

Application Type Renewal  
Facility Type Municipal  
Major / Minor Minor

**NPDES PERMIT FACT SHEET  
INDIVIDUAL SEWAGE**

Application No. PA0090018  
APS ID 771229  
Authorization ID 1378976

**Applicant and Facility Information**

Applicant Name	<u>North Strabane Township Municipal Authority</u>	Facility Name	<u>Willolake STP</u>
Applicant Address	<u>1828b Route 519 S Canonsburg, PA 15317</u>	Facility Address	<u>Brookfield Court Canonsburg, PA 15317</u>
Applicant Contact	<u>Mark Wolinsky</u>	Facility Contact	<u>Mark Wolinsky</u>
Applicant Phone	<u>(724) 745-7220</u>	Facility Phone	<u>(724) 745-7220</u>
Client ID	<u>39433</u>	Site ID	<u>643</u>
Ch 94 Load Status	<u>Existing Organic Overload</u>	Municipality	<u>North Strabane Township</u>
Connection Status	<u>Dept. Imposed Connection Prohibitions</u>	County	<u>Washington</u>
Date Application Received	<u>December 13, 2021</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>December 27, 2021</u>	If No, Reason	<u></u>
Purpose of Application	<u>NPDES permit renewal.</u>		

**Summary of Review**

The Pa Department of Environmental Protection (PADEP/Department) received an NPDES permit renewal application from Herbert, Rowland & Grubic, Inc on behalf of North Strabane Township Municipal Authority (permittee) on December 13, 2021 for permittee's Willolake STP (facility). This is a minor sewage facility with design flow of 0.14 MGD. The treated effluent is discharged through Outfall 001 into an UNT to Chartiers Creek in state watershed 20-F. The existing permit will expire on June 30, 2022. The terms and conditions are automatically extended since the renewal application was received at least 180 days prior to expiration date. Renewal NPDES permit applications under Clean Water program are not covered by PADEP's PDG per 021-2100-001.


This fact sheet is developed in accordance with 40 CFR §124.56.

Changes in this renewal: Quarterly E. Coli monitoring added.

Sludge use and disposal description and location(s): Digested sludge is hauled off to Clairton Sewage Treatment Plant.

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
√		Reza H. Chowdhury, E.I.T. / Project Manager 	December 27, 2021
X		<b>Pravin Patel</b> Pravin C. Patel, P.E. / Environmental Engineer Manager	01/24/2022

Discharge, Receiving Waters and Water Supply Information			
Outfall No.	001	Design Flow (MGD)	0.14
Latitude	40° 13' 22"	Longitude	80° 11' 51"
Quad Name	Washington East	Quad Code	1704
Wastewater Description: Sewage Effluent			
Receiving Waters	Unnamed Tributary of Chartiers Creek (WWF)	Stream Code	37079
NHD Com ID	99694104	RMI	0.56
Drainage Area	0.46 mi <sup>2</sup>	Yield (cfs/mi <sup>2</sup> )	0.007
Q <sub>7-10</sub> Flow (cfs)	0.00317	Q <sub>7-10</sub> Basis	USGS StreamStats
Elevation (ft)	1063.04	Slope (ft/ft)	
Watershed No.	20-F	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Impaired		
Cause(s) of Impairment	SILTATION, TURBIDITY		
Source(s) of Impairment	HABITAT MODIFICATION - OTHER THAN HYDROMODIFICATION, HABITAT MODIFICATION - OTHER THAN HYDROMODIFICATION		
TMDL Status	Final, Final	Name	Chartiers Creek, Chartiers Creek Watershed
Background/Ambient Data		Data Source	
pH (SU)	7.0		Default per 391-2000-013
Temperature (°C)	25		Default per 391-2000-007 for WWF
Hardness (mg/L)	100		Default
Other:			
Nearest Downstream Public Water Supply Intake		West View Water Authority in Neville TWP, Allegheny CNTY	
PWS Waters	Ohio River	Flow at Intake (cfs)	
PWS RMI	35.26	Distance from Outfall (mi)	38.88

