pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0228915**
Facility Type	**Municipal**	APS ID	**1013760**
Major / Minor	**Minor**	Authorization ID	**1309574**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**ORD Sewer Authority**	Facility Name	**Osceola Mills Region WWTP**
Applicant Address	235 Skips Lane	Facility Address	235 Skips Lane
	Osceola Mills, PA 16666-1753		Osceola Mills, PA 16666-1753
Applicant Contact	Jeffrey Mann, Chairman	Facility Contact	Dennis Knepp, Chief Operator
Applicant Phone	(814) 339-6504	Facility Phone	(814) 339-6504
Client ID	240916	Site ID	654916
Ch 94 Load Status	Not Overloaded	Municipality	Decatur Township
Connection Status	No Limitations	County	Clearfield
Date Application Received	March 24, 2020	EPA Waived?	No
Date Application Accepted	April 6, 2020	If No, Reason	Significant CB Discharge
Purpose of Application	Renewal of a NPDES Permit		

Summary of Review

The subject facility is a municipal sewage treatment plant serving Osceola Borough, Decatur Township, and Rush Township in Clearfield 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		*Keith C. Allison* Keith C. Allison / Project Manager	August 24, 2020
X		*Nicholas W. Hartranft* Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	August 25, 2020

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.4
Latitude	40º 51' 16.81"	Longitude	-78º 15' 36.31"
Quad Name	Houtzdale, PA	Quad Code	1219
Wastewater Description:	Sewage Effluent		
Receiving Waters	Moshannon Creek (TSF)	Stream Code	25695
NHD Com ID	61832681	RMI	41.67
Drainage Area	70.8 mi^2	Yield (cfs/mi^2)	0.132
Q_{7-10} Flow (cfs)	9.36	Q_{7-10} Basis	Gage 01542000, Moshannon Ck @ Osceola Mills (1942-1993)
Elevation (ft)	1468	Slope (ft/ft)	0.00341
Watershed No.	8-D	Chapter 93 Class.	TSF
Existing Use	N/A	Existing Use Qualifier	N/A
Exceptions to Use	None	Exceptions to Criteria	None
Assessment Status	Impaired		
Cause(s) of Impairment	METALS		
Source(s) of Impairment	ACID MINE DRAINAGE		
TMDL Status	Final	Name	Moshannon Creek Watershed
Nearest Downstream Public Water Supply Intake	PA-American Water Company @ Milton, PA		
PWS Waters	West Branch Susquehanna River	Flow at Intake (cfs)	8,500,000
PWS RMI	10.8	Distance from Outfall (mi)	166

Changes Since Last Permit Issuance: The above stream and drainage characteristics were determined for the previous review in 2015 and remain adequate.

Other Comments:

The discharge is not expected to be a significant contributor to the impairment to Moshannon Creek. However, while it is not a specific discharger to have received a wasteload allocation in the TMDL it is recommended that monitoring be included in the NPDES permit for the metals typically associated with AMD – Aluminum, Iron, and Manganese. Annual monitoring for these three parameters will be included in the draft NPDES permit to provide data of actual contributions of these metals into the watershed from the discharge.

No downstream water supply is expected to be affected by this discharge with the limitations and monitoring proposed.

Treatment Facility Summary				
Treatment Facility Name: ORD Sewer Authority STP				
WQM Permit No.	**Issuance Date**			
1705407	12/5/05			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Sequencing Batch Reactor	Ultraviolet	0.4
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.4	800	Not Overloaded	Centrifugation	

Changes Since Last Permit Issuance: None

Other Comments: The treatment plant as approved by WQM Permit No. 1705407 consists of grinder, two sequencing batch reactors, ultraviolet light disinfection, sludge holding, and centrifuge. Chlorination and Dechlorination are kept as a backup.

Sludge/Biosolids Disposal

The facility's dewatered sludge is disposed by landfill. Per the application, approximately 28.67 dry tons of sludge were disposed in the past year.

Hauled in Waste

Per the application, the permittee has received no hauled-in wastes over the past three years and does not anticipate receiving any over the next permit term.

