pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0113221**
Facility Type	**Non-Municipal**	APS ID	**1020927**
Major / Minor	**Minor**	Authorization ID	**1322433**

Applicant and Facility Information

Applicant Name	**Youth Challenge Int Bible Institution**	Facility Name	**Youth Challenge International**
Applicant Address	155 N Williamson Road	Facility Address	1810 Snydertown Road
	Blossburg, PA 16912-1215		Sunbury, PA 17801
Applicant Contact	John Rakow (jrrakow@yahoo.com)	Facility Contact	John Rakow
Applicant Phone	(570) 850-0526	Facility Phone	(570) 850-0526
Client ID	53079	Site ID	241954
Ch 94 Load Status	Not Overloaded	Municipality	Upper Augusta Township
Connection Status	No Limitations	County	Northumberland
Date Application Received	August 4, 2020	EPA Waived?	Yes
Date Application Accepted	August 10, 2020	If No, Reason	N/A

Purpose of Application: Renewal of an existing NPDES permit for the discharge of treated sewage.

Summary of Review

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		*Jonathan P. Peterman* Jonathan P. Peterman / Project Manager	January 28, 2021
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	January 29, 2021

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.019
Latitude	40° 52’ 17.40”	Longitude	76° 43’ 50.70”
Quad Name	Trevorton	Quad Code	1232
Wastewater Description:	Sewage		
Receiving Waters	Unnamed Tributary of Shamokin Creek (CWF)	Stream Code	18549
NHD Com ID	54961209	RMI	0.06
Drainage Area	0.34	Yield (cfs/mi^2)	0.4
Q_{7-10} Flow (cfs)	0.138	Q_{7-10} Basis	Gage No. 1554500
Elevation (ft)	567	Slope (ft/ft)	0.003
Watershed No.	6-B	Chapter 93 Class.	CWF
Existing Use	CWF	Existing Use Qualifier	N/A
Exceptions to Use	None.	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	Metals, pH		
Source(s) of Impairment	AMD		
TMDL Status	Final, 04/09/2001	Name	Shamokin Creek Watershed
Nearest Downstream Public Water Supply Intake	Harrisburg Municipal Water Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	2610
PWS RMI	74	Distance from Outfall (mi)	65

Changes Since Last Permit Issuance: Changes Since Last Permit Issuance: The updated Q_{7-10} data was obtained from the updated stream gage information obtained from *Stuckey, M.H., and Roland, M.A., 2011, Selected Streamflow Statistics for Streamgage Locations In and Near Pennsylvania*. A Q_{7-10} analysis was conducted using an upstream stream gage (01554500) as the reference stream gage. The Q_{7-10} calculations, which are attached in Appendix A, indicate that the Q_{7-10} is 0.138 cfs.

In order to determine the Q_{7-10} low flow for the West Branch of the Susquehanna River, which is considered the point of first use given that Shamokin Creek is considered § 95.5(a), a local stream gage was utilized. The Q_{7-10} of the stream gage located slightly up river from the confluence was used directly in the analysis. The Q_{7-10} calculations are attached in Appendix A.

Other Comments: None.

Treatment Facility Summary

Treatment Facility Name: Youth Challenge International Bible Institution

WQM Permit No.	Issuance Date	Notes:
4986408	9/3/1987	Initial construction.

Waste Type	Degree of Treatment	Process Type	Disinfection	Design Flow (MGD)
Sewage	Secondary	Extended Aeration	Hypochlorite	0.019
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.025	---	Not Overloaded	---	Other WWTP

Treatment System Components for Outfall 001:
- One (1) Influent Bar Screen.
- One (1) 26,700 Gallon Aeration Tank.
- One (1) 4,900 Gallon Clarifier.
- One (1) Tablet Erosion Chlorinator.
- One (1) Chlorine Contact Tank.
- One (1) Outfall 001 to Unnamed Tributary of Shamokin Creek.

Sludge use and disposal description and location(s): Other WWTP

Changes Since Last Permit Issuance: None.
Other Comments: None.