Changes Since Last Permit Issuance: None

Other Comments:

**Streamflow:**

There is no nearby WQN Station or Streamgage from the discharge point. Therefore, USGS's web based watershed delineation tool StreamStats (accessible at <https://streamstats.usgs.gov/ss/>, accessed on January 13, 2022) was utilized to determine the drainage area and low flow statistics of the receiving stream at discharge point. The StreamStats delineation report shows a drainage area at the Outfall 001 to be 0.46 mi<sup>2</sup>, Q<sub>7-10</sub> of 0.00317 cfs, and Q<sub>30-10</sub> of 0.00719 cfs.

Q<sub>7-10</sub> runoff rate (low flow yield): 0.00317 cfs/0.46 mi<sup>2</sup> or 0.007 cfs/mi<sup>2</sup>  
 Q<sub>30-10</sub>:Q<sub>7-10</sub>: 0.00719/0.00317 or 2.27  
 Default Q<sub>1-10</sub>:Q<sub>7-10</sub> of 0.64 will be used for modeling, if needed.

**PWS Intake:**

The nearby downstream PWS intake is W. View Water Authority in Neville Township, Allegheny County, which is approximately 38.88 miles downstream of discharge point. Due to the distance, dilution of Ohio River, and effluent limitations, it is expected that the discharge will not adversely impact the PWS intake.

**Wastewater Characteristics:**

A pH of 7.0 (median July- September 2021), default temperature of 20°C (Default per 391-2000-007), and default Hardness value of 100 mg/l will be used for modeling, if needed.

**Background data:**

There is no nearby WQN station from the discharge point. In absence of site-specific data, a default pH of 7.0 S.U., default stream temperature of 25°C, and default hardness of 100 mg/l will be used, as appropriate.

**Chartiers Creek Watershed TMDL:**

Chartiers Creek Watershed is impaired for metals from AMDs. No WLA is allocated for this facility.

Treatment Facility Summary				
<b>Treatment Facility Name:</b> Willolake STP				
<b>WQM Permit No.</b>		<b>Issuance Date</b>		
6378416		09/28/1978		
<b>Waste Type</b>	<b>Degree of Treatment</b>	<b>Process Type</b>	<b>Disinfection</b>	<b>Avg Annual Flow (MGD)</b>
Sewage	Tertiary	Activated Sludge With Solids Removal	Ultraviolet	0.099
<b>Hydraulic Capacity (MGD)</b>	<b>Organic Capacity (lbs/day)</b>	<b>Load Status</b>	<b>Biosolids Treatment</b>	<b>Biosolids Use/Disposal</b>
0.14	310	Existing Organic Overload		

Changes Since Last Permit Issuance: None

Treatment Plant Description
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Willolake STP is a minor sewage treatment plant with design flow of 0.099 MGD, hydraulic design capacity of 0.14 MGD, and organic loading capacity of 310 lbs./day. The Department agreed through a letter on January 4, 2017 that the NPDES effluent limitations will be based on a flow rate of 0.14 MGD, sampling frequency of 2/month for conventional pollutants, grab sampling for influent and effluent analysis, and influent sampling be collected from influent manhole. The fact sheet accompanying the 2017 permit stated that if the plant receives or will receive within the next 5 years monthly average flows exceeding 0.1 MGD, they must provide composite sampling equipment and sampling frequency will be changed to 1/week. A review of past 12 months flow data indicated that the average monthly flow stayed below 0.1 MGD.

Flow travels from a manhole outside the plant to one flow EQ tank and split between two aeration tanks. After aeration, wastewater flows to two clarifiers. After clarification, flows then chlorinated in two chlorine contact tanks, flows through a flow meter and is discharged. Sludge from the clarifiers travels to and is stored in four sludge holding/digestion tanks. The permittee is planning for instrumentation and miscellaneous upgrades by 2024-2025. Digested sludge is hauled off to Clairton Sewage Treatment Plant.

The facility receives non-categorical non-significant industrial wastewater from below commercial contributors:

Commercial Entity	Business Type	Sewage Flows (GPD)
Frankie I's Bar & Grill	Resturant	1,200
Greenbriar Treatment Center	Addiction Treatment Center	1,000
Greenbriar Lighthouse for Men	Addiction Rehabilitation Center	1,000
Meadows Barns	Horses	1,700
Investment Timing	Office	200
Paul Hernberger Insurance	Office	175

Compliance History

DMR Data for Outfall 001 (from November 1, 2020 to October 31, 2021)

Parameter	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21	DEC-20	NOV-20
Flow (MGD) Average Monthly	0.068	0.066	0.056	0.061	0.072	0.070	0.062	0.077	0.084	0.070	0.082	0.059
Flow (MGD) Daily Maximum	0.123	0.182	0.120	0.081	0.172	0.090	0.071	0.104	0.150	0.119	0.125	0.096
pH (S.U.) Minimum	6.5	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.9	6.9	7.0	6.9
pH (S.U.) Maximum	7.1	7.1	7.1	7.1	7.1	7.0	7.0	7.1	7.1	7.1	7.1	7.1
DO (mg/L) Minimum	6.8	6.8	7.0	6.8	6.8	6.7	7.1	7.1	7.1	7.9	8.1	6.6
CBOD5 (lbs/day) Average Monthly	1.13	1.7	0.93	1.0	1.59	2.8	1.08	1.28	1.47	1.34	1.7	0.98
CBOD5 (mg/L) Average Monthly	< 2.0	3.0	< 2.0	< 2.0	2.65	4.8	2.1	< 2.0	2.05	2.3	2.5	< 2.0
CBOD5 (mg/L) IMAX	< 2.0	3.7	< 2.0	< 2.0	3.3	7.6	2.2	< 2.0	2.1	2.6	3.1	< 2.0
BOD5 (lbs/day) Raw Sewage Influent Average Monthly	107	103	111	107.9	115.8	106	109	87.6	174	124.3	111.8	90.4
BOD5 (lbs/day) Raw Sewage Influent Daily Maximum	128	110	112	105.6	164	137	118	129.9	255	147	127.9	171
BOD5 (mg/L) Raw Sewage Influent Average Monthly	188.75	187	238.2	227	192.9	183	211	136.5	248.6	213	163.6	183.9
TSS (lbs/day) Average Monthly	6.8	2.8	2.57	2.5	3.3	< 2.9	< 2.5	3.2	4.2	3.8	3.8	2.46
TSS (lbs/day) Raw Sewage Influent Average Monthly	137	85.8	74	66	123.7	64	61	88.6	107	136	113.5	69.9
TSS (lbs/day) Raw Sewage Influent Daily Maximum	197	88	87	78	155.5	79	62	90.7	112	170	142.2	150
TSS (mg/L) Raw Sewage Influent Average Monthly	242	156	158	130	206	110	118	138	153	234	166	142
TSS (mg/L) Average Monthly	12.0	< 5.0	5.5	< 5.0	5.5	< 5.0	< 5.0	< 5.0	6.0	6.5	5.5	< 5.0
TSS (mg/L) IMAX	14.0	< 5.0	6.0	< 5.0	6.0	< 5.0	< 5.0	< 5.0	7.0	8.0	6.0	< 5.0

**NPDES Permit Fact Sheet  
Willolake STP**

**NPDES Permit No. PA0090018**

Fecal Coliform (No./100 ml) Geometric Mean	56	46	55	5	3	82	6	2	70	70	2	2
Fecal Coliform (No./100 ml) IMAX	79	83	126	28	9	168	16	4	92	104	4	2
UV Transmittance (%) Minimum	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.6	6.7	6.7	6.7
Total Nitrogen (mg/L) Daily Maximum											5.72	
Ammonia (lbs/day) Average Monthly	0.31	0.33	0.16	0.2	0.27	1.47	0.38	0.13	0.1	0.32	0.4	0.29
Ammonia (mg/L) Average Monthly	0.55	0.6	0.35	0.4	0.45	2.5	0.75	0.25	0.15	0.55	0.6	0.6
Ammonia (mg/L) IMAX	0.6	0.7	0.4	0.4	0.5	3.4	0.9	0.3	0.2	0.6	0.7	0.7
Total Phosphorus (mg/L) Daily Maximum											3.9	

**Compliance History**

**Effluent Violations for Outfall 001, from: December 1, 2020 To: October 31, 2021**

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	05/31/21	Avg Mo	2.5	mg/L	2.0	mg/L

**Summary of Inspections:**

7/22/2021: CEI conducted. No violations identified during the inspection. All treatment units appeared to be in good working condition.

Other Comments: The non-compliance report form was submitted for May 2021 effluent violations. The form, however, didn't identify the cause of non-compliance or corrective action taken.

Existing Limits

Outfall 001:

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) <sup>(1)</sup>		Concentrations (mg/L)			Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Maximum			Instant. Maximum
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Min	XXX	9.0	XXX	1/weekday	Grab
Dissolved Oxygen	XXX	XXX	5.0 Min	XXX	XXX	XXX	1/weekday	Grab
Carbonaceous Biochemical Oxygen Demand (CBOD5)	11.7	XXX	XXX	10.0	XXX	20.0	2/month	Grab
Biochemical Oxygen Demand (BOD5) Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
Total Suspended Solids	29.2	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Total Suspended Solids Raw Sewage Influent	Report	Report	XXX	Report	XXX	XXX	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
Ultraviolet light transmittance (%)	XXX	XXX	Report Min	XXX	XXX	XXX	1/weekday	Measured
Total Nitrogen	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab
Ammonia-Nitrogen Nov 1 - Apr 30	4.1	XXX	XXX	3.5	XXX	7.0	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	2.3	XXX	XXX	2.0	XXX	4.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	XXX	Report Daily Max	XXX	1/year	Grab

**Development of Effluent Limitations**

<b>Outfall No.</b> <u>001</u>	<b>Design Flow (MGD)</b> <u>0.14</u>
<b>Latitude</b> <u>40° 13' 22.00"</u>	<b>Longitude</b> <u>-80° 11' 51.00"</u>
<b>Wastewater Description:</b> <u>Sewage Effluent</u>	

**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 <sub>5</sub>	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:

**Water Quality-Based Limitations**

The WQM 7.0 model was utilized properly during the last permit term. DEP's SOP doesn't require model run in every renewal for minor sewage facilities unless there were significant changes. Since there are no significant changes during the permit cycle in terms of stream condition, stream designation, discharge quality, discharge quantity, and operations practices, the model result is still valid. The existing model derived results for CBOD<sub>5</sub>, DO, and NH<sub>3</sub>-N will be carried over in this renewal. The printout from last model run is attached in this fact sheet.

**Additional Considerations**

Fecal Coliform:

The recent coliform guidance in 25 Pa. code § 92a.47.(a)(4) requires a summer technology limit of 200/100 ml as a geometric mean and an instantaneous maximum not greater than 1,000/100ml and § 92a.47.(a)(5) requires a winter limit of 2,000/100ml as a geometric mean and an instantaneous maximum not greater than 10,000/100ml. These are the existing limits that will be carried over.

E. Coli:

DEP's SOP titled "Establishing Effluent Limitations for Individual Sewage Permits (BCW-PMT-033, revised March 24, 2021) recommends quarterly E. Coli monitoring for all dischargers with flow between ≥0.05 MGD to <1.0 MGD. This requirement will be applied from this permit term.

pH:

The TBEL for pH is above 6.0 and below 9.0 S.U. (40 CFR §133.102(c) and Pa Code 25 § 95.2(1)) which are existing limits and will be carried over.

Total Suspended Solids (TSS):

There is no water quality criterion for TSS. The existing limits of 25 mg/L average monthly and 50 mg/L instantaneous maximum will remain in the permit based on the minimum level of effluent quality attainable by secondary treatment, 25 Pa. Code § 92a.47 and 40CFR 133.102(b). The mass based average monthly load is calculated to be 29.5 lbs./day based on a flow of 0.14 MGD. Existing limits will be carried over.

UV Disinfection:

PADEP's SOP BCW-PMT-033 recommends UV parameter monitoring where UV is used as a method of disinfection, with the same frequency as would be if Chlorine is used for disinfection. The current permit has UV Transmittance monitoring in %, which will be carried over in this renewal.

Flow and Influent BOD<sub>5</sub>, CBOD<sub>5</sub>, and TSS Monitoring Requirement:

The requirement to monitor the volume of effluent will remain in the draft permit per 40 CFR § 122.44(i)(1)(ii). Influent BOD<sub>5</sub> and TSS monitoring requirements are established in the permit per the requirements set in Pa Code 25 Chapter 94. To show compliance with percentage removal efficiency of CBOD<sub>5</sub>, reporting for influent CBOD<sub>5</sub> will remain in the permit. Monitoring frequency was negotiated between the Department and the permittee in the past.

**Best Professional Judgement (BPJ):**

Total Phosphorus:

Existing monthly monitoring requirement will be carried over in this renewal.

Monitoring Frequency and Sample Types:

Otherwise specified above, the monitoring frequency and sample type of compliance monitoring for existing parameters are recommended by DEP's SOP and Permit Writers Manual and/or on a case-by-case basis using best professional judgment (BPJ).

Total Nitrogen:

PADEP's SOP BCW-PMT-033 suggests monitoring requirement, at a minimum, for facilities with design flow greater than 2,000 GPD. This requirement is applied for all facilities meeting the flow criteria.

**Anti-Backsliding**

The proposed limits are at least as stringent as are in existing permit, unless otherwise stated; therefore, anti-backsliding is not applicable.



**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) <sup>(1)</sup>		Concentrations (mg/L)				Minimum <sup>(2)</sup> Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Average Monthly	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Recorded
pH (S.U.)	XXX	XXX	6.0 Daily Min	XXX	XXX	9.0	1/weekday	Grab
DO	XXX	XXX	5.0 Daily Min	XXX	XXX	XXX	1/weekday	Grab
CBOD5	11.7	XXX	XXX	10.0	XXX	20.0	2/month	Grab
BOD5 Raw Sewage Influent	Report	Report	Report	XXX	XXX	XXX	2/month	Grab
TSS Raw Sewage Influent	Report	Report	Report	XXX	XXX	XXX	2/month	Grab
TSS	29.2	XXX	XXX	25.0	XXX	50.0	2/month	Grab
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
UV Transmittance (%)	XXX	XXX	Report Daily Min	XXX	XXX	XXX	1/weekday	Measured
Total Nitrogen	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab
Ammonia Nov 1 - Apr 30	4.1	XXX	XXX	3.5	XXX	7.0	2/month	Grab
Ammonia May 1 - Oct 31	2.3	XXX	XXX	2.0	XXX	4.0	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	Report Daily Max	XXX	XXX	1/year	Grab

Compliance Sampling Location: At Outfall 001. Influent sampling at influent manhole.

Tools and References Used to Develop Permit	
<input type="checkbox"/>	WQM for Windows Model (see Attachment [redacted])
<input type="checkbox"/>	Toxics Management Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	TRC Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Temperature Model Spreadsheet (see Attachment [redacted])
<input type="checkbox"/>	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
<input type="checkbox"/>	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
<input type="checkbox"/>	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
<input type="checkbox"/>	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
<input type="checkbox"/>	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
<input type="checkbox"/>	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
<input type="checkbox"/>	Pennsylvania CSO Policy, 385-2000-011, 9/08.
<input type="checkbox"/>	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
<input type="checkbox"/>	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
<input type="checkbox"/>	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
<input type="checkbox"/>	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
<input type="checkbox"/>	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
<input type="checkbox"/>	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
<input type="checkbox"/>	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
<input type="checkbox"/>	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
<input type="checkbox"/>	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
<input type="checkbox"/>	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
<input type="checkbox"/>	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Design Stream Flows, 391-2000-023, 9/98.
<input type="checkbox"/>	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.
<input type="checkbox"/>	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
<input type="checkbox"/>	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
<input type="checkbox"/>	SOP: [redacted]
<input type="checkbox"/>	Other: [redacted]

Permit No. PA0090018

WARM PERIOD

**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
20F	37079	Trib 37079 of Chartiers Creek	0.580	1038.00	0.49	0.00000	0.00	<input checked="" type="checkbox"/>

**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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.034	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
Milllake STP	PA0090018	0.0000	0.1400	0.1400	0.000	20.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	10.00	2.00	0.00	0.60
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.00	0.00	0.00	0.70

Permit No. PA0090018

**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
20F	37079	Trib 37079 of Chartiers Creek	0.000	998.00	2.51	0.00000	0.00	<input checked="" type="checkbox"/>

**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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.034	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

**Discharge Data**

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

Permit No. PA0090018

**WQM 7.0 Hydrodynamic Outputs**

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
20F		37079				Trib 37079 of Chartiers 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
<b>Q7-10 Flow</b>												
0.580	0.02	0.00	0.02	.2166	0.01306	.408	4.86	11.91	0.12	0.301	20.36	7.00
<b>Q1-10 Flow</b>												
0.580	0.01	0.00	0.01	.2166	0.01306	NA	NA	NA	0.12	0.305	20.23	7.00
<b>Q30-10 Flow</b>												
0.580	0.02	0.00	0.02	.2166	0.01306	NA	NA	NA	0.12	0.297	20.47	7.00

Permit No. PA0090018

### WQM 7.0 Modeling Specifications

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

Permit No. PA0090018

### WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
20F	37079	Trib 37079 of Chartiers 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
0.580	Willolake STP	9.51	4	9.51	4	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
0.580	Willolake STP	1.85	2	1.85	2	0	0

**Dissolved Oxygen Allocations**

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.58	Willolake STP	10	10	2	2	5	5	0	0

Permit No. PA0090018

### WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
20F	37079	Trib 37079 of Chartiers Creek		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
0.580	0.140	20.357	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
4.856	0.408	11.912	0.118	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
9.43	0.590	1.86	0.720	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
5.232	27.461	Owens	5	
<u>Reach Travel Time (days)</u>				
0.301				
	<u>Subreach Results</u>			
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.030	9.26	1.82	7.11
	0.060	9.09	1.78	7.94
	0.090	8.93	1.74	8.19
	0.120	8.77	1.70	8.19
	0.150	8.62	1.67	8.19
	0.180	8.46	1.63	8.19
	0.211	8.31	1.60	8.19
	0.241	8.16	1.56	8.19
	0.271	8.02	1.53	8.19
	0.301	7.87	1.50	8.19



Permit No. PA0090018

**WQM 7.0 Effluent Limits**

<u>SWP Basin</u>		<u>Stream Code</u>		<u>Stream Name</u>			
20F		37079		Trib 37079 of Chartiers 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)
0.580	Willolake STP	PA0090018	0.000	CBOD5	10		
				NH3-N	2	4	
				Dissolved Oxygen			5

Permit No. PA0090018

**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
20F	37079	Trib 37079 of Chartiers Creek	0.580	1038.00	0.49	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.034	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
Willolake STP	PA0090018	0.0000	0.1400	0.1400	0.000	20.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	10.00	2.00	0.00	0.60
Dissolved Oxygen	5.00	8.24	0.00	0.00
NH3-N	2.00	0.00	0.00	0.70

Permit No. PA0090018

**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
20F	37078	Trib 37078 to Chartiers Creek	0.795	998.00	2.51	0.00000	0.00	<input checked="" type="checkbox"/>

**Stream Data**

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.034	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
End of WL Reach	NA	0.0000	0.1400	0.1400	0.000	20.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	7.87	0.00	0.00	0.47
Dissolved Oxygen	8.19	8.24	0.00	0.00
NH3-N	1.50	0.00	0.00	0.70

Permit No. PA0090018

COLD PERIOD

**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
20F	37079	Trib 37079 of Chartiers Creek	0.580	1038.00	0.49	0.00000	0.00	<input checked="" type="checkbox"/>

**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		Stream	
									Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.068	0.00	0.00	0.000	0.000	0.0	0.00	0.00	5.00	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
Willolake	PA0090018	0.0000	0.1400	0.1400	0.000	15.00	7.00

**Parameter Data**

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	10.00	2.00	0.00	0.60
Dissolved Oxygen	5.00	12.80	0.00	0.00
NH3-N	3.50	0.10	0.00	0.70

Permit No. PA0090018

**WQM 7.0 Hydrodynamic Outputs**

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
20F		37079				Trib 37079 of Chartiers 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
<b>Q7-10 Flow</b>												
0.580	0.03	0.00	0.03	.2166	0.01306	.413	4.95	11.99	0.12	0.289	13.67	7.00
<b>Q1-10 Flow</b>												
0.580	0.02	0.00	0.02	.2166	0.01306	NA	NA	NA	0.12	0.298	14.10	7.00
<b>Q30-10 Flow</b>												
0.580	0.05	0.00	0.05	.2166	0.01306	NA	NA	NA	0.13	0.282	13.27	7.00

Permit No. PA0090018

### WQM 7.0 Modeling Specifications

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

### WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>							
20F	37079	Trib 37079 of Chartiers Creek							
<b>NH3-N Acute Allocations</b>									
RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction		
0.580	Willolake	15	7	15	7	0	0		
<b>NH3-N Chronic Allocations</b>									
RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction		
0.580	Willolake	3.17	3.5	3.17	3.5	0	0		
<b>Dissolved Oxygen Allocations</b>									
RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
0.58	Willolake	10	10	3.5	3.5	5	5	0	0

Permit No. PA0090018

### WQM 7.0 D.O. Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
20F	37079	Trib 37079 of Chartiers Creek		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
0.560	0.140	13.667	7.000	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
4.947	0.413	11.993	0.122	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
8.93	0.581	3.05	0.430	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
6.040	23.527	Owens	5	
<u>Reach Travel Time (days)</u>				
0.289				
<b>Subreach Results</b>				
	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.029	8.82	3.01	7.94
	0.058	8.71	2.97	8.91
	0.087	8.60	2.94	9.35
	0.116	8.50	2.90	9.35
	0.145	8.39	2.86	9.35
	0.174	8.28	2.83	9.35
	0.203	8.18	2.79	9.35
	0.232	8.08	2.76	9.35
	0.260	7.98	2.72	9.35
	0.289	7.88	2.69	9.35



Permit No. PA0090018

**WQM 7.0 Effluent Limits**

<u>SWP Basin</u>		<u>Stream Code</u>	<u>Stream Name</u>				
20F		37079	Trib 37079 of Chartiers 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)
0.580	Willolake	PA0090018	0.000	CBOD5	10		
				NH3-N	3.5	7	
				Dissolved Oxygen			5