pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal**	Application No.	**PA0111929**
Facility Type	**Municipal**	APS ID	**1117512**
Major / Minor	**Minor**	Authorization ID	**1491690**

Applicant and Facility Information

Applicant Name	**Lawrenceville Borough Tioga County**	Facility Name	**Lawrenceville Borough Sewer System STP**
Applicant Address	6 Mechanic Street	Facility Address	Cherry Street
	Lawrenceville, PA 16929-9768		Lawrenceville, PA 16929
Applicant Contact	Barry Mortimer	Facility Contact	Barry Mortimer
Applicant Phone	(570) 827-2066	Facility Phone	(570) 827-2066
Client ID	147372	Site ID	248296
Ch 94 Load Status	Existing Hydraulic Overload	Municipality	Lawrenceville Borough
Connection Status	No Exceptions Allowed	County	Tioga
Date Application Received	July 9, 2024	EPA Waived?	Yes
Date Application Accepted	July 15, 2024	If No, Reason	

Purpose of Application: Renewal of a NPDES Permit

Summary of Review

The subject facility is a publicly owned treatment works (POTW) serving Lawrenceville Borough and Lawrence Township in Tioga County and the Town of Lindley, NY. A map indicating the discharge location is attached.

Sludge use and disposal description and location(s): The facility's sludge is disposed by landfill. Per the application 3.08 dry tons were disposed 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 / Project Manager	January 29, 2025
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	January 29, 2025

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.1
Latitude	41º 59' 38.63"	Longitude	-77º 7' 21.36"
Quad Name	Jackson Summit, PA	Quad Code	0329
Wastewater Description:	Sewage Effluent		
Receiving Waters	Tioga River (WWF)	Stream Code	30990
NHD Com ID	57349457	RMI	13.6
Drainage Area	456	Yield (cfs/mi^2)	0.069
Q_{7-10} Flow (cfs)	31.3	Q_{7-10} Basis	Stream Gage No. 01518700, Tioga River @ Tioga Junction
Elevation (ft)	982	Slope (ft/ft)	0.00041
Watershed No.	4-A	Chapter 93 Class.	WWF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	MERCURY		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status		Name	
Nearest Downstream Public Water Supply Intake	PA/NY Border		
PWS Waters	Tioga River	Distance from Outfall (mi)	0.6

Changes Since Last Permit Issuance: The above stream and drainage characteristics were determined for previous reviews and remain adequate.

Other Comments: No downstream water supply is expected to be affected by this discharge at this time with the limitations and monitoring proposed. The Department considers the Pennsylvania-New York Border to serve as the nearest downstream water supply when no nearer water supply exists

This minor POTW discharge with no industrial flows is not expected to be a contributor to the impairment to the Tioga River by Mercury.

Treatment Facility Summary

Treatment Facility Name: Lawrenceville Borough Sewer System

WQM Permit No.	Issuance Date	Permit Coverage:
5975403	1975	Original permit for plant
5906402	Original – 12/18/06 A-1 – 4/1/21 A-2 - 2/21/23	Addition of Plate and frame filter Removal of plate and frame dewatering press New tablet dechlorination feeders

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Tablet Chlorine	0.1

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.1	170	Existing Hydraulic Overload	Dewatering	Landfill

Changes Since Last Permit Issuance: The facility received amendments A-1 and A-2 to WQM 5906402 over the past permit term.

Other Comments: The treatment consists of screen, comminutor, two aeration tanks, two clarifiers, chlorination, dechlorination, and sludge drying beds.

Compliance History

DMR Data for Outfall 001 (from December 1, 2023 to November 30, 2024)

