

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

**NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE**

Application No. PA0031305
 APS ID 1049107
 Authorization ID 1371870

Applicant and Facility Information

Applicant Name	<u>Summit School, Inc.</u>	Facility Name	<u>Summit Academy</u>
Applicant Address	<u>PO Box 13, 839 Herman Road</u> <u>Herman, PA 16039-0013</u>	Facility Address	<u>839 Herman Road</u> <u>Herman, PA 16039-0013</u>
Applicant Contact	<u>Harry Stasik, Executive Director</u> <u>(stasikh@theacademyschools.com)</u>	Facility Contact	<u>Harry Stasik, Executive Director</u> <u>(stasikh@theacademyschools.com)</u>
Applicant Phone	<u>(724) 282-1995</u>	Facility Phone	<u>(724) 282-1995</u>
Client ID	<u>37452</u>	Site ID	<u>240983</u>
Ch 94 Load Status	<u>Not Overloaded</u>	Municipality	<u>Summit Township</u>
Connection Status	<u>No Limitations</u>	County	<u>Butler</u>
Date Application Received	<u>October 1, 2021</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u></u>	If No, Reason	<u></u>
Purpose of Application	<u>Renewal of the NPDES Permit for an existing discharge of treated sanitary wastewater from a non-municipal sewer system.</u>		

Summary of Review

Act 14 - Proof of Notification was submitted and received.
 A Part II Water Quality Management permit is not required at this time.
 The applicant should be able to meet the limits of this permit, which will protect the uses of the receiving stream.

I. OTHER REQUIREMENTS:

- A. Stormwater into Sewers
- B. Right of Way
- C. Solids Handling
- D. Effluent Chlorine Optimization and Minimization
- E. Little or No Assimilative Capacity

SPECIAL CONDITIONS:

- II. Solids Management
- III. Requirements for Total Residual Chlorine (TRC)

There are no open violations in efacts associated with the subject Client ID (37452) as of 10/18/2023. *10/27/2023 CWY*

Approve	Deny	Signatures	Date
X		Stephen A. McCauley Stephen A. McCauley, E.I.T. / Environmental Engineering Specialist	10/18/2023
X		Chad W. Yurisc Chad W. Yurisc, P.E. / Environmental Engineer Manager	10/27/2023

Discharge, Receiving Waters and Water Supply Information

Outfall No.	<u>001</u>	Design Flow (MGD)	<u>0.04</u>
Latitude	<u>40° 49' 49.00"</u>	Longitude	<u>-79° 48' 46.00"</u>
Quad Name	<u>-</u>	Quad Code	<u>-</u>
Wastewater Description: <u>Sewage Effluent</u>			
Receiving Waters	<u>Unnamed Tributary to the Bonnie Brook (WWF)</u>	Stream Code	<u>35159</u>
NHD Com ID	<u>126221605</u>	RMI	<u>2.3</u>
Drainage Area	<u>0.05</u>	Yield (cfs/mi ²)	<u>0.047 (default)</u>
Q ₇₋₁₀ Flow (cfs)	<u>0.002</u>	Q ₇₋₁₀ Basis	<u>calculated</u>
Elevation (ft)	<u>1274</u>	Slope (ft/ft)	<u>0.03813</u>
Watershed No.	<u>20-C</u>	Chapter 93 Class.	<u>WWF</u>
Existing Use	<u>-</u>	Existing Use Qualifier	<u>-</u>
Exceptions to Use	<u>-</u>	Exceptions to Criteria	<u>-</u>
Assessment Status	<u>Attaining Use(s)</u>		
Cause(s) of Impairment	<u>-</u>		
Source(s) of Impairment	<u>-</u>		
TMDL Status	<u>-</u>	Name	<u>-</u>
Background/Ambient Data		Data Source	
pH (SU)	<u>-</u>		<u>-</u>
Temperature (°F)	<u>-</u>		<u>-</u>
Hardness (mg/L)	<u>-</u>		<u>-</u>
Other:	<u>-</u>		<u>-</u>
Nearest Downstream Public Water Supply Intake		<u>Beaver Falls Municipal Authority - Eastvale</u>	
PWS Waters	<u>Beaver River</u>	Flow at Intake (cfs)	<u>3,110</u>
PWS RMI	<u>5.0</u>	Distance from Outfall (mi)	<u>64.0</u>

Sludge use and disposal description and location(s): All sludge is hauled to the Dalton Facility by the Dalton Service Company, where it is ultimately disposed of at an approved landfill.

