pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0101290**
Facility Type	**Municipal**	APS ID	**1029888**
Major / Minor	**Minor**	Authorization ID	**1338694**

NPDES PERMIT FACT SHEET INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Sandy Township Clearfield County**	Facility Name	**Sandy Township Main Sewer System STP**
Applicant Address	PO Box 267	Facility Address	163 Tannery Row Road
	DuBois, PA 15801-0267		DuBois, PA 15801
Applicant Contact	Shawn Arbaugh, Twp. Manager	Facility Contact	Matt Smith, Operator
Applicant Phone	(814) 371-4220	Facility Phone	(814) 590-3520
Client ID	78360	Site ID	251534
Ch 94 Load Status	Not Overloaded	Municipality	Sandy Township
Connection Status	No Limitations	County	Clearfield
Date Application Received	December 29, 2020	EPA Waived?	Yes
Date Application Accepted	January 11, 2021	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit for an existing discharge of treated sewage

Summary of Review

The subject facility is a Publicly Owned Treatment Works (POTW) serving a portion of Sandy Township, Clearfield County.

A map of the discharge location is attached.

Sludge use and disposal description and location(s): The facility's sludge is transferred to other facilities for further processing. Per the application, 6.745 dry tons were produced in the previous year.

Public Participation

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

Approve	Deny	Signatures	Date
X		Keith C. Allison Keith C. Allison / Project Manager	April 28, 2021
X		Nicholas W. Hartranft Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	May 6, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.1
Latitude	41º 8' 39.45"	Longitude	-78º 47' 39.54"
Quad Name	Falls Creek, PA	Quad Code	
Wastewater Description:	Sewage Effluent		
Receiving Waters	Wolf Run (CWF)	Stream Code	48728
NHD Com ID	123859394	RMI	0.6
Drainage Area	25.1 mi^2	Yield (cfs/mi^2)	0.0526
Q_{7-10} Flow (cfs)	1.32	Q_{7-10} Basis	USGS StreamStats
Elevation (ft)	1394	Slope (ft/ft)	0.0019
Watershed No.	17-C	Chapter 93 Class.	CWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Attaining Use(s)		
Nearest Downstream Public Water Supply Intake	Hawthorn Area Water Authority		
PWS Waters	Redbank Creek	Distance from Outfall (mi)	Approx. 53

Changes Since Last Permit Issuance: None. The above stream and drainage characteristics were determined for the previous review and remain adequate.

Other Comments: No downstream water supply is expected to be affected by the discharge at this time with the limitations and monitoring proposed.

Treatment Facility Summary

Treatment Facility Name: Sandy Township STP

WQM Permit No.	Issuance Date	Permit For:
1773403	A-1 - /3/74	Treatment plant, pump stations and collection system
	A-2 - 6/14/17	Chlorine Removal
WQG02171101	3/16/11	Pump Station

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Contact Stabilization	Chlorine With Dechlorination	0.1

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1	270	Not Overloaded	Aerobic Digestion	Other WWTP

Changes Since Last Permit Issuance: WQM Permit Amendment No. 1773403 Amendment No. 2 for chlorine removal was approved in 2017 to address more TRC stringent limits in the previous NDPES renewal.

Other Comments: The treatment plant, as authorized by WQM Permit No. 1773403 is a contact stabilization process that consists of bar screen, comminutor, two aeration tanks, one clarifier, chlorination with contact tank, dechlorination, and aerobic digester.

Trucked-In Waste

The facility has not received any hauled-in waste in the past three years and does not anticipate receiving hauled-in waste during the next permit term.

Compliance History

DMR Data for Outfall 001 (from March 1, 2020 to February 28, 2021)

