pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0020222**
Facility Type	**Municipal**	APS ID	**976495**
Major / Minor	**Minor**	Authorization ID	**1244188**

Applicant and Facility Information

Applicant Name	**Weaverland Valley Authority**	Facility Name	**Terre Hill Borough WWTP**
Applicant Address	4610 Division Highway	Facility Address	426 Linden Street
	East Earl, PA 17519		East Earl, PA 17519
Applicant Contact	Ken Witmer	Facility Contact	Ken Witmer
Applicant Phone	(717) 354-5593	Facility Phone	(717) 354-5593
Client ID	333097	Site ID	252193
Ch 94 Load Status	Not Overloaded	Municipality	Terre Hill Borough
Connection Status	No Limitations	County	Lancaster
Date Application Received	August 29, 2018	EPA Waived?	Yes
Date Application Accepted	September 18, 2018	If No, Reason	

Purpose of Application: NPDES Renewal/Transfer and WQM Transfer

Summary of Review

Weaverland Valley Authority has applied to the Pennsylvania Department of Environmental Protection (DEP) for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit. The permit was issued on June 14, 2013, and became effective on July 1, 2013. The permit authorized discharge of treated sewage from the existing facility located in Terre Hill Borough, Lancaster County into Black Creek. The existing permit expiration date was June 30, 2018, and the permit has been administratively extended since that time.

The WWTP was previously owned by Terre Hill Borough. This application also consists of the transfer applications for the NPDES and WQM permit from Terre Hill Borough to Weaverland Valley Authority. Act 537 Planning was approved on September 29, 2015.

Per the previous renewal fact sheet, in October 1994, Terre Hill Borough completed the relocation of their outfall line from the small tributary adjacent to the WWTP to the main stem of Black Creek (approximately 1,800' away). This was done to relax NH_3-N limitations. The WWTP originally was designed as an activated sludge process, with 2 large polishing ponds. The WWTP had past problems with treatment, particularly with NH_3-N. The ponds were found to be increasing NH_3-N in the effluent during the summer. The facility was previously upgraded in 1990 to add a third aeration tank to control the NH_3-N problem. As of 2007, the polishing ponds had been abandoned, and nitrification was being achieved at the WWTP. A septage receiving station was constructed at the WWTP in 2001. As of September 2007, problems have resulted from improperly introducing septage.

Changes in this renewal: TDS, Sulfate, Chloride, and Bromide monitoring has been added. E. Coli monitoring has been added.

Sludge use and disposal description and location(s): Offsite location

Approve	Deny	Signatures	Date
X		*Benjamin Lockwood* Benjamin R. Lockwood / Environmental Engineering Specialist	March 31, 2021
		Daniel W. Martin, P.E. / Environmental Engineer Manager	
		Maria D. Bebenek, P.E. / Program Manager	

Summary of Review

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.

A topographic map showing the discharge location and additional supplemental information is located at the end of the fact sheet.

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.21
Latitude	40º 10' 8"	Longitude	76º 2' 26"
Quad Name	Terre Hill	Quad Code	1737
Wastewater Description:	Sewage Effluent		
Receiving Waters	Black Creek	Stream Code	07774
NHD Com ID	57461843	RMI	0.97
Drainage Area	9.45 mi^2	Yield (cfs/mi^2)	0.066
Q_{7-10} Flow (cfs)	0.621	Q_{7-10} Basis	USGS PA StreamStats
Elevation (ft)	382	Slope (ft/ft)	
Watershed No.	7-J	Chapter 93 Class.	HQ-WWF, MF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	N/A	Exceptions to Criteria	N/A
Assessment Status	Impaired		
Cause(s) of Impairment	Pathogens, Siltation		
Source(s) of Impairment	Source Unknown, Agriculture		
TMDL Status	N/A	Name	N/A
Nearest Downstream Public Water Supply Intake	Lancaster City Water Bureau		
PWS Waters	Conestoga River	Flow at Intake (cfs)	
PWS RMI		Distance from Outfall (mi)	25.6

Changes Since Last Permit Issuance: USGS PA StreamStats is showing a drainage area of 9.45 mi^2 and a Q_{7-10} flow of 0.621 cfs at the Outfall 001 location .

Treatment Facility Summary				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Activated Sludge	Hypochlorite	0.21
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.21	375	Not Overloaded	Anerobic Digester / Reed Beds	Offsite Location

Changes Since Last Permit Issuance: None

Other Comments: The WWTP train is as follows: Comminutor/Muffin Monster – Primary Aeration/Settling Tank – Aeration Tank – Secondary Aeration/Settling Tank – Chlorine Contact Tank (with liquid feed) – Discharge to Outfall 001 to Black Creek. The system also includes the chemical addition of sodium hypochlorite and alum, as well as an anaerobic digester and 2 reed beds.

Compliance History	
Summary of DMRs:	A summary of the past 12-month DMR effluent data is presented on the next page of this fact sheet.
Summary of Inspections:	1/27/2015: A routine inspection was conducted by Andrew Hall, DEP Water Quality Specialist. Field tests came back within permitted values. There was some foaming present in the primary clarifier, with slight carry over to the second primary clarifier. There was light growth in the final clarifier weir notches, and there was no baffle present. The chlorine contact tank had small pockets of bulk sludge flowing over the second baffle, and the effluent was slightly turbid. Outfall 001 is located in an area with little flow, and solids accumulation was noted at the outfall extending approximately 5 feet downstream along the bank. Due to the location of the outfall, a vacuum truck would be unable to access this area. He recommended that the operator try to reduce solids leaving the plant. 2/24/2016: A routine inspection was conducted by Sheena Ripple, DEP Water Quality Specialist. The aeration tank brown color, with no foam or odor. The final clarifier was clear. The operator stated that he was having issues with setting the feed rate low, and was working to correct it. 10/17/2017: A routine inspection was conducted by Kevin Buss, DEP Water Quality Specialist. Since the last inspection, the facility had fecal coliform, phosphorus, TSS, ammonia, and residual chlorine effluent violations. Effluent violations in September 2017 were attributed to a rain event and chemical feed malfunction. The alum chemical feed tank is stored outside, next to the treatment plant and does not have secondary containment. Effluent appeared mostly clear with some suspended solids. The chlorine contact tank surface held some grease and floatables, mostly contained behind the baffles. 4/2/2019: A routine inspection was conducted by Tracy Tomtishen, DEP Water Quality Specialist. A walkthrough of the facility was conducted. Some grease and floatables were visible in the influent channel. The aeration tank #1 had even aeration, and the clarifier scum hopper was functional. Algae was visible on the clarifier weirs and trough. The clarifier content appeared cloudy. The second clarifier tank was mostly clear with minimal pin floc. The chlorine contact tank appeared slightly cloudy with some surface scum. Algae was present on the walls of the tank. The sodium hypochlorite drip was functioning. Field test results came back within permitted values. No concerns were noted at the sludge holding tank. Septage from local septic tanks and restaurant holding tanks are hauled-in and disposed. The septage tank is aerated, but only one side was receiving aeration. The opposing side of the tank had an accumulation of solids and floatables. The septage discharge to the treatment plant is adjusted to prevent surges. Solids were visible at Outfall 001. The outfall is not located near the stream's edge, and sediment is beginning to accumulate around the outfall structure. Solids were observed at least two effluent manholes prior to the discharge. Solids accumulation led to a swale which discharges to Black Creek. Solids, grease, and floatables were observed in the manhole. The overflows were believed to be the result of decreased treatment during high water events. Issues were noted with the alum feed; alum was manually being added and the feed pump were not operational, and there was no secondary containment for the alum, sodium hypochlorite and the sodium bisulfate containers. It was also noted that the treatment plant appeared to be impacted by significant amount of sheet flow from stormwater runoff, and the stormwater drain and outfall are blocked with sediment. 5/9/2019: A Notice of Violation (NOV) was issued based on the previous inspection due to a discharge of partially treated sewage to the ground surface with potential to reach waters of the Commonwealth, discharge which resulted in solids accumulation in receiving stream, failure to immediately notify DEP to changes in treatment plant performance, failure to collect representative samples during periods of adverse weather, and failure to

	properly operate and maintain an aerated sludge holding tank. A list of effluent violations were also provided. 4/29/2020: An Administrative Inspection was conducted by Tracy Tomtishen. Since the last inspection, two recirculating pumps were rebuilt and a blower was replaced, and sludge was removed from the reed beds. No other current issues or needs were noted. 8/20/2020: An Administrative Inspection was conducted by Tracy Tomtishen. Since the last inspection, the Muffin Monster stopped functioning and was replaced. The report noted that the treatment plant was struggling with pH fluctuations. Soda ash was added as needed. The plant was also struggling to meet phosphorus limits. For the month prior to the inspection, soda ash addition was not necessary, and the plant had stabilized. No other current issues or needs were noted. 10/5/2020: A NOV was issued based on effluent violations during 2019 and 2020. 10/26/2020: A routine inspection was conducted by Tracy Tomtishen. The clarifier #1 had a light layer of surface scum/foam, and algae was visible on the weirs and trough. The clarifier #2 contents appeared cloudy with heavy pin floc, and the effluent trough has algae accumulation. The chlorine contact tank appeared clear with a grey cloudy tint. Algae was present on walls of the tank. The bulk alum chemical storage tank is no longer in use, and there was chemical buildup present on the floor of the containment building. No leaks were noted outside of the sludge holding tank. The water at the outfall appeared to have a light grey tint compared to the stream water. It was noted that there have been pH fluctuations due to influent variations. Soda ash is added as needed.

Other Comments: There are currently no open violations associated with the permittee or facility

Compliance History

DMR Data for Outfall 001 (from December 1, 2019 to November 30, 2020)

Parameter	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19
Flow (MGD) Average Monthly	0.1722	0.1543	0.1452	0.1523	0.1134	0.0963	0.1402	0.1943	0.1945	0.2175	0.222	0.2136
Flow (MGD) Daily Maximum	0.2344	0.2	0.2441	0.3155	0.2088	0.2096	0.2266	0.3011	0.3718	0.2954	0.4731	0.314
pH (S.U.) Minimum	7.14	7.04	7.01	6.85	6.22	6.04	6.0	7.04	7.0	6.88	7.14	6.76
pH (S.U.) Maximum	7.73	8.03	7.73	8.49	7.9	7.3	7.54	8.49	8.34	7.74	7.73	7.77
DO (mg/L) Minimum	8.27	7.12	5.65	5.18	5.22	5.26	5.42	6.04	5.09	6.04	6.18	5.96
TRC (mg/L) Average Monthly	0.09	0.07	0.08	0.10	0.11	0.24	0.23	0.14	0.15	0.11	0.11	0.09
TRC (mg/L) Instantaneous Maximum	0.73	0.50	0.52	0.75	0.71	0.48	0.73	0.28	0.43	0.24	0.52	0.47
CBOD5 (lbs/day) Average Monthly	< 5	< 4	< 4	< 5.0	6.0	7.0	6.0	< 8.0	16.0	9.0	7.0	< 7.0
CBOD5 (lbs/day) Weekly Average	< 5	4	7	8.0	12.0	9.0	8.0	11.0	28.0	12.0	9.0	10
CBOD5 (mg/L) Average Monthly	< 3	< 3	< 4	< 4.0	6.0	8.0	6.0	< 5.0	10.0	5.0	4.0	< 4.0
CBOD5 (mg/L) Weekly Average	3.0	4	5	7.0	10.0	13.0	9.0	8.0	18.0	7.0	5.0	6.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	212.0	199	237	184.0	172.0	144	172.0	305.0	391.0	337.0	318.0	278.0
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	311.0	297	372	261.0	225.0	278	235.0	415.0	474.0	494.0	411.0	377.0
BOD5 (mg/L) Raw Sewage Influent Average Monthly	140.0	151	208	152.0	174.0	164	161.0	208.0	249.0	180.0	178.0	153.0
TSS (lbs/day) Average Monthly	11	7	7	8.0	12.0	12.0	16.0	17.0	25.0	14.0	8.0	7.0

TSS (lbs/day) Raw Sewage Influent Average Monthly	200.0	199	268	192.0	185.0	140	170.0	229.0	377.0	247.0	209.0	244.0
TSS (lbs/day) Raw Sewage Influent Daily Maximum	259.0	327	536	270.0	360.0	354	292.0	464.0	563.0	414.0	288.0	310.0
TSS (lbs/day) Weekly Average	20	8	18	12.0	24.0	20.0	22.0	23.0	30.0	39.0	15.0	14.0
TSS (mg/L) Average Monthly	7	5	6	6.0	11.0	14.0	15.0	11.0	16.0	8.0	5.0	4.0
TSS (mg/L) Raw Sewage Influent Average Monthly	132.0	150	235	158.0	183.0	157	158.0	153.0	241.0	130.0	116.0	133.0
TSS (mg/L) Weekly Average	11	6	17	9.0	20.0	23.0	24.0	14.0	18.0	22.0	8.0	9.0
Fecal Coliform (CFU/100 ml) Geometric Mean	50	32	15.0	31.0	60.0	136.0	20.0	19.0	35	32.0	31.0	38.0
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	108	111	75.0	326.0	205.0	2420	36.0	38.0	165.0	2420.0	142.0	150.0
Nitrate-Nitrite (mg/L) Average Monthly	23.9	31.6	29.0	36.0	33.0	31.21	32.0	22.0	24.0	23.16	< 21.0	23.0
Nitrate-Nitrite (lbs) Total Monthly	1109	1219	1005	1129.0	1046.0	810	986.0	956.0	1149.0	1222.0	< 971.0	1252.0
Total Nitrogen (mg/L) Average Monthly	24.4	< 0.5	29	30.0	34.8	34.58	32.86	22.27	30.4	23.16	< 21.6	23.0
Total Nitrogen (lbs) Total Monthly	1132	1219	1005	1129.0	1098.0	901	1066	977.0	1478.0	1222.0	< 994.0	1252.0
Total Nitrogen (lbs) Other Annual Final Effluent Total Annual												11900.0
Ammonia (lbs/day) Average Monthly	< 0.2	< 0.2	< 0.1	< 0.6	< 3.0	5.0	< 1.6	< 0.5	< 9.8	< 1.3	< 1.3	< 0.5
Ammonia (mg/L) Average Monthly	< 0.1	< 0.1	< 0.1	< 0.5	< 2.5	5.6	< 1.7	< 0.3	< 6.1	< 0.7	< 0.6	< 0.3
Ammonia (lbs) Total Monthly	< 4.6	< 5.2	< 3.5	< 19.3	< 92.9	149.7	< 48.8	< 15.2	< 303.8	< 37.3	< 31.0	< 14.2

Ammonia (lbs) Other Annual Final Effluent Total Annual												862.0
TKN (mg/L) Average Monthly	< 0.5	< 0.5	< 0.5	< 0.5	< 1.8	< 3.6	< 2.8	< 0.77	< 11.0	< 0.5	< 0.8	< 0.5
TKN (lbs) Total Monthly	< 23	< 20	< 17	< 19.0	< 65.0	< 98.0	< 88	< 34.0	< 336.0	< 27.0	< 39.0	< 30.0
Total Phosphorus (lbs/day) Average Monthly	1.6	1.1	0.9	0.9	2.3	1.7	2.3	2.8	3.4	2.9	3.4	2.1
Total Phosphorus (mg/L) Average Monthly	1.0	0.9	0.8	0.7	2.3	2.1	2.3	1.9	2.2	1.6	1.8	1.2
Total Phosphorus (lbs) Total Monthly	47.8	34.1	27.8	27.3	71.1	51.8	71.4	82.8	104.2	83.2	85.1	65.0
Total Phosphorus (lbs) Other Annual Final Effluent Total Annual												816.0

Compliance History

Effluent Violations for Outfall 001, from: January 1, 2020 To: November 30, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Fecal Coliform	06/30/20	IMAX	2420	CFU/100 ml	1000	CFU/100 ml
Ammonia	06/30/20	Avg Mo	5.6	mg/L	3.0	mg/L
Total Phosphorus	06/30/20	Avg Mo	2.1	mg/L	2.0	mg/L
Total Phosphorus	05/31/20	Avg Mo	2.3	mg/L	2.0	mg/L
Total Phosphorus	07/31/20	Avg Mo	2.3	mg/L	2.0	mg/L
Total Phosphorus	03/31/20	Avg Mo	2.2	mg/L	2.0	mg/L

Existing Effluent Limitations and Monitoring Requirements

The tables below summarize the effluent limits and monitoring requirements implemented in the existing NPDES permit.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (7/1/2013-6/30/2016)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Total Residual Chlorine (7/1/2016-6/30/2018)	XXX	XXX	XXX	0.26	XXX	0.85	1/day	Grab
CBOD5 May 1 – Oct 31	35	53	XXX	20	30	40	1/week	24-Hr Composite
CBOD5 Nov 1 – Apr 30	44	70	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	53	79	XXX	30	45	60	1/week	24-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 – Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (CFU/100 ml) Oct 1 – Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
Ammonia-Nitrogen May 1 – Oct 31	5.3	XXX	XXX	3.0	XXX	6.0	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 – Apr 30	16	XXX	XXX	9.0	XXX	18	1/week	24-Hr Composite
Total Phosphorus	3.5	XXX	XXX	2.0	XXX	4.0	1/week	24-Hr Composite

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	1/month	24-Hr Composite
Nitrite-Nitrate as N	Report	XXX	XXX	Report	XXX	1/month	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .021
Latitude 40º 10' 8" **Longitude** 76º 2' 26"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
E. Coli (No./100 ml)	Report	IMAX	-	92a.61
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Water Quality-Based Limitations

$CBOD_5$, NH_3-N

Pursuant to 40 CFR § 122.44(d)(1)(i), more stringent requirements should be considered when pollutants are discharged at the levels which have the reasonable potential to cause or contribute to excursions above water quality standards.

WQM 7.0 ver. 1.0b is a water quality model designed to assist DEP in determining appropriate water quality based effluent limits (WQBELs) for carbonaceous biochemical oxygen demand ($CBOD_5$), NH_3-N and dissolved oxygen (D.O.). DEP's Technical Guidance No. 391-2000-007 provides the technical methods contained in WQM 7.0 for determining wasteload allocations and for determining recommended NPDES effluent limits for point source discharges. The model was utilized for this permit renewal, and the model output indicated a $CBOD_5$ average monthly limit of 25 mg/l, an NH_3-N average monthly limit of 6.24 mg/l, and a D.O. minimum limit of 5.0 mg/l were protective of water quality.

The flow data used to run the model was acquired from USGS PA StreamStats and is included at the end of this fact sheet. The existing $CBOD_5$ and NH_3-N limits are more stringent than this more recent model output; therefore, the existing limits will remain in the permit.

Best Professional Judgement (BPJ) Limitations

Dissolved Oxygen
A minimum D.O. limit of 5.0 mg/L is a D.O. water quality criterion found in 25 Pa. Code § 93.7(a). This limit is included in the existing NPDES permit based BPJ. It is still recommended to include this limit in the draft permit to ensure that the facility continues to achieve compliance with DEP water quality standards.

Total Phosphorus
For Total Phosphorus (TP), the existing NPDES permit requires the permittee to comply with average monthly and IMAX limits of 2.0 mg/L and 4.0 mg/L, respectively. DEP's Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams (Guidance No. 391-2000-018) was used during the past renewal to evaluate if phosphorus limitations were necessary. According to the guidance, phosphorus limits would be needed if the contributions from this facility

exceeded 0.25% of the total phosphorus load of all discharges in the Lower Susquehanna River Basin. The calculated 9.2 lbs/day was 0.24% of the loading after delivery ratios to the lower Susquehanna River were applied. This is lower than the cut-off point of 0.25%, however, the fact sheet noted that the WWTP had been required to remove phosphorus for several permit terms since it was upgraded in 1990 to include phosphorus removal equipment. Therefore, the existing average monthly limit of 2.0 mg/l and instantaneous maximum limit of 4.0 mg/l will remain in the permit to protect the local watershed.

Additional Considerations

Chesapeake Bay Total Maximum Daily Load (TMDL)

DEP developed a strategy to comply with the EPA and Chesapeake Bay Foundation requirements by reducing point source loadings of Total Nitrogen (TN) and Total Phosphorus (TP). This strategy can be located in the *Pennsylvania Chesapeake Watershed Implementation Plan* (WIP), dated January 11, 2011. Subsequently, an update to the WIP was published as the Phase 2 WIP. As part of the Phase 2 WIP, a *Phase 2 Watershed Implementation Plan Wastewater Supplement* (Phase 2 Supplement) was developed, providing an update on TMDL implementation for point sources and DEP's current implementation strategy for wastewater. A new update to the WIP was published as the Phase 3 WIP in August 2019. As part of the Phase 3 WIP, a *Phase 3 Watershed Implementation Plan Wastewater Supplement* (Phase 3 Supplement) was developed, and was most recently revised on December 17, 2019, and is the basis for the development of any Chesapeake Bay related permit parameters. Sewage discharges have been prioritized based on their design flow to the Bay. The highest priority (Phases 1, 2, and 3) dischargers will receive annual Cap Loads based on their design flow on August 29, 2005 and concentrations of 6 mg/l TN and 0.8 mg/l TP. These limits may be achieved through a combination of treatment technology, credits, or offsets. For Phase 4 and 5 facilities, Cap Loads are not currently being implemented for renewed or amended permits for facilities that do not increase design flow.

This facility is considered a Phase 4 non-significant discharger with a design flow less than 0.4 MGD but greater than or equal to 0.2 MGD. According to DEP's latest-revised Phase 3 Supplement, issuance of permits with monitoring and reporting for TN and TP is recommended for any Phase 4 non-significant sewage facilities. Furthermore, DEP's SOP No. BCW-PMT-033 states that in general, at a minimum, monitoring for TN and TP should be included in new and reissued permits for sewage discharges with design flows > 2,000 gpd. Therefore, TN and TP monitoring will be included in the renewed permit, which is consistent with the existing permit. The existing monitoring frequency and sample type will remain.

Total Dissolved Solids (TDS)

Total Dissolved Solids and its major constituents including Bromide, Chloride, and Sulfate have become statewide pollutants of concern and threats to DEP's mission to prevent violations of water quality standards. The requirement to monitor these pollutants must be considered under the criteria specified in 25 Pa. Code § 95.10 and the following January 23, 2014 DEP Central Office Directive:

For point source discharges and upon issuance or reissuance of an individual NPDES permit:

- Where the concentration of TDS in the discharge exceeds 1,000 mg/L, or the net TDS load from a discharge exceeds 20,000 lbs/day, and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for TDS, sulfate, chloride, and bromide. Discharges of 0.1 MGD or less should monitor and report for TDS, sulfate, chloride, and bromide if the concentration of TDS in the discharge exceeds 5,000 mg/L.

- Where the concentration of bromide in a discharge exceeds 1 mg/L and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for bromide. Discharges of 0.1 MGD or less should monitor and report for bromide if the concentration of bromide in the discharge exceeds 10 mg/L.

- Where the concentration of 1,4-dioxane (CAS 123-91-1) in a discharge exceeds 10 µg/l and the discharge flow exceeds 0.1 MGD, Part A of the permit should include monitor and report for 1,4-dioxane. Discharges of 0.1 MGD or less should monitor and report for 1,4-dioxane if the concentration of 1,4-dioxane in the discharge exceeds 100 µg/l.

Terre Hill WWTP had a reported maximum effluent TDS concentration of 1,505 mg/l and Bromide concentration of 0.5 mg/l. Based upon the data provided in the application, monitoring will be necessary for TDS, sulfate, chloride, and bromide. A monitoring frequency of 1/year will be used for these parameters.

Fecal Coliform

PA Code § 92a.47.(a)(4) requires a monthly average limit of 200/100 mL as a geometric mean and an instantaneous maximum limit not greater than 1,000/100 mL from May through September for fecal coliform. PA Code § 92a.47.(a)(5) requires a monthly average limit of 2,000/100 mL as a geometric mean and an instantaneous maximum limit not greater than 10,000/100 mL from October through April for fecal coliform. These limits are included in the existing permit and will remain in the renewal.

E. Coli

PA Code § 92a.61 requires IMAX reporting of E. Coli. Per DEP's SOP No. BCW-PMT-033, sewage dischargers with a design flow of >= 0.05 and < 1 mgd will include E. Coli monitoring with a frequency of 1/quarter. This parameter has been added to the renewal permit.

Total Residual Chlorine

The attached computer printout utilizes the equations and calculations as presented in the Department's May 1, 2003 Implementation Guidance for Total Residual Chlorine (TRC) (ID No. 391-2000-015) for developing chlorine limitations. The Guidance references Chapter 92, Section 92.2d (3) which establishes a standard BAT limit of 0.5 mg/l unless a facility-specific BAT has been developed. The attached printout indicates that a water quality limit of 0.28 mg/l would be needed to prevent toxicity concerns. The existing TRC is more stringent; therefore, a TRC limit of 0.26 mg/l monthly average and 0.85 mg/l instantaneous maximum will be included in this permit.

Sampling Frequency & Sample Type

The monitoring requirements were established based on BPJ and/or Table 6-3 of DEP's Technical Guidance No. 362-0400-001.

Flow Monitoring

Flow monitoring is recommended by DEP's technical guidance and is also required by 25 PA Code §§ 92a.61.

Influent BOD_5 and Total Suspended Solids (TSS) Monitoring

As a result of negotiation with US EPA, influent monitoring of TSS and BOD_5 are required for any publicly owned treatment works (POTWs); therefore, influent sampling of BOD_5 and TSS will remain in the permit.

Mass Loading Limitation

All mass loading effluent limitations recommended in the draft permit are concentration-based, calculated using the formula: design flow (MGD) x concentration limit (mg/l) x conversion factor of 8.34.

Anti-Degradation

The effluent limits for this discharge have been developed to ensure that existing instream water uses and the level of water quality necessary to protect the existing uses are maintained and protected. No Exceptional Value Waters are impacted by this discharge. This WWTP discharges to a stream classified as a HQ-WWF. The discharge was pre-existing and is permitted to protect the stream.

303(d) Listed Streams

The discharge is located on a stream segment that is designated on the 303(d) list as impaired. There is a recreational impairment due to pathogens from an unknown source. There is an aquatic life impairment due to siltation from agriculture. The proposed effluent limits include limits for fecal coliform.

Class A Wild Trout Fisheries

No Class A Wild Trout Fisheries are impacted by this discharge.

Anti-Backsliding

Pursuant to 40 CFR § 122.44(l)(1), all proposed permit requirements addressed in this fact sheet are at least as stringent as the requirements implemented in the existing NPDES permit unless any exceptions addressed by DEP in this fact sheet.

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" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	5.0	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.26	XXX	0.85	1/day	Grab
CBOD5 May 1 – Oct 31	35	53	XXX	20	30	40	1/week	24-Hr Composite
CBOD5 Nov 1 – Apr 30	44	70	XXX	25	40	50	1/week	24-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	24-Hr Composite
Total Suspended Solids	53	79	XXX	30	45	60	1/week	24-Hr Composite
Fecal Coliform (No./100 ml) May 1 – Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Fecal Coliform (No./100 ml) Oct 1 – Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Ammonia-Nitrogen May 1 – Oct 31	5.3	XXX	XXX	3.0	XXX	6.0	1/week	24-Hr Composite
Ammonia-Nitrogen Nov 1 – Apr 30	16	XXX	XXX	9.0	XXX	18	1/week	24-Hr Composite
Total Phosphorus	3.5	XXX	XXX	2.0	XXX	4.0	1/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
TDS	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
Sulfate	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
Chloride	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite
Bromide	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	24-Hr Composite

Compliance Sampling Location: Composite samples may be taken before or after disinfection; grab samples may be taken after disinfection

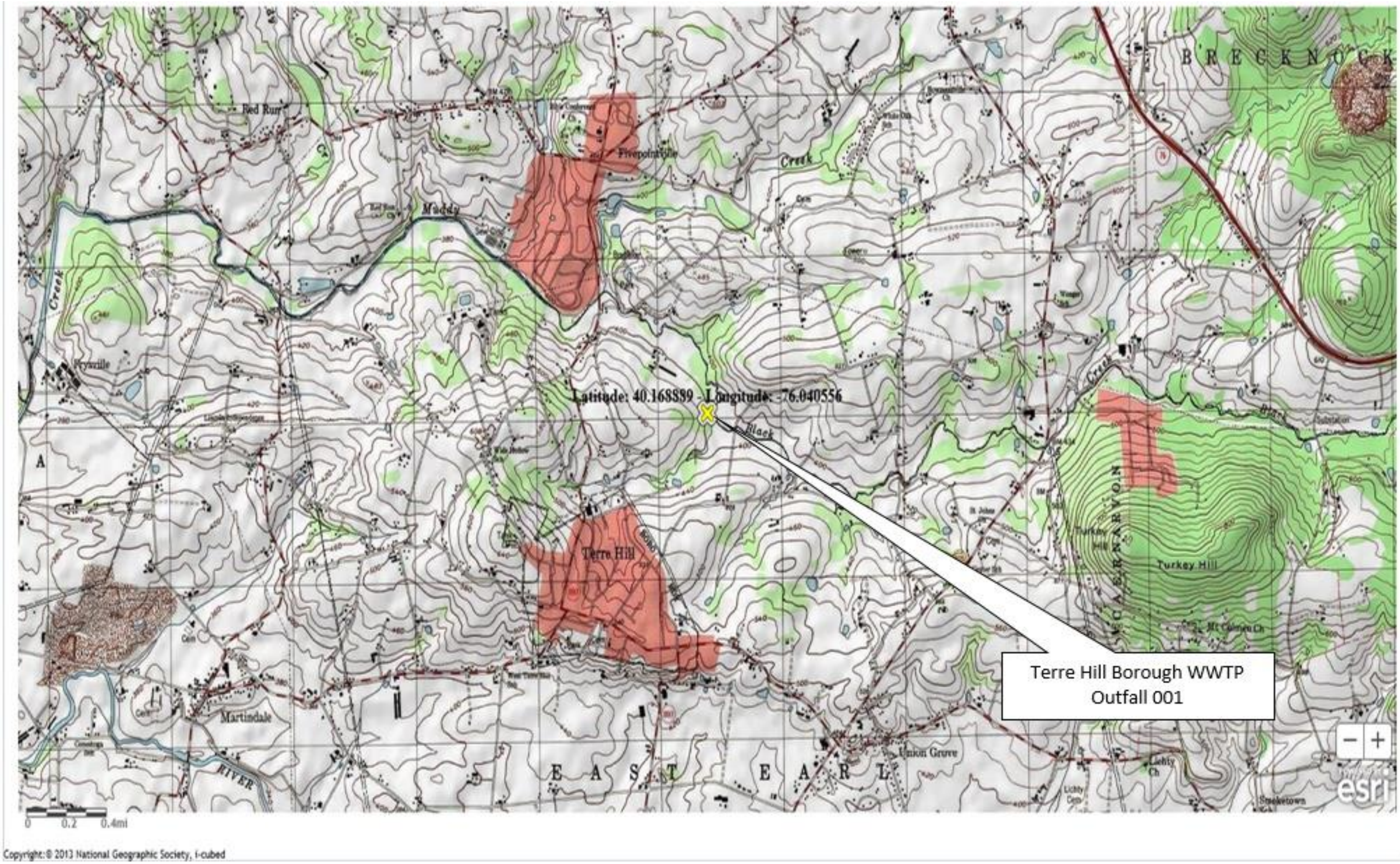
Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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

Parameter	Effluent Limitations					Monitoring Requirements	
	Mass Units (lbs)		Concentrations (mg/L)			Minimum Measurement Frequency	Required Sample Type
	Monthly	Annual	Minimum	Monthly Average	Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	1/month	24-Hr Composite
Nitrite-Nitrate as N	Report	XXX	XXX	Report	XXX	1/month	24-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	1/week	24-Hr Composite

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☐	Temperature Model Spreadsheet (see Attachment)
☐	Toxics Screening Analysis Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☐	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☐	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 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, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 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, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP: No. BCW-PMT-002, No. BCW-PMT-033
☐	Other: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Terre Hill Borough WWTP
Outfall 001
Terre Hill
Fivepointville
Martindale
Union Grove
Turkey Hill
Fryville
Muddy
Creek
Black
Red Run
B R E C K N O C K
E A S T
E A R L
C A E R N A R V O N
RIVER
0 0.2 0.4mi
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Enter report title:

Weaverland Valley Authority Terre Hill WWTP PA0020222 Outfall 001

Enter comments:

Some comments here

Weaverland Valley Authority Terre Hill WWTP PA0020222 Outfall 001

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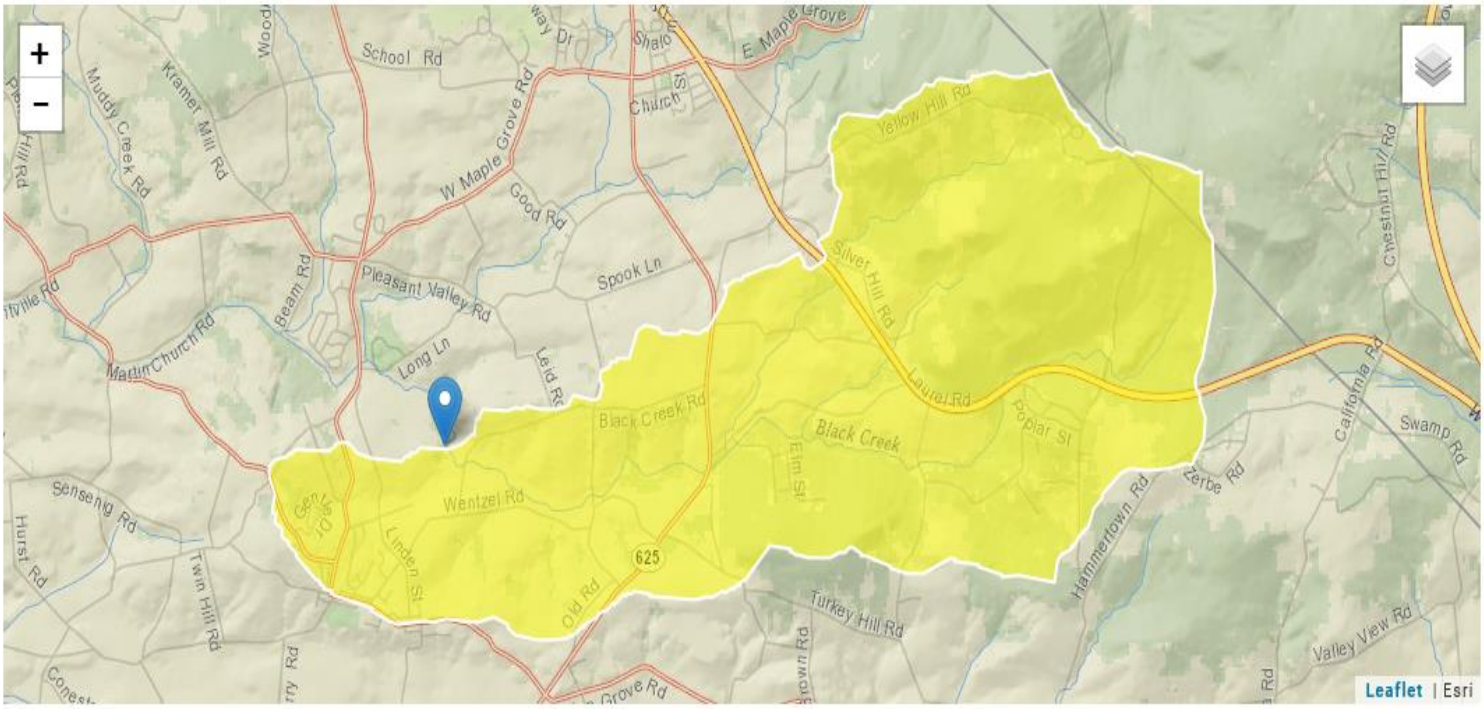

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	9.45	square miles
BSLOPD	Mean basin slope measured in degrees	4.5697	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	8.9486	percent

Low-Flow Statistics Parameters[Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	9.45	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.5697	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	8.9486	percent	0	89

Low-Flow Statistics Flow Report[Low Flow Region 1]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	1.42	ft^3/s	46	46
30 Day 2 Year Low Flow	1.95	ft^3/s	38	38
7 Day 10 Year Low Flow	0.621	ft^3/s	51	51
30 Day 10 Year Low Flow	0.887	ft^3/s	46	46
90 Day 10 Year Low Flow	1.47	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p.

Application Version: 4.4.0

Enter report title:

Weaverland Valley Authority Terre Hill WWTP PA0020222 Downstream Point ×

Enter comments:

Some comments here

Weaverland Valley Authority Terre Hill WWTP PA0020222 Downstream Point

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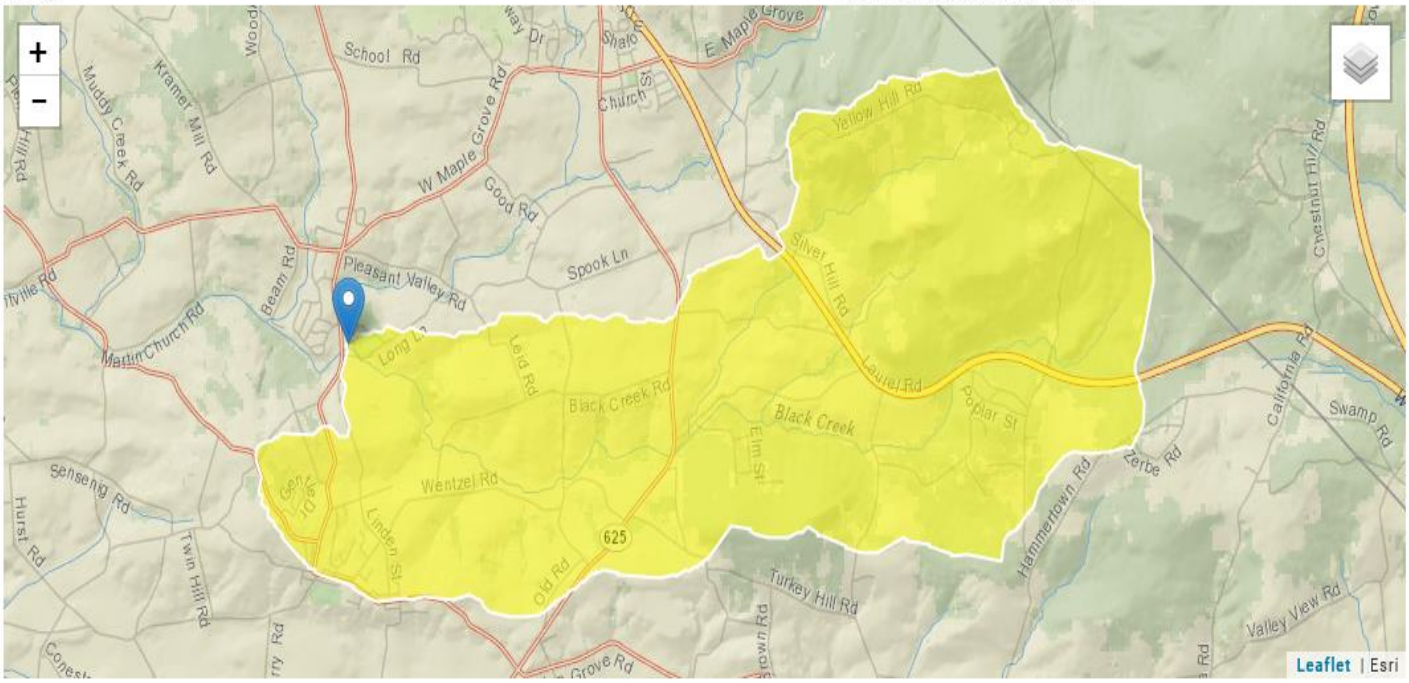

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	10.2	square miles
BSLOPD	Mean basin slope measured in degrees	4.4798	degrees
ROCKDEP	Depth to rock	4.3	feet
URBAN	Percentage of basin with urban development	8.2935	percent

Low-Flow Statistics Parameters[Low Flow Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	10.2	square miles	4.78	1150
BSLOPD	Mean Basin Slope degrees	4.4798	degrees	1.7	6.4
ROCKDEP	Depth to Rock	4.3	feet	4.13	5.21
URBAN	Percent Urban	8.2935	percent	0	89

Low-Flow Statistics Flow Report[Low Flow Region 1]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp
7 Day 2 Year Low Flow	1.48	ft^3/s	46	46
30 Day 2 Year Low Flow	2.04	ft^3/s	38	38
7 Day 10 Year Low Flow	0.641	ft^3/s	51	51
30 Day 10 Year Low Flow	0.92	ft^3/s	46	46
90 Day 10 Year Low Flow	1.54	ft^3/s	41	41

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p.

Application Version: 4.4.0

1	1A	B	C	D	E	F	G
2	2	**TRC EVALUATION**					
3	3	Input appropriate values in B4:B8 and E4:E7					
4	4	0.621	= Q stream (cfs)		0.5	= CV Daily	
5	5	0.21	= Q discharge (MGD)		0.5	= CV Hourly	
6	6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	7	0.3	= Chlorine Demand of Stre		1	= CFC_Partial Mix Factor	
8	8	0	= Chlorine Demand of Disc		15	= AFC_Criteria Compliance Time (min)	
9	9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
10		0	= % Factor of Safety (FOS)			=Decay Coefficient (K)	
11	10	Source	Reference	AFC Calculations		Reference	CFC Calculations
12	11	TRC	1.3.2.iii	WLA afc = 0.629		1.3.2.iii	WLA cfc = 0.605
13	12	PENTOXSD TRC	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
14	13	PENTOXSD TRC	5.1b	LTA_afc= 0.234		5.1d	LTA_cfc = 0.352
15	14						
16	15	Source		Effluent Limit Calculations			
17	16	PENTOXSD TRC	5.1f	AML MULT = 1.231			
18	17	PENTOXSD TRC	5.1g	AVG MON LIMIT (mg/l) = 0.288		AFC	
19	18			INST MAX LIMIT (mg/l) = 0.943			
20							
21							
22							
23		WLA afc	**(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...**				
24			**...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**				
25		LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)				
26		LTA_afc	wla_afc*LTAMULT_afc				
27							
28		**WLA_cfc**	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...**				
29			**...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**				
30		LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)				
31		**LTA_cfc**	wla_cfc*LTAMULT_cfc				
32							
33		AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))				
34		AVG MON LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)				
35		INST MAX LIMIT	**1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)**				
36							
37							
38							
39							
40							
41							
42		**(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....**					
43		**....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)**					
44							
45							
46							

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
07J	7774	BLACK CREEK	0.970	382.00	9.45	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	0.62	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
Weaverland	PA0020222	0.2100	0.2100	0.2100	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	5.00	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
07J	7774	BLACK CREEK	0.000	373.00	10.20	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	0.64	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	0.00	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
07J	7774	BLACK 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												
0.970	0.62	0.00	0.62	.3249	0.00176	.523	15.88	30.35	0.11	0.520	21.72	7.00
Q1-10 Flow												
0.970	0.40	0.00	0.40	.3249	0.00176	NA	NA	NA	0.10	0.605	22.25	7.00
Q30-10 Flow												
0.970	0.84	0.00	0.84	.3249	0.00176	NA	NA	NA	0.13	0.462	21.39	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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07J	7774	BLACK 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
0.970	Weaverland	13.91	30.93	13.91	30.93	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
0.970	Weaverland	1.73	6.21	1.73	6.21	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)		
0.97	Weaverland	25	25	6.21	6.21	5	5	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07J	7774	BLACK CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.970	0.210	21.717	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
15.875	0.523	30.352	0.114
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
9.90	1.212	2.13	0.799
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.129	17.490	Owens	6
Reach Travel Time (days)			
0.520			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.052	9.25	2.05	7.27
0.104	8.64	1.96	7.38
0.156	8.07	1.88	7.48
0.208	7.53	1.81	7.56
0.260	7.04	1.73	7.64
0.312	6.57	1.66	7.71
0.364	6.14	1.59	7.78
0.416	5.73	1.53	7.84
0.468	5.36	1.47	7.90
0.520	5.00	1.41	7.96

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07J	7774	BLACK 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)
0.970	Weaverland	PA0020222	0.210	CBOD5	25		
				NH3-N	6.21	12.42	
				Dissolved Oxygen			5