Anti-Backsliding

In accordance with 40 CFR 122.44(l)(1) and (2), this permit does not contain effluent limitations, standards, or conditions that are less stringent than the previous permit.

TMDL Impairment

Shamokin Creek TMDL
The Department's Geographic Information System (GIS) shows that Shamokin Creek is impaired and a TMDL does exist for the stream segment. High levels of metals caused these impairments (iron, manganese, aluminum). All impairments resulted from acid mine drainage. The TMDL addresses the three primary metals associated with acid mine drainage (iron, manganese, aluminum) as well as depressed pH. There is currently no industrial waste being discharged into the treatment plant and this discharge is not expected to contribute to the level of metals in the stream. The system does receive effluent from rental businesses and restaurants, but the flow contribution from these combined businesses account for less than 1% of the total flow. Given the regulations contained in 40 CFR §122.44(d)(1)(ii)&(iii), it can be determined that the type of effluent from this facility has no "Reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant." Therefore, the permit will not be required to contain effluent limits for the pollutant addressed in the TMDL. Since the TMDL does not assign any wasteload allocations to this facility, it is not authorized to discharge these metals of concern. To ensure that this facility is not discharging these pollutants in levels that will contribute to the impairment of the stream, yearly monitoring for these parameters will be placed in the permit.

Chesapeake Bay Requirements

Since this facility's annual average design flow is 0.025 MGD, the permittee will be required to monitor and report TN and TP throughout the permit term at a frequency no less than annually in accordance with the Phase II WIP Chesapeake Bay Strategy for Phase V facilities (0.002 MGD to 0.2 MGD) unless 1) the facility has already conducted at least two years of nutrient monitoring and 2) a summary of the monitoring results are included in the next permit's fact sheet. Since the permittee has not discharged, this monitoring has not been completed and the nutrient monitoring will remain until completed.

Existing Effluent Limitations and Monitoring Requirements

Existing Limits – Outfall 001

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Annual Average	Total Annual	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report Avg Mo	XXX	XXX	XXX	XXX	XXX	1/week	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	Report	1/6 months	Grab
Total Aluminum	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Manganese	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab

*The existing effluent limits for Outfall 001 were based on a design flow of 0.019 MGD.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.019
Latitude 40° 52’ 17.40” **Longitude** 76° 43’ 50.70”
Wastewater Description: Treated 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	1,000 / 100 ml	IMAX	-	92a.47(a)(4)

(5/1 – 9/30)				
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)

Water Quality-Based Limitations

Water quality-based limits are not necessary to protect the receiving stream under chapter 95.5 of the Department's rules and regulations when significant impairment from AMD exists. 25 PA Code § 95.5(a) stipulates that water quality modeling is not necessary and secondary limits (technology based) will apply for discharges to AMD-impaired streams where "the applicable water quality criteria are not being met and designated water uses are no being achieved to the extent that aquatic communities are essentially excluded." The stream is listed on the 303(d) list for AMD impairment and the condition of the Shamokin Creek has been previously verified. The stream is not expected to improve significantly and no further downstream waters would be affected by the existing discharges.

Comments: None.

Best Professional Judgment (BPJ) Limitations

See Dissolved Oxygen section below.
Comments: None.

Additional Considerations

None

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 the abovementioned 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) and/or BPJ.

Proposed Limits - 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
	Annual Average	Total Annual	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report Avg Mo	XXX	XXX	XXX	XXX	XXX	1/week	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	XXX	XXX	XXX	25	XXX	50	2/month	Grab
Total Suspended Solids	XXX	XXX	XXX	30	XXX	60	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	2/month	Grab

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Annual Average	Total Annual	Instant. Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2,000 Geo Mean	XXX	10,000	2/month	Grab
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	Report	1/6 months	Grab
Total Nitrogen	Report	Report	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Phosphorus	Report	Report	XXX	Report Annl Avg	XXX	XXX	1/year	Grab
Total Aluminum	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Iron	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab
Total Manganese	XXX	XXX	XXX	Report	Report	XXX	1/year	Grab

*The proposed effluent limits for Outfall 001 were based on a design flow of 0.019 MGD.