Parameter	FEB-21	JAN-21	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20
Flow (MGD) Average Monthly	0.025	0.028	0.029	0.028	0.028	0.027	0.035	0.03	0.032	0.029	0.03	0.040
Flow (MGD) Daily Maximum	0.045	0.046	0.057	0.037	0.053	0.056	0.061	0.05	0.079	0.045	0.045	0.071
pH (S.U.) Minimum	7.3	7.3	7.2	7.1	7.41	7.4	6.8	7.1	7.3	7.5	7.4	7.2
pH (S.U.) Maximum	7.5	7.6	7.8	7.6	7.71	7.9	7.8	7.8	7.7	7.8	7.8	7.7
DO (mg/L) Minimum	4.13	4.44	3.55	2.87	4.28	4.61	4.14	3.83	4.25	4.98	4.99	3.58
TRC (mg/L) Average Monthly	0.06	0.05	0.04	0.1	0.03	0.07	0.03	0.05	0.03	0.02	0.03	0.03
TRC (mg/L) Instantaneous Maximum	0.33	0.19	0.16	0.9	0.1	0.52	0.11	0.48	0.1	0.07	0.12	0.12
CBOD5 (lbs/day) Average Monthly	< 0.7	1	1	2	1	< 0.9	2	4	12	0.9	3	< 1
CBOD5 (lbs/day) Weekly Average	0.9	2	2	2	2	2	3	9	42	1	9	2
CBOD5 (mg/L) Average Monthly	< 5	5	6	8	6	< 4	6	17	27	4	12	< 4
CBOD5 (mg/L) Weekly Average	6	7	10	11	8	7	9	34	64	5	28	9
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	47	46	42	43	71	68	68	61	117	70	79	53
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	64	63	61	49	80	86	92	67	223	103	136	53
BOD5 (mg/L) Raw Sewage Influent Average Monthly	309	205	191	202	352	321	235	303	403	311	271	160
TSS (lbs/day) Average Monthly	0.6	< 0.8	< 0.09	1	1	1	3	4	6	0.9	< 1	< 0.7
TSS (lbs/day) Raw Sewage Influent Average Monthly	25	36	30	30	39	43	46	35	40	34	52	26

TSS (lbs/day) Raw Sewage Influent Daily Maximum	45	54	54	57	50	71	67	65	90	37	80	32
TSS (lbs/day) Weekly Average	0.7	2	1	2	3	2	5	8	17	1	1	0.8
TSS (mg/L) Average Monthly	4	< 3	< 4	4	6	6	12	19	19	4	< 4	< 3
TSS (mg/L) Raw Sewage Influent Average Monthly	164	169.3	134.9	147	192	199	158	162	130	153	177	100
TSS (mg/L) Weekly Average	5	5	5	6	12	9	21	32	26	5	5	3
Fecal Coliform (CFU/100 ml) Geometric Mean	< 5	10	10	< 1	< 2	< 2	< 1	< 4	< 10	< 1	< 1	< 3
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	21.6	345.2	98.8	2	22.6	29.2	1	23.1	2419.6	4.1	< 1	28.8
Ammonia (lbs/day) Average Monthly	0.5	0.5	0.6	0.7	0.6	< 2.0	10.0	< 4.0	8.0	3.0	4	3
Ammonia (mg/L) Average Monthly	3.196	2.084	1.556	3.48	3.23	< 7.0	37.4	< 19.5	24.14	12.4	13.42	12.745

Compliance History

Effluent Violations for Outfall 001, from: March 1, 2020 To: February 28, 2021

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	06/30/20	Wkly Avg	42	lbs/day	33	lbs/day
CBOD5	06/30/20	Avg Mo	27	mg/L	25	mg/L
CBOD5	06/30/20	Wkly Avg	64	mg/L	40	mg/L
Fecal Coliform	06/30/20	IMAX	2419.6	CFU/100 ml	1000	CFU/100 ml
Ammonia	07/31/20	Avg Mo	< 19.5	mg/L	18.5	mg/L
Ammonia	06/30/20	Avg Mo	24.14	mg/L	18.5	mg/L
Ammonia	08/31/20	Avg Mo	37.4	mg/L	18.5	mg/L

Compliance History, Cont'd	
Summary of Inspections:	The facility has been inspected at least annually by the Department over the past permit term. The most recent inspection on October 15, 2020 identified effluent violations but no operation violations at the time of inspection.
Other Comments:	A query in WMS found no open violations for Sandy Township, Clearfield County in eFACTS. The Township received an NOV on January 16, 2019 as a result of effluent violations.

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	21	33	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	25	38	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Total Nitrogen	Report	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	15.4	XXX	XXX	18.5	XXX	XXX	1/week	8-Hr Composite
Total Phosphorus	Report	XXX	XXX	Report	XXX	XXX	1/year	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.1
Latitude 41º 8' 39.00" **Longitude** -78º 47' 41.00"
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)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The above applicable requirements are included in the existing permit and will remain.

Water Quality-Based Limitations

CBOD5, NH3-N, and DO

The discharge has an existing water quality-based May through October limit for ammonia-nitrogen of 18.5 mg/L.