Parameter	NOV-24	OCT-24	SEP-24	AUG-24	JUL-24	JUN-24	MAY-24	APR-24	MAR-24	FEB-24	JAN-24	DEC-23
Flow (MGD) Average Monthly	0.0419	0.0448	0.0551	0.0882	0.0567	0.05618	0.0757721	0.157225	0.1537	0.1630	0.18402	0.1228
Flow (MGD) Daily Maximum	0.0717	0.1185	0.0881	0.1721	0.1044	0.084697	0.266892	0.282688	0.2699	0.0223	0.4148	0.2473
pH (S.U.) Instantaneous Minimum	6.5	6.27	7.0	6.62	6.3	6.8	6.1	6.6	6.1	6.1	6.2	6.0
pH (S.U.) Instantaneous Maximum	7.2	7.26	8.0	7.46	7.7	7.5	7.4	7.37	7.9	8.0	7.6	7.4
DO (mg/L) Instantaneous Minimum	4.3	4.56	4.1	4.01	4.3	4.13	4.1	4.67	4.3	4.2	5.4	4.7
TRC (mg/L) Average Monthly	0.014	0.13	0.02	0.2	0.16	0.27	0.32	0.42	0.4	0.36	0.34	0.4
TRC (mg/L) Instantaneous Maximum	0.4	0.41	0.46	1.4	0.38	0.59	0.73	1.6	1.1	0.53	0.7	0.9
CBOD5 (lbs/day) Average Monthly	< 1	< 1	< 2	< 3	< 1	< 3	< 2	< 4	< 6	< 12	19	< 6
CBOD5 (lbs/day) Weekly Average	< 1	< 2	< 3	< 4	< 1	< 8	< 3	< 4	8	22	34	< 14
CBOD5 (mg/L) Average Monthly	< 3.0	< 3.12	< 4.0	< 3.04	< 3.1	< 5.57	< 3.44	< 3.28	< 4.65	< 7.96	11.3	< 5.4
CBOD5 (mg/L) Weekly Average	< 3.0	< 3.5	< 7.3	< 3.1	< 3.5	< 12.2	< 5.0	4.51	< 5.7	12.4	19.6	< 10.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	46	34	77	65	42	78	91	70	71	126	149	149
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	78	73	188	121	65	97	193	100	139	207	232	232
BOD5 (mg/L) Raw Sewage Influent Average Monthly	129	105	156	87.3	117	173	137	60	62	92.9	155	155
TSS (lbs/day) Average Monthly	< 1	< 1	< 3	< 3	< 1	< 2	< 3	< 8	13	28	30	14
TSS (lbs/day) Raw Sewage Influent Average Monthly	25	22	50	50	31	41	50	28	32	55	134	134

TSS (lbs/day) Raw Sewage Influent Daily Maximum	46	48	107	78	67	60	136	57	63	71	380	380
TSS (lbs/day) Weekly Average	3	2	< 5	7	2	5	5	< 11	23	45	48	19
TSS (mg/L) Average Monthly	< 3.3	< 4.2	< 5.8	< 3.8	< 3.1	< 3.8	< 4.9	< 6.4	10.5	19.3	17.9	13.5
TSS (mg/L) Raw Sewage Influent Average Monthly	70	65	105	67	85	90	81	23	29	42.3	254	124
TSS (mg/L) Weekly Average	5.8	6.4	19.09	8.8	3.5	7.4	10.8	12.4	14.3	28.3	30.0	19.8
Fecal Coliform (No./100 ml) Geometric Mean	1	< 3	< 2	< 4	< 1	< 1	< 1	< 4	< 1	100	291	61
Fecal Coliform (No./100 ml) Instantaneous Maximum	3.1	18.5	8.4	71.2	< 1	< 1	2	12	1	2420	2419.6	> 2419.6
Ammonia (lbs/day) Average Monthly	< 0.4	< 0.2	13.945	1	< 0.3	3	< 0.02	< 0.1	< 0.7	< 1	< 5	< 0.09
Ammonia (mg/L) Average Monthly	< 0.75	< 0.6	19.095	2.786	< 1.27	5.621	< 0.1863	< 0.1	< 0.4886	< 0.866	< 2.822	< 0.1

Compliance History

Effluent Violations for Outfall 001, from: December 1, 2023 to November 30, 2024

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	01/31/24	Wkly Avg	34	lbs/day	33	lbs/day
TSS	02/29/24	Avg Mo	28	lbs/day	25	lbs/day
TSS	01/31/24	Avg Mo	30	lbs/day	25	lbs/day
TSS	01/31/24	Wkly Avg	48	lbs/day	37	lbs/day
TSS	02/29/24	Wkly Avg	45	lbs/day	37	lbs/day
Fecal Coliform	12/31/23	IMAX	> 2419.6	No./100 ml	10000	No./100 ml

Compliance History, Cont'd	
Summary of Inspections:	The most recent inspection of the facility by the Department on September 10, 2024 identified Failure to Maintain Sludge Records, eDMR violations, Failure to Monitor Pollutants as Required by the NPDES Permit, and Failure to Properly Document Monitoring Activities and Results.
Other Comments:	A query in WMS found an open violation in eFACTS for Lawrenceville Borough for "Reporting for all water withdrawals and usage" from the Water Planning and Conservation Program. Recent Chapter 94 reports have identified overload conditions.

Existing Effluent Limitations and Monitoring Requirements

The **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 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	20	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	25	37	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.1
Latitude 41º 59' 38.90" **Longitude** -77º 7' 21.60"
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 limits are applicable and are included in the existing permit.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The WQM7.0 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. WQM7.0 modeling was performed (see Attachment B) for the discharge to the Tioga River and verifies that no limitations are necessary beyond the technology-based secondary treatment limits listed above.