Effluent Limit Determination for Outfall 001

General Information
The associated mass-based limits (lbs/day) for all parameters were based on the formula: design flow (average annual) (MGD) x concentration limit (mg/L) at design flow x conversion factor (8.34). All effluent limits were then rounded down in accordance with the rounding rules established in the *Technical Guidance for the Development and Specification of Effluent Limitations (362-0400-001)*, Chapter 5 - Specifying Effluent Limitations in NPDES Permits. The existing monitoring frequencies and sample types for these parameters generally correspond with the *Technical Guidance for the Development and Specification of Effluent Limitations* (362-0400-001) Table 6-3 and will remain.

Flow
Reporting of the average monthly flow is consistent with monitoring requirements for other treatment plants of this size.

Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)
The previously applied technology-based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for $CBOD_5$ will remain as water quality-based limits are not required given that the stream is void of aquatic life. The existing limits will remain.

Total Suspended Solids (TSS)
The previously applied technology-based secondary treatment standards (25 PA Code §92a.47 (a) (1&2)) for TSS will remain as well.

pH
CFR Title 40 §133.102(c) and 25 PA Code §95.2(1) provide the basis of effluent limitations for pH. The existing limits will remain.

Total Residual Chlorine (TRC)
A TRC model evaluation was conducted by using the technology-based effluent limitation as input and the West Branch of the Susquehanna River as the point of first use. In accordance with 25 Pa. Code 92a.48(b)(2), a BAT value of 0.5 mg/l was used. The attached TRC model indicates that the technology based effluent limit of 0.5 mg/L (Average Monthly) and 1.6 mg/L (Instantaneous Maximum) are protective of water quality and will remain.

Fecal Coliforms

The existing fecal coliform limits with I-max limits were updated from the previous Chapter 92 code to correspond with what is specified in the updated 25 PA Code § 92a.47 (a)(4)&(5).

Ammonia-Nitrogen (NH3-N)
Based on BPJ, monitoring for NH3-N is proposed. However, since it is anticipated that the treatment method utilized at this facility will consistently meet the technology based effluent limits, a monitoring frequency of 1/ 6 months was previously implemented. The existing monitoring requirements will remain.

Dissolved Oxygen (DO)
Based on BPJ, only monitoring will be required for this facility. This will also provide historical data to establish baseline DO levels in the effluent for future reviews.

Compliance History

Summary of Inspections -The most recent Clean Water Program onsite inspections for this facility were a Compliance Evaluation Inspection on 12/31/19. The inspection stated that there had been no discharge from the system at that time and no operational issues were noted.

WMS Query Summary - A WMS Query was run at *Reports - Violations & Enforcements – Open Violations for Client Report* to determine whether there are any unresolved violations associated with the client that will affect issuance of the permit (per CSL Section 609). This query revealed no open violations.

Attachments

Appendices

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **B**)
☐	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:
☐	Other:

APPENDIX A

Q_{7-10} ANALYSIS AND STREAM DATA

Q_{7-10} Analysis

Facility: Youth Challenge Intl. Bibe Inst.
Outfall: 001

NPDES Permit No.: PA0113221
RMI at Outfall: 0.06 Elev. 567

Reference Stream Gage Information	
Stream Name	Shamokin Creek
Reference Gage	1554500
Station Name	Shamokin Creek near Shamokin, PA
Gage Drainage Area (sq. mi.)	54.2
Q_{7-10} at gage (cfs)	22
Yield Ratio (cfs/mi^2)	0.4059

Was Ecoflows Used?	No
Correlation From Ecoflows	

Check Dilution Ratio		
Discharge at Outfall (wf) (mgd)	0.003	
	sf (cfs)	wf (cfs)
Dilution Ratio = sf/wf	0.1380	0.004641686
Dilution Ratio =	29.73216467 to 1	