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.

Narrative: This Fact Sheet details the determination of draft NPDES permit limits for an existing discharge of 0.04 of treated sewage from a non-municipal STP in Summit Township, Butler County.

Treatment permitted under WQM Permits 9194-S and 1015406 A-1 consists of the following: Comminution, a bypass bar screen, an extended aeration tank, Polyaluminum Chloride and Sodium Bicarbonate for phosphorus removal and pH control, a settling tank, liquid chlorine disinfection with a contact tank, tablet dechlorination, and a sludge digester.

1. Streamflow:

Unnamed Tributary to the Bonnie Brook at Outfall 001:

Yieldrate: 0.047 cfsm (Used for streams in the Conn. Creek Watershed)
Drainage Area: 0.05 sq. mi. (USGS StreamStats)
% of stream allocated: 100% Basis: No nearby discharges
Q₇₋₁₀: 0.002 cfs (Calculated)

2. Wasteflow:

Maximum discharge: 0.04 MGD = 0.06 cfs

Runoff flow period: 24 hours Basis: Runoff flow for this STP

The calculated stream flow (Q₇₋₁₀) is much less than 3 times the permitted discharge flow. In accordance with the SOP, the treatment requirements in document number 391-2000-014, titled, "Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers", dated April 12, 2008, were evaluated with this renewal. Based on eDMR data, the treatment requirements are not attainable with the treatment technology in place so the requirements will not be implemented in this NPDES Permit renewal.

Flow will be required to be monitored as authorized under Chapter 92a.61, and as recommended in the SOP.

3. Parameters:

The following parameters were evaluated: pH, Total Suspended Solids, Fecal Coliform, E. Coli, Total Phosphorus, Total Nitrogen, NH₃-N, CBOD₅, Dissolved Oxygen, and Disinfection.

a. pH

Between 6.0 and 9.0 at all times

Basis: Application of Chapter 93.7 technology-based limits.

The measurement frequency will be retained as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

b. Total Suspended Solids

Limits are 30.0 mg/l as a monthly average and 60.0 as an instantaneous maximum.

Basis: Application of Chapter 92a47 technology-based limits.

c. Fecal Coliform

05/01 - 09/30: 200/100ml (monthly average geometric mean)
1,000/100ml (instantaneous maximum)

10/01 - 04/30: 2,000/100ml (monthly average geometric mean)
10,000/100ml (instantaneous maximum)

Basis: Application of Chapter 92a47 technology-based limits

d. E. Coli

Monitoring was added for E. Coli at a frequency of 1/year.

Basis: Application of Chapter 92a.61 as recommended by the SOP for flows greater than 0.002 MGD and less than 0.05 MGD.

e. Phosphorus

The previous limits for Total Phosphorus of 2.0 mg/l for discharges to the Connoquenessing Creek Watershed will be retained in accordance with the SOP, based on Chapter 96.5 and Chapter 92a.61.

f. Total Nitrogen

The previous monitoring for Total Nitrogen will be retained in accordance with the SOP, based on Chapter 92a.61.

g. Ammonia-Nitrogen (NH₃-N)

Median discharge pH to be used: 7.1 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: Default value used in the absence of data

Stream Temperature: 25°C (default value used for WWF modeling)

Background NH₃-N concentration: 0.0 mg/l

Basis: Default value

Calculated NH₃-N Summer limits: 3.2 mg/l (monthly average)
6.4 mg/l (instantaneous maximum)

Calculated NH₃-N Winter limits: 9.6 mg/l (monthly average)
19.2 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the summer NH₃-N limits above (see Attachment 1). The winter limits are calculated as three times the summer limits. The calculated limits are less restrictive than the previous permit. Based on eDMR data, the previous limits are attainable, so they will be retained.

h. CBOD₅

Median discharge pH to be used: 7.1 Standard Units (S.U.)

Basis: eDMR data from previous 12 months

Discharge temperature: 25°C (default value used in the absence of data)

Median stream pH to be used: 7.0 Standard Units (S.U.)

