pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0038814**
Facility Type	**Municipal**	APS ID	**1009297**
Major / Minor	**Minor**	Authorization ID	**1301665**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Ellport Borough Sewer Authority**	Facility Name	**Ellport Borough STP**
Applicant Address	313 Burns Avenue	Facility Address	313 Burns Avenue
	Ellwood City, PA 16117-3910		Ellwood City, PA 16117-3910
Applicant Contact	David Steffler	Facility Contact	Michael Milnes (Operator)
Applicant Phone	(724) 752-1422	Facility Phone	(724) 752-1422
Client ID	62947	Site ID	261253
Ch 94 Load Status	Not Overloaded	Municipality	Ellport Borough
Connection Status	No Limitations	County	Lawrence
Date Application Received	January 2, 2020	EPA Waived?	Yes
Date Application Accepted	January 21, 2020	If No, Reason	

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

Summary of Review

This is a Publicly Owned Treatment Works (POTW) serving the municipalities of Ellport Borough, Perry Township and Franklin Township in Lawrence County.

There are no proposed changes to discharge quality or quantity as part of this permit renewal.

There are currently no open violations listed in EFACTS for this permittee (3/29/2022).

Sludge use and disposal description and location(s): Sludge is hauled offsite and disposed of at municipal waste landfill operated by Joseph J. Brunner Inc. and located in New Sewickley Township, Beaver County.

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		Adam J. Pesek Adam J. Pesek, E.I.T. / Environmental Engineer	March 29, 2022
X		Justin C. Dickey Justin C. Dickey, P.E. / Environmental Engineer Manager	April 11, 2022

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.72
Latitude	40º 51' 58"	Longitude	-80º 15' 29"
Quad Name	Beaver Falls	Quad Code	1203
Wastewater Description:	Sewage Effluent		

Receiving Waters	Slippery Rock Creek	Stream Code	34025
NHD Com ID	126216417	RMI	4.96
Drainage Area	827	Yield (cfs/mi^2)	0.08
Q_{7-10} Flow (cfs)	66.04	Q_{7-10} Basis	New Castle TDS Study
Elevation (ft)	800	Slope (ft/ft)	0.0027
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	PATHOGENS		
Source(s) of Impairment	SOURCE UNKNOWN		
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)	7.0	Default
Temperature (°C)	25	Default (WWF)
Hardness (mg/L)		
Other: NH_3-N	0.1	Default66.04

Nearest Downstream Public Water Supply Intake		PA American Water Company – Ellwood District	
PWS Waters	Connoquenessing Creek	Flow at Intake (cfs)	67
PWS RMI	0.25	Distance from Outfall (mi)	4.7

Changes Since Last Permit Issuance:

Other Comments: There are three unauthorized sanitary sewer overflows in the sanitary sewer system.
Outfall 002 – Overflow at Pump Station No. 1 for flows exceeding 550 gpm.
Outfall 003 – Overflow at Pump Station No. 2.
Outfall 004 – Historical bypass of the treatment plant which is normally closed (can be opened by a valve). The bypass is believed to have been removed during the last treatment plant upgrade.

Treatment Facility Summary

Treatment Facility Name: Ellport Borough STP

WQM Permit No.	Issuance Date
3777402	9/22/1977
3705401	3/24/2005

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Extended Aeration	Gas Chlorine	0.72

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.72	1000	Not Overloaded	Aerobic Digestion	Landfill

Changes Since Last Permit Issuance: The 8/22/2019 Inspection Report indicated the permittee should submit a WQM Permit Amendment application for dechlorination equipment that is already installed and removal of comminutor/grinder unit if the permittee is not planning to install them as permitted. No WQM Permit amendment application has been submitted to date.

Other Comments:

Compliance History	
Summary of DMRs:	Only one effluent violation reported for D.O. since the beginning of 2017
Summary of Inspections:	CAP approved on July 27, 2020 to address hydraulic overload conditions at Lift Stations #1 and #2 that occurred during wet weather events. The last site inspection occurred on January 21, 2020. The inspection report indicated it was a follow up inspection to the one done in 2019. No major issues reported. A site inspection was conducted on August 22, 2019. The inspection report noted violations noted below: 1. Failure to comply with terms and conditions of a WQM Permit (P. L. 1987, No. 394, Sec 611). Water Quality Management (WQM) Permit 3705401 dated March 24, 2015 approved the construction/modification/operation of 'New Wastewater Treatment Units' which includes a comminutor/grinder sized for a flow rate of 2000-gpm (2.9-MGD). A comminutor/grinder is not installed at the headworks. A Muffin Monster control panel and manual, coarse bar screen are installed at the headworks. 2. Failure to apply for and/or obtain a WQM Permit for the construction of sewage or industrial waste facilities. A chemical feed system has been installed to apply sodium bisulfite to treatment plant effluent, for the purpose of de-chlorination, without applying for a WQM Permit amendment.

