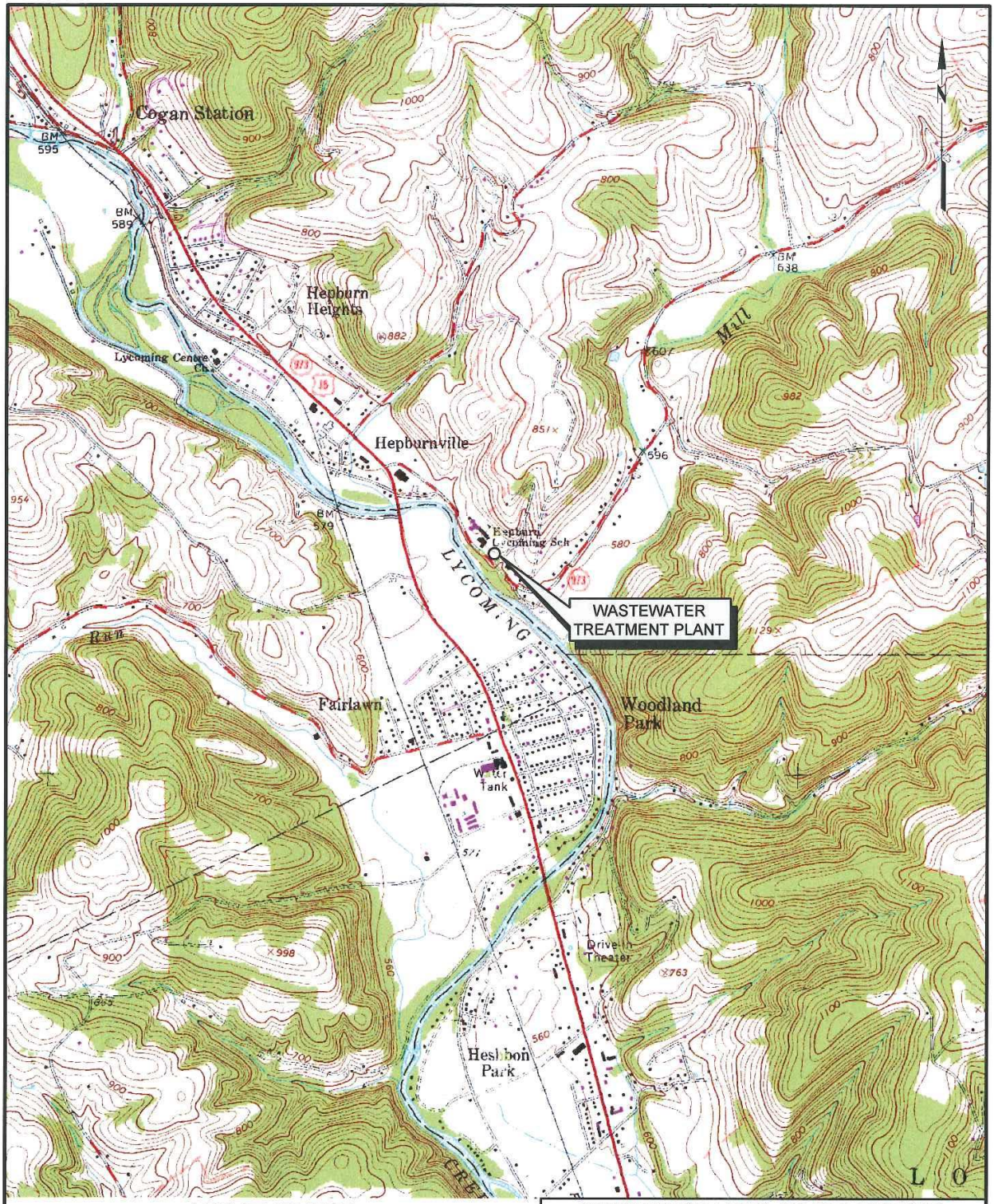
Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6

ATTACHMENT 02



LOCATION MAP
SCALE: 1" = 2000'

2000 1000 0 2000 4000

CREDIT: U.S. GEOLOGICAL SURVEY
DEPARTMENT OF THE INTERIOR/USGS
COGAN STATION

WILLIAMSPORT AREA SCHOOL DISTRICT
LYCOMING COUNTY, PENNSYLVANIA

LOCATION MAP
WASTEWATER TREATMENT PLANT

GANNETT FLEMING JANUARY 2016

FILE PATH: K:\411W&WW ERD\60312 WASD\Location Map\Location Map.dwg
DATE SAVED: 1/5/2016 5:42 PM BY: mkline DATE PLOTTED: 1/5/2016 5:43 PM

ATTACHMENT 03

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
10A	20501	LYCOMING 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)
6.600	WASD Hep-Lyc	PA0032352	0.000	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

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
10A	20501	LYCOMING CREEK	6.600	580.00	238.00	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	0.100	0.00	10.45	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
WASD Hep-Lyc	PA0032352	0.0000	0.0026	0.0026	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
10A	20501	LYCOMING CREEK	**5.800**	555.00	254.00	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	0.100	0.00	11.20	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
10A	20501	LYCOMING 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												
6.600	10.45	0.00	10.45	.004	0.00592	.823	53.36	64.79	0.24	0.205	20.00	7.00
Q1-10 Flow												
6.600	6.69	0.00	6.69	.004	0.00592	NA	NA	NA	0.19	0.264	20.00	7.00
Q30-10 Flow												
6.600	14.21	0.00	14.21	.004	0.00592	NA	NA	NA	0.28	0.173	20.00	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	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
10A	20501	LYCOMING 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
6.600	WASD Hep-Lyc	9.67	50	9.67	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
6.600	WASD Hep-Lyc	1.92	25	1.92	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)		
6.60	WASD Hep-Lyc	25	25	25	25	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
10A	20501	LYCOMING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
6.600	0.003	20.002	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
53.356	0.823	64.794	0.238
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.01	0.006	0.01	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.241	9.610	Tsivoglou	5
Reach Travel Time (days)			
0.205			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.021	2.01	0.01	8.24
0.041	2.01	0.01	8.24
0.062	2.01	0.01	8.24
0.082	2.01	0.01	8.24
0.103	2.01	0.01	8.24
0.123	2.01	0.01	8.24
0.144	2.01	0.01	8.24
0.164	2.01	0.01	8.24
0.185	2.01	0.01	8.24
0.205	2.01	0.01	8.24