pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Southwest Regional Office**
**CLEAN WATER PROGRAM**

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0216186** |
| Facility Type | **Non-Municipal** | APS ID | **1012592** |
| Major / Minor | **Minor** | Authorization ID | **1307584** |

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **United Mine Workers Of America Career Centers Inc.** | Facility Name | **Mining Tech & Training Center STP** |
| Applicant Address | 197 Dunn Station Road | Facility Address | 197 Dunn Station Road |
| | Prosperity, PA 15329-1625 | | Prosperity, PA 15329-1625 |
| Applicant Contact | Clemmy Allen | Facility Contact | Clemmy Allen |
| Applicant Phone | (724) 627-0988 | Facility Phone | (724) 627-0988 |
| Client ID | 270920 | Site ID | 237768 |
| Ch 94 Load Status | Not Overloaded | Municipality | Washington Township |
| Connection Status | No Limitations | County | Greene |
| Date Application Received | March 4, 2020 | EPA Waived? | Yes |
| Date Application Accepted | March 1, 2021 | If No, Reason | - |

Purpose of Application: Minor Sewage Treatment Facility Renewal.

## Summary of Review

This application is for a renewal of an NPDES permit, for an existing Minor discharge of treated sewage from a Non-Municipal STP.

Act 14 – Proof of Notification was submitted and received.

There are no open violations for subject client ID (200265) as of 3/25/2021.

There has been no change to the discharge or the receiving stream since the last permit issuance.

A part 2 WQM permit is not required at this time.

Treatment consist of (WQM Permit No. 3081405): The existing treatment process consists of flow EQ, extended aeration, clarification, tertiary filters and chlorination for disinfection. The treated sewage then discharges into Ruff Creek (WWF).

Sludge use and disposal description and location(s): Septage must be pumped and hauled off-site by a septage hauler for land application under a general permit authorized by DEP or disposal at an STP.

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 | | Jon F. Bucha<br>Jonathan F. Bucha / Civil Engineer Trainee | March 24, 2021 |
| X | | Justin C. Dickey<br>Justin C. Dickey, P.E. / Environmental Engineer Manager | April 7, 2021 |

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | .025 |
| Latitude | 39º 57' 44" | Longitude | -80º 10' 33" |
| Quad Name | Waynesburg | Quad Code | 1904 |
| Wastewater Description: | Sewage Effluent | | |
| Receiving Waters | Ruff Creek (WWF) | Stream Code | 40345 |
| NHD Com ID | 99414406 | RMI | 8.7 |
| Drainage Area | 7.25 $mi^2$ | Yield ($cfs/mi^2$) | 0.0017 |
| $Q_{7-10}$ Flow (cfs) | 0.01214 | $Q_{7-10}$ Basis | Storet Sta. No. 03073000, S. Fork Tenmile Creek, Jefferson PA, Period of Record 1933-1988. |
| Elevation (ft) | 989 (Google Earth) | Slope (ft/ft) | - |
| Watershed No. | 19-B | Chapter 93 Class. | WWF |
| Existing Use | - | Existing Use Qualifier | - |
| Exceptions to Use | - | Exceptions to Criteria | - |
| 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 | Tri-County Joint Municipal Authority | | |
| PWS Waters | MONONGAHELA RIVER | Flow at Intake (cfs) | |
| PWS RMI | | Distance from Outfall (mi) | |

Changes Since Last Permit Issuance: River mile index's, elevations, and drainage areas were revised using streamstats and google earth for modeling purposes.