Basis: Default value used in the absence of data

Stream Temperature: 25°C (default value used for WWF modeling)

Background CBOD₅ concentration: 2.0 mg/l

Basis: Default value

Calculated CBOD₅ limits: 25.0 mg/l (monthly average)

50.0 mg/l (instantaneous maximum)

Result: WQ modeling resulted in the calculated CBOD5 limits above (see Attachment 1). The calculated limits are less restrictive than the previous permit. Based on eDMR data, the previous limits are attainable, so they will be retained. Based on the SOP, the seasonal limits for CBOD5 were converted to year round at the previous 10 mg/l monthly average value.

i. Dissolved Oxygen (DO)

The technology-based minimum of 4.0 mg/l is recommended by the WQ Model (see Attachment 1) and the SOP based on Chapter 93.7, under the authority of Chapter 92a.61. This limit is the same as the previous permit and will be retained.

The measurement frequency will be retained as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

j. Disinfection

Ultraviolet (UV) light monitoring

Total Residual Chlorine (TRC) limits: 0.29 mg/l (monthly average)
0.96 mg/l (instantaneous maximum)

Basis: The TRC limits above were calculated at the first point of use using the Department's TRC Calculation Spreadsheet (see Attachment 2). The limits are more restrictive than the previous NPDES Permit. Based on eDMR data, the more restrictive limits might not be attainable, so a three year compliance schedule will be added with this renewal.

The measurement frequency will be retained as 1/day as recommended in the SOP, based on Table 6-3 in the "Technical Guidance for the Development and Specification of Effluent Limitations" (362-0400-001).

4. Reasonable Potential Analysis for Receiving Stream:

A Reasonable Potential Analysis was not performed in accordance with State practices for Outfall 001 using the Department's Toxics Management Spreadsheet since no sampling other than sewage-related parameters was performed for this facility with the renewal application.

5. Reasonable Potential for Downstream Public Water Supply (PWS):

The Department's Toxics Management Spreadsheet does not calculate limits for parameters that are based on PWS criteria (TDS, Chloride, Bromide, and Sulfate).

Nearest Downstream potable water supply (PWS): Beaver Falls Municipal Authority - Eastvale
Distance downstream from the point of discharge: 64.0 miles (approximate)

Result: No limits or monitoring are necessary as significant dilution is available.

6. Anti-Backsliding:

Since all the permit limits in this renewal are the same or more restrictive than the previous NPDES Permit, anti-backsliding is not applicable.

7. Attachment List:

Attachment 1 - WQ Modeling Printouts

Attachment 2 - TRC_Calc Spreadsheet

(The Attachments above can be found at the end of this document)

Compliance History

DMR Data for Outfall 001 (from September 1, 2022 to August 31, 2023)

Parameter	AUG-23	JUL-23	JUN-23	MAY-23	APR-23	MAR-23	FEB-23	JAN-23	DEC-22	NOV-22	OCT-22	SEP-22
Flow (MGD) Average Monthly	0.0144	0.0058	0.0112	0.0199	0.0099	0.0136	0.0114	0.0085	0.0058	0.0099	0.0099	0.0099
pH (S.U.) Minimum	6.70	7.0	6.00	6.6	6.70	7.1	7.4	6.8	7.0	7.06	7.0	7.1
pH (S.U.) Maximum	7.98	8.2	7.96	7.6	8.00	8.2	8.3	7.9	7.8	7.92	7.8	7.8
DO (mg/L) Minimum	6.0	5.7	5.5	6.0	6.6	7.4	7.2	8.1	7.8	7.11	7.5	6.5
TRC (mg/L) Average Monthly	< 0.20	0.50	0.35	0.5	0.50	0.50	0.50	0.5	0.50	0.50	0.4	0.25
TRC (mg/L) Instantaneous Maximum	0.8	1.00	0.80	1.0	1.00	1.00	1.5	1.0	1.0	1.00	0.9	0.30
CBOD5 (mg/L) Average Monthly	< 2.00	< 2.00	< 2.00	2.00	3.85	3.91	< 2.00	< 2.00	< 2.00	5.41	< 2.00	< 2.00
TSS (mg/L) Average Monthly	22	12	23	10	11.5	7	9	8	11	27	8	14
Fecal Coliform (No./100 ml) Geometric Mean	1	< 1	554	11	10.954	< 1	25	7.348	10	260	6.234	2400
Fecal Coliform (No./100 ml) Instantaneous Maximum	1.0	1.0	2420	126	120	1	613	54	50	2420	20	2400
Total Nitrogen (mg/L) Average Monthly	39	52	50	45	36	54.8	50	26.4	18	20.0	19	16.6
Ammonia (mg/L) Average Monthly	< 0.400	< 0.400	< 0.400	< 0.400	< 0.400	< 0.800	< 0.800	7.5	< 0.800	< 0.800	< 0.800	< 0.800
Total Phosphorus (mg/L) Average Monthly	0.28	0.38	0.44	0.27	0.38	0.23	0.61	0.24	0.46	0.96	0.41	0.73

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the “NPDES Permit Writer’s Manual” (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: Permit Effective Date through January 30, 2027.

