

Application Type Renewal
Facility Type Industrial
Major / Minor Minor

**NPDES PERMIT FACT SHEET
INDIVIDUAL INDUSTRIAL WASTE (IW)
AND IW STORMWATER**

Application No. PA0253588
APS ID 1035485
Authorization ID 1348429

Applicant and Facility Information

| | | | |
|---------------------------|--|------------------|--|
| Applicant Name | <u>Diversified Production, LLC</u> | Facility Name | <u>Crooked Creek Treatment Facility</u> |
| Applicant Address | <u>101 McQuiston Drive</u> <u>Jackson Center, PA 16133-1633</u> | Facility Address | <u>182 Walnut Drive</u> <u>Shelocta, PA 15774</u> |
| Applicant Contact | <u>Paul Espenan</u> | Facility Contact | <u>Paul Hart</u> |
| Applicant Phone | <u>(724) 662-0300</u> | Facility Phone | <u>(724) 349-2777</u> |
| Client ID | <u>244896</u> | Site ID | <u>692752</u> |
| SIC Code | <u>1389</u> | Municipality | <u>South Bend Township</u> |
| SIC Description | <u>Mining - Oil And Gas Field Services, Nec</u> | County | <u>Armstrong</u> |
| Date Application Received | <u>March 16, 2021</u> | EPA Waived? | <u>No</u> |
| Date Application Accepted | <u>April 13, 2021</u> | If No, Reason | <u>O&G Facility</u> |
| Purpose of Application | <u>Renewal of an NPDES Permit for an existing discharge of treated industrial waste.</u> | | |

Summary of Review

This facility is an existing treatment facility for the treatment of water generated by dewatering coal seams from which methane gas will be extracted. This is also known as coal bed methane extraction. Many wells produce water from this activity in a given area and that water, known as coalbed methane connate water ("connate"), is conveyed via a pipe to a treatment facility.

Connate enters the facility via several collection pipelines. It passes through three settling basins in series that are connected by limestone riprap channels. The basins and riprap channels provide setting, oxidation and cascade aeration. The water discharges to Crooked Creek via outfall 001. Stormwater is diverted around the ponds to the greatest extent possible. The ponds are the only infrastructure at the facility so there are no other outfalls associated with the facility.

There are currently 481 open violations listed in EFACTS for this client (7/29/2022). All of these violations are at other facilities owned by the client.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP's discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

| Approve | Deny | Signatures | Date |
|---------|------|--|-------------------------------|
| X | | Adam J. Pesek Adam J. Pesek, E.I.T. / Project Manager | July 29, 2022 |
| X | | Vacant / Environmental Engineer Manager | Okay to Draft JCD 8/1/2022 |

| Discharge, Receiving Waters and Water Supply Information | | | |
|--|---|------------------------------|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.0015 |
| Latitude | 40° 38' 15.06" | Longitude | -79° 21' 32.08" |
| Quad Name | Elderton | Quad Code | 1311 |
| Wastewater Description: Connate wastewater | | | |
| Receiving Waters | Crooked Creek | Stream Code | 46216 |
| NHD Com ID | 123858496 | RMI | 27.2 |
| Drainage Area | 200 | Yield (cfs/mi ²) | 0.0658 |
| Q ₇₋₁₀ Flow (cfs) | 20.4 | Q ₇₋₁₀ Basis | Streamstats and USGS Gage 03038000 Crooked Creek at Idaho ('84-'15) |
| Elevation (ft) | 970 | Slope (ft/ft) | 0.001 |
| Watershed No. | 17-E | 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) | 7.2 | | 10/6/2008 upstream sample |
| Temperature (°C) | 25 | | Default (WWF) |
| Hardness (mg/L) | 116 | | Avg of 3 stream samples taken for renewal application |
| Other: | | | |
| Nearest Downstream Public Water Supply Intake | Buffalo Township Municipal Authority – Freeport | | |
| PWS Waters | Allegheny River | Flow at Intake (cfs) | 2070 |
| PWS RMI | 29.4 | Distance from Outfall (mi) | 37.8 |

Changes Since Last Permit Issuance: Average annual flow of discharge flow has been greatly reduced as the produced water has been declining exponentially since the system was first designed.