Other Comments: N/A

| Treatment Facility Summary | | | | |
|---|---|---|---|---|
| **Treatment Facility Name:** Mining Tech & Training Center STP | | | | |
| **WQM Permit No.** | **Issuance Date** | | | |
| 3081405 | 12/29/1981 | | | |
| **Waste Type** | **Degree of Treatment** | **Process Type** | **Disinfection** | **Avg Annual Flow (MGD)** |
| Sewage | Secondary | Extended Aeration | Chlorine | 0.004 |
| **Hydraulic Capacity (MGD)** | **Organic Capacity (lbs/day)** | **Load Status** | **Biosolids Treatment** | **Biosolids Use/Disposal** |
| 0.025 | | Not Overloaded | | |

| Compliance History | |
|---|---|
| **Summary of DMRs:** | Review of the past 3 years of DMR reports indicates one effluent violation for Average Monthly TRC. No other effluent violations were indicated on the DMRs. |
| **Summary of Inspections:** | An inspection occurred on 7/22/2020, where no violations were noted and the plant is being properly maintained. |

## Compliance History

### DMR Data for Outfall 001 (from February 1, 2020 to January 31, 2021)

| Parameter | JAN-21 | DEC-20 | NOV-20 | OCT-20 | SEP-20 | AUG-20 | JUL-20 | JUN-20 | MAY-20 | APR-20 | MAR-20 | FEB-20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 |
| pH (S.U.) Minimum | 6.6 | 6.6 | 6.8 | 6.5 | 6.6 | 6.8 | 6.5 | 6.8 | 6.6 | 6.6 | 6.8 | 6.8 |
| pH (S.U.) Maximum | 7.4 | 7.5 | 7.5 | 7.4 | 7.4 | 7.6 | 7.4 | 7.3 | 7.4 | 7.7 | 7.6 | 7.5 |
| DO (mg/L) Minimum | 7.8 | 7.6 | 7.6 | 7.6 | 7.6 | 7.6 | 7.4 | 7.4 | 6.7 | 6.5 | 6.7 | 6.7 |
| TRC (mg/L) Average Monthly | 0.05 | 0.04 | 0.04 | 0.04 | 0.05 | 0.04 | 0.04 | 0.04 | 0.05 | 0.04 | 0.05 | 0.05 |
| TRC (mg/L) Instantaneous Maximum | 0.07 | 0.08 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 | 0.08 | 0.09 | 0.09 | 0.09 | 0.09 |
| CBOD5 (mg/L) Average Monthly | 2.7 | < 2.0 | 4.2 | 2.3 | < 2.0 | < 2.0 | 2.1 | 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| CBOD5 (mg/L) Instantaneous Maximum | 3.5 | < 2.0 | 6.4 | 2.6 | < 2.0 | < 2.0 | 2.1 | 2.1 | < 2.0 | < 2.0 | < 2.0 | < 2.0 |
| TSS (mg/L) Average Monthly | 11.5 | 10 | 10 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 5.5 | 8.5 | 17.5 | < 5.0 |
| TSS (mg/L) Instantaneous Maximum | 18.0 | 15 | 15 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 6.0 | 12 | 25.0 | < 5.0 |
| Fecal Coliform (CFU/100 ml) Geometric Mean | 2.4 | 72.1 | < 1 | 1.4 | 12.9 | 73.4 | < 1 | 2.0 | < 1 | < 2.0 | 8.4 | < 1.0 |
| Fecal Coliform (CFU/100 ml) Instantaneous Maximum | 6.0 | 193 | < 1 | 2.0 | 84 | > 200 | < 1 | 4.0 | < 2 | < 2.0 | 72 | < 1.0 |
| Total Nitrogen (mg/L) Daily Maximum | | 35.5 | | | | | | | | | | |
| Ammonia (mg/L) Average Monthly | 0.9 | 0.09 | 0.2 | 0.9 | 0.2 | 0.5 | 0.5 | 0.7 | 1.0 | 0.3 | 0.3 | 1.1 |
| Ammonia (mg/L) Instantaneous Maximum | 1.4 | 0.09 | 0.3 | 1.3 | 0.2 | 0.8 | 0.5 | 0.9 | 1.2 | 0.3 | 0.3 | 1.4 |
| Total Phosphorus (mg/L) Daily Maximum | | 5.9 | | | | | | | | | | |

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** .025
**Latitude** 39º 57' 44.00" **Longitude** -80º 10' 33.00"
**Wastewater Description:** Sewage Effluent