Q_{7-10} at Outfall	
Drainage Area at site (sq. mi.)	0.34
Q_{7-10} at discharge site (cfs)	0.1380
Q_{7-10} at discharge site (mgd)	0.0892
Low Flow Yield Ratio of 0.1 cfs/mi^2 (For Approx. Comparison Only)	
Q_{7-10} at discharge site (cfs)	0.0340
Q_{7-10} at discharge site (mgd)	0.0220

Q_{7-10} at Downstream Reach #1	
Drainage Area at Reach (sq. mi.)	103
RMI	0
Q_{7-10} at reach (cfs)	41.8081
Q_{7-10} at reach (mgd)	27.0213
	Elev.

Q_{7-10} at Downstream Reach #2	
Drainage Area at Reach (sq. mi.)	[Drainage Area @ Reach #2]
RMI	[RMI @ Reach #2]
Q_{7-10} at reach (cfs)	#VALUE!
Q_{7-10} at reach (mgd)	#VALUE!

Q_{7-10} at Downstream Reach #3	
Drainage Area at Reach (sq. mi.)	[Drainage Area @ Reach #3]
RMI	[RMI @ Reach #3]
Q_{7-10} at reach (cfs)	#VALUE!
Q_{7-10} at reach (mgd)	#VALUE!

Basin Characteristics Report at [Site / Reach]

Date: Thurs Oct 22, 2015 9:46:21 AM GMT-4
NAD 1983 Latitude: 40.8713 (40 52 17)
NAD 1983 Longitude: -76.7334 (-76 44 01)

DRNAREA	0.34
STRMTOT	1.17
STRDEN	3.44
BSLOPD	13.2
CENTROIDX	106633.9
CENTROIDY	209219.7
OUTLETX	106745
OUTLETY	208535
LONG_OUT	-76.7335
BSLOPDRAW	13.46
FOREST	69
PRECIP	41
URBAN	0
GLACIATED	0
ROCKDEP	3.3
CARBON	0
STORAGE	1
ELEV	693.8
MAXTEMP	59
DRN	3.1
IMPNLCD01	0
LC01DEV	3
LC11IMP	0.39
LC11DEV	2.41