Other Comments: **The Department will request a WQM Permit application be submitted when the draft permit is sent out.**

Compliance History

DMR Data for Outfall 001 (from February 1, 2021 to January 31, 2022)

Parameter	JAN-22	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21
Flow (MGD) Average Monthly	0.438	0.477	0.350	0.378	0.308	0.347	0.396	0.295	0.496	0.353	0.610	0.411
Flow (MGD) Weekly Average	0.886	0.855	0.554	1.312	0.467	1.168	0.998	0.399	1.715	0.488	2.268	0.585
pH (S.U.) Minimum	6.94	6.96	7.00	7.00	7.15	7.11	7.04	7.06	6.97	6.98	6.86	6.98
pH (S.U.) Maximum	7.36	7.66	7.59	7.67	7.43	7.34	7.38	7.37	7.46	7.41	7.85	7.23
DO (mg/L) Minimum	5.94	5.52	5.64	5.70	5.50	5.12	5.07	5.28	6.47	6.16	6.73	7.73
TRC (mg/L) Average Monthly	0.36	0.38	0.38	0.38	0.10	0.15	0.11	0.18	0.46	0.45	0.40	0.46
TRC (mg/L) Instantaneous Maximum	0.50	0.50	0.50	0.50	0.20	0.50	0.50	0.50	0.50	0.50	0.50	0.50
CBOD5 (lbs/day) Average Monthly	20.1	27.6	18.6	34.8	25.8	21.4	28.2	19.9	22.9	23.9	34.1	21.5
CBOD5 (lbs/day) Weekly Average	25.5	35.0	22.4	44.4	33.1	24.3	33.3	21.6	27.7	31.2	46.2	32.8
CBOD5 (mg/L) Average Monthly	5.52	6.94	6.40	11.05	10.06	7.425	8.55	8.12	5.55	8.125	6.72	6.30
CBOD5 (mg/L) Weekly Average	7.0	8.80	7.70	14.1	12.9	8.40	10.1	8.80	6.70	10.6	9.10	7.90
BOD5 (lbs/day) Influent Average Monthly	773.5	1004.8	829.7	1244.2	857.4	894.6	936.2	611.6	967.9	853.7	1434.4	770.3
BOD5 (lbs/day) Influent Weekly Average	1099.5	1551.4	1164.6	1626.7	1068.5	1198.1	1079.9	819.2	1154.1	912.6	1638.1	884.3
BOD5 (mg/L) Influent Average Monthly	211.75	252.6	284.25	394.7	333.8	309.25	283.5	248.6	234.0	290.0	282.0	224.75
TSS (lbs/day) Average Monthly	3.65	15.9	9.48	29.9	17.4	13.0	28.8	16.7	11.3	8.83	7.12	7.53
TSS (lbs/day) Influent Average Monthly	633.7	805.1	932.6	1149.8	927.3	828.4	828.9	588.5	785.9	720.5	1188.4	690.6

TSS (lbs/day) Influent Daily Maximum	1044.7	1615.4	1205.5	1292.5	1299.7	1099.7	990.7	770.0	864.5	1000.9	1592.3	867.2
TSS (lbs/day) Weekly Average	3.65	31.8	20.4	34.6	28.2	26.0	42.9	24.6	16.5	23.5	10.1	7.53
TSS (mg/L) Average Monthly	1.0	4.0	3.25	9.50	6.80	4.50	8.75	6.80	2.75	3.0	1.40	1.0
TSS (mg/L) Influent Average Monthly	173.5	202.4	319.5	364.7	361.0	286.25	251.0	239.2	190.0	277.75	233.6	201.5
TSS (mg/L) Weekly Average	1.0	8.0	7.0	11.0	11.0	9.00	13.0	10.0	4.0	8.0	2.0	1.0
Fecal Coliform (CFU/100 ml) Geometric Mean	2.39	1.24	5.02	6.47	9.12	13.6	11.0	15.7	2.21	7.135	2.93	3.08
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	11.0	3.0	10.0	16.0	36.0	22.0	62.5	39.0	12.0	24.0	9.0	10.0
Total Nitrogen (lbs/day) Average Quarterly		29.7			48.0			28.2			51.3	
Total Nitrogen (mg/L) Average Quarterly		7.27			16.6			11.5			10.1	
Ammonia (lbs/day) Average Monthly	8.80	32.8	35.7	25.6	33.0	35.4	34.2	28.7	8.76	4.41	1.78	1.66
Ammonia (mg/L) Average Monthly	2.41	8.27	12.2	8.15	12.8	12.2	10.38	11.6	2.12	1.50	0.35	0.485
Total Phosphorus (lbs/day) Average Quarterly		8.23			11.3			16.2			7.58	
Total Phosphorus (mg/L) Average Quarterly		2.07			3.93			6.61			1.49	

