pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**New**	Application No.	**PA0285315**
Facility Type	**Non-Municipal**	APS ID	**1112355**
Major / Minor	**Minor**	Authorization ID	**1482014**

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Applicant and Facility Information

Applicant Name	**Meadow Crest Development**	Facility Name	**Meadow Crest STP**
Applicant Address	PO Box 449	Facility Address	326 Klein Road 392 Klein Road
	Mars, PA 16046-0449		Zelienople, PA 16063-3528
Applicant Contact	Brett Schultz	Facility Contact	Same as Applicant
Applicant Phone	(724) 625-7800	Facility Phone	Same as Applicant
Client ID	385438	Site ID	872144
Ch 94 Load Status	N/A (new facility)	Municipality	New Sewickley Township
Connection Status	N/A (new facility)	County	Beaver
Date Application Received	April 19, 2024	EPA Waived?	Yes
Date Application Accepted	April 24, 2024	If No, Reason	

Purpose of Application: Application for a new NPDES permit authorize a discharge of a treated Sewage.

Summary of Review

The applicant proposes to construct 53,600 GPD (134 EDUs) privately owned Sanitary Sewage Treatment Plant that will serve a proposed 133 dwellings resident lots community along with one existing home on Klein Rd in New Sewickley Township, Beaver County. This application was submitted to request authorization for discharge of the treated sewage effluent generated from Phase I of the residential development.

This NPDES permit is being issued to authorize the operation and discharge of treated sewage effluent from a new sanitary sewage treatment plant consisting of a comminutor, mechanical bypass bar screen, two flow equalization tanks, five aeration tanks, three clarifier/settlings tanks, one sludge holding tank, two fixed media filtration tanks, UV disinfection, and post aeration with flow meter (see Appendix A). The proposed treatment plant flow chart (see Appendix A) shows that the treatment plant will utilize an extended aeration process and will have a single point inlet from the residents community sewer conveyance system. The treated effluent will be piped to the discharge point as shown on the utility drawings (see Appendix A) for the sanitary line MH72-MH73 then to the end wall structure EW20. The distance that the piped effluent discharge will travel is about 100 ft from the post aeration tank to the outfall location with a slope of 0.2561 ft/ft. Based on the Point of First Use (Appendix C) and the outfall location submitted within the application, the Outfall 001 will directly discharge to UNT to Tributary 34834 to Brush Creek which is classified as Warm Water Fishery (WWF) located in State Watershed 20-C.

WQM Permit 0424401 for the construction of the proposed sewage treatment facilities is currently under technical review. The proposed treatment plant headworks and UV unit are designed to handle Phase I & II combined flow up to 100,000 gpd as the total design daily flow based on the maximum development of 250 EDUs. Based on applicant response to the part II permit WQM No. 424401 technical deficiency letter dated May 8, 2024, the plant will be constructed with 5 aeration tanks

Approve	Deny	Signatures	Date
X		Hazim Aldalli Hazim Aldalli / Environmental Engineering Specialist	August 9, 2024
X		Mahbuba Iasmin Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager	October 9, 2024

Summary of Review

however, the current plan is to operate only two aeration tanks (#1 and #2) for treating flows up to 21,440 gpd. As more houses are added and flow increases, each of the remaining three aeration tanks would be placed online for each 10,720 gpd flow increment.

The Phase I proposed sewer system will be entirely separated and will consist of gravity sewer collection system using 8-inch SDR-35 PVC pipes with 25 sanitary manholes.

No stormwater will be treated/bypassed within the proposed STP, as site plan shows separate stormwater collection system that drain into infiltration basins. The applicant submitted an approved standard E&S control plan per the application attached Site Plan drawings No. 6 & 7.

The provided FEMA maps show that the proposed new plant site, sedimentation basins, and the stormwater infiltration basins are located within Zone X (unshaded). There is no detailed FEMA floodplain identified for this stream. Therefore, the required set back is 50 feet from the top of the stream banks.

No industrial users will be served by this plant per application.

Part C 6 – Notification of Responsible Operator for new sewage facilities has been added to the Draft Permit.

Part C 7 – An Operation and maintenance Plan has been added to the Draft Permit.

An Act 537 Planning was approved for this project on January 10, 2024 for a treatment plant that includes the entire build out of the project, i.e., 248 proposed residential units, one existing home and a club house for a total of 250 EDUs.

A Public Notice indicating that the application was received, was published in the PA Bulletin on May 11, 2024.

The Act – 14 PL 834 Municipal Notifications were provided by the March 4, 2024 letters and no comments were received.

The applicant has no open or unresolved violations per Client ID Report on July 19, 2024 (see Appendix E).

Draft permit issuance is recommended.