Basin Map at Outfall

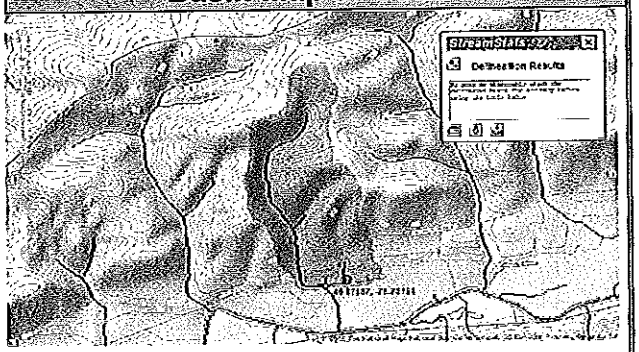


Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.—Continued

[Latitude and Longitude in decimal degrees; mi², square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi²)	Regulated[1]
01541303	West Branch Susquehanna River at Hyde, Pa.	41.005	-78.457	474	Y
01541308	Bradley Run near Ashville, Pa.	40.509	-78.584	6.77	N
01541500	Clearfield Creek at Dimeling, Pa.	40.972	-78.406	371	Y
01542000	Moshannon Creek at Osceola Mills, Pa.	40.850	-78.268	68.8	N
01542500	WB Susquehanna River at Karthaus, Pa.	41.118	-78.109	1,462	Y
01542810	Waldy Run near Emporium, Pa.	41.579	-78.293	5.24	N
01543000	Driftwood Branch Sinnemahoning Creek at Sterling Run, Pa.	41.413	-78.197	272	N
01543500	Sinnemahoning Creek at Sinnemahoning, Pa.	41.317	-78.103	685	N
01544000	First Fork Sinnemahoning Creek near Sinnemahoning, Pa.	41.402	-78.024	245	Y
01544500	Kettle Creek at Cross Fork, Pa.	41.476	-77.826	136	N
01545000	Kettle Creek near Westport, Pa.	41.320	-77.874	233	Y
01545500	West Branch Susquehanna River at Renovo, Pa.	41.325	-77.751	2,975	Y
01545600	Young Womans Creek near Renovo, Pa.	41.390	-77.691	46.2	N
01546000	North Bald Eagle Creek at Milesburg, Pa.	40.942	-77.794	119	N
01546400	Spring Creek at Houserville, Pa.	40.834	-77.828	58.5	N
01546500	Spring Creek near Axemann, Pa.	40.890	-77.794	87.2	N
01547100	Spring Creek at Milesburg, Pa.	40.932	-77.786	142	N
01547200	Bald Eagle Creek below Spring Creek at Milesburg, Pa.	40.943	-77.786	265	N
01547500	Bald Eagle Creek at Blanchard, Pa.	41.052	-77.604	339	Y
01547700	Marsh Creek at Blanchard, Pa.	41.060	-77.606	44.1	N
01547800	South Fork Beech Creek near Snow Shoe, Pa.	41.024	-77.904	12.2	N
01547950	Beech Creek at Monument, Pa.	41.112	-77.702	152	N
01548005	Bald Eagle Creek near Beech Creek Station, Pa.	41.081	-77.549	562	Y
01548500	Pine Creek at Cedar Run, Pa.	41.522	-77.447	604	N
01549000	Pine Creek near Waterville, Pa.	41.313	-77.379	750	N
01549500	Blockhouse Creek near English Center, Pa.	41.474	-77.231	37.7	N
01549700	Pine Creek below Little Pine Creek near Waterville, Pa.	41.274	-77.324	944	Y
01550000	Lycoming Creek near Trout Run, Pa.	41.418	-77.033	173	N
01551500	WB Susquehanna River at Williamsport, Pa.	41.236	-76.997	5,682	Y
01552000	Loyalsock Creek at Loyalsockville, Pa.	41.325	-76.912	435	N
01552500	Muncy Creek near Sonestown, Pa.	41.357	-76.535	23.8	N
01553130	Sand Spring Run near White Deer, Pa.	41.059	-77.077	4.93	N
01553500	West Branch Susquehanna River at Lewisburg, Pa.	40.968	-76.876	6,847	Y
01553700	Chillisquaque Creek at Washingtonville, Pa.	41.062	-76.680	51.3	N
01554000	Susquehanna River at Sunbury, Pa.	40.835	-76.827	18,300	Y
01554500	Shamokin Creek near Shamokin, Pa.	40.810	-76.584	54.2	N
01555000	Penns Creek at Penns Creek, Pa.	40.867	-77.048	301	N
01555500	East Mahantango Creek near Dalmatia, Pa.	40.611	-76.912	162	N
01556000	Frankstown Branch Juniata River at Williamsburg, Pa.	40.463	-78.200	291	N
01557500	Bald Eagle Creek at Tyrone, Pa.	40.684	-78.234	44.1	N
01558000	Little Juniata River at Spruce Creek, Pa.	40.613	-78.141	220	N
01559000	Juniata River at Huntingdon, Pa.	40.485	-78.019	816	LF
01559500	Standing Stone Creek near Huntingdon, Pa.	40.524	-77.971	128	N
01559700	Sulphur Springs Creek near Manns Choice, Pa.	39.978	-78.619	5.28	N
01560000	Dunning Creek at Belden, Pa.	40.072	-78.493	172	N

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.—Continued

[ft³/s; cubic feet per second; —, statistic not computed; <, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day, 10-year (ft³/s)	7-day, 10-year (ft³/s)	7-day, 2-year (ft³/s)	30-day, 10-year (ft³/s)	30-day, 2-year (ft³/s)	90-day, 10-year (ft³/s)
01546000	1912–1934	17	1.8	2.2	6.8	3.7	12.1	11.2
01546400	1986–2008	23	13.5	14.0	19.6	15.4	22.3	18.7
01546500	1942–2008	67	26.8	29.0	41.3	31.2	44.2	33.7
01547100	1969–2008	40	102	105	128	111	133	117
01547200	1957–2008	52	99.4	101	132	106	142	115
01547500	[2]1971–2008	38	28.2	109	151	131	172	153
01547500	[3]1956–1969	14	90.0	94.9	123	98.1	131	105
01547700	1957–2008	52	.5	.6	2.7	1.1	3.9	2.2
01547800	1971–1981	11	1.6	1.8	2.4	2.1	2.9	3.5
01547950	1970–2008	39	12.1	13.6	28.2	17.3	36.4	23.8
01548005	[2]1971–2000	25	142	151	206	178	241	223
01548005	[3]1912–1969	58	105	114	147	125	165	140
01548500	1920–2008	89	21.2	24.2	50.1	33.6	68.6	49.3
01549000	1910–1920	11	26.0	32.9	78.0	46.4	106	89.8
01549500	1942–2008	67	.6	.8	2.5	1.4	3.9	2.6
01549700	1959–2008	50	33.3	37.2	83.8	51.2	117	78.4
01550000	1915–2008	94	6.6	7.6	16.8	11.2	24.6	18.6
01551500	[2]1963–2008	46	520	578	1,020	678	1,330	919
01551500	[3]1901–1961	61	400	439	742	523	943	752
01552000	1927–2008	80	20.5	22.2	49.5	29.2	69.8	49.6
01552500	1942–2008	67	.9	1.2	3.1	1.7	4.4	3.3
01553130	1969–1981	13	1.0	1.1	1.5	1.3	1.8	1.7
01553500	[2]1968–2008	41	760	838	1,440	1,000	1,850	1,470
01553500	[3]1941–1966	26	562	619	880	690	1,090	881
01553700	1981–2008	28	9.1	10.9	15.0	12.6	17.1	15.2
01554000	[2]1981–2008	28	1,830	1,990	3,270	2,320	4,210	3,160
01554000	[3]1939–1979	41	1,560	1,630	2,870	1,880	3,620	2,570
01554500	1941–1993	53	16.2	22.0	31.2	25.9	35.7	31.4
01555000	1931–2008	78	33.5	37.6	58.8	43.4	69.6	54.6
01555500	1931–2008	78	4.9	6.5	18.0	9.4	24.3	16.6
01556000	1918–2008	91	43.3	47.8	66.0	55.1	75.0	63.7
01557500	1946–2008	63	2.8	3.2	6.3	4.2	8.1	5.8
01558000	1940–2008	69	56.3	59.0	79.8	65.7	86.2	73.7
01559000	1943–2008	66	104	177	249	198	279	227
01559500	1931–1958	28	9.3	10.5	15.0	12.4	17.8	15.8
01559700	1963–1978	16	.1	.1	.2	.1	.3	.2
01560000	1941–2008	68	8.5	9.4	15.6	12.0	20.2	16.2
01561000	1932–1958	27	.4	.5	1.6	.8	2.5	1.7
01562000	1913–2008	96	64.1	67.1	106	77.4	122	94.5
01562500	1931–1957	27	1.1	1.6	3.8	2.3	5.4	3.7
01563200	[2]1974–2008	35	—	—	—	112	266	129
01563200	[3]1948–1972	25	10.3	28.2	86.1	64.5	113	95.5
01563500	[2]1974–2008	35	384	415	519	441	580	493
01563500	[3]1939–1972	34	153	242	343	278	399	333
01564500	1940–2008	69	3.6	4.2	10.0	6.2	14.4	10.6

Low-Flow Statistics for Pennsylvania Streams

Developed by the U.S. Geological Survey for the
Pennsylvania Department of Environmental Protection

Pennsylvania Low-Flow Statistics - Query Results

LOW-FLOW STATISTICS

[All flow statistics in cubic feet per second (ft^3/s)]

Mouse over or click on table headings to view definition of statistic

STREAM NAME: Susquehanna River **GAGE OR BRIDGE SITE:** gage **REFERENCE GAGE:**[1] 01554000	**COUNTY:** Northumberland **USGS QUAD:** Sunbury **STATION NAME:** Susquehanna River at Sunbury, PA	**LATITUDE:** 405115 **LONGITUDE:** 764821 **DRAINAGE AREA (sq. mi.):** 18300

Entire Period of Record [2]	$Q_{1,10}$	$Q_{7,10}$	$Q_{30,10}$	MEAN	MEDIAN	HARMONIC MEAN
1938-95	1650	1740	2030	26800	15710	9470

FLOW DURATION TABLE (Probability of Exceedance)										
P5	P10	P20	P30	P40	P50	P60	P70	P80	P90	P95
87100	61810	39810	28690	21200	15710	11770	8650	6100	3810	2840

Pre-Regulation Period of Record[3]	$Q_{1,10}$	$Q_{7,10}$	$Q_{30,10}$	MEAN	MEDIAN	HARMONIC MEAN
1938-70	1470	1530	1740	24200	13890	8210

FLOW DURATION TABLE (Probability of Exceedance)										
P5	P10	P20	P30	P40	P50	P60	P70	P80	P90	P95
82370	56070	38300	27040	19190	13890	10180	7470	5120	3200	2500

Post-Regulation Period of Record[4]	$Q_{1,10}$	$Q_{7,10}$	$Q_{30,10}$	MEAN	MEDIAN	HARMONIC MEAN
1971-95	2200	2430	2940	28250	18030	11800

FLOW DURATION TABLE (Probability of Exceedance)										
P5	P10	P20	P30	P40	P50	P60	P70	P80	P90	P95
92160	64470	41900	30500	23470	18030	13940	10480	7580	4930	3670

[1] Reference Gage indicates which USGS gage was used in the computation of lowflow statistics for the specified locations
[2] Period of Record for climatic year, April 1 through March 31
[3] Period of record refers to pre-regulation conditions