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.72
Latitude 40º 51' 58.00" **Longitude** -80º 15' 29.00"
Wastewater Description: Sewage Effluent

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report (No./100 ml)	IMAX	-	92a.61

Comments: Monitoring for E. coli will be placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Water Quality-Based Limitations

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

Parameter	Limit (mg/l)	SBC	Model
Ammonia Nitrogen	21	Average Monthly	WQM 7.0 Version 1.0b (Previous Modeling)

Comments: Monitoring for ammonia nitrogen will be placed in the permit during the wintertime period because the standard season multiplier of "3" is well above the threshold value of 25 mg/l discussed in the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Best Professional Judgment (BPJ) Limitations

Comments: A dissolved oxygen daily minimum limit of 4.0 mg/l and a TRC IMAX limit of 1.6 is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Other Considerations

Comments: Monitoring for influent BOD_5 and influent TSS is placed in the permit in accordance with the Department's SOP entitled "New and Reissuance Individual Sewage NPDES Permit Applications."

Monitoring for total nitrogen and total phosphorus is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits."

Anti-Backsliding

N/A

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (362-0400-001), SOPs and/or BPJ.

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

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	9.0 Daily Max	XXX	1/day	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
CBOD5	150	240	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
TSS	180	270	XXX	30	45	60	1/week	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Ammonia Nov 1 - Apr 30	Report	XXX	XXX	Report	XXX	XXX	1/month	8-Hr Composite
Ammonia May 1 - Oct 31	126	XXX	XXX	21	XXX	42	1/week	8-Hr Composite
Total Phosphorus	Report Avg Qrtly	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite

Compliance Sampling Location: Outfall 001 (after disinfection)

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	34025	CONNOQUENESSING CREEK	**4.960**	800.00	827.00	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	0.080	66.04	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
Ellport Boro SA	PA0038814	0.7200	0.0000	0.0000	0.000	20.00	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	4.00	7.54	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	34025	CONNOQUENESSING CREEK	**1.640**	770.00	836.00	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	0.080	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
Ellwood City	PA0026832	3.3000	0.0000	0.0000	0.000	20.00	6.70

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	4.00	7.54	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	34025	CONNOQUENESSING CREEK	**0.010**	745.00	838.00	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	0.080	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

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

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												
4.960	66.04	0.00	66.04	1.1138	0.00171	1.087	141.86	130.54	0.44	0.466	24.92	7.00
1.640	66.76	0.00	66.76	6.2189	0.00290	1.095	142.05	129.69	0.47	0.212	24.57	6.97
Q1-10 Flow												
4.960	42.27	0.00	42.27	1.1138	0.00171	NA	NA	NA	0.34	0.595	24.87	7.00
1.640	42.73	0.00	42.73	6.2189	0.00290	NA	NA	NA	0.38	0.266	24.36	6.96
Q30-10 Flow												
4.960	89.81	0.00	89.81	1.1138	0.00171	NA	NA	NA	0.52	0.393	24.94	7.00
1.640	90.79	0.00	90.79	6.2189	0.00290	NA	NA	NA	0.55	0.181	24.68	6.98

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 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

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
4.960	Ellport Boro SA	11.15	50	11.15	50	0	0
1.640	Ellwood City	12.01	50	12.07	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
4.960	Ellport Boro SA	1.37	25	1.37	22.1	2	12
1.640	Ellwood City	1.4	24.56	1.41	21.72	2	12