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	Estimate
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	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	10.0	XXX	20	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are technology-based on Chapter 92a.47. The limits for CBOD₅, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for E. Coli and Total Nitrogen is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7. The limits for Total Phosphorus limits are based on Chapter 96.5.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the “NPDES Permit Writer’s Manual” (386-0400-001), SOPs and/or BPJ.

Outfall 001, Effective Period: January 31, 2027 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	Estimate
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	4.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.29	XXX	0.96	1/day	Grab
CBOD5	XXX	XXX	XXX	10.0	XXX	20	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
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/month	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	7.5	XXX	15	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.5	XXX	5	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite

Compliance Sampling Location: at Outfall 001, after disinfection.

Flow is monitor only based on Chapter 92a.61. The limits for pH and Dissolved Oxygen are technology-based on Chapter 93.7. The Total Residual Chlorine (TRC) limits are water quality-based on Chapter 93.7. The limits for CBOD₅, Total Suspended Solids, and Fecal Coliforms are technology-based on Chapter 92a.47. Monitoring for E. Coli and Total Nitrogen is based on Chapter 92a.61. The limits for Ammonia-Nitrogen are water quality-based on Chapter 93.7. The limits for Total Phosphorus limits are based on Chapter 96.5.

Attachment 1

WQM 7.0 Effluent Limits (Perennial Reach)

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
20C	35159	Trib 35159 of Bonnie Brook					
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)
1.570	Summit Academy	PA0031305c	0.040	CBOD5	10.66		
				NH3-N	2.16	4.32	
				Dissolved Oxygen			4

Since the calculated CBOD5 limits are the same as the Dry Reach inputs, they are protective of the receiving stream.

The calculated DO limits are 4.0 mg/l and will be set in the permit.

For NH3-N, the limit can be back-calculated using the equation: $Ct = (Co)e^{-kt}$, where

$Ct = 2.16 \text{ mg/l}$

$k = 0.7 \text{ days}^{-1}$ = constant for NH3-N

$t = 0.432 \text{ days}$ = Dry Reach Model travel time

Therefore, $2.16 \text{ mg/l} = (Ct)e^{-(0.7 \text{ days}^{-1})(0.432 \text{ days})}$

$Ct = 2.922$

$\text{NH}_3\text{-N} = 2.9 \text{ mg/l}$

Summit Academy

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
20C	35159	Trib 35159 of Bonnie Brook		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>		<u>Analysis pH</u>
1.570	0.040	25.000		7.066
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>		<u>Reach Velocity (fps)</u>
4.053	0.346	11.724		0.064
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>		<u>Reach Kn (1/days)</u>
7.95	0.735	1.49		1.029
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>		<u>Reach DO Goal (mg/L)</u>
5.108	27.721	Owens		5
<u>Reach Travel Time (days)</u>	Subreach Results			
1.492	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.149	6.92	1.27	7.54
	0.298	6.03	1.09	7.54
	0.448	5.25	0.94	7.54
	0.597	4.58	0.80	7.54
	0.746	3.99	0.69	7.54
	0.895	3.47	0.59	7.54
	1.045	3.03	0.51	7.54
	1.194	2.64	0.44	7.54
	1.343	2.30	0.37	7.54
	1.492	2.00	0.32	7.54

Summit Academy

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	5		

Summit Academy

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	35159	Trib 35159 of Bonnie Brook	1.570	1127.00	0.60	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.047	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
Summit Academy	PA0031305c	0.0400	0.0000	0.0000	0.000	25.00	7.10

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	10.66	2.00	0.00	1.50
Dissolved Oxygen	2.00	7.54	0.00	0.00
NH3-N	15.45	0.00	0.00	0.70

(From Dry Reach Model)