Compliance History

DMR Data for Outfall 001 (from July 1, 2019 to June 30, 2020)

Parameter	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20	DEC-19	NOV-19	OCT-19	SEP-19	AUG-19	JUL-19
Flow (MGD) Average Monthly	0.104	0.139	0.153	0.155	0.162	0.121	0.122	0.096	0.099	0.095	0.095	0.105
Flow (MGD) Daily Maximum	0.172	0.289	0.22	0.405	0.271	0.178	0.180	0.175	0.165	0.191	0.159	0.178
pH (S.U.) Minimum	6.4	6.4	6.4	6.2	6.3	6.5	6.5	6.8	6.7	6.5	6.5	6.6
pH (S.U.) Maximum	7.5	7.3	7.3	7.7	7.6	7.7	7.6	7.7	7.5	7.5	7.4	7.4
DO (mg/L) Minimum	4.6	1.9	2.4	2.8	4.0	5.1	4.0	4.1	4.3	4.1	4.05	4.7
TRC (mg/L) Average Monthly	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
TRC (mg/L) Instantaneous Maximum	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG	GG
CBOD5 (lbs/day) Average Monthly	3	2	3	2	< 3	2	3	1	2	2	2	2
CBOD5 (lbs/day) Weekly Average	3	2	4	2	5	2	4	2	3	2	2	2
CBOD5 (mg/L) Average Monthly	4	2	4	2	< 2	2	3	2	3	2	2	2
CBOD5 (mg/L) Weekly Average	4	2	7	2	3	2	4	2	3	2	2.4	2
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	248	260	220	250	303	270	277	251	244	391	222	248
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	316	328	335	297	391	293	379	290	277	791	267	357
BOD5 (mg/L) Raw Sewage Influent Average Monthly	288	237	153	194	219	231	222	303	278	468	224	234
TSS (lbs/day) Average Monthly	3	< 3	5	3	< 3	3	5	3	3	< 3	2	2
TSS (lbs/day) Raw Sewage Influent Average Monthly	229	316	233	252	279	297	293	284	249	287	300	262

TSS (lbs/day) Raw Sewage Influent Daily Maximum	286	514	332	289	343	362	475	427	300	402	503	399
TSS (lbs/day) Weekly Average	5	7	12	4	4	6	8	5	5	4	2	2
TSS (mg/L) Average Monthly	< 4	< 3	7	3	< 3	< 3	4	5	4	2	< 3	2
TSS (mg/L) Raw Sewage Influent Average Monthly	266	276	156	193	203	252	229	345	287	341	283	246
TSS (mg/L) Weekly Average	8	6	20	4	4	5	6	7	3	3	4	3
Fecal Coliform (CFU/100 ml) Geometric Mean	< 4	< 1	< 3	> 27	39	9	3	11	3	10	32	7
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	26.2	< 1	24.3	2419.8	187	23.3	12.0	51	15.8	24.3	165	24.8
UV Intensity (µw/cm²) Minimum	1100	1200	1300	1200	1200	1100	1600	1400	1700	2700	2700	2700
Nitrate-Nitrite (mg/L) Average Monthly	2.93	2.93	2.59	1.1	1.23	1.76	0.87	0.55	0.78	2.4	3.78	3.45
Nitrate-Nitrite (lbs) Total Monthly	68	83	98	29	45	49	28	11	19	49	76	80
Total Nitrogen (mg/L) Average Monthly	6.01	5.52	5.31	8.73	8.79	4.59	2.69	2.58	4.45	4.96	6.33	5.35
Total Nitrogen (lbs) Effluent Net Total Monthly	139	161	198	230	280	127	< 84	52	122	100	130	125
Total Nitrogen (lbs) Total Monthly	1.9	161	198	230	280	127	< 84	52	122	100	130	125
Ammonia (mg/L) Average Monthly	0.85	0.73	0.68	5.31	6.08	0.81	0.45	0.33	2.19	0.24	0.18	0.15
Ammonia (lbs) Total Monthly	20	< 22	24	149	180	22	13	7	71	5	4	3
TKN (mg/L) Average Monthly	3.08	2.6	2.72	7.63	7.56	2.83	1.82	2.03	3.67	2.52	2.55	1.9
TKN (lbs) Total Monthly	71	78	100	201	235	79	56	41	104	51	53	45
Total Phosphorus (mg/L) Average Monthly	3.36	2.48	0.66	1.06	1.72	2.28	1.91	2	2.26	3.23	4.27	2.7

Total Phosphorus (lbs) Effluent Net Total Monthly	78	69	23	24	55	63	61	41	60	64	88	62
Total Phosphorus (lbs) Total Monthly	78	69	23	24	55	63	61	41	60	64	88	62

Compliance History, Cont'd	
Summary of Inspections	The facility has been inspected at least annually by the Department over the past term. The most recent full inspection of the facility on October 30, 2019 identified no violations at the time of inspection.
Other Comments:	A query in WMS found no open violations in eFACTS for ORD Sewer Authority.