Total Residual Chlorine

The attached modeling shows that the technology-based limit of 0.5 mg/L is adequate to protect the receiving waters (See Attachment C).

Water Quality Toxics Management

No additional reasonable potential analysis has been performed to determine additional parameters for limitations or monitoring for this minor municipal treatment plant with no industrial users.

Chesapeake Bay/Nutrient Requirements

A portion of the Chesapeake Bay and many of its tidal tributaries have been listed as impaired under Section 303(d) of the Water Pollution Control Act, 33 U.S.C. §1313(d). Total Nitrogen and Total Phosphorus cap loads have been established for significant dischargers in Pennsylvania to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. The Lawrenceville Borough facility is considered a Phase V, non-significant Chesapeake Bay discharger and as such no nutrient cap loadings have been established for the facility pursuant to the Phase III Watershed Implementation Plan. The Total Nitrogen (TN) and Total Phosphorus (TP) concentrations from a previous permit term have averaged 9.8 and 1.16 mg/L, respectively. Therefore, no additional monitoring for TN and TP will be required at this time.

Best Professional Judgment (BPJ) Limitations

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

E. Coli

Quarterly e. coli monitoring will be required at this time due to changes to Chapter 93 of the Department's regulations and Department policy.

Anti-Backsliding

No limitations in this proposed draft permit have been made less stringent consistent with the anti-backsliding 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" (386-0400-001), SOPs and/or BPJ.

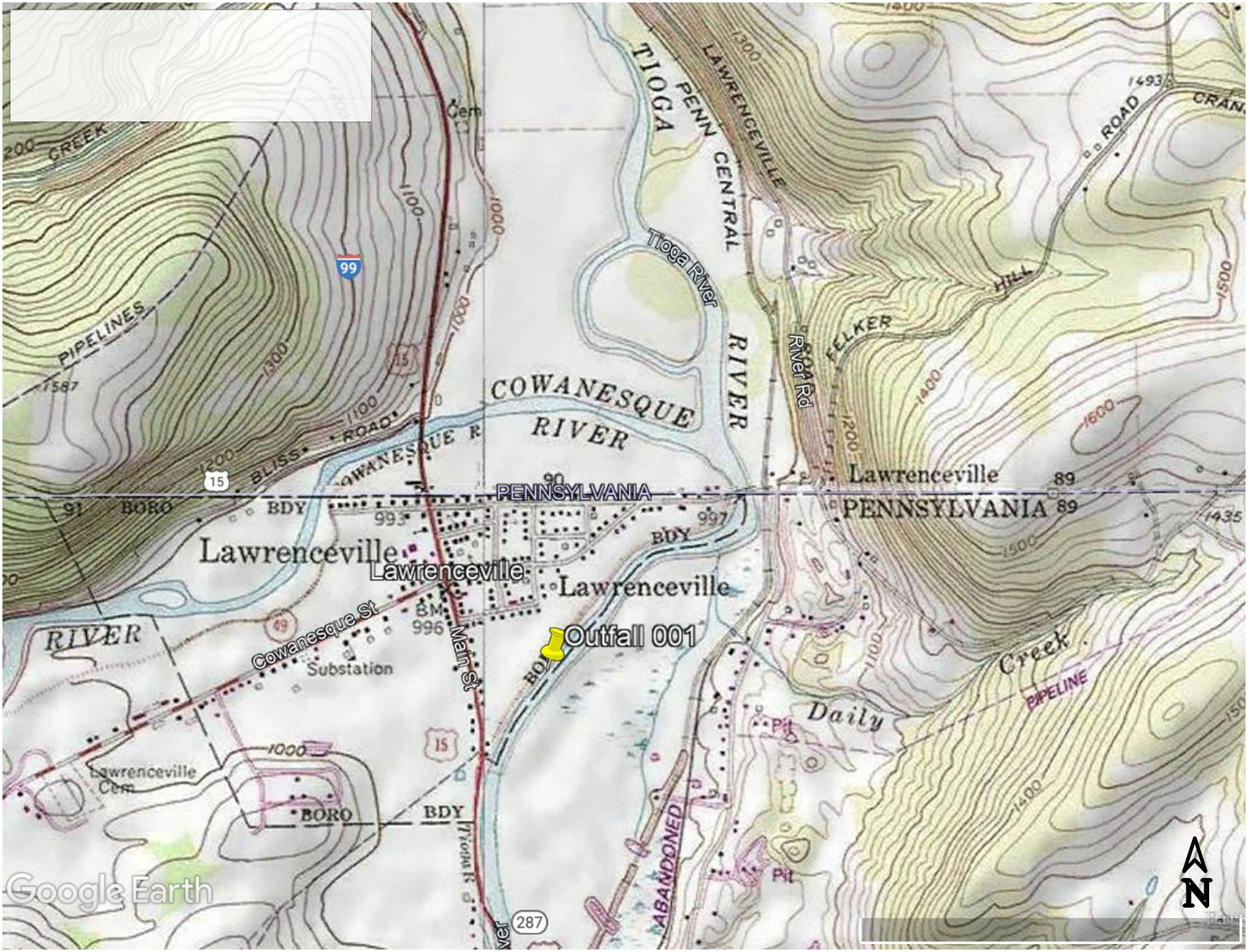
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

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 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	4.0 Inst Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	20	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	25	37	XXX	30.0	45.0	60	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	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	Report	XXX	XXX	Report	XXX	XXX	1/week	8-Hr Composite
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/quarter	Grab

Compliance Sampling Location: Outfall 001

Other Comments: E. coli monitoring is new as mentioned 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, 386-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 386-2000-019, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 386-2000-018, 11/96.
☐	Technology-Based Control Requirements for Water Treatment Plant Wastes, 386-2183-001, 10/97.
☐	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 386-2183-002, 12/97.
☐	Pennsylvania CSO Policy, 386-2000-002, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☐	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 386-2000-008, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 386-2000-004, 12/97.
☒	Implementation Guidance Design Conditions, 386-2000-007, 9/97.
☒	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 386-2000-016, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 386-2000-012, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 386-2000-009, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 386-2000-015, 5/2004.
☒	Implementation Guidance for Section 93.7 Ammonia Criteria, 386-2000-022, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 386-2000-013, 4/2008.
☒	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 386-2000-011, 11/1994.
☐	Implementation Guidance for Temperature Criteria, 386-2000-001, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 386-2000-021, 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, 386-2000-020, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 386-2000-005, 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, 386-2000-010, 3/1999.
☒	Design Stream Flows, 386-2000-003, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 386-2000-006, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 386-3200-001, 6/97.
☒	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:


Outfall 001
Lawrenceville
PENNSYLVANIA
COWANESQUE RIVER
Tioga River
PENN CENTRAL
LAWRENCEVILLE
Cowanesque St
Main St
Substation
Lawrenceville Cem
BORO
BDY
ABANDONED
PIPELINE
Daily
Creek
River Rd
FELKER
HILL
ROAD
BLISS
PIPELINES
Google Earth
N

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
04A	30990	TIOGA RIVER	**13.600**	982.00	456.00	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	0.069	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
Lawrenceville	PA0111929	0.1000	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

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
04A	30990	TIOGA RIVER	**13.140**	981.00	457.00	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	0.069	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
04A	30990	TIOGA RIVER

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 (ºC)	Analysis pH
Q7-10 Flow												
13.600	31.46	0.00	31.46	.1547	0.00041	1.003	102.58	102.23	0.31	0.092	20.02	7.00
Q1-10 Flow												
13.600	20.14	0.00	20.14	.1547	0.00041	NA	NA	NA	0.24	0.117	20.04	7.00
Q30-10 Flow												
13.600	42.79	0.00	42.79	.1547	0.00041	NA	NA	NA	0.36	0.077	20.02	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	5		

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (ºC)	Analysis pH
13.600	0.100	20.024	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
102.577	1.003	102.227	0.307
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.11	0.081	0.12	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.217	0.590	Tsivoglou	5
Reach Travel Time (days)			
0.092			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.009	2.11	0.12	8.22
0.018	2.11	0.12	8.22
0.027	2.11	0.12	8.21
0.037	2.11	0.12	8.21
0.046	2.10	0.12	8.21
0.055	2.10	0.12	8.21
0.064	2.10	0.12	8.21
0.073	2.10	0.12	8.21
0.082	2.10	0.12	8.21
0.092	2.10	0.11	8.21

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

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
13.600	Lawrenceville	16.71	50	16.71	50	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
13.600	Lawrenceville	1.88	25	1.88	25	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)		
13.60	Lawrenceville	25	25	25	25	3	3	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
04A	30990	TIOGA RIVER

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)
13.600	Lawrenceville	PA0111929	0.100	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			3

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

31.3	= Q stream (cfs)	0.5	= CV Daily
0.1	= 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)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 64.561	1.3.2.iii	WLA cfc = 62.935
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 24.057	5.1d	LTA_cfc = 36.587

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)