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)		
4.96	Ellport Boro SA	25	25	22.1	22.1	4	4	0	0
1.64	Ellwood City	25	25	21.72	21.72	4	4	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
4.960	0.720	24.917	7.003
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
141.862	1.087	130.539	0.436
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.38	0.183	0.46	1.022
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.481	3.907	Tsivoglou	5
Reach Travel Time (days)			
0.466			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.047	2.36	0.44	7.51
0.093	2.33	0.42	7.53
0.140	2.31	0.40	7.54
0.186	2.28	0.38	7.54
0.233	2.26	0.37	7.54
0.279	2.23	0.35	7.54
0.326	2.21	0.33	7.54
0.373	2.19	0.32	7.54
0.419	2.16	0.30	7.54
0.466	2.14	0.29	7.54

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
1.640	4.020	24.574	6.973
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
142.048	1.095	129.693	0.469
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.74	0.692	1.79	0.995
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.292	7.084	Tsivoglou	5
Reach Travel Time (days)			
0.212			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.021	3.67	1.75	7.20
0.042	3.60	1.71	7.13
0.064	3.54	1.68	7.07
0.085	3.48	1.64	7.02
0.106	3.41	1.61	6.99
0.127	3.35	1.57	6.96
0.149	3.29	1.54	6.94
0.170	3.23	1.51	6.93
0.191	3.17	1.48	6.93
0.212	3.12	1.45	6.93

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34025	CONNOQUENESSING CREEK

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)
4.960	Ellport Boro SA	PA0038814	0.720	CBOD5	25		
				NH3-N	22.1	44.2	
				Dissolved Oxygen			4

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)
1.640	Ellwood City	PA0026832	3.300	CBOD5	25		
				NH3-N	21.72	43.44	
				Dissolved Oxygen			4

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Ellport Boro STP** NPDES Permit No.: **PA0038814** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated Domestic Sewage**

Discharge Characteristics								
Design Flow (MGD)*	Hardness (mg/l)*	pH (SU)*	Partial Mix Factors (PMFs)				Complete Mix Times (min)	
			AFC	CFC	THH	CRL	Q_{7-10}	Q_h
0.72	100	7.2						

					0 if left blank		*0.5 if left blank*		*0 if left blank*			*1 if left blank*	
	Discharge Pollutant	Units	Max Discharge Conc		Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		520									
	Chloride (PWS)	mg/L		190									
	Bromide	mg/L	<	0.5									
	Sulfate (PWS)	mg/L		61									
	Fluoride (PWS)	mg/L											
Group 2	Total Aluminum	µg/L											
	Total Antimony	µg/L											
	Total Arsenic	µg/L											
	Total Barium	µg/L											
	Total Beryllium	µg/L											
	Total Boron	µg/L											
	Total Cadmium	µg/L											
	Total Chromium (III)	µg/L											
	Hexavalent Chromium	µg/L											
	Total Cobalt	µg/L											
	Total Copper	µg/L											
	Free Cyanide	µg/L											
	Total Cyanide	µg/L											
	Dissolved Iron	µg/L											
	Total Iron	µg/L											
	Total Lead	µg/L											
	Total Manganese	µg/L											
	Total Mercury	µg/L											
	Total Nickel	µg/L											
	Total Phenols (Phenolics) (PWS)	µg/L											
	Total Selenium	µg/L											
	Total Silver	µg/L											
	Total Thallium	µg/L											
	Total Zinc	µg/L											
	Total Molybdenum	µg/L											
	Acrolein	µg/L	<										
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<										
	Benzene	µg/L	<										
	Bromoform	µg/L	<										

Group 3	Carbon Tetrachloride	µg/L	<										
	Chlorobenzene	µg/L											
	Chlorodibromomethane	µg/L	<										
	Chloroethane	µg/L	<										
	2-Chloroethyl Vinyl Ether	µg/L	<										
	Chloroform	µg/L	<										
	Dichlorobromomethane	µg/L	<										
	1,1-Dichloroethane	µg/L	<										
	1,2-Dichloroethane	µg/L	<										
	1,1-Dichloroethylene	µg/L	<										
	1,2-Dichloropropane	µg/L	<										
	1,3-Dichloropropylene	µg/L	<										
	1,4-Dioxane	µg/L	<										
	Ethylbenzene	µg/L	<										
	Methyl Bromide	µg/L	<										
	Methyl Chloride	µg/L	<										
	Methylene Chloride	µg/L	<										
	1,1,2,2-Tetrachloroethane	µg/L	<										
	Tetrachloroethylene	µg/L	<										
	Toluene	µg/L	<										
	1,2-trans-Dichloroethylene	µg/L	<										
	1,1,1-Trichloroethane	µg/L	<										
	1,1,2-Trichloroethane	µg/L	<										
	Trichloroethylene	µg/L	<										
	Vinyl Chloride	µg/L	<										
Group 4	2-Chlorophenol	µg/L	<										
	2,4-Dichlorophenol	µg/L	<										
	2,4-Dimethylphenol	µg/L	<										
	4,6-Dinitro-o-Cresol	µg/L	<										
	2,4-Dinitrophenol	µg/L	<										
	2-Nitrophenol	µg/L	<										
	4-Nitrophenol	µg/L	<										
	p-Chloro-m-Cresol	µg/L	<										
	Pentachlorophenol	µg/L	<										
	Phenol	µg/L	<										
	2,4,6-Trichlorophenol	µg/L	<										
Group 5	Acenaphthene	µg/L	<										
	Acenaphthylene	µg/L	<										
	Anthracene	µg/L	<										
	Benzidine	µg/L	<										
	Benzo(a)Anthracene	µg/L	<										
	Benzo(a)Pyrene	µg/L	<										
	3,4-Benzofluoranthene	µg/L	<										
	Benzo(ghi)Perylene	µg/L	<										
	Benzo(k)Fluoranthene	µg/L	<										
	Bis(2-Chloroethoxy)Methane	µg/L	<										
	Bis(2-Chloroethyl)Ether	µg/L	<										
	Bis(2-Chloroisopropyl)Ether	µg/L	<										
	Bis(2-Ethylhexyl)Phthalate	µg/L	<										
	4-Bromophenyl Phenyl Ether	µg/L	<										
	Butyl Benzyl Phthalate	µg/L	<										
	2-Chloronaphthalene	µg/L	<										
	4-Chlorophenyl Phenyl Ether	µg/L	<										
	Chrysene	µg/L	<										
	Dibenzo(a,h)Anthrancene	µg/L	<										
	1,2-Dichlorobenzene	µg/L	<										
	1,3-Dichlorobenzene	µg/L	<										
	1,4-Dichlorobenzene	µg/L	<										
	3,3-Dichlorobenzidine	µg/L	<										
	Diethyl Phthalate	µg/L	<										
	Dimethyl Phthalate	µg/L	<										
	Di-n-Butyl Phthalate	µg/L	<										
	2,4-Dinitrotoluene	µg/L	<										

	2,6-Dinitrotoluene	µg/L	<										
	Di-n-Octyl Phthalate	µg/L	<										
	1,2-Diphenylhydrazine	µg/L	<										
	Fluoranthene	µg/L	<										
	Fluorene	µg/L	<										
	Hexachlorobenzene	µg/L	<										
	Hexachlorobutadiene	µg/L	<										
	Hexachlorocyclopentadiene	µg/L	<										
	Hexachloroethane	µg/L	<										
	Indeno(1,2,3-cd)Pyrene	µg/L	<										
	Isophorone	µg/L	<										
	Naphthalene	µg/L	<										
	Nitrobenzene	µg/L	<										
	n-Nitrosodimethylamine	µg/L	<										
	n-Nitrosodi-n-Propylamine	µg/L	<										
	n-Nitrosodiphenylamine	µg/L	<										
	Phenanthrene	µg/L	<										
	Pyrene	µg/L	<										
	1,2,4-Trichlorobenzene	µg/L	<										
Group 6	Aldrin	µg/L	<										
	alpha-BHC	µg/L	<										
	beta-BHC	µg/L	<										
	gamma-BHC	µg/L	<										
	delta BHC	µg/L	<										
	Chlordane	µg/L	<										
	4,4-DDT	µg/L	<										
	4,4-DDE	µg/L	<										
	4,4-DDD	µg/L	<										
	Dieldrin	µg/L	<										
	alpha-Endosulfan	µg/L	<										
	beta-Endosulfan	µg/L	<										
	Endosulfan Sulfate	µg/L	<										
	Endrin	µg/L	<										
	Endrin Aldehyde	µg/L	<										
	Heptachlor	µg/L	<										
	Heptachlor Epoxide	µg/L	<										
	PCB-1016	µg/L	<										
	PCB-1221	µg/L	<										
	PCB-1232	µg/L	<										
	PCB-1242	µg/L	<										
	PCB-1248	µg/L	<										
	PCB-1254	µg/L	<										
	PCB-1260	µg/L	<										
	PCBs, Total	µg/L	<										
	Toxaphene	µg/L	<										
	2,3,7,8-TCDD	ng/L	<										
Group 7	Gross Alpha	pCi/L											
	Total Beta	pCi/L	<										
	Radium 226/228	pCi/L	<										
	Total Strontium	µg/L	<										
	Total Uranium	µg/L	<										
	Osmotic Pressure	mOs/kg											

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Toxics Management Spreadsheet
Version 1.3, March 2021

Stream / Surface Water Information

Ellport Boro STP, NPDES Permit No. PA0038814, Outfall 001

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Connoquenessing Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

Location	Stream Code*	RMI*	Elevation (ft)*	DA (mi^2)*	Slope (ft/ft)	PWS Withdrawal (MGD)	Apply Fish Criteria*
Point of Discharge	034025	4.96	800	827			Yes
End of Reach 1	034025	0.25	735	839		1	Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hardness	pH
Point of Discharge	4.96	0.1	66.04									100	7		
End of Reach 1	0.25	0.1	67									100	7		

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Analysis	
			Stream	Tributary						Hardness	pH	Hardness	pH	Hardness	pH
Point of Discharge	4.96														
End of Reach 1	0.25														

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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Ellport Boro STP, NPDES Permit No. PA0038814, Outfall 001

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☑ ***Hydrodynamics***

$Q_{7\text{-}10}$

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
4.96	66.04		66.04	1.114	0.003	1.088	138.387	127.149	0.446	0.646	437.31
0.25	67.00	1.547	65.453								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
4.96	289.40		289.40	1.114	0.003	2.073	138.387	66.747	1.013	0.284	170.669
0.25	293.075	1.547	291.53								

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.185 Analysis Hardness (mg/l): 100 Analysis pH: 7.01

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	

☑ ***CFC*** CCT (min): ####### PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	

☑ ***THH*** CCT (min): ####### THH PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A PWS PMF: 1

Model Results 3/28/2022 Page 5

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	30,576,133	WQC applied at RMI 0.25 with a design stream flow of 67 cfs
Chloride (PWS)	0	0		0	250,000	250,000	15,288,067	WQC applied at RMI 0.25 with a design stream flow of 67 cfs
Sulfate (PWS)	0	0		0	250,000	250,000	15,288,067	WQC applied at RMI 0.25 with a design stream flow of 67 cfs

☑ ***CRL*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	

☑ ***Recommended WQBELs & Monitoring Requirements***

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	30,576	mg/L	Discharge Conc ≤ 10% WQBEL
Chloride (PWS)	15,288	mg/L	Discharge Conc ≤ 10% WQBEL
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	15,288	mg/L	Discharge Conc ≤ 10% WQBEL

TRC_CALC (1)

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

66.04	= Q stream (cfs)	0.5	= CV Daily
0.72	= Q discharge (MGD)	0.5	= CV Hourly
30	= no. samples	0.185	= 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 = 3.518	1.3.2.iii	WLA cfc = 18.450
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 1.311	5.1d	LTA_cfc = 10.726

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)**

Ellport Borougnh STP
Ellport Borough, Lawrence County
NPDES# PA0038814

Date	pH min	pH max	10^ -pH min	10^ -pH max	Ave (10^pH min & pH max)	-Log (Ave pH)
Jul-19	6.90	7.20	1.26E-07	6.31E-08	9.45E-08	**7.0**
Aug-19	6.98	7.18	1.05E-07	6.61E-08	8.54E-08	**7.1**
Sep-19	6.98	7.23	1.05E-07	5.89E-08	8.18E-08	**7.1**
Jul-20	7.06	7.69	8.71E-08	2.04E-08	5.38E-08	**7.3**
Aug-20	6.97	7.64	1.07E-07	2.29E-08	6.5E-08	**7.2**
Sep-20	6.99	7.50	1.02E-07	3.16E-08	6.7E-08	**7.2**
Jul-21	7.04	7.38	9.12E-08	4.17E-08	6.64E-08	**7.2**
Aug-20	7.11	7.34	1.07E-07	2.29E-08	6.5E-08	**7.2**
Sep-20	7.15	7.43	1.02E-07	3.16E-08	6.7E-08	**7.2**
					Median:	**7.2**