Sludge use and disposal description and location(s): The estimated daily organic load is 89 lbs/days. The recycled activated sludge from the clarifiers is proposed to be pumped to the lead aeration tank and the waste activated sludge is proposed to be pumped to the sludge holding tank which will be thickened and stored. The stored sludge will be periodically collected by a private hauler to be disposed off at a permitted landfill.

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.

Following includes justification for the development of the Draft Permit effluent limitations and monitoring requirements.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	001	Design Flow (MGD)	0.0536
Latitude	40º 42' 39"	Longitude	-80º 9' 13"
Quad Name	Baden	Quad Code	40080F2
Wastewater Description:	Sewage Effluent		
Receiving Waters	UNT to Tributary 34834 to Brush Creek	Stream Code	UNT 34834
NHD Com ID	126215945	RMI	0.31
Drainage Area	0.0846	Yield (cfs/mi^2)	0.0045
Q_{7-10} Flow (cfs)	0.000378	Q_{7-10} Basis	USGS StreamStats (Appendix B)
Elevation (ft)	1132	Slope (ft/ft)	0.04
Watershed No.	20-C	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use	None.	Exceptions to Criteria	None.
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment			
Source(s) of Impairment			
TMDL Status		Name	

Background/Ambient Data		Data Source
pH (SU)		
Temperature (°F)		
Hardness (mg/L)		
Other:		

Nearest Downstream Public Water Supply Intake	BEAVER FALLS MUNI AUTH		
PWS Waters	Beaver River	Flow at Intake (cfs)	640
PWS RMI	5.50	Distance from Outfall (mi)	>20.0

Changes Since Last Permit Issuance: N/A, New facility

Other Comments: A point of first use survey (POFU) was conducted by Rick Spear, the Regional Biologist, on March 23, 2022. The Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek was confirmed to support aquatic life. (See Appendix C).

Treatment Facility Summary				
Treatment Facility Name: Meadow Crest STP				
WQM Permit No.	**Issuance Date**			
0424401	In Process			
Waste Type	**Degree of Treatment**	**Process Type**	**Disinfection**	**Avg Annual Flow (MGD)**
Sewage	Secondary	Extended Aeration	Ultra-Violet	0.0536
Hydraulic Capacity (MGD)	**Organic Capacity (lbs/day)**	**Load Status**	**Biosolids Treatment**	**Biosolids Use/Disposal**
0.0536	89.0	N/A	Activated Sludge	Off Site/ Permitted Landfill

Changes Since Last Permit Issuance: N/A, new facility.

Other Comments: None.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.0536
Latitude 40º 42' 39.00" **Longitude** -80º 9' 13.00"
Wastewater Description: Treated Sewage Effluent

Technology-Based Limitations (TBELs)

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

Pollutant	Limit (mg/l)	SBC	Federal Regulation	State Regulation
$CBOD_5$	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)

Comments: The bases for the proposed technology-based limitations are listed in the above table.

Stream flow (Q_{7-10}) to wastewater discharge ratio = 0.000378 cfs/0.08293 cfs= 0.0046. The stream flow (Q_{7-10}) to wastewater flow (design flow) ratio is less than 3:1. Therefore, PADEP's guidance will be considered to evaluate applicable effluent limitations and/or monitoring requirements. Per SOP- *Establishing Effluent Limitations for Individual Sewage Permits*, for new or expanding discharges, advanced treatment requirements will be applied as outlined in DEP's *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers* (391-2000-014). Accordingly, Part C 3 standard condition will be added to the permit (see Part C.I.G of the Draft Permit).

An instantaneous minimum of 6.0 mg/L for Dissolved Oxygen (D.O.) will be applied at Outfall 001 based on DEP's advanced treatment requirements stated previously.

For Total Suspended Solids, an average monthly of 10 mg/L and an Ins. Max of 20 mg/L with a twice per month sampling frequency requirement will be imposed at Outfall 001.

For the Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), the advanced treatment requirements apply. An Average Monthly Limit (AML) of 10 mg/L and an Ins. Max of 20 mg/L with a twice monthly sampling frequency will be imposed at Outfall 001.

Water Quality-Based Limitations

The following limitations were determined through water quality modeling (output files attached, see Appendix D):

Parameter	Limit (mg/l)	SBC	Model
$CBOD_5$ (May1-Oct 31)	25	Average Monthly	WQM7.0
$CBOD_5$ (Nov 1- Apr 30)	25	Average Monthly	WQM7.0
NH_3-N (May1-Oct 31)	1.9	Average Monthly	WQM7.0
NH_3-N (Nov 1- Apr 30)	2.8	Average Monthly	WQM7.0
Dissolved Oxygen	5.0	Minimum	WQM7.0

Comments: The proposed new discharge was evaluated using WQM 7.0 for $CBOD_5$, NH_3-N, and D.O. parameters. The pH, and Fecal Coliform parameters are not evaluated using WQM 7.0. The model generated WQBEL seasonal limits for Ammonia-Nitrogen (NH_3-N). These limits are AML of 2.8 mg/L for the cold period and AML of 1.9 mg/L for the warm period. Twice a month sampling frequency will be imposed.

Anti-Backsliding

This is a new permit. Therefore, anti-backsliding regulations do not apply.

Total Nitrogen (TN) and Total Phosphorus (TP)

Per SOP (No. BCW-PMT-033: Establishing Effluent Limitations for Individual Sewage Permits):

- Nutrient monitoring is required, at a minimum, to establish the nutrient load from the wastewater treatment facility and the impacts that load may have on the quality of the receiving stream(s). Sewage discharges with design flows > 2,000 gpd require monitoring, at a minimum, for Total Nitrogen and Total Phosphorus in new and reissued permits.
- Because the stream flow (Q_{7-10}) to wastewater flow (design flow) ratio is less than 3:1, per SOP- *Establishing Effluent Limitations for Individual Sewage Permits*, for new or expanding discharges, advanced treatment requirements will be applied as outlined in DEP's *Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers* (391-2000-014).

An AML of 5 mg/L for TN, and AML of 0.5 mg/L for TP will be imposed at Outfall 001 per the above-mentioned policy as outlined in Section V.C.2.F. Twice a month sampling will be required.

Disinfection

Per DEP SOP No. BCW-PMT-033 revised February 5, 2024, permittee can report (at a minimum) UV transmittance (%), UV dosage ($\mu Ws/cm^2$ or mWs/cm^2 or $mjoules/cm^2$) or UV intensity ($\mu W/cm^2$ or mW/cm^2). Per the WQM application Module 8, the required Ultraviolet Disinfection Light Transmittance will be measured in $mjoules/cm^2$.

E. Coli

Pursuant to 25 Pa. code § 92a.61(b) quarterly monitoring for *E. Coli* will be imposed at Outfall (001) to determine if *E. Coli* will be a pollutant of concern, which is consistent with DEP SOP No. BCW-PMT-033 revised February 5, 2024.

Monitoring Frequency Considerations

In general, less frequent monitoring may be established only when the permittee demonstrates that there will be no discharge on days where monitoring is not required. The permittee may remain in compliance with the permit by using a No Discharge Indicator (NODI) code on the "Daily Effluent Monitoring" supplemental form to identify the absence of a discharge on a particular day.

The daily monitoring frequencies and other frequencies justified above are consistent with current policy and Table 6-3 of DEP's Technical Guidance for the Development and Specification of Effluent Limitations.

Proposed Effluent Limitations and Monitoring Requirements

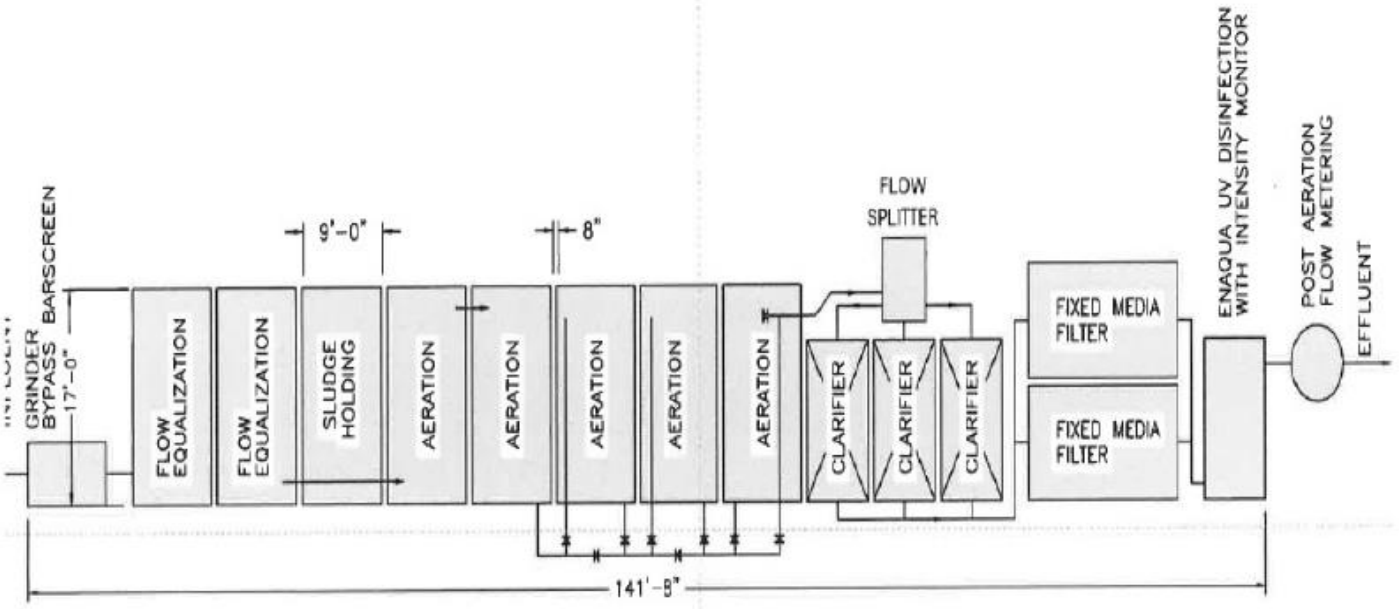
The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

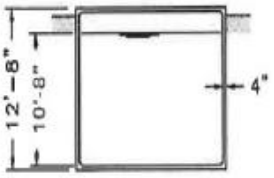
Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) (1)		Concentrations (mg/L)				Minimum (2) Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	2/month	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Inst Min	XXX	XXX	XXX	1/day	Grab
CBOD5	XXX	XXX	XXX	10.0	XXX	20.0	2/month	Grab
TSS	XXX	XXX	XXX	10.0	XXX	20.0	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
Ammonia-Nitrogen Nov 1 - Apr 30	XXX	XXX	XXX	2.8	XXX	5.6	2/month	Grab
Ammonia-Nitrogen May 1 - Oct 31	XXX	XXX	XXX	1.9	XXX	3.8	2/month	Grab
UV Transmittance (%)	XXX	XXX	Report	XXX	XXX	XXX	1/day	Measured
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/quarter	Grab
Total Nitrogen	XXX	XXX	XXX	5.0	XXX	XXX	2/month	Grab
Total Phosphorus	XXX	XXX	XXX	0.5	XXX	XXX	2/month	Grab

Compliance Sampling Location: Outfall 001.

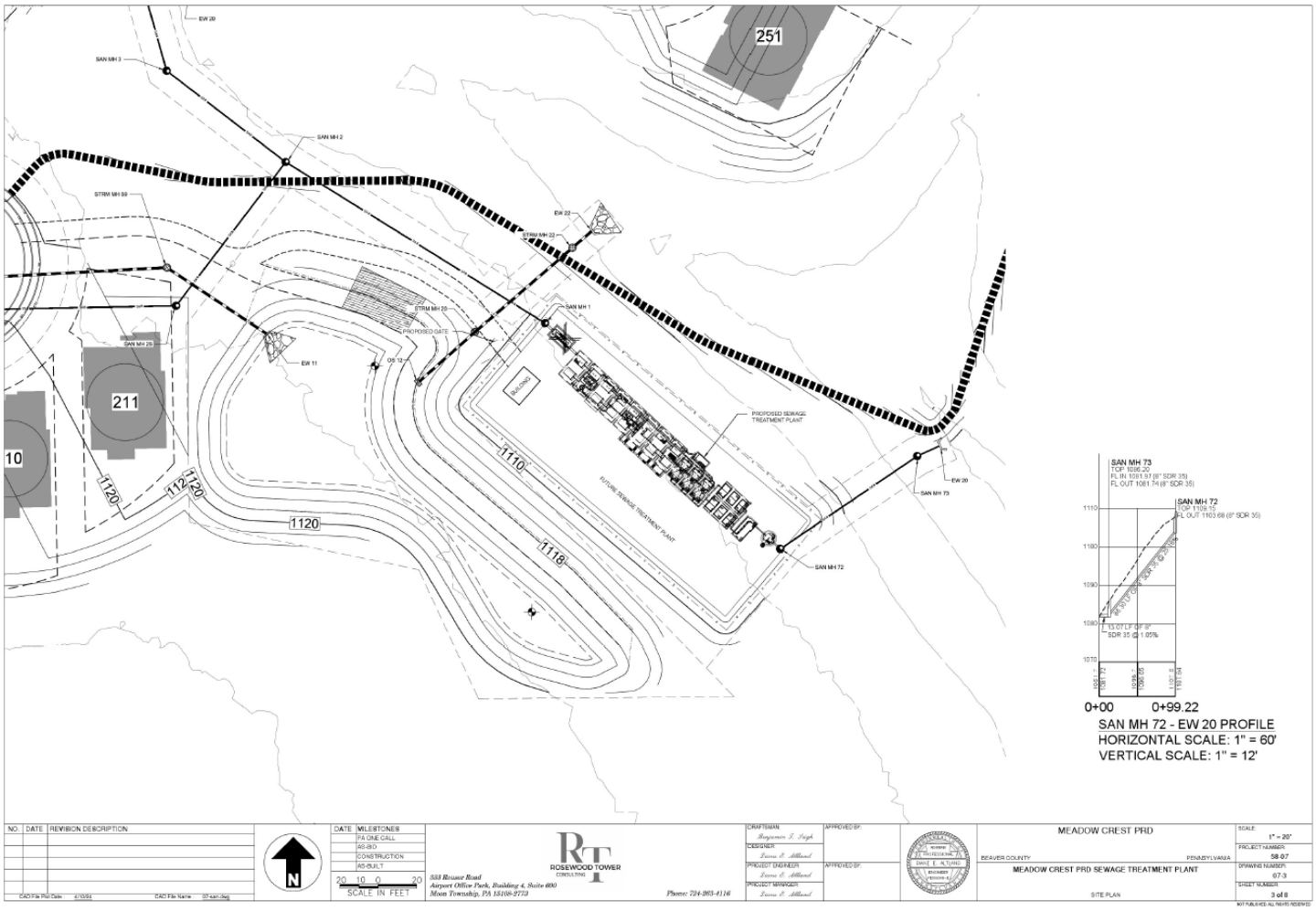
APPENDIX A:
SITE PLANS





TYP. SECTION VIEW
AERATION TANK

53,600 GPD WASTEWATER TREATMENT PLANT		
MEADOW CREST		
DRAWN BY: DEA	SCALE: NTS	DRAWING NO.: MEADOWCREST
DATE: 3/13/2024	REV.: 1/8/24	
ROSEWOOD TOWER CONSULTING		



NO.	DATE	REVISION DESCRIPTION

CAD File Plot Date: 4/10/24 CAD File Name: 07-san.dwg

N

DATE	MILESTONES
	PA ONE CALL
	AS-BID
	CONSTRUCTION
	AS-BUILT

20 10 0 20
SCALE IN FEET

ROSEWOOD TOWER CONSULTING
533 Rouser Road
Airport Office Park, Building 4, Suite 600
Moon Township, PA 15108-3773
Phone: 724-203-4116

DRAFTSMAN:	Benjamin T. Leigh
DESIGNER:	Donna E. Millward
PROJECT ENGINEER:	Donna E. Millward
PROJECT MANAGER:	Donna E. Millward
APPROVED BY:	
APPROVED BY:	

DAVID E. ALTUNG
ENGINEER
COMMONWEALTH OF PENNSYLVANIA

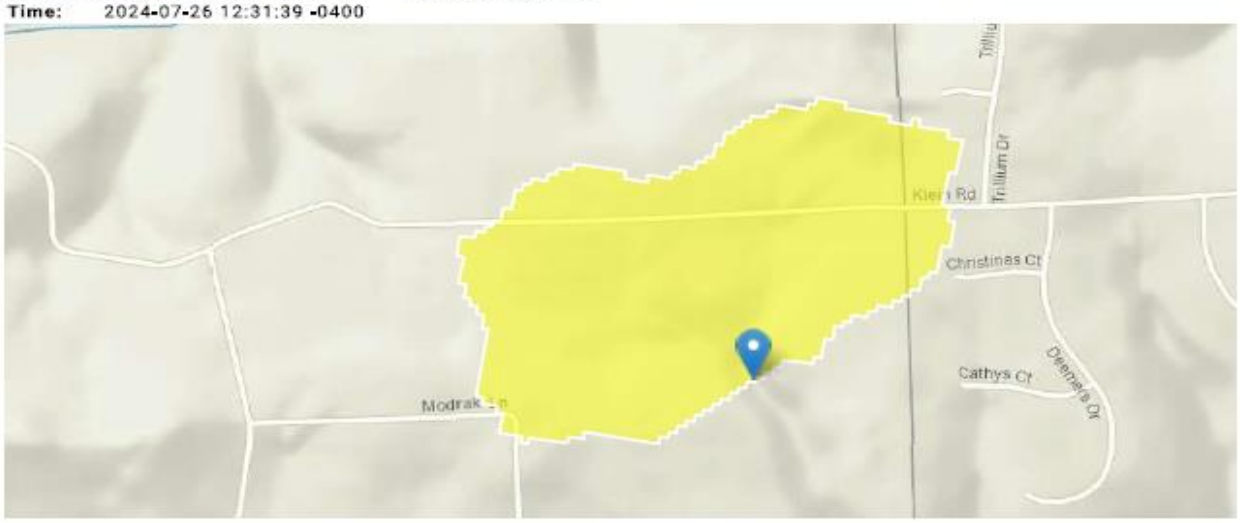
MEADOW CREST PRD
BEAVER COUNTY PENNSYLVANIA
MEADOW CREST PRD SEWAGE TREATMENT PLANT
SITE PLAN

SCALE:	1" = 20'
PROJECT NUMBER:	58-07
DRAWING NUMBER:	07-3
SHEET NUMBER:	3 of 8

APPENDIX B:
USGS StreamStats

StreamStats Report

Region ID: PA
Workspace ID: PA20240726163117954000
Clicked Point (Latitude, Longitude): 40.71064, -80.15320
Time: 2024-07-26 12:31:39 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
CARBON	Percentage of area of carbonate rock	0	percent
DRNAREA	Area that drains to a point on a stream	0.0846	square miles
ELEV	Mean Basin Elevation	1132	feet

Low-Flow Statistics

Low-Flow Statistics Parameters [Low Flow Region 4]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.0846	square miles	2.26	1400
ELEV	Mean Basin Elevation	1132	feet	1050	2580

Low-Flow Statistics Disclaimers [Low Flow Region 4]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [Low Flow Region 4]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.0016	ft^3/s
30 Day 2 Year Low Flow	0.00346	ft^3/s
7 Day 10 Year Low Flow	0.000378	ft^3/s
30 Day 10 Year Low Flow	0.00097	ft^3/s
90 Day 10 Year Low Flow	0.00221	ft^3/s

Low-Flow Statistics Citations

Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)

Application Version: 4.21.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

APPENDIX C:
POFU Survey

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MEMO

TO Brenden Valko
Sewage Palnning Specialist
Clean Water Program

FROM Richard Spear
Aquatic Biologist Supervisor
Clean Water Program

DATE April 4, 2022

RE Point of First Use Survey
Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek
State Water Plan: 20C
Hydrologic Unit Code: 05030105
Stream Code: N/A
New Sewickley Township, Beaver County, PA

INTRODUCTION

On March 23, 2022, at the request of Brenden Valko of the Clean Water Program, a Point of First Surface Water Use (POFU) Survey was attempted in the vicinity of an Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek, located on the Meadow Crest Development Property. The property's address is 326 Klein Road Zelienople, PA 16063 in New Sewickley Township, Beaver County (Figure 1). The sampling location was at latitude 40.71097, and the longitude was -80.15389. I went with Brenden Valko and Kimble Webb of the Clean Water Sewage Planning Section; I could not perform a delineation of the drainage area using USGS Stream Stats because the stream is undocumented and unnamed, so it is not on a map and thus not in Stream Stats.

SAMPLING METHODOLOGY

The POFU is the location at which a body of water can support aquatic life as defined in 25 Pennsylvania Code §93. Guidance for determining the POFU is in the Department's guidance document #391-2000-014, Policy and Procedures for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers (revised April 12, 2008). Specifically, Appendix B of the guidance document provides additional guidance when making a POFU determination.
On March 23, 2022, we sampled basic water chemistry (Table 1) and macroinvertebrates (Table 2) the Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek. Macroinvertebrates were collected according to the Department's Qualitative Benthic Macroinvertebrate Data Collection Protocol, found in the Water Quality Monitoring Protocols for Streams and Rivers 2018 (Monitoring Book), which can be found by following this link:

Southwest Regional Office
400 Waterfront Drive | Pittsburgh, PA 16335 | 412.442.4000 | Fax. 412.442.4194 | www.dep.pa.gov

http://files.dep.state.pa.us/Water/Drinking%20Water%20and%20Facility%20Regulation/WaterQualityPortalFiles/Technical%20Documentation/MONITORING_BOOK.pdf.

RESULTS, DISCUSSION, AND CONCLUSIONS

The objective of this study was to examine aquatic life in the Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek to determine if and where the stream is capable of supporting an aquatic life use as defined in 25 Pennsylvania Code §93.9q, where water quality standards must be met. The Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek, had eight taxa and three of them were long-lived taxa, and thus the point of sampling on Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek is the POFU. Since just a few tenths of a mile away from this property are developments with sewers, connected to these sewers would be the best environmental alternative for the aquatic life in the Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek, as well the aquatic life in Brush Creek watershed. The Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek is currently heavily impacted by sedimentation and adding discharge from approximately 250 homes has the potential to severely impact this tributary, and the rest of the Brush Creek watershed.

cc: Stream File – Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek
Thomas Flanagan – SWRO Sewage Planning Specialist Supervisor
Stacey Greenwald – SWRO, Environmental Group Manager
Christopher Kriley – SWRO, Environmental Program Manager
Mahbuba Iasmin – SWRO, Environmental Group Manager
Michael Lookenbill – CO, Environmental Group Manager

- 3 -

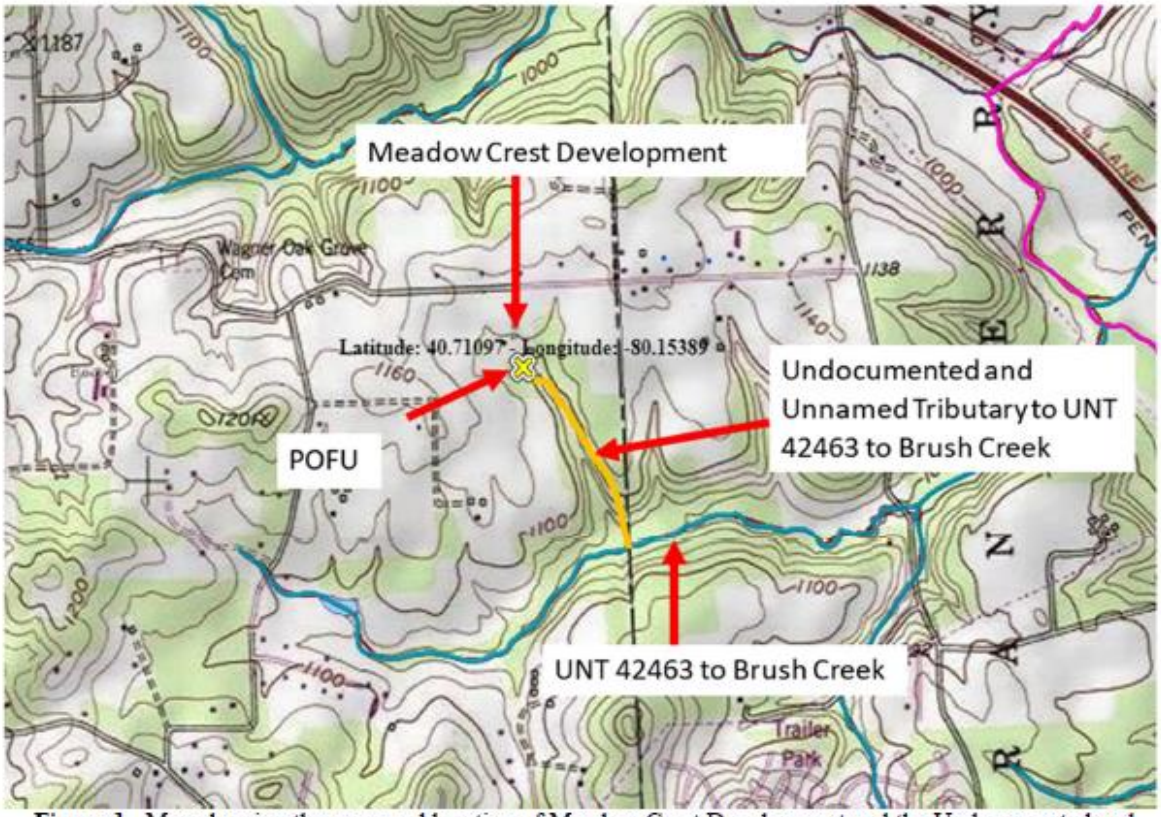


Figure 1. Map showing the proposed location of Meadow Crest Development and the Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek

Figure 2. Picture of Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek

- 5 -

Table 1. Water quality parameters from the Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek

PARAMETER	DESCRIPTION	RESULTS
pH	FIELD	7.33 pH units
TEMPERATURE	FIELD	6.3° C
DISSOLVED OXYGEN	FIELD	11.98 mg/L
SPECIFIC CONDUCTANCE	FIELD	218.7 umhos/cm

Table 2. Macroinvertebrates observed in Undocumented and Unnamed Tributary to UNT 34834 to Brush Creek

TAXA	Family (Common Name)	Number in sample	Long lived taxa
Plathyhelminthes	Flat Worms	Common	No
Diplectrona	Hydropsychidae (Net-spinning Caddisfly)	Common	Yes
Rhyacophila	Rhyacophilidae (Green Sedges Caddisflies)	Present	Yes
Ameletus	Ameletidae (Brown Duns Mayflies)	Present	Questionable
Diploperla	Perlodidae (Springflies)	Common	Yes
Dicronota	Pediciidae (Hairy-eyed Craneflies)	Present	No
Caecidotea	Asellidae (Ispoods)	Common	No
Hydrobius	Hydrophilidae (Scavenger Beetles)	Present	No

APPENDIX D:
WQM7.0 Model Results (Summer)

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	34834	Trib 34834 to Brush Creek	0.310	1132.00	0.08	0.04000	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	0.004	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
Medow Crest STP	PA0285315	0.0536	0.0536	0.0536	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	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
20C	34834	Trib 34834 to Brush Creek	0.100	1123.00	0.76	0.04000	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	0.007	0.01	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
Medow Crest STP	PA0285315	0.0000	0.0000	0.0000	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	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	34834	Trib 34834 to Brush 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												
0.310	0.00	0.00	0.00	.0829	0.04000	.382	2.04	5.35	0.11	0.120	20.02	7.00
Q1-10 Flow												
0.310	0.00	0.00	0.00	.0829	0.04000	NA	NA	NA	0.11	0.120	20.01	7.00
Q30-10 Flow												
0.310	0.00	0.00	0.00	.0829	0.04000	NA	NA	NA	0.11	0.120	20.03	7.00

WQM 7.0 Modeling Specifications

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

Tuesday, July 30, 2024 Version 1.0b Page 1 of 1

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34834	Trib 34834 to Brush Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.310	0.054	20.023	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.041	0.382	5.347	0.107
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.90	1.499	1.92	0.701
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.015	28.821	Owens	5
Reach Travel Time (days)			
0.120			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.012	24.45	1.90	5.60
0.024	24.01	1.88	6.03
0.036	23.59	1.87	6.34
0.048	23.16	1.85	6.57
0.060	22.75	1.84	6.74
0.072	22.34	1.82	6.87
0.084	21.95	1.81	6.97
0.096	21.55	1.79	7.06
0.108	21.17	1.78	7.13
0.120	20.79	1.76	7.18

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34834	Trib 34834 to Brush 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
0.310	Medow Crest ST	9.66	9.69	9.66	9.69	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
0.310	Medow Crest ST	1.91	1.92	1.91	1.92	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)		
0.31	Medow Crest STP	25	25	1.92	1.92	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34834	Trib 34834 to Brush 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)
0.310	Medow Crest STP	PA0285315	0.054	CBOD5	25		
				NH3-N	1.92	3.84	
				Dissolved Oxygen			5

APPENDIX D:
WQM7.0 Model Results (Winter)

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	34834	Trib 34834 to Brush Creek	0.310	1132.00	0.08	0.04000	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	0.009	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
Medow Crest STP	PA0285315	0.0536	0.0536	0.0536	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	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
20C	34834	Trib 34834 to Brush Creek	0.100	1123.00	0.76	0.04000	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	0.014	0.01	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
Medow Crest STP	PA0285315	0.0000	0.0000	0.0000	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	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	12.51	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	34834	Trib 34834 to Brush 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												
0.310	0.00	0.00	0.00	.0829	0.04000	.382	2.04	5.35	0.11	0.120	14.95	7.00
Q1-10 Flow												
0.310	0.00	0.00	0.00	.0829	0.04000	NA	NA	NA	0.11	0.120	14.97	7.00
Q30-10 Flow												
0.310	0.00	0.00	0.00	.0829	0.04000	NA	NA	NA	0.11	0.120	14.94	7.00

Tuesday, July 30, 2024 Version 1.0b Page 1 of 1

WQM 7.0 Modeling Specifications

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

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
20C	34834	Trib 34834 to Brush Creek

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
0.310	0.054	14.955	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
2.041	0.382	5.347	0.107
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
24.90	1.499	2.80	0.475
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
5.034	25.557	Owens	5
Reach Travel Time (days)			
0.120			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.012	24.54	2.78	5.86
0.024	24.19	2.76	6.47
0.036	23.85	2.75	6.93
0.048	23.51	2.73	7.27
0.060	23.18	2.72	7.53
0.072	22.85	2.70	7.73
0.084	22.53	2.69	7.88
0.096	22.21	2.67	8.00
0.108	21.89	2.66	8.09
0.120	21.58	2.64	8.16

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
20C	34834	Trib 34834 to Brush 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
0.310	Medow Crest ST	14.05	14.09	14.05	14.09	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
0.310	Medow Crest ST	2.79	2.81	2.79	2.81	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)		
0.31	Medow Crest STP	25	25	2.81	2.81	5	5	0	0

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
20C	34834	Trib 34834 to Brush 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)
0.310	Medow Crest STP	PA0285315	0.054	CBOD5	25		
				NH3-N	2.81	5.62	
				Dissolved Oxygen			5

APPENDIX E:

Compliance Review

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER MANAGEMENT SYSTEM
OPEN VIOLATIONS BY CLIENT

7/19/2024 8:13:47 AM

Client ID: 385438
Client: All

Open Violations: 0

No data was found using the criteria entered. Please revise your choices and try again.

SSRS_WMS_516 Ver 1.1

Page 1 of 1