### Technology-Based Limitations

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

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

### Water Quality-Based Limitations

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

| Parameter | Limit (mg/l) | SBC | Model |
|---|---|---|---|
| Ammonia Nitrogen (May 1 – October 31) | 2.0 | Average Monthly | WQM 7.0 |
| Ammonia Nitrogen (November 1 – April 30) | 6.0 | Average Monthly | WQM7.0 |
| Dissolved Oxygen | 4.0 | Average Monthly | WQM 7.0 |
| Total Residual Chlorine | 0.07 | Average Monthly | TRC_CALC |

Comments: The winter seasonal ammonia nitrogen limit of 6.0 mg/L is based upon 3 times the summer seasonal limit, which is based upon the Department's Implementation Guidance of Section 93.7 Ammonia Criteria. Dissolved Oxygen modeling results show that the present limits of 5 mg/L are more stringent than the Water Quality-Based Limitations required to protect water quality. Upon review of past eDMR data demonstrating the treatment facilities ability to meet the current Dissolved Oxygen limit of 5 mg/L, It is recommended that the current limit of 5 mg/L for Dissolved Oxygen be re-imposed to help protect the stream.

### Best Professional Judgment (BPJ) Limitations

Comments: Total Nitrogen, Total Phosphorus, and Flow monitoring is based on Ch. 92a.61 and the Departments SOP for Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BPNPSM-PMT-033). Total Nitrogen and Total Phosphorus monitoring will remain at the 1/year sampling frequency on the current permit renewal. However, the Total Nitrogen and Total Phosphorus monitoring will be changed to an "annual average" reporting rather than a "daily maximum" reporting based on the Department's SOP for Establishing Effluent Limitations for Individual Sewage Permits. Monitoring for flow has been increased to 1/week

**Additional Considerations**

E. Coli monitoring of 1/year has been added based on Ch. 92a.61(11)(12).

**Anti-Backsliding**

The WQBEL calculation using WQM 7.0, resulting effluent limit for CBOD5 did not require a more stringent limit than the Technology-Based Limitation of 25 mg/L Average Monthly. However, backsliding is not appropriate in this case and the existing effluent limitation of 20 mg/L will remain in the current renewal. The permittee is able to consistently meet this limitation. There is no WLA or TMDL to consider for the receiving stream.

**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.

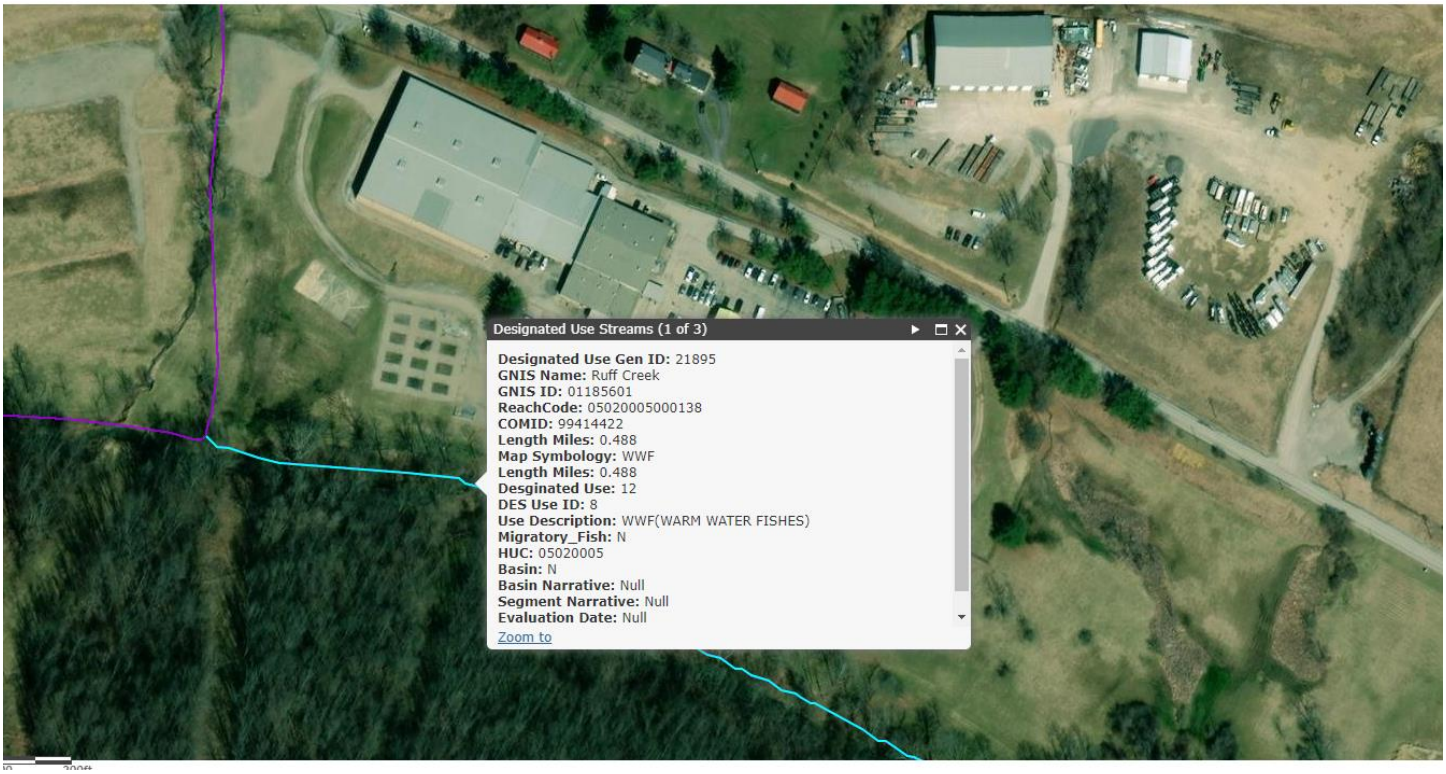
**Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date**.

| Parameter | Effluent Limitations | | | | | | Monitoring Requirements | |
|---|---|---|---|---|---|---|---|---|
| | Mass Units (lbs/day) (1) | | Concentrations (mg/L) | | | | Minimum (2) Measurement Frequency | Required Sample Type |
| | Average Monthly | Average Weekly | Minimum | Average Monthly | Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | XXX | XXX | XXX | XXX | XXX | 1/week | Measured |
| pH (S.U.) | XXX | XXX | 6.0 Daily Min | XXX | XXX | 9.0 | 1/day | Grab |
| DO | XXX | XXX | 5.0 Daily Min | XXX | XXX | XXX | 1/day | Grab |
| TRC | XXX | XXX | XXX | 0.055 | XXX | 0.179 | 1/day | Grab |
| CBOD5 (May through October) | XXX | XXX | XXX | 20.0 | XXX | 40.0 | 2/month | Grab |
| CBOD5 (November through April) | XXX | XXX | XXX | 25.0 | XXX | 50.0 | 2/month | Grab |
| TSS | XXX | XXX | XXX | 30.0 | XXX | 60.0 | 2/month | Grab |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 | XXX | 10000 | 2/month | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 | XXX | 1000 | 2/month | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | XXX | Report | 1/year | Grab |
| Total Nitrogen | XXX | XXX | XXX | Report Annual Avg | XXX | XXX | 1/year | Grab |
| Ammonia Nov 1 - Apr 30 | XXX | XXX | XXX | 6.0 | XXX | 12.0 | 2/month | Grab |
| Ammonia May 1 - Oct 31 | XXX | XXX | XXX | 2.0 | XXX | 4.0 | 2/month | Grab |
| Total Phosphorus | XXX | XXX | XXX | Report Annual Avg | XXX | XXX | 1/year | Grab |

Compliance Sampling Location: Outfall 001 after disinfection.

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☒ | WQM for Windows Model (see Attachment ) |
| ☒ | TRC Model Spreadsheet (see Attachment ) |
| ☒ | Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97. |
| ☒ | Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97. |
| ☒ | 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. |
| ☒ | SOP: Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BPNPSM-PMT-033) dated November 9, 2012, Revised August 23, 2013). |

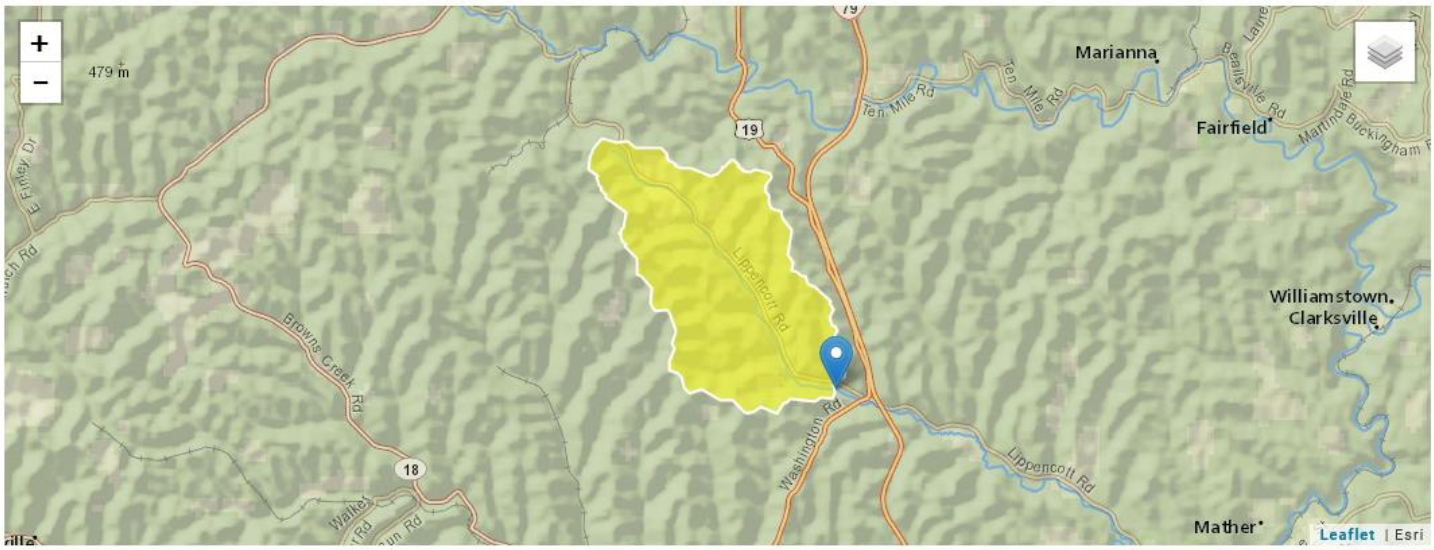
# ATTACHMENT A
## eMAP – Stream Designation