The WQM7 model allows the Department to evaluate point source discharges of dissolved oxygen (DO), carbonaceous BOD ($CBOD_5$), and ammonia-nitrogen (NH_3-N) into free-flowing streams and rivers. To accomplish this, the model simulates two basic processes: the mixing and degradation of NH_3-N in the stream and the mixing and consumption of DO in the stream due to the degradation of $CBOD_5$ and NH_3-N. The current model includes recent updates to the NH_3-N criteria in Chapter 93. WQM7.0 modeling was performed (see Attachment B) for the discharge to Wolf Run and indicated that the existing secondary limit for CBOD listed above and the current summer NH3-N limit of 18.5 mg/L are adequate to protect the receiving stream. The model did indicate that DO levels are continuing to decline at the end of the reach but the end of the reach is the confluence with Sandy Lick Creek which will provide adequate additional dilution. No limitations should be necessary for the rest of the year given the additional stream flow and lower temperatures typical for the rest of the year.

Total Residual Chlorine

The BAT limit of 0.5 mg/L from 25 PA Code 92a.48 is included in the existing permit. The Department uses a modeling spreadsheet to analyze the toxicity of a discharge's TRC in a receiving stream, accounting for available dilution. The attached results of the TRC spreadsheet from the previous review (see Attachment C) show that the technology-based limit of 0.5 mg/l is adequate to protect the receiving stream.

Nutrient Monitoring

Annual nutrient monitoring was included in the existing permit. The average Total Nitrogen over the past permit term was 19.8 mg/L and the average Total Phosphorus was 1.75 mg/L. Therefore, because the average nutrient load from the facility has been characterized no further monitoring for TN and TP will be required at this time.

Toxics Management
No further "Reasonable Potential Analysis" was performed for this minor municipal sewage facility to determine additional toxic parameters as candidates for limitations or monitoring.

Best Professional Judgment (BPJ) Limitations

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

Anti-Backsliding

No limitations have been made less stringent consistent with the anti-degradation requirements of the Clean Water Act and 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" (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) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	21	33	XXX	25.0	40.0	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	25	38	XXX	30.0	45.0	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Ammonia May 1 - Oct 31	15.4	XXX	XXX	18.5	XXX	XXX	1/week	8-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: Total Nitrogen and Total Phosphorus monitoring have been removed from the proposed permit as noted above.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	Toxics Management Spreadsheet (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	Temperature Model Spreadsheet (see Attachment)
☒	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 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: Establishing Effluent Limitations for Individual Sewage Permits, rev. 8/23/13
☐	Other:

Attachments:

- Discharge Location Map
- WQM7.0 Model
- TRC Model

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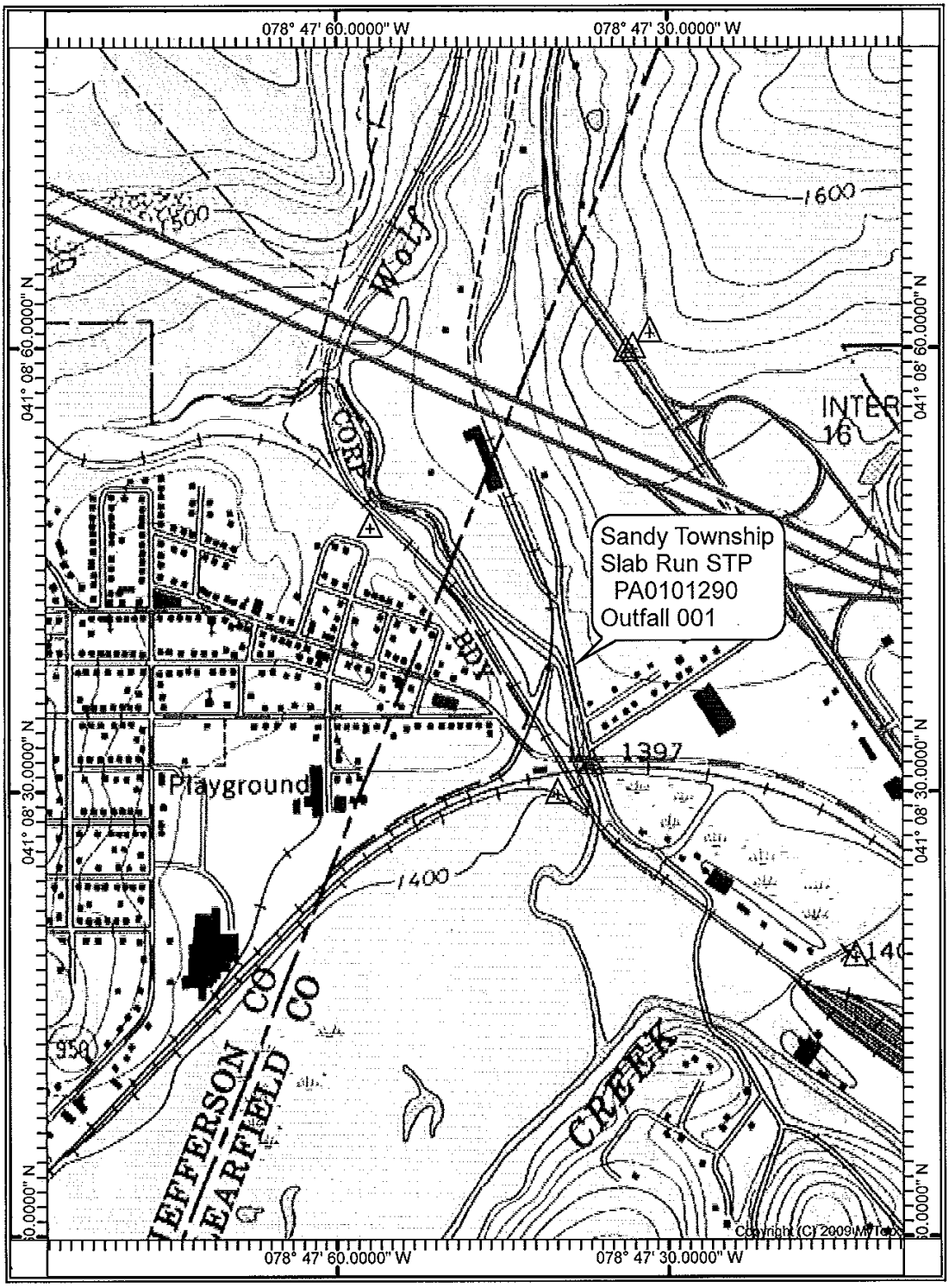

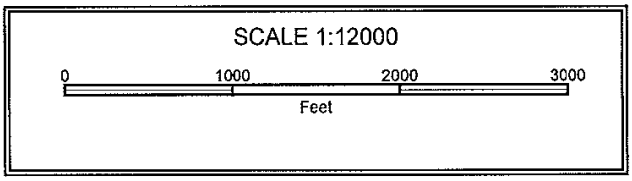

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Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
17C	48728	WOLF RUN	0.600	1394.00	25.10	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
Sandy Twp	PA0101290	0.1000	0.0000	0.0000	0.000	25.00	7.50

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	18.50	0.00	0.00	0.70

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Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
17C	48728	WOLF RUN	0.000	1388.00	25.20	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	0.053	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
17C	48728	WOLF RUN

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												
0.600	1.33	0.00	1.33	.1547	0.00189	.577	21.61	37.43	0.12	0.308	20.52	7.03
Q1-10 Flow												
0.600	0.85	0.00	0.85	.1547	0.00189	NA	NA	NA	0.10	0.383	20.77	7.05
Q30-10 Flow												
0.600	1.81	0.00	1.81	.1547	0.00189	NA	NA	NA	0.14	0.263	20.39	7.02

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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
17C	48728	WOLF RUN

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
0.600	Sandy Twp	15.05	37	15.05	37	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
0.600	Sandy Twp	1.82	18.5	1.82	18.5	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)		
0.60	Sandy Twp	25	25	18.5	18.5	3	3	0	0

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WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
17C	48728	WOLF RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.600	0.100	20.521	7.032
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
21.610	0.577	37.433	0.119
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
4.40	0.801	1.93	0.729
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.697	2.169	Tsivoglou	6
Reach Travel Time (days)			
0.308			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.031	4.29	1.88	7.44
0.062	4.18	1.84	7.20
0.092	4.08	1.80	6.99
0.123	3.97	1.76	6.80
0.154	3.87	1.72	6.63
0.185	3.78	1.68	6.48
0.216	3.68	1.65	6.35
0.246	3.59	1.61	6.23
0.277	3.50	1.57	6.12
0.308	3.41	1.54	6.03

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
17C	48728	WOLF RUN

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)
0.600	Sandy Twp	PA0101290	0.100	CBOD5	25		
				NH3-N	18.5	37	
				Dissolved Oxygen			3

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TRC EVALUATION					
Client			Date		
1.32	= Q stream (cfs)		0.5	= CV Daily	
0.1	= Q discharge (MGD)		0.5	= CV Hourly	
30	= no. samples		0.972	= 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)	
	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
Source	Reference	AFC Calculations		Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc =	2.665	1.3.2.iii	WLA cfc = 2.665
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.993	5.1d	LTA_cfc = 1.549
		WQBEL_afc=	1.222		WQBEL_cfc= 1.907
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*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT afc	EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)
LTA_afc	wla_afc*LTAMULT_afc
WLA_cfc	**(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))...** **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)**
LTAMULT_cfc	EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)
LTA_cfc	wla_cfc*LTAMULT_cfc
AML MULT	EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*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)**