APPENDIX B

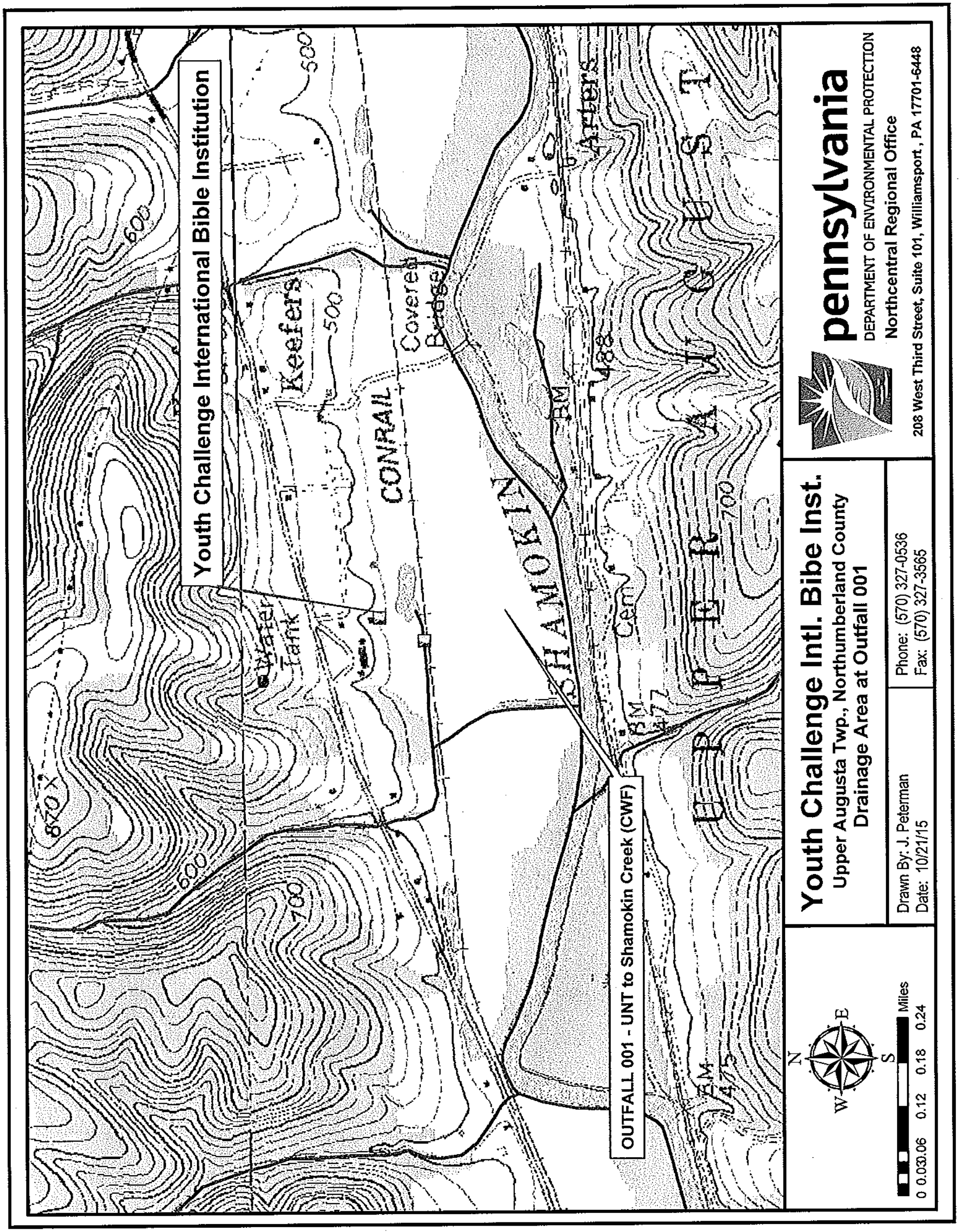
TRC ANALYSIS SPREADSHEET

1A	B	C	D	E	F	G
2	**TRC EVALUATION**	Youth Challenge PA0113221				
3	Input appropriate values in B4:B8 and E4:E7					
4	1740	= Q stream (cfs)		0.5	= CV Daily	
5	0.019	= Q discharge (MGD)		0.5	= CV Hourly	
6	30	= no. samples		1	= AFC_Partial Mix Factor	
7	0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
8	0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
9	0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
	0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
10	Source	Reference	AFC Calculations		Reference	CFC Calculations
11	TRC	1.3.2.iii	WLA afc = #######		1.3.2.iii	WLA cfc = #########
12	PENTOXSD TRG	5.1a	LTAMULT afc = 0.373		5.1c	LTAMULT cfc = 0.581
13	PENTOXSD TRG	5.1b	LTA_afc= #######		5.1d	LTA_cfc = #########
14						
15	Source		Effluent Limit Calculations			
16	PENTOXSD TRG	5.1f	AML MULT = 1.231			
17	PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ	
18			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)**

APPENDIX C

FACILITY MAP AND SCHEMATIC


Youth Challenge International Bible Institution
OUTFALL 001 - UNT to Shamokin Creek (CWF)
Keefers
Covered Bridge
CONRAIL
SHAMOKIN
Water Tank
Cem
Arters
Youth Challenge Intl. Bibe Inst.
Upper Augusta Twp., Northumberland County
Drainage Area at Outfall 001
Drawn By: J. Peterman
Date: 10/21/15
Phone: (570) 327-0536
Fax: (570) 327-3565
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Northcentral Regional Office
208 West Third Street, Suite 101, Williamsport, PA 17701-6448
0 0.03 0.06 0.12 0.18 0.24 Miles