**Permit No. PA0216186**

# ATTACHMENT B

## StreamStats REPORT – RMI 8.7 ON Ruff Creek



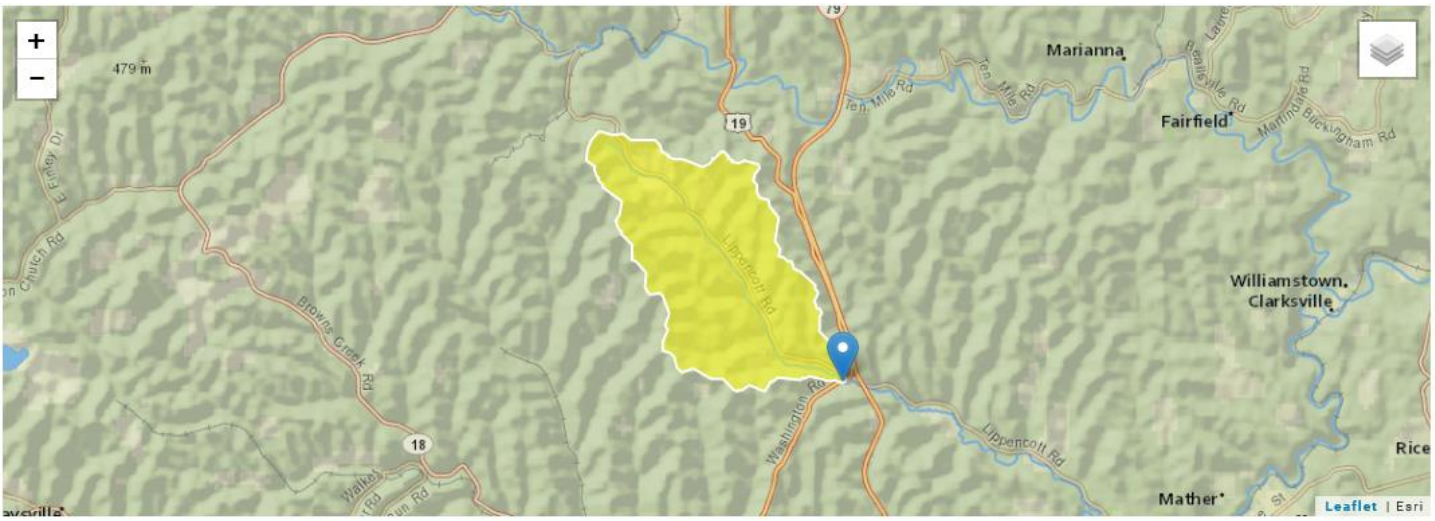

Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 7.25 | square miles |
| ELEV | Mean Basin Elevation | 1239 | feet |

**Permit No. PA0216186**

# ATTACHMENT C

## StreamStats REPORT – RMI 8.3 ON Ruff Creek




Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 7.4 | square miles |
| ELEV | Mean Basin Elevation | 1236 | feet |

**Permit No. PA0216186**

# ATTACHMENT D
## WQM 7.0 MODEL OUTPUT FILE

## WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19B | 40345 | RUFF 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) |
|---|---|---|---|---|---|---|---|
| 8.700 | United Mine | PA0216186 | 0.025 | CBOD5 | 25 | | |
| | | | | NH3-N | 2.42 | 4.84 | |
| | | | | Dissolved Oxygen | | | 4 |

## WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19B | 40345 | RUFF CREEK |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 8.700 | 0.025 | 21.208 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 6.030 | 0.334 | 18.059 | 0.025 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 19.44 | 1.416 | 1.86 | 0.768 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 5.025 | 14.475 | Owens | 5 |
| **Reach Travel Time (days)** | | | |
| 0.965 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.097 | 16.83 | 1.73 | 5.58 |
| 0.193 | 14.56 | 1.60 | 6.02 |
| 0.290 | 12.61 | 1.49 | 6.39 |
| 0.386 | 10.91 | 1.38 | 6.72 |
| 0.483 | 9.44 | 1.28 | 6.99 |
| 0.579 | 8.17 | 1.19 | 7.24 |
| 0.676 | 7.08 | 1.11 | 7.45 |
| 0.772 | 6.12 | 1.03 | 7.63 |
| 0.869 | 5.30 | 0.95 | 7.80 |
| 0.965 | 4.59 | 0.89 | 7.94 |

**Permit No. PA0216186**

## 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 |
|---|---|---|---|---|---|---|---|---|
| 19B | 40345 | RUFF CREEK | **8.700** | 989.00 | 7.25 | 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 | 0.002 | 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 |
|---|---|---|---|---|---|---|---|
| United Mine | PA0216186 | 0.0250 | 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 | 3.00 | 8.24 | 0.00 | 0.00 |
| NH3-N | 25.00 | 0.10 | 0.00 | 0.70 |

**Permit No. PA0216186**

## 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 |
|---|---|---|---|---|---|---|---|---|
| 19B | 40345 | RUFF CREEK | **8.300** | 980.00 | 7.40 | 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 | 0.002 | 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. PA0216186**

# WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19B | 40345 | RUFF 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** | | | | | | | | | | | | |
| 8.700 | 0.01 | 0.00 | 0.01 | .0387 | 0.00426 | .334 | 6.03 | 18.06 | 0.03 | 0.965 | 21.21 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 8.700 | 0.01 | 0.00 | 0.01 | .0387 | 0.00426 | NA | NA | NA | 0.02 | 1.016 | 20.85 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 8.700 | 0.02 | 0.00 | 0.02 | .0387 | 0.00426 | NA | NA | NA | 0.03 | 0.921 | 21.51 | 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 | | |

**Permit No. PA0216186**

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 19B | 40345 | RUFF 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 |
|---|---|---|---|---|---|---|---|
| 8.700 | United Mine | 9.1 | 10.93 | 9.1 | 10.93 | 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 |
|---|---|---|---|---|---|---|---|
| 8.700 | United Mine | 1.72 | 2.42 | 1.72 | 2.42 | 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) | | |
| 8.70 | United Mine | 25 | 25 | 2.42 | 2.42 | 4 | 4 | 0 | 0 |

**Permit No. PA0216186**

# ATTACHMENT C
## TRC SPREADSHEET

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | **TRC EVALUATION** | | | | | | |
| 2 | Input appropriate values in A3:A9 and D3:D9 | | | | | | |
| 3 | 0.01214 | = Q stream (cfs) | | 0.5 | = CV Daily | | |
| 4 | 0.025 | = Q discharge (MGD) | | 0.5 | = CV Hourly | | |
| 5 | 4 | = no. samples | | 1 | = AFC_Partial Mix Factor | | |
| 6 | 0.3 | = Chlorine Demand of Stream | | 1 | = CFC_Partial Mix Factor | | |
| 7 | 0 | = Chlorine Demand of Discharge | | 15 | = AFC_Criteria Compliance Time (min) | | |
| 8 | 0.5 | = BAT/BPJ Value | | 720 | = CFC_Criteria Compliance Time (min) | | |
| 9 | 0 | = % Factor of Safety (FOS) | | | =Decay Coefficient (K) | | |
| 10 | Source | Reference | AFC Calculations | | Reference | CFC Calculations | |
| 11 | TRC | 1.3.2.iii | WLA afc = 0.119 | | 1.3.2.iii | WLA cfc = 0.109 | |
| 12 | PENTOXSD TRG | 5.1a | LTAMULT afc = 0.373 | | 5.1c | LTAMULT cfc = 0.581 | |
| 13 | PENTOXSD TRG | 5.1b | LTA_afc= 0.044 | | 5.1d | LTA_cfc = 0.063 | |
| 14 | | | | | | | |
| 15 | Source | | Effluent Limit Calculations | | | | |
| 16 | PENTOXSD TRG | 5.1f | AML MULT = 1.720 | | | | |
| 17 | PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = 0.076 | | AFC | | |
| 18 | | | INST MAX LIMIT (mg/l) = 0.179 | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | WLA afc | **(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))...** | | | | | |
| 23 | | **...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)** | | | | | |
| 24 | LTAMULT afc | EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5) | | | | | |
| 25 | LTA_afc | wla_afc*LTAMULT_afc | | | | | |
| 26 | | | | | | | |
| 27 | **WLA_cfc** | **(.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc) )...** | | | | | |
| 28 | | **...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)** | | | | | |
| 29 | LTAMULT_cfc | EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5) | | | | | |
| 30 | **LTA_cfc** | wla_cfc*LTAMULT_cfc | | | | | |
| 31 | | | | | | | |
| 32 | AML MULT | EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1)) | | | | | |
| 33 | AVG MON LIMIT | MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT) | | | | | |
| 34 | INST MAX LIMIT | **1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)** | | | | | |
| 35 | | | | | | | |
| 36 | | | | | | | |
| 37 | | | | | | | |
| 38 | | | | | | | |
| 39 | | | | | | | |
| 40 | | | | | | | |
| 41 | **(0.011/EXP(-K*CFC_tc/1440))+(((CFC_Yc*Qs*0.011)/(1.547*Qd)....** | | | | | | |
| 42 | **....*EXP(-K*CFC_tc/1440)))+Xd+(CFC_Yc*Qs*Xs/1.547*Qd))*(1-FOS/100)** | | | | | | |