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	35159	Trib 35159 of Bonnie Brook	0.000	1050.00	2.58	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.047	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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

Summit Academy

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
20C	35159	Trib 35159 of Bonnie Brook

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
1.570	Summit Academy	10.33	13.34	10.33	13.34	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
1.570	Summit Academy	1.33	2.16	1.33	2.16	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
1.57	Summit Academy	10.66	10.66	2.16	2.16	4	4	0	0

Summit Academy

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
20C		35159				Trib 35159 of Bonnie Brook						
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												
1.570	0.03	0.00	0.03	.0619	0.00929	.346	4.05	11.72	0.06	1.492	25.00	7.07
Q1-10 Flow												
1.570	0.02	0.00	0.02	.0619	0.00929	NA	NA	NA	0.06	1.596	25.00	7.08
Q30-10 Flow												
1.570	0.04	0.00	0.04	.0619	0.00929	NA	NA	NA	0.07	1.406	25.00	7.06

Summit Academy

WQM 7.0 D.O.Simulation (Dry Reach Model)

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
20C	35159	Trib 35159 of Bonnie Brook		
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
2.300	0.040	25.000	7.096	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
1.640	0.379	4.327	0.103	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
24.09	1.500	24.09	1.029	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
3.927	32.135	Owens	NA	
<u>Reach Travel Time (days)</u>	Subreach Results			
0.432	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.043	22.20	23.04	2.00
	0.086	20.46	22.04	2.00
	0.130	18.86	21.08	2.00
	0.173	17.39	20.17	2.00
	0.216	16.03	19.29	2.00
	0.259	14.77	18.45	2.00
	0.302	13.62	17.65	2.00
	0.345	12.55	16.88	2.00
	0.389	11.57	16.15	2.00
	0.432	10.66	15.45	2.00

(Enter into Perennial Reach Model)

Summit Academy

WQM 7.0 Modeling Specifications

Parameters	D.O.	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	Simulation	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	2		

Summit Academy

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	35159	Trib 35159 of Bonnie Brook	2.300	1274.00	0.05	0.00000	0.00	<input type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.047	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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
Summit Academy	PA0031305b	0.0400	0.0000	0.0000	0.000	25.00	7.10

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	0.00	0.00	1.50
Dissolved Oxygen	4.00	2.00	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
20C	35159	Trib 35159 of Bonnie Brook	1.570	1127.00	0.60	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.047	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	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

Summit Academy

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>			<u>Stream Name</u>							
20C		35159			Trib 35159 of Bonnie Brook							
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												
2.300	0.00	0.00	0.00	NA	0.03814	.379	1.64	4.33	0.10	0.432	25.00	7.10
Q1-10 Flow												
2.300	0.00	0.00	0.00	NA	0.03814	NA	NA	NA	0.00	0.000	0.00	0.00
Q30-10 Flow												
2.300	0.00	0.00	0.00	NA	0.03814	NA	NA	NA	0.00	0.000	0.00	0.00

Summit Academy

Attachment 2

TRC EVALUATION				
Input appropriate values in A3:A9 and D3:D9				
0.12126	= Q stream (cfs)	0.5	= CV Daily	
0.04	= 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
TRC	1.3.2.iii	WLA_afc = 0.644		1.3.2.iii
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c
PENTOXSD TRG	5.1b	LTA_afc = 0.240		5.1d
				WLA_cfc = 0.620
				LTAMULT_cfc = 0.581
				LTA_cfc = 0.361
Source	Effluent Limit Calculations			
PENTOXSD TRG	5.1f	AML_MULT = 1.231		
PENTOXSD TRG	5.1g	AVG_MON_LIMIT (mg/l) = 0.295		AFC
		INST_MAX_LIMIT (mg/l) = 0.966		
WLA_afc	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc}) \dots$ $\dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$			
LTA_afc	$wla_afc \cdot LTAMULT_afc$			
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc}) \dots$ $\dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd)] \cdot (1 - FOS / 100)$			
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$			
LTA_cfc	$wla_cfc \cdot LTAMULT_cfc$			
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$			
AVG_MON_LIMIT	$MIN(BAT_BPJ, MIN(LTA_afc, LTA_cfc) \cdot AML_MULT)$			
INST_MAX_LIMIT	$1.5 \cdot ((av_mon_limit / AML_MULT) / LTAMULT_afc)$			