Other Comments:

| Treatment Facility Summary | | | | |
|--|-----------------------------------|----------------------|----------------------------|-------------------------------|
| Treatment Facility Name: Crooked Creek Treatment Facility | | | | |
| WQM Permit No. | | Issuance Date | | |
| 0308201 A-2 T-1 | | 2/6/2020 | | |
| | | | | |
| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
| Industrial | | Chemical/Settling | | 0.014 |
| | | | | |
| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
| 0.014 | | | | |

Changes Since Last Permit Issuance:

Other Comments: Treatment system consists of flow equalization, continuous aeration in aeration chamber, sodium sulfate addition, flocculation, three settling ponds, and final discharge manhole with composite sampling.

| Compliance History | |
|--------------------------------|---|
| Summary of DMRs: | 3 effluent violations for TSS reported and 8 late DMR submissions since September 2016. NOV was sent to permittee on 12/3/2020 for failure to timely pay the annual fee for this permit. |
| Summary of Inspections: | Site inspection was last conducted on 2/20/2021 to verify that the upgraded plant was operational by the operational deadline set in an executed COA. The COA was terminated on 4/01/2021. |

Other Comments:

Compliance History

DMR Data for Outfall 001 (from April 1, 2021 to March 31, 2022)

| Parameter | MAR-22 | FEB-22 | JAN-22 | DEC-21 | NOV-21 | OCT-21 | SEP-21 | AUG-21 | JUL-21 | JUN-21 | MAY-21 | APR-21 |
|--|--------|--------|--------|--------|--------------|--------|--------|--------|--------|--------|--------|--------|
| Flow (MGD) Average Monthly | 0.0015 | 0.0016 | 0.0008 | 0.0016 | 0.00091 1 | 0.0012 | 0.0013 | 0.001 | 0.0006 | 0.0009 | 0.0005 | 0.0009 |
| Flow (MGD) Daily Maximum | 0.0092 | 0.0155 | 0.0075 | 0.0139 | 0.00294 0 | 0.0054 | 0.0175 | 0.0109 | 0.0067 | 0.0103 | 0.009 | 0.0064 |
| pH (S.U.) Daily Minimum | 7.4 | 6.8 | 7.0 | 6.9 | 7.0 | 7.2 | 6.9 | 7.1 | 6.3 | 6.3 | 6.4 | 6.3 |
| pH (S.U.) Daily Maximum | 7.5 | 7.1 | 7.1 | 7.0 | 7.0 | 7.2 | 7.0 | 7.7 | 7.5 | 6.5 | 7.4 | 6.7 |
| TSS (mg/L) Average Monthly | 11.5 | 8.5 | < 15.0 | 9.5 | 21.0 | 19.5 | 25.0 | 11.0 | < 9.5 | 16.5 | 10.0 | 8.0 |
| TSS (mg/L) Daily Maximum | 17.0 | 10.0 | 25.0 | 11.0 | 25.0 | 23.0 | 35.0 | 13.0 | 14.0 | 21.0 | 12.0 | 8.0 |
| Total Dissolved Solids (lbs/day) Average Monthly | 233 | 249 | 168 | 189 | 153 | 355 | 92 | 109 | 203 | 74 | 21 | 214 |
| Total Dissolved Solids (lbs/day) Daily Maximum | 403 | 634 | 402 | 374 | 346 | 832 | 184 | 265 | 516 | 147 | 64 | 328 |
| Total Dissolved Solids (mg/L) Average Monthly | 14895 | 6120 | 16550 | 17250 | 17500 | 19200 | 14950 | 15700 | 17350 | 15600 | 15600 | 14650 |
| Total Dissolved Solids (mg/L) Daily Maximum | 20200 | 10400 | 19900 | 18400 | 18800 | 19700 | 16400 | 17400 | 19500 | 17700 | 17700 | 15100 |
| Osmotic Pressure (mOs/kg) Average Monthly | 396 | 165 | 411 | 471 | 425 | 494 | 370 | 407 | 408 | 361 | 368 | 395 |
| Osmotic Pressure (mOs/kg) Daily Maximum | 522 | 269 | 488 | 479 | 524 | 516 | 434 | 445 | 409 | 383 | 391 | 404 |
| Oil and Grease (mg/L) Average Monthly | < 5.0 | < 5.1 | < 5.1 | < 5.2 | < 5.2 | < 5.1 | < 4.9 | < 5.0 | < 4.9 | < 5.0 | < 4.9 | < 4.9 |
| Oil and Grease (mg/L) Instantaneous Maximum | < 5.0 | < 5.2 | < 5.1 | < 5.2 | < 5.2 | < 5.2 | < 4.9 | < 5.0 | < 4.9 | < 5.0 | < 4.9 | < 4.9 |
| Total Acidity (mg/L) Average Monthly | NULL28 | -39.5 | -72.3 | -79.0 | -47.5 | -79 | NULL37 | NULL14 | -80.5 | 32.3 | -74.5 | -50.0 |

NPDES Permit Fact Sheet
Crooked Creek Treatment Facility

NPDES Permit No. PA0253588

| | | | | | | | | | | | | |
|--|-------|-------|--------|--------|-------|-------|--------|--------|-------|--------|--------|-------|
| Total Acidity (mg/L) Daily Maximum | -200 | -43.0 | -80.2 | -99.0 | -48.4 | -80 | -220 | NULL24 | -90.5 | 33.2 | -99.0 | -62.1 |
| Total Alkalinity (mg/L) Effluent Net Daily Minimum | 50.6 | 28.4 | 55.3 | 52.3 | 47.9 | 55.4 | 0.0 | 35.9 | 43.4 | 31.3 | 41.7 | 35.4 |
| Total Barium (lbs/day) Average Monthly | 0.04 | 0.03 | 0.03 | 0.02 | 0.02 | 0.05 | 0.01 | 0.01 | 0.03 | 0.01 | < 0.01 | 0.02 |
| Total Barium (lbs/day) Daily Maximum | 0.09 | 0.06 | 0.08 | 0.05 | 0.05 | 0.11 | 0.02 | 0.03 | 0.07 | 0.02 | 0.01 | 0.03 |
| Total Barium (mg/L) Average Monthly | 2.30 | 0.7 | 2.3 | 1.94 | 2.2 | 2.52 | 1.8 | 2.2 | 2.1 | 1.6 | 1.6 | 1.4 |
| Total Barium (mg/L) Daily Maximum | 2.45 | 1.0 | 2.6 | 2.35 | 2.2 | 2.66 | 2.2 | 2.6 | 2.2 | 1.6 | 1.9 | 1.4 |
| Total Iron (lbs/day) Average Monthly | < 0.1 | 0.01 | < 0.01 | < 0.01 | < 0.1 | 0.01 | < 0.01 | < 0.01 | 0.01 | < 0.01 | < 0.01 | < 0.1 |
| Total Iron (lbs/day) Daily Maximum | < 0.1 | 0.03 | 0.01 | < 0.01 | < 0.1 | 0.02 | < 0.01 | < 0.01 | 0.01 | < 0.01 | < 0.01 | < 0.1 |
| Total Iron (mg/L) Average Monthly | 0.1 | 0.3 | 0.2 | 0.1 | 0.11 | 0.29 | 0.4 | 0.3 | 0.4 | 0.4 | 0.8 | 0.1 |
| Total Iron (mg/L) Daily Maximum | 0.1 | 0.5 | 0.3 | 0.1 | 0.13 | 0.35 | 0.6 | 0.3 | 0.5 | 0.4 | 1.0 | 0.1 |
| Total Strontium (lbs/day) Average Monthly | 0.5 | 0.4 | 0.4 | 0.5 | 0.4 | 0.6 | 0.2 | 0.2 | 0.3 | 0.1 | < 0.1 | 0.5 |
| Total Strontium (lbs/day) Daily Maximum | 1.0 | 1.0 | 0.9 | 1.2 | 0.9 | 1.4 | 0.3 | 0.5 | 0.9 | 0.3 | 0.1 | 0.8 |
| Total Strontium (mg/L) Average Monthly | 33.9 | 9.8 | 37.1 | 40.6 | 43.3 | 34.8 | 27.7 | 29.5 | 25.9 | 28.3 | 28.9 | 34.9 |
| Total Strontium (mg/L) Daily Maximum | 44.1 | 16.9 | 45.8 | 59.2 | 44.2 | 39.2 | 31.0 | 30.4 | 26.8 | 29.2 | 32.1 | 37.1 |
| Sulfate (lbs/day) Average Monthly | 1.83 | 2.64 | 0.91 | 1.34 | 1.34 | 2.8 | 0.67 | 1.0 | 1.54 | 0.5 | 0.24 | 1.86 |
| Sulfate (lbs/day) Daily Maximum | 2.98 | 6.83 | 2.1 | 2.4 | 3.12 | 6.6 | 1.30 | 2.5 | 4.45 | 1.4 | 0.71 | 3.21 |
| Sulfate (mg/L) Average Monthly | 120.9 | 64.7 | 96.9 | 127 | 149 | 150.5 | 110.5 | 130.5 | 82.5 | 80.2 | 138.5 | 127.5 |
| Sulfate (mg/L) Daily Maximum | 171.0 | 112 | 125.0 | 136 | 152 | 153.0 | 116.0 | 132.0 | 131.0 | 128.0 | 150.0 | 148.0 |
| Chloride (lbs/day) Average Monthly | 86 | 50 | 88 | 81 | 89 | 162 | 34 | 59 | 100 | 36 | 10 | 114 |
| Chloride (lbs/day) Daily Maximum | 173 | 84 | 214 | 199 | 199 | 348 | 69 | 146 | 284 | 84 | 30 | 181 |
| Chloride (mg/L) Average Monthly | 4915 | 1225 | 8390 | 6770 | 10410 | 9710 | 5455 | 8145 | 5865 | 6590 | 7100 | 7820 |

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Crooked Creek Treatment Facility

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|--------------------------------------|------|------|------|------|-------|-------|------|------|------|-------|-------|-------|
| Chloride (mg/L) Daily Maximum | 5710 | 1380 | 9760 | 9800 | 11500 | 11600 | 6160 | 8560 | 8370 | 7700 | 7780 | 8190 |
| Bromide (lbs/day) Average Monthly | 0.79 | 0.35 | 0.68 | 0.84 | 0.7 | 1.45 | 0.43 | 0.39 | 0.92 | 0.6 | 0.10 | 1.53 |
| Bromide (lbs/day) Daily Maximum | 1.69 | 0.54 | 1.68 | 1.58 | 1.6 | 3.28 | 0.70 | 1.11 | 2.43 | 1.5 | 0.31 | 2.65 |
| Bromide (mg/L) Average Monthly | 43.6 | 8.5 | 63.9 | 77.9 | 79 | 81.3 | 73.9 | 38.9 | 69.5 | 102.2 | 87.7 | 105.3 |
| Bromide (mg/L) Daily Maximum | 47.0 | 8.9 | 72.6 | 78.1 | 83 | 88.8 | 85.5 | 58.5 | 71.4 | 69.3 | 110.0 | 122.0 |

Development of Effluent Limitations

| | | | |
|--------------------------------|-----------------|--------------------------|-----------------|
| Outfall No. | 001 | Design Flow (MGD) | 0.15 |
| Latitude | 40° 38' 15.06" | Longitude | -79° 21' 32.08" |
| Wastewater Description: | Treated Connate | | |

Technology-Based Limitations

While this facility does collect and treat connate from multiple wells it is not a centralized waste treatment facility subject to the effluent limit guideline ("ELG") 40 CFR 437. The applicability section of the ELG, 40 CFR 437.1(b), states, "This part does not apply to the following discharges of wastewater from a CWT facility: ... (3) Wastewater from the treatment of wastes received from off-site via conduit (e.g., pipelines, channels, ditches, trenches, etc.) from the facility that generates the wastes unless the resulting wastewaters are commingled with other wastewaters subject to this provision." In this case the connate is being generated at the well and then delivered via a conduit (pipelines) to the treatment facility where it is processed and discharged.

Outfall 001 is no longer subject to 40 CFR 435, the Oil and Gas Extraction Point Source discharge ELG as EPA has not promulgated effluent limitation guidelines and standards for pollutant discharges from coalbed methane extraction facilities. EPA had initiated a coalbed methane rulemaking but announced its decision to discontinue this effort in Fall 2014.

The production water is subject to the provisions in the oil & gas wastewater permitting manual ("OGPM").

The OGPM stipulates technology based effluent limitations as least as stringent as the following:

| Parameter | Minimum | Average Monthly | Daily Maximum | Instantaneous Maximum | Maximum |
|-------------------------------|---------|-----------------------|---------------|-----------------------|---------|
| Total Suspended Solids (mg/L) | - | 30 | 60 | 75 | - |
| Oil and Grease (mg/L) | - | 15 | 30 | - | - |
| Iron, Total (mg/L) | - | 3.5 | 7.0 | 9.0 | - |
| Acidity (mg/L) | - | Less than Alkalinity. | | | - |
| pH (s.u.) | 6 | - | - | | 9 |

Table 1: Technology based effluent limitations from the Oil & Gas Wastewater Permitting Manual

This facility is also subject to the effluent standards for Total Dissolved Solids (TDS) set forth in PA Code Chapter 95.10. This facility is not considered a new or expanding mass load as it was an authorized discharge prior to August 21, 2010. The previously calculated average and maximum loadings are shown in table 2, below. They will be included as a special condition in the permit. If the permittee discharges over this loading it will be considered an expanding load and must be reevaluated under Chapter 95.10. Osmotic pressure is also a pollutant of concern but because TDS and osmotic pressure are different ways of expressing the presence of the same pollutant, dissolved salts, a technology based effluent limitation for osmotic pressure will not be developed.

| Parameter | Average Monthly | Maximum Daily |
|----------------------------------|-----------------|---------------|
| Total Dissolved Solids (lbs/day) | 16,471 | 16,889 |

Table 2: Authorized TDS loading.

The discharge is subject to the effluent standards for industrial wastes in 25 PA Code Chapter 95.2 (1, 2 and 4) for pH, oil & grease, and dissolved iron. These are shown in table 3, below. Because there is a total iron limit with a maximum of 7 also applicable to the discharge the dissolved iron limit is not necessary and will not be imposed.

| Parameter | Minimum | Average Monthly | Daily Maximum | Maximum |
|------------------------|---------|-----------------|---------------|---------|
| Oil and Grease (mg/L) | - | 15 | 30 | |
| Iron, dissolved (mg/L) | - | - | 7.0 | |
| pH (s.u.) | 6 | - | - | 9 |

Table 3: Effluent standards from 25 PA Code Chapter 95.2

Flow monitoring will be required in accordance with 25 Pa. Code § 92a.61(b).

Water Quality-Based Limitations

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

| Parameter | Limit (mg/l) | SBC | Model |
|-----------|--------------|-----|-------|
| None | | | |

Comments: No reasonable potential was determined, nor was monitoring recommend, for any pollutants after running the TMS Spreadsheet.

Previously, TDS and its major constituents including sulfate, chloride, bromide had emerged as pollutants of concern in several major watersheds in the Commonwealth. The conservative nature of these solids allows them to accumulate in surface waters and they may remain a concern even if the immediate downstream public water supply is not directly impacted. Bromide has been linked to formation of disinfection byproducts at increased levels in public water systems. In addition, as a consequence of actions associated with Triennial Review 13, the Environmental Quality Board had directed DEP to collect additional data related to sulfate, chloride, and 1,4-dioxane. Under a monitoring initiative that was in effect at the time of the previous permit renewal, monitoring was placed in the permit for sulfate, chloride, and bromide.

Since that time, the Department collected enough data, and is no longer requiring certain facilities to collect this data. In addition, this facility's average flow rated dramatically decreased, thus putting them under the threshold of the previous monitoring initiative. Therefore, monitoring for chloride, total sulfate, and bromide will be removed from the proposed renewed permit.

Best Professional Judgment (BPJ) Limitations

Comments: Existing effluent limits for total barium, found in table 4, will be retained in this permit renewal. The technology based effluent limitations were developed based on Best Professional Judgement in accordance with 40 CFR 125.3.

| Parameter | Average Monthly | Daily Maximum |
|---------------------|-----------------|---------------|
| Total Barium (mg/L) | 10.0 | 20.0 |

Table 4: BPJ Technology Based Effluent Limitations

Total strontium was previously identified as a pollutant of concern and had monitoring in the permit. After evaluating effluent quality of the upgraded treatment facility and running the TMS Spreadsheet, it was determined that total strontium is no longer a pollutant of concern. Monitoring for total strontium will be removed from the proposed renewed permit.

Anti-Backsliding

No backsliding of limits is being proposed.

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 | Daily Maximum | Daily Minimum | Average Monthly | Daily Maximum | Instant. Maximum | | |
| Flow (MGD) | Report | 0.15 | XXX | XXX | XXX | XXX | 1/day | Measured |
| pH (S.U.) | XXX | XXX | 6.0 | XXX | 9.0 | XXX | 2/month | Grab |
| TSS | XXX | XXX | XXX | 30.0 | 60.0 | 75 | 2/month | 24-Hr Composite |
| Total Dissolved Solids | Report | Report | XXX | Report | Report | XXX | 2/month | 24-Hr Composite |
| Osmotic Pressure (mOs/kg) | XXX | XXX | XXX | Report | Report | XXX | 2/month | 24-Hr Composite |
| Oil and Grease | XXX | XXX | XXX | 15.0 | XXX | 30.0 | 2/month | Grab |
| Total Acidity | XXX | XXX | XXX | Report | Report | XXX | 2/month | 24-Hr Composite |
| Total Alkalinity Effluent Net | XXX | XXX | 0.0 | XXX | XXX | XXX | 2/month | Calculation |
| Total Barium | Report | Report | XXX | 10.0 | 20.0 | 25 | 2/month | 24-Hr Composite |
| Total Iron | Report | Report | XXX | 3.5 | 7.0 | 9 | 2/month | 24-Hr Composite |

Compliance Sampling Location: Outfall 001 (prior to mixing with any waters)

Other Comments:



Discharge Information

Instructions Discharge Stream

Facility: Crooked Creek Treatment Facility NPDES Permit No.: PA0253588 Outfall No.: 001

Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Connate Wastewater

| Discharge Characteristics | | | | | | | | |
|---------------------------|------------------|----------|----------------------------|-----|-----|-----|--------------------------|----------------|
| Design Flow (MGD)* | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) | | | | Complete Mix Times (min) | |
| | | | AFC | CFC | THH | CRL | Q ₇₋₁₀ | Q _n |
| 0.0015 | 1180 | 7.5 | | | | | | |

| | | | | 0 if left blank | | 0.5 if left blank | | 0 if left blank | | | 1 if left blank | |
|---------|---------------------------------|------|--------|-----------------|----------------|-------------------|--------------|-----------------|---------------|-----|------------------|----------------|
| | | | | Trib Conc | Stream Conc | Daily CV | Hourly CV | Strea m CV | Fate Coeff | FOS | Criteri a Mod | Chem Transl |
| Group 1 | Total Dissolved Solids (PWS) | mg/L | 13,100 | | | | | | | | | |
| | Chloride (PWS) | mg/L | 6600 | | | | | | | | | |
| | Bromide | mg/L | 97.3 | | | | | | | | | |
| | Sulfate (PWS) | mg/L | 90.4 | | | | | | | | | |
| | Fluoride (PWS) | mg/L | 0.169 | | | | | | | | | |
| Group 2 | Total Aluminum | µg/L | 13 | | | | | | | | | |
| | Total Antimony | µg/L | 8.7 | | | | | | | | | |
| | Total Arsenic | µg/L | 5.7 | | | | | | | | | |
| | Total Barium | µg/L | 5920 | | | | | | | | | |
| | Total Beryllium | µg/L | < 0.3 | | | | | | | | | |
| | Total Boron | µg/L | 310 | | | | | | | | | |
| | Total Cadmium | µg/L | < 1.6 | | | | | | | | | |
| | Total Chromium (III) | µg/L | 0.4 | | | | | | | | | |
| | Hexavalent Chromium | µg/L | < 5 | | | | | | | | | |
| | Total Cobalt | µg/L | 2 | | | | | | | | | |
| | Total Copper | µg/L | 12 | | | | | | | | | |
| | Free Cyanide | µg/L | 1.9 | | | | | | | | | |
| | Total Cyanide | µg/L | 1.9 | | | | | | | | | |
| | Dissolved Iron | µg/L | 42 | | | | | | | | | |
| | Total Iron | µg/L | 2180 | | | | | | | | | |
| | Total Lead | µg/L | < 3.3 | | | | | | | | | |
| | Total Manganese | µg/L | 24 | | | | | | | | | |
| | Total Mercury | µg/L | 0.04 | | | | | | | | | |
| | Total Nickel | µg/L | 4 | | | | | | | | | |
| | Total Phenols (Phenolics) (PWS) | µg/L | 3 | | | | | | | | | |
| | Total Selenium | µg/L | 51 | | | | | | | | | |
| | Total Silver | µg/L | < 3.3 | | | | | | | | | |
| | Total Thallium | µg/L | < 2.8 | | | | | | | | | |
| | Total Zinc | µg/L | 2 | | | | | | | | | |
| | Total Molybdenum | µg/L | 3 | | | | | | | | | |
| | Acrolein | µg/L | < | | | | | | | | | |
| | Acrylamide | µg/L | < | | | | | | | | | |
| | Acrylonitrile | µg/L | < | | | | | | | | | |
| | Benzene | µg/L | < | | | | | | | | | |
| | Bromoform | µg/L | < | | | | | | | | | |
| | Carbon Tetrachloride | µg/L | < | | | | | | | | | |

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Stream / Surface Water Information

Crooked Creek Treatment Facility, NPDES Permit No. PA0253588, Outfall 001

Instructions Discharge **Stream**

Receiving Surface Water Name: Crooked Creek

No. Reaches to Model: 1

- ☒ Statewide Criteria
☐ Great Lakes Criteria
☐ ORSANCO Criteria

| Location | Stream Code* | RMI* | Elevation (ft)* | DA (mi ²)* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|--------------------|--------------|------|-----------------|------------------------|---------------|----------------------|----------------------|
| Point of Discharge | 046216 | 37.8 | 970 | 200 | 0.001 | | Yes |
| End of Reach 1 | 042122 | 0 | 746 | 11200 | | 1 | Yes |

Q₇₋₁₀

| Location | RMI | LFY (cfs/mi ²)* | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|--------------------|------|-----------------------------|------------|-----------|-----------|------------|------------|----------------|--------------------|-----------|----|-----------|-----|----------|----|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness* | pH* | Hardness | pH |
| Point of Discharge | 37.8 | 0.0658 | 20.4 | | | | | | | | | 116 | 7.2 | | |
| End of Reach 1 | 0 | 0.0658 | 2070 | | | | | | | | | 100 | 7 | | |

Q_h

| Location | RMI | LFY (cfs/mi ²)* | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|--------------------|------|-----------------------------|------------|-----------|-----------|------------|------------|----------------|--------------------|-----------|----|----------|----|----------|----|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness | pH | Hardness | pH |
| Point of Discharge | 37.8 | | | | | | | | | | | | | | |
| End of Reach 1 | 0 | | | | | | | | | | | | | | |



Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Crooked Creek Treatment Facility, NPDES Permit No. PA0253588, Outfall 001

Instructions

Results

RETURN TO INPUTS

SAVE AS PDF

PRINT

☒ All

☐ Inputs

☐ Results

☐ Limits

☒ Hydrodynamics

Q₇₋₁₀

| RMI | Stream Flow (cfs) | PWS Withdrawal (cfs) | Net Stream Flow (cfs) | Discharge Analysis Flow (cfs) | Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Travel Time (days) | Complete Mix Time (min) |
|------|-------------------|----------------------|-----------------------|-------------------------------|---------------|------------|------------|-----------|----------------|--------------------|-------------------------|
| 37.8 | 20.40 | | 20.40 | 0.002 | 0.001 | 0.885 | 74.288 | 83.898 | 0.31 | 7.448 | 287.022 |
| 0 | 2070.00 | 1.547 | 2068.453 | | | | | | | | |

Q_h

| RMI | Stream Flow (cfs) | PWS Withdrawal (cfs) | Net Stream Flow (cfs) | Discharge Analysis Flow (cfs) | Slope (ft/ft) | Depth (ft) | Width (ft) | W/D Ratio | Velocity (fps) | