

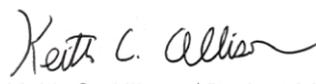
Application Type Renewal  
 Facility Type Non-Municipal  
 Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0031852  
 APS ID 1147538  
 Authorization ID 1544383

Applicant and Facility Information			
Applicant Name	<u>Central Columbia School District</u>	Facility Name	<u>Central Columbia School District</u>
Applicant Address	<u>4777 Old Berwick Road</u> <u>Bloomsburg, PA 17815-3515</u>	Facility Address	<u>4777 Old Berwick Road</u> <u>Bloomsburg, PA 17815-3515</u>
Applicant Contact	<u>Brian Tretter</u>	Facility Contact	<u>Brian Tretter</u>
Applicant Phone	<u>(570) 784-2850</u>	Facility Phone	<u>(570) 784-2850</u>
Client ID	<u>6741</u>	Site ID	<u>257175</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>South Centre Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Columbia</u>
Date Application Received	<u>September 30, 2025</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>October 7, 2025</u>	If No, Reason	
Purpose of Application	<u>Renewal of a NPDES Permit</u>		

Summary of Review
<p>The subject sewage treatment plant discharge serves a school complex in South Centre Township, Columbia County.</p> <p>Sludge use and disposal description and location(s): The facility's wasted sludge is transferred to other WWTPs for further processing.</p> <p><u>Public Participation</u></p> <p>DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the <i>Pennsylvania Bulletin</i> in accordance with 25 Pa. Code § 92a.82. Upon publication in the <i>Pennsylvania Bulletin</i>, 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 <i>Pennsylvania Bulletin</i> at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.</p>

Approve	Deny	Signatures	Date
✓		 Keith C. Allison / Project Manager	October 12, 2025
✓		 Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	October 12, 2025

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.028</u>
Latitude	<u>41° 1' 29.04"</u>	Longitude	<u>-76° 22' 12.39"</u>
Quad Name	<u>Mifflinville, PA</u>	Quad Code	<u>1035</u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Unnamed Tributary to Susquehanna River (CWF)</u>	Stream Code	<u>28075</u>
NHD Com ID	<u>65639971</u>	RMI	<u>0.59</u>
Drainage Area	<u>1.53</u>	Yield (cfs/mi <sup>2</sup> )	<u>0.205</u>
Q <sub>7-10</sub> Flow (cfs)	<u>0.31</u>	Q <sub>7-10</sub> Basis	<u>USGS Stream Gage 01442500, Brodhead Creek @ Minisink Hills, PA</u>
Elevation (ft)	<u>492</u>	Slope (ft/ft)	<u>0.01</u>
Watershed No.	<u>5-D</u>	Chapter 93 Class.	<u>CWF</u>
Existing Use	<u>n/a</u>	Existing Use Qualifier	<u>N/A</u>
Exceptions to Use	<u>None</u>	Exceptions to Criteria	<u>None</u>
Assessment Status	<u>Attaining Use(s)</u>		
Nearest Downstream Public Water Supply Intake	<u>Danville Municipal Water Authority</u>		
PWS Waters	<u>Susquehanna River</u>	Distance from Outfall (mi)	<u>Approx. 20</u>

Changes Since Last Permit Issuance: The above stream and drainage characteristics have been updated for this review.

Other Comments:

No downstream water supply is expected to be affected by the discharge with the limitations and monitoring proposed.

Treatment Facility Summary				
<b>Treatment Facility Name:</b> Central Columbia School District				
<b>WQM Permit No.</b>		<b>Issuance Date</b>		
1990407		3/23/1990		
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Secondary	Sequencing Batch Reactor	Gas Chlorine	0.028
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.028		Not Overloaded	Holding Tank	Other WWTP

Changes Since Last Permit Issuance: None.

Other Comments: The treatment as permitted under WQM Permit No. 1990407 consists of comminutor, manual bar screen, equalization tank, distribution box, four Cromaglass SBRs, four erosion chlorinators, four chlorine contact tanks, and sludge holding tank.

Compliance History

DMR Data for Outfall 001 (from January 1, 2025 to December 31, 2025)

Parameter	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25
Flow (MGD) Average Monthly	0.0042	0.0049	0.0059	0.005	0.0026	0.0017	0.0019	0.0063	0.0049	0.0058	0.007	0.0061
Flow (MGD) Daily Maximum	0.0090	0.0094	0.010	0.0129	0.0123	0.020	0.0136	0.0138	0.0169	0.0156	0.0152	0.01138
pH (S.U.) Instantaneous Minimum	6.9	6.9	6.7	6.4	6.6	6.3	6.4	6.5	6.3	6.3	6.4	6.9
pH (S.U.) Instantaneous Maximum	7.6	7.5	7.8	7.3	7.6	7.5	7.3	7.5	7.4	7.1	7.5	7.5
DO (mg/L) Daily Minimum	0.98	1.1	0.57	0.15	0.22	0.34	0.2	0.3	0.72	1.0	0.7	0.29
TRC (mg/L) Average Monthly	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3
TRC (mg/L) Instantaneous Maximum	1.4	0.8	1.0	1.2	1.1	0.6	0.6	0.8	0.6	0.7	0.7	1.1
CBOD5 (mg/L) Average Monthly	16	16	16	17	14	11	18	42	26	28	36	22
TSS (mg/L) Average Monthly	30	8	19	< 12	49	49	25	17	14	21	36	22
Fecal Coliform (CFU/100 ml) Geometric Mean	< 2	< 2	< 6	5	< 2	< 2	< 106	< 2	< 2	12	< 71	22
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 2	< 2	16	8	3	< 2	5600	< 2	< 2	50	2500	60
Ammonia (mg/L) Average Monthly	5	0.4	0.4	0.5	1.0	0.3	0.2	1.0	1	9	7	31

**Compliance History, Cont.**

**Effluent Violations for Outfall 001, from: January 1, 2025 to December 31, 2025)**

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	05/31/25	Avg Mo	42	mg/L	25	mg/L
CBOD5	02/28/25	Avg Mo	36	mg/L	25	mg/L
CBOD5	03/31/25	Avg Mo	28	mg/L	25	mg/L
CBOD5	04/30/25	Avg Mo	26	mg/L	25	mg/L
TSS	08/31/25	Avg Mo	49	mg/L	30	mg/L
TSS	02/28/25	Avg Mo	36	mg/L	30	mg/L
TSS	07/31/25	Avg Mo	49	mg/L	30	mg/L
Fecal Coliform	06/30/25	IMAX	5600	CFU/100 ml	1000	CFU/100 ml
Ammonia	01/31/25	Avg Mo	31	mg/L	16	mg/L

**Compliance History, Cont.**

<b>Summary of Inspections:</b>		The most recent inspection by the Department on July 17, 2025, noted eDMR effluent violations.
<b>Other Comments:</b>		A query in WMS found no open violations Central Columbia School District in eFACTS.

**Existing Effluent Limitations and Monitoring Requirements**

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
DO	XXX	XXX	Report Daily Min	XXX	XXX	XXX	Daily when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	Daily when Discharging	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	60	2/month	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	16	XXX	32	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	5.5	XXX	11	2/month	8-Hr Composite

**Development of Effluent Limitations**

Outfall No. 001 Design Flow (MGD) 0.028  
 Latitude 41° 1' 26.50" Longitude -76° 22' 15.10"  
 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 <sub>5</sub>	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
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 limitations are applicable and included in the existing permit

**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<sub>5</sub>), and ammonia nitrogen (NH<sub>3</sub>-N) into free-flowing streams and rivers. To accomplish this the model simulates two basic processes: the mixing and degradation of NH<sub>3</sub>-N in the stream and the mixing and consumption of DO in the stream due to the degradation of CBOD<sub>5</sub> and NH<sub>3</sub>-N.

The discharge has existing water quality-based limits for NH<sub>3</sub>-N as listed on the previous page.

WQM7.0 modeling was performed for the discharge to the Unnamed Tributary to the Susquehanna River and showed that the secondary treatment limits listed above for CBOD<sub>5</sub> and the existing limits for NH<sub>3</sub>-N are adequate to protect the receiving waters. See Attachment B.

**TRC**

The Department uses a modeling spreadsheet to determine necessary WQBELs for TRC toxicity based on instream dilution. The attached modeling results (See attachment D) show that the existing limit of 0.5 mg/l is adequate to protect the receiving stream.

**Toxics Management**

No further "Reasonable Potential Analysis" was performed to determine additional toxic parameters as candidates for limitations for this 0.028 MGD sewage treatment facility receiving no industrial influent.

**Chesapeake Bay Requirements**

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. This treatment plant is considered an existing Phase 5, insignificant Chesapeake Bay discharger per the Phase III Watershed Implementation Plan (WIP) and thus has not received Cap Loads. Monitoring for a previous permit renewal found the Total Nitrogen and Total Phosphorus to average 40.1 and 6.4 mg/L, respectively. Because the

current nutrient load from the discharge has adequately been characterized no further nutrient monitoring will be required at this time.

**e. Coli**

Annual e. coli monitoring will be required at this time due to recent changes to Chapter 93 of the Departments regulations and Department policy.

**Best Professional Judgment (BPJ) Limitations**

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

**Anti-Backsliding**

No limitations 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) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	Daily when Discharging	Grab
DO	XXX	XXX	Report Daily Min	XXX	XXX	XXX	Daily when Discharging	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	Daily when Discharging	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30	XXX	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 Nov 1 - Apr 30	XXX	XXX	XXX	16	XXX	32	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	5.5	XXX	11	2/month	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

Compliance Sampling Location: Outfall 001

Other Comments: E. Coli monitoring is new as mentioned above. Due to the nature of the facility (schools) the measurement frequency of daily when discharging for pH, DO, and TRC will remain at this time.

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

Attachments:

- A. Discharge Location Map
- B. WQM7.0 Model
- C. TRC Model

CENTRE

Mabel's small town

BM 502

Outfall 001

Central Columbia High School

Star Family Restaurant

ABANDONED

Susqu

Almedia

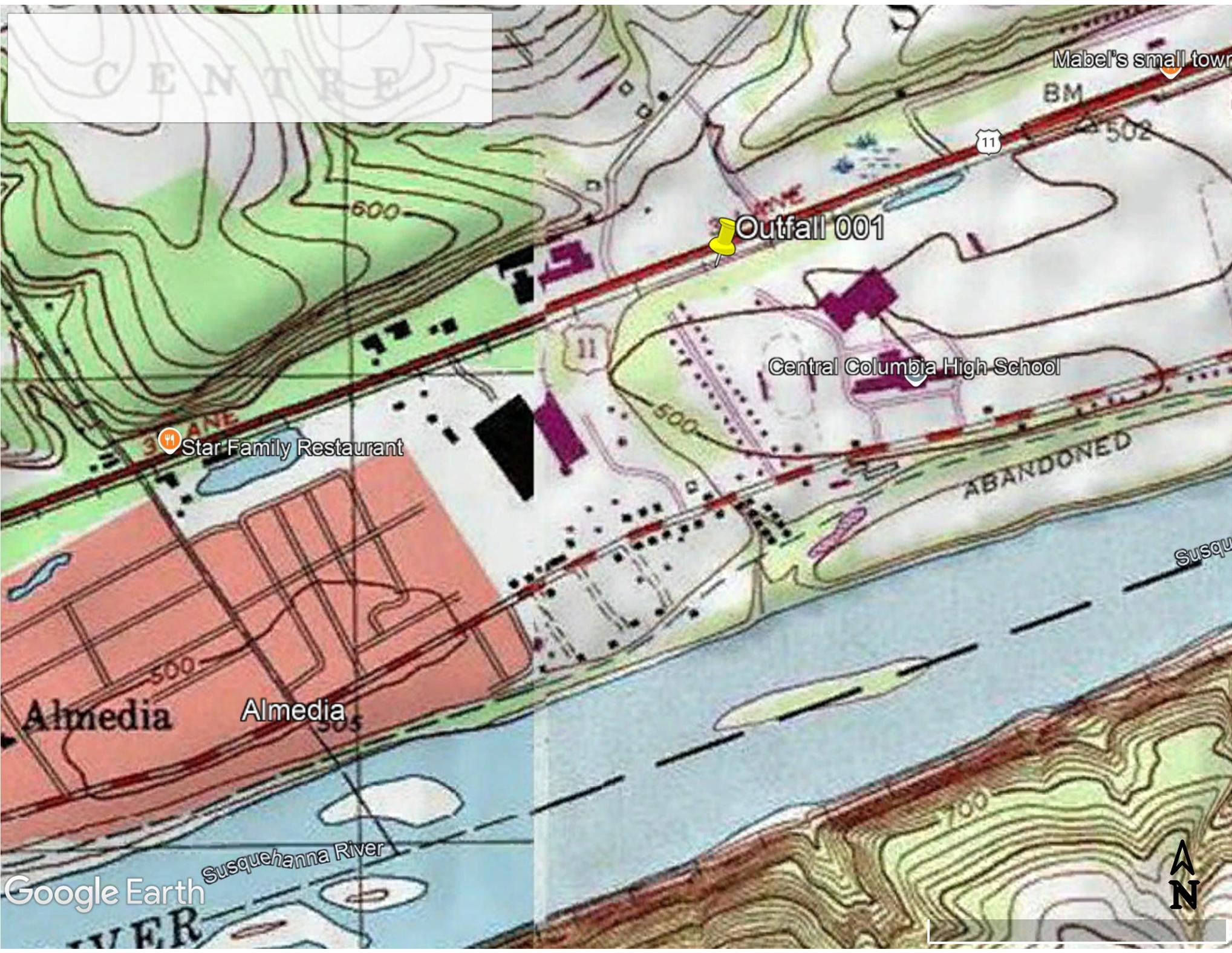
Almedia

Google Earth

Susquehanna River



VER



## 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
05D	28075	Trib 28075 to Susquehanna River	<b>0.590</b>	492.00	1.53	0.00000	0.00	<input checked="" type="checkbox"/>

### Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
	(cfsm)	(cfs)	(cfs)									
<b>Q7-10</b>	0.205	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
<b>Q1-10</b>		0.00	0.00	0.000	0.000							
<b>Q30-10</b>		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
Central Col SD	PA0031852	0.0280	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	5.50	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
05D	28075	Trib 28075 to Susquehanna River	<b>0.001</b>	461.00	2.00	0.00000	0.00	<input checked="" type="checkbox"/>

### Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time (days)	Rch Velocity (fps)	WD Ratio	Rch Width (ft)	Rch Depth (ft)	Tributary Temp (°C)	pH	Stream Temp (°C)	pH
	(cfsm)	(cfs)	(cfs)									
<b>Q7-10</b>	0.205	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
<b>Q1-10</b>		0.00	0.00	0.000	0.000							
<b>Q30-10</b>		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

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
05D		28075				Trib 28075 to Susquehanna River						
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
<b>Q7-10 Flow</b>												
0.590	0.31	0.00	0.31	.0433	0.00997	.427	7.35	17.24	0.11	0.316	20.61	7.00
<b>Q1-10 Flow</b>												
0.590	0.20	0.00	0.20	.0433	0.00997	NA	NA	NA	0.09	0.391	20.89	7.00
<b>Q30-10 Flow</b>												
0.590	0.43	0.00	0.43	.0433	0.00997	NA	NA	NA	0.13	0.271	20.46	7.00

## WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	6		

## WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
05D	28075	Trib 28075 to Susquehanna River

<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>
0.590	0.028	20.607	7.000
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>
7.353	0.427	17.236	0.114
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>
4.79	0.862	0.67	0.733
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>
7.607	24.818	Owens	6
<u>Reach Travel Time (days)</u>	<b>Subreach Results</b>		
0.316	<u>TravTime</u>	<u>CBOD5</u>	<u>NH3-N</u>
	(days)	(mg/L)	(mg/L)
			<u>D.O.</u>
			(mg/L)
	0.032	4.66	0.65
	0.063	4.53	0.64
	0.095	4.40	0.62
	0.127	4.28	0.61
	0.158	4.16	0.59
	0.190	4.05	0.58
	0.221	3.94	0.57
	0.253	3.83	0.55
	0.285	3.72	0.54
	0.316	3.62	0.53

## WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
05D	28075	Trib 28075 to Susquehanna River

### 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
0.590	Central Col SD	15.57	11	15.57	11	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
0.590	Central Col SD	1.83	5.5	1.83	5.5	0	0

### Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.59	Central Col SD	25	25	5.5	5.5	3	3	0	0

## WQM 7.0 Effluent Limits

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
05D	28075	Trib 28075 to Susquehanna River					
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)
0.590	Central Col SD	PA0031852	0.028	CBOD5	25		
				NH3-N	5.5	11	
				Dissolved Oxygen			3

<b>TRC EVALUATION</b>				
Input appropriate values in A3:A9 and D3:D9				
0.31	= Q stream (cfs)	0.5	= CV Daily	
0.028	= Q discharge (MGD)	0.5	= CV Hourly	
30	= no. samples	1	= 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)		=Decay Coefficient (K)	
Source	Reference	AFC Calculations		Reference
TRC	1.3.2.iii	WLA_afc = 2.302		1.3.2.iii
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c
PENTOXSD TRG	5.1b	LTA_afc = 0.858		5.1d
				WLA_cfc = 2.237
				LTAMULT_cfc = 0.581
				LTA_cfc = 1.300
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	$(.019/e^{-k \cdot AFC\_tc}) + [(AFC\_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC\_tc}) \dots + Xd + (AFC\_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$			
LTA_afc	wla_afc * LTAMULT_afc			
WLA_cfc	$(.011/e^{-k \cdot CFC\_tc}) + [(CFC\_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC\_tc}) \dots + Xd + (CFC\_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no\_samples + 1)) - 2.326 \cdot LN(cvd^2 / no\_samples + 1)^{0.5})$			
LTA_cfc	wla_cfc * LTAMULT_cfc			
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no\_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no\_samples + 1))$			
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)			