Existing Effluent Limitations and Monitoring Requirements

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2)	Required
	Average Monthly	Weekly Average	Minimum	Average Monthly	Weekly Average	Instant. Maximum	Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	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	83	133 Wkly Avg	XXX	25	40	50	1/week	8-Hr Composite
BOD5 Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	100	150 Wkly Avg	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1,000	1/week	Grab
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	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

Existing Effluent Limitations and Monitoring Requirements – Chesapeake Bay Requirements								
Parameter	**Effluent Limitations**						**Monitoring Requirements**	
	Mass Units (lbs/day) (1)		**Concentrations (mg/L)**				**Minimum (2) Measurement Frequency**	**Required Sample Type**
	Monthly	**Annual**	**Monthly**	**Monthly Average**	**Maximum**	**Instant. Maximum**		
Ammonia---N	Report	Report	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Kjeldahl---N	Report	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Net Total Nitrogen	Report	9,748	XXX	XXX	XX	XXX	1/month	Calculation
Net Total Phosphorus	Report	1,218	XXX	XXX	XXX	XXX	1/month	Calculation

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.4
Latitude 40º 51' 17.80" **Longitude** -78º 15' 36.50"
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)
	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
Total Suspended Solids	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 already included in the existing permit.

Water Quality-Based Limitations

DO, CBOD5 and NH3-N

The Department uses the WQM7.0 model 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 for the previous review (see Attachment C) of the discharge to Moshannon Creek and showed that no limitations are necessary beyond the technology-based secondary treatment limits listed above. Due to occasional levels of DO below the typical assumed value of 3.0 mg/L as seen in the data on page 4 an effluent DO of 2.0 mg/L was used in the attached modeling run for verification of instream protection.

Total Residual Chlorine

Although the facility typically uses ultraviolet light disinfection, the permittee also keeps chlorine as a backup. Therefore, the existing permit contains TRC monitoring with the BAT limit of 0.5. The attached modeling shows that the existing limit is adequate to protect the receiving stream.

Water Quality Toxics Management

No additional "Reasonable Potential Analysis" was performed to determine additional toxic parameters as potential candidates for limitations or monitoring for the minor wastewater treatment plant discharge with no significant 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 in order to reduce the total nutrient load to the Bay and meet State of Maryland Water Quality Standards. As a 0.4 MGD facility, ORD Sewer Authority treatment facility is considered a Phase 3, Significant Chesapeake Bay discharger. Nutrient cap loadings have previously been established for this facility consistent with the Phase III Watershed Implementation Plan.

The discharge's cap loadings as well as the actual Total Nitrogen and Total Phosphorus loadings for the past two cycle years are listed in the table below.

Nutrient	Total Nitrogen	Total Phosphorus
Nutrient Cap Loads for PA0114821	9,748	1,218
10/1/18 – 9/30/19 Total Loadings	<2,205	825
10/1/17 – 9/30/18 Total Loadings	2,752	976

Moshannon Creek TMDL

As mentioned above, due to the impairment in Moshannon Creek the discharge will receive monitoring for Total Aluminum, Total Iron, and Total Manganese to determine actual loading from the discharge to the Moshannon Creek Watershed. Annual monitoring will be adequate.

Anti-Backsliding

No proposed limitations were made less stringent consistent with the anti-degradation requirements of the Clean Water Act and 40 CFR 122.44(I).

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	Metered
pH (S.U.)	XXX	XXX	6.0	XXX	9.0 Max	XXX	1/day	Grab
Dissolved Oxygen	XXX	XXX	Report	XXX	XXX	XXX	1/day	Grab
Total Residual Chlorine (TRC)	XXX	XXX	XXX	0.5	XXX	1.6	1/day	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	83	133	XXX	25	40	50	1/week	8-Hr Composite
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Total Suspended Solids	100	150	XXX	30	45	60	1/week	8-Hr Composite
Total Suspended Solids Raw Sewage Influent	Report	Report Daily Max	XXX	Report	XXX	XXX	1/week	8-Hr Composite
Fecal Coliform (CFU/100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	1/week	Grab
Fecal Coliform (CFU/100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	1/week	Grab
Ultraviolet light intensity ($\mu w/cm^2$)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Metered
Ammonia-Nitrogen	XXX	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Aluminum	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Iron	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite
Total Manganese	XXX	Report Daily Max	XXX	XXX	Report Daily Max	XXX	1/year	8-Hr Composite

Compliance Sampling Location: Outfall 001

Other Comments: The above limitations and monitoring are unchanged from the existing permit except for the addition of annual Aluminum, Iron, and Manganese monitoring as mentioned above.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, to comply with Pennsylvania's Chesapeake Bay Tributary Strategy.

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
	Monthly	Annual	Monthly	Monthly Average	Maximum	Instant. Maximum		
Ammonia--N	Report	Report	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Kjeldahl--N	Report	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Nitrate-Nitrite as N	Report	XXX	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Total Nitrogen	Report	Report	XXX	Report	XXX	XXX	1/month	Calculation
Total Phosphorus	Report	Report	XXX	Report	XXX	XXX	2/week	8-Hr Composite
Net Total Nitrogen	XXX	9748	XXX	XXX	XXX	XXX	1/year	Calculation
Net Total Phosphorus	XXX	1218	XXX	XXX	XXX	XXX	1/year	Calculation

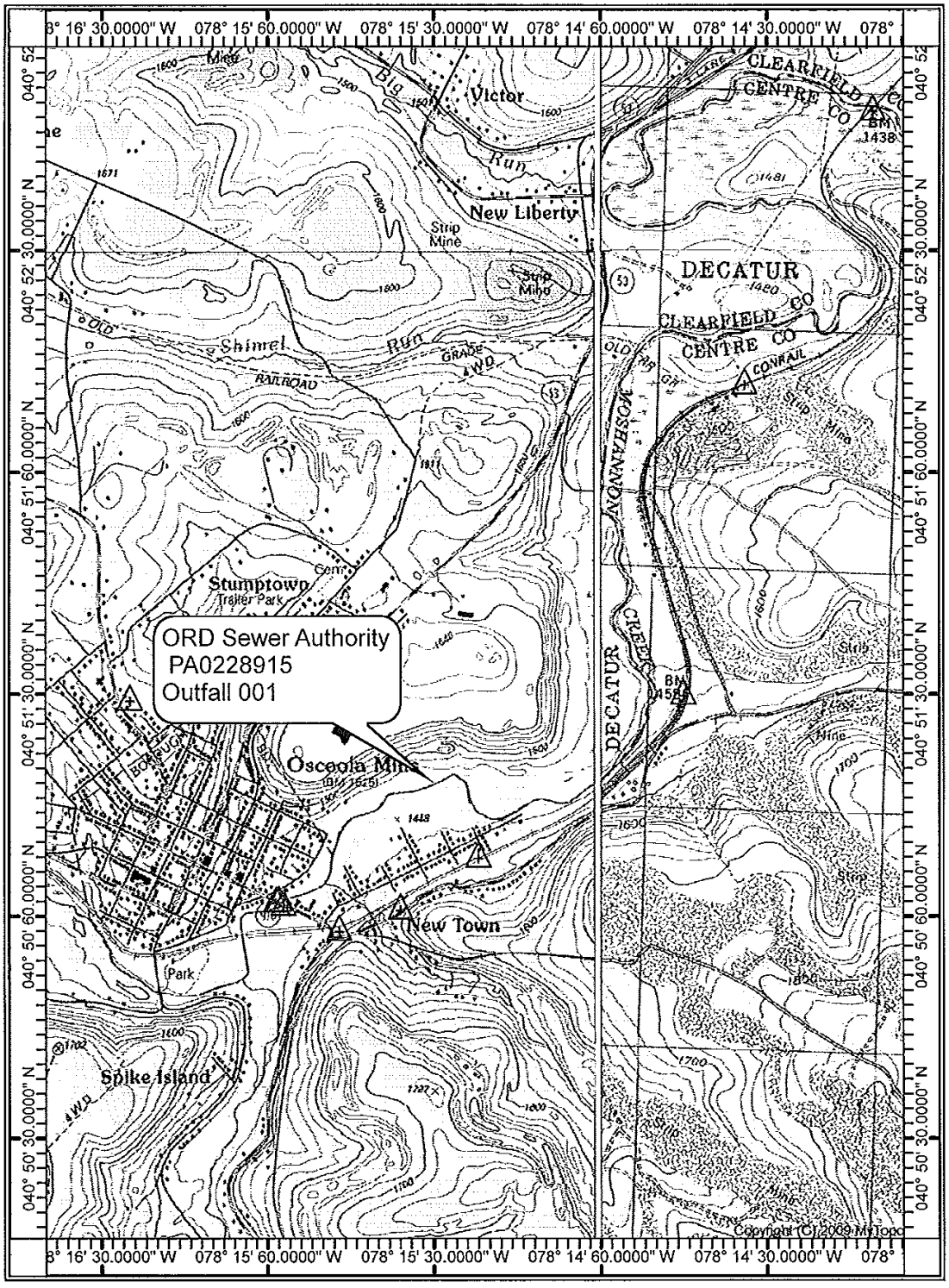
Compliance Sampling Location: Outfall 001

These requirements are unchanged from the existing permit except for the removal of monthly net Total Nitrogen and net Total Phosphorus consistent with current Chesapeake Bay monitoring requirements and the Phase III WIP.

Tools and References Used to Develop Permit	
☒	WQM for Windows Model (see Attachment **B**)
☐	PENTOXSD for Windows Model (see Attachment)
☒	TRC Model Spreadsheet (see Attachment **C**)
☐	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: Establishing Effluent Limitations for Individual Sewage Permits, rev. 8/23/13
☐	Other:

Attachments:

A. Discharge Location Map
B. WQM7.0 Model
C. TRC Model


ORD Sewer Authority
PA0228915
Outfall 001
Victor
New Liberty
Strip Mine
DECATUR
CLEARFIELD CO
CENTRE CO
Shimel Run
RAILROAD
Stumptown
Trailer Park
Osceola Mills
New Town
Spike Island
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DECATUR CREEK
Park
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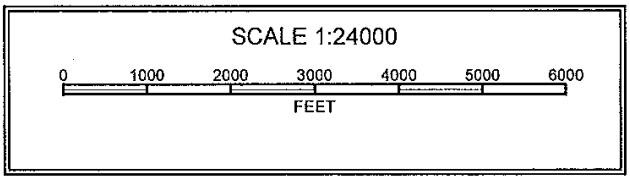
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Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
08D	25695	MOSHANNON CREEK	**41.670**	1468.00	70.80	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	0.132	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
ORD Sewer Auth	PA0228915	0.4000	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	2.00	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
08D	25695	MOSHANNON CREEK	**40.670**	1450.00	73.00	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	0.132	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 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☑
WLA Method	EMPR	Use Inputted W/D Ratio	☐
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	☐
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	☑
D.O. Saturation	90.00%	Use Balanced Technology	☑
D.O. Goal	6		

WQM 7.0 Hydrodynamic Outputs

SWP Basin	Stream Code	Stream Name
08D	25695	MOSHANNON 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												
41.670	9.35	0.00	9.35	.6188	0.00341	.752	45.84	60.91	0.29	0.212	20.31	7.00
Q1-10 Flow												
41.670	5.98	0.00	5.98	.6188	0.00341	NA	NA	NA	0.23	0.266	20.47	7.00
Q30-10 Flow												
41.670	12.71	0.00	12.71	.6188	0.00341	NA	NA	NA	0.34	0.180	20.23	7.00

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
08D	25695	MOSHANNON CREEK

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
41.670	0.400	20.311	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
45.837	0.752	60.914	0.289
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
3.43	0.620	1.55	0.717
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
7.855	9.427	Tsivoglou	6
Reach Travel Time (days)			
0.212			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.021	3.38	1.53	7.92
0.042	3.34	1.51	7.98
0.063	3.29	1.48	8.03
0.085	3.25	1.46	8.07
0.106	3.21	1.44	8.11
0.127	3.17	1.42	8.14
0.148	3.12	1.40	8.17
0.169	3.08	1.38	8.20
0.190	3.04	1.35	8.20
0.212	3.00	1.33	8.20

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
08D	25695	MOSHANNON 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
41.670	ORD Sewer Auth	9.35	50	9.35	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
41.670	ORD Sewer Auth	1.89	25	1.89	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)		
41.67	ORD Sewer Auth	25	25	25	25	2	2	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
08D	25695	MOSHANNON 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)
41.670	ORD Sewer Auth	PA0228915	0.400	CBOD5	25		
				NH3-N	25	50	
				Dissolved Oxygen			2

TRC EVALUATION						
Client			Date			
9.36	**= Q stream (cfs)**		**0.5**	**= CV Daily**		
0.4	**= Q discharge (MGD)**		**0.5**	**= CV Hourly**		
30	**= no. samples**		**0.972**	**= 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)**		
	= % Factor of Safety (FOS)		**0**	**=Decay Coefficient (K)**		
Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	**1.3.2.iii**	WLA afc =	4.709	**1.3.2.iii**	WLA cfc =	4.715
PENTOXSD TRG	**5.1a**	LTAMULT afc =	0.373	**5.1c**	LTAMULT cfc =	0.581
PENTOXSD TRG	**5.1b**	LTA_afc=	1.755	**5.1d**	LTA_cfc =	2.741
		WQBEL_afc=	**2.160**		WQBEL_cfc=	3.374
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)**