pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0104299**
Facility Type	**Non-Municipal**	APS ID	**1009151**
Major / Minor	**Minor**	Authorization ID	**1301377**

Applicant and Facility Information

Applicant Name	**Lutherlyn**	Facility Name	**Camp Lutherlyn**
Applicant Address	P.O. Box 355	Facility Address	500 Lutherlyn Lane
	Prospect, PA 16052-0355		Prospect, PA 16052-0355
Applicant Contact	Debra Roberts	Facility Contact	Eric Roehling
Applicant Phone	(724) 865-2161	Facility Phone	(724) 816-2218
Client ID	63315	Site ID	453389
Ch 94 Load Status	Not Overloaded	Municipality	Connoquenessing Township
Connection Status	No Limitations	County	Butler
Date Application Received	December 30, 2019	EPA Waived?	Yes
Date Application Accepted	January 10, 2020	If No, Reason	

Purpose of Application: Minor Sewage Treatment Facility Renewal for a campground.

Summary of Review

This application is for a renewal of an NPDES permit, for an existing Minor discharge of treated sewage from a Non-Municipal STP.

Act 14 – Proof of Notification was submitted and received.

There are no open violations for subject client ID (63315) as of 4/27/2020.

A part 2 WQM permit is not required at this time.

Treatment consist of (WQM Permit No. 1091401): A central pump station directing flow to the head of the treatment process, during which, Ferric Chloride and Aluminum Sulfate are added. The sewage is then treated by a Two-Stage Aerated Lagoon, followed by a Polishing Pond, and then a Chlorine Contact Tank where Sodium Hypochlorite is used for disinfection. The treated sewage then discharges into Semiconon Run.

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		Jon F. Bucha Jonathan F. Bucha / Civil Engineer Trainee	May 4, 2020
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	May 4, 2020

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	.0155
Latitude	40º 53' 4"	Longitude	-80º 1' 30"
Quad Name	Prospect	Quad Code	1105
Wastewater Description:	Sewage Effluent		

Receiving Waters	Semiconon Run (CWF)	Stream Code	34982
NHD Com ID	126217094	RMI	2.88
Drainage Area	2.42 mi^2	Yield (cfs/mi^2)	0.043
Q_{7-10} Flow (cfs)	0.104	Q_{7-10} Basis	Buffalo Creek @ Freeport Gage
Elevation (ft)	1157	Slope (ft/ft)	0.01125
Watershed No.	20-C	Chapter 93 Class.	CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	Organic Enrichment		
Source(s) of Impairment	Fertilizer		
TMDL Status	Final	Name	Little Connoquenessing Creek Watershed

Background/Ambient Data		Data Source
pH (SU)	7.4	Stream Survey Sample
Temperature (°F)	-	-
Hardness (mg/L)	-	-
Other:	-	-

Nearest Downstream Public Water Supply Intake		Harmony Borough Water Authority	
PWS Waters	Little Connoquenessing Creek	Flow at Intake (cfs)	2.0
PWS RMI	1.1	Distance from Outfall (mi)	12.68

Changes Since Last Permit Issuance: River mile index's, elevations, and drainage areas were revised using streamstats and google earth for modeling purposes. These revisions did not change the effluent limits.

Other Comments: The yield was changed from 0.047 cfsm in the previous renewal permit to 0.043 cfsm due to using more recent data from 1977-2011 at the Buffalo @ Freeport gage, this did not change the modeling effluent limits.

Treatment Facility Summary				
Treatment Facility Name: Camp Lutherlyn				
WQM Permit No.	**Issuance Date**			
1091401				
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary With Ammonia Reduction	Aerated Lagoon	Hypochlorite	0.0155
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0155		Not Overloaded		

Changes Since Last Permit Issuance: N/A

Other Comments: N/A

Compliance History

DMR Data for Outfall 001 (from February 1, 2019 to January 31, 2020)

Parameter	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19
Flow (MGD) Average Monthly	0.0089	0.00585	0.004858	0.00385	0.00226	0.0089	0.0206	0.0170	0.00979	0.00867	0.0070	0.0177
pH (S.U.) Minimum	7.5	7.0	7.1	6.9	6.8	7.2	7.2	7.2	7.1	7.1	6.5	7.5
pH (S.U.) Maximum	7.9	7.6	7.4	7.1	7.4	7.4	7.4	7.4	7.4	7.5	7.3	8.0
TRC (mg/L) Average Monthly	0.18	0.06	0.20	0.18	0.03	0.13	0.16	0.04	0.04	0.14	0.05	0.04
TRC (mg/L) Instantaneous Maximum	0.25	0.10	0.30	0.48	0.07	0.26	0.41	0.06	0.05	0.36	0.06	0.05
CBOD5 (mg/L) Average Monthly	5.0	4.6	7.4	3.55	4.7	5.8	7.4	6.7	4.7	8.4	17.0	5.4
TSS (mg/L) Average Monthly	18	14	4.0	17	12	20	33	19	15	16	27	17
Fecal Coliform (CFU/100 ml) Geometric Mean	2.0	6.0	18	379	16	1488	73	119	50	6	5	501
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	2.0	27.0	23	1046	238	2420	1733	2420	816	31	6	727
Total Nitrogen (mg/L) Average Monthly	3.16	7.67	9.0	11.10	9.62	9.74	8.46	0.1	0.1	5.10	4.79	4.68
Ammonia (mg/L) Average Monthly	0.57	2.16	2.72	6.97	6.2	3.42	2.11	1.24	1.31	1.06	0.28	0.89
Total Phosphorus (mg/L) Average Monthly	0.59	1.23	2.41	2.30	2.4	1.95	1.6	1.10	0.70	0.81	0.61	0.52

Compliance History

Effluent Violations for Outfall 001, from: March 1, 2019 To: January 31, 2020

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
TSS	07/31/19	Avg Mo	33	mg/L	30	mg/L
Fecal Coliform	08/31/19	Geo Mean	1488	CFU/100 ml	200	CFU/100 ml
Fecal Coliform	07/31/19	IMAX	1733	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	06/30/19	IMAX	2420	CFU/100 ml	1000	CFU/100 ml
Fecal Coliform	08/31/19	IMAX	2420	CFU/100 ml	1000	CFU/100 ml
Total Phosphorus	09/30/19	Avg Mo	2.4	mg/L	2.0	mg/L
Total Phosphorus	10/31/19	Avg Mo	2.30	mg/L	2.0	mg/L
Total Phosphorus	11/30/19	Avg Mo	2.41	mg/L	2.0	mg/L

Summary of Inspections: The last compliance inspection at the site occurred on 8/20/2018 by inspector Bruce Leidy, and no violations were noted.

Other Comments: Camp Lutherlyn received effluent violation notices on 11/1/2016, 1/25/2018, and 10/9/2019 for exceeding the effluent limits in Part A of the permit. March 1, 2019 to January 31, 2020 exceeded fecal coliform effluent limit values in June, July, and August, which is expected to be the camps busy time of the year. The previous 5 years showed infrequent fecal coliform effluent limit exceedances. Fecal Coliform and Total Phosphorus limits will need to be closely monitored. The permittee should be able to meet these limits based on historical DMR data and the treatment plant design.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** .0155
Latitude 40º 53' 4" **Longitude** -80º 1' 30"
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: All of the Technology-Based Limitations were applied to the NPDES permit as the most stringent effluent limits. These Technology-Based Limitations were also applied on the previous permit renewal.

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Disssolved Oxygen	3	Average Monthly	WQM 7.0
CBOD5	25	Average Monthly	WQM 7.0
Ammonia-Nitrogen (May 1 – Oct 31)	9.84	Average Monthly	WQM 7.0
Ammonia-Nitrogen (Nov 1 – April 30)	29.52	Average Monthly	WQM 7.0

Comments: Modeling results show that the present limits are more stringent than the Water Quality-Based Limitations required to protect water quality. It is recommended that the current limits be re-imposed to protect the stream. A Water Quality Based Phosphorus limit of 2 mg/L is being re-imposed from the previous permit renewal to help control eutrophication in Connoquenessing Creek.

Best Professional Judgment (BPJ) Limitations

Comments: A Dissolved Oxygen limit of 4 mg/L is being carried over from the previous permit renewal. This D.O. limit is based on the Chapter 93 Instream Standard for Warm Water Fisheries. Total Nitrogen monitoring is based on Ch. 92a.61 and the Departments SOP for Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BPNPSM-PMT-033).

Anti-Backsliding

Anti-Backsliding considerations do not apply since the effluent limitations are all remaining the same as in the previous permit renewal.

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.

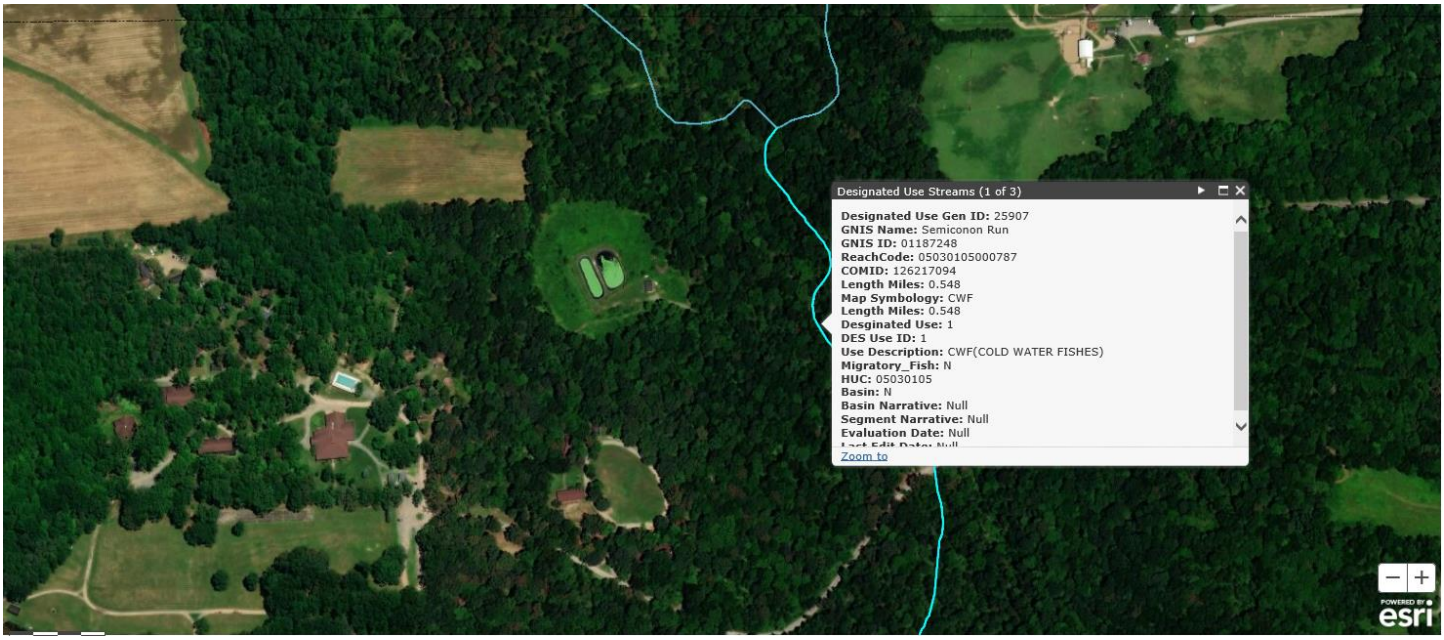
Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	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
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	21.0	XXX	42	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	7.0	XXX	14	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

Compliance Sampling Location: Outfall 001 after disinfection.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment)
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☒	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.
☒	SOP: Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BPNPSM-PMT-033) dated November 9, 2012, Revised August 23, 2013).

Permit No. PA0104299

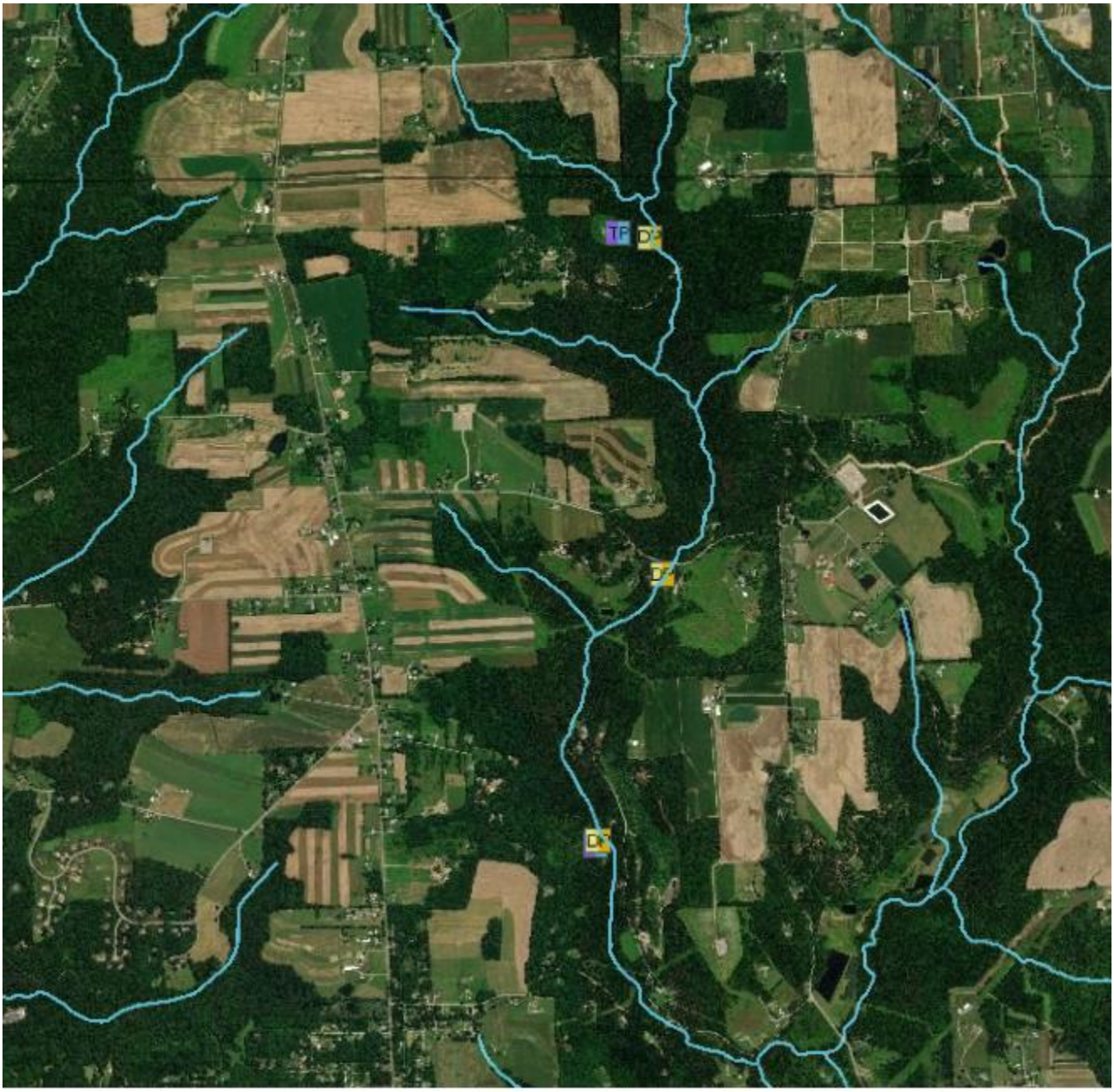
ATTACHMENT A
eMAP – Stream Designation



Permit No. PA0104299

ATTACHMENT B

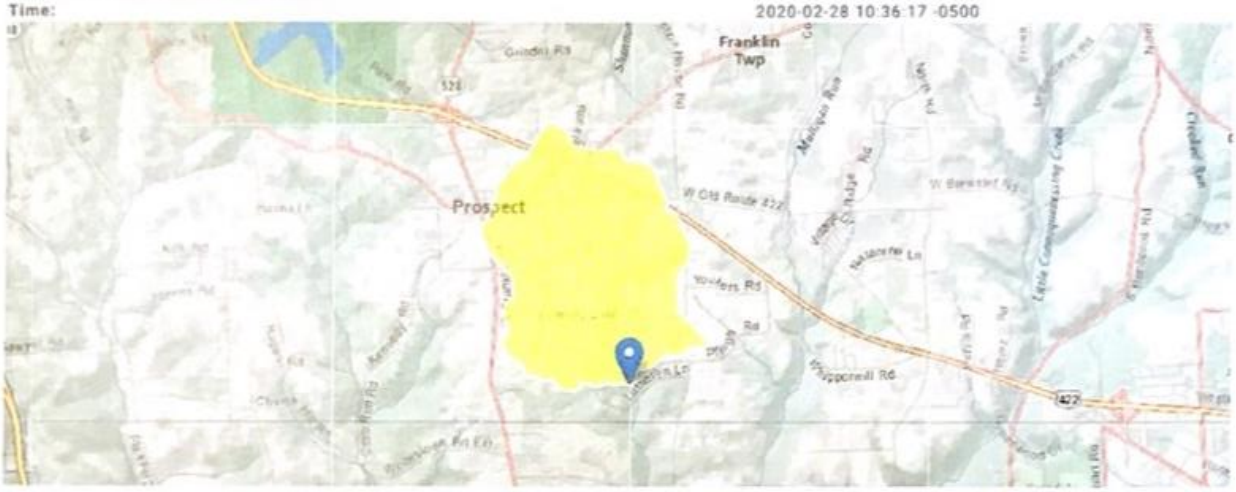
eMAP – AERIAL MAPPING WITH NEARBY DISCHARGES



ATTACHMENT C
StreamStats REPORT – RMI 2.88 ON SEMICONON RUN

StreamStats Report

Region ID: PA
Workspace ID: PA20200228153559883000
Clicked Point (Latitude, Longitude): 40.88455, -80.02470
Time: 2020-02-28 10:36:17 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	2.42	square miles
ELEV	Mean Basin Elevation	1316.5	feet

Low-Flow Statistics Parameters[Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.42	square miles	2.26	1400
ELEV	Mean Basin Elevation	1316.5	feet	1050	2580

Low-Flow Statistics Flow Report[Low Flow Region 4]

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	0.083	ft^3/s	43	43
30 Day 2 Year Low Flow	0.155	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0257	ft^3/s	66	66
30 Day 10 Year Low Flow	0.052	ft^3/s	54	54
90 Day 10 Year Low Flow	0.104	ft^3/s	41	41

Low-Flow Statistics Citations

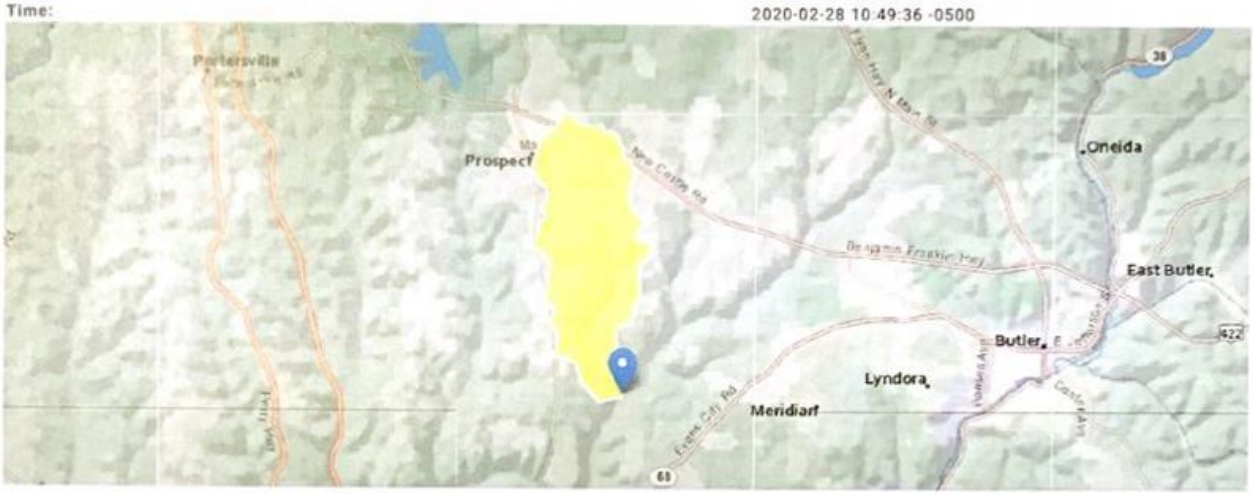
Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

ATTACHMENT D

StreamStats REPORT – RMI 0.0 ON SEMICONON RUN

StreamStats Report

Region ID:	PA
Workspace ID:	PA20200228154919673000
Clicked Point (Latitude, Longitude):	40.85096, -80.01954
Time:	2020-02-28 10:49:36 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	5.25	square miles
ELEV	Mean Basin Elevation	1276.4	feet

Low-Flow Statistics Parameters[Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	5.25	square miles	2.26	1400
ELEV	Mean Basin Elevation	1276.4	feet	1050	2580

Low-Flow Statistics Flow Report[Low Flow Region 4]

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	0.196	ft^3/s	43	43
30 Day 2 Year Low Flow	0.35	ft^3/s	38	38
7 Day 10 Year Low Flow	0.0657	ft^3/s	66	66
30 Day 10 Year Low Flow	0.125	ft^3/s	54	54
90 Day 10 Year Low Flow	0.239	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. (http://pubs.usgs.gov/sir/2006/5130/)

ATTACHMENT E
WQM 7.0 MODEL OUTPUT FILE

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34982	SEMICONON 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)
2.880	Camp Lutheran	PA0104299	0.015	CBOD5	25		
				NH3-N	9.84	19.68	
				Dissolved Oxygen			3

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34982	SEMICONON RUN

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
2.880	0.015	20.912	7.356
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
5.994	0.364	16.466	0.058
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
6.19	0.359	1.88	0.751
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.287	21.422	Owens	6
Reach Travel Time (days)			
3.017			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.302	5.53	1.50	8.10
0.603	4.94	1.19	8.10
0.905	4.41	0.95	8.10
1.207	3.94	0.76	8.10
1.508	3.52	0.60	8.10
1.810	3.14	0.48	8.10
2.112	2.81	0.38	8.10
2.413	2.51	0.31	8.10
2.715	2.24	0.24	8.10
3.017	2.00	0.19	8.10

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
20C	34982	SEMICONON RUN	**2.880**	1157.00	2.42	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	0.043	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.40	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
Camp Lutheran	PA0104299	0.0150	0.0000	0.0000	0.000	25.00	7.20

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	0.10	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
20C	34982	SEMICONON RUN	**0.001**	986.00	5.25	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	0.043	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.40	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
20C	34982	SEMICONON 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												
2.880	0.10	0.00	0.10	.0232	0.01125	.364	5.99	16.47	0.06	3.017	20.91	7.36
Q1-10 Flow												
2.880	0.07	0.00	0.07	.0232	0.01125	NA	NA	NA	0.05	3.667	21.29	7.34
Q30-10 Flow												
2.880	0.14	0.00	0.14	.0232	0.01125	NA	NA	NA	0.07	2.611	20.70	7.37

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
20C	34982	SEMICONON 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
2.880	Camp Lutheran	6.5	24.88	6.5	24.88	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
2.880	Camp Lutheran	1.47	9.84	1.47	9.84	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)		
2.88	Camp Lutheran	25	25	9.84	9.84	3	3	0	0

Thursday, March 12, 2020 Version 1.0b

ATTACHMENT E
TRC SPREADSHEET

Camp Lutheran

TRC_CALC_external

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

0.104	= Q stream (cfs)	0.5	= CV Daily
0.0155	= 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)	0	=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 1.403	1.3.2.iii	WLA cfc = 1.360
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 0.523	5.1d	LTA_cfc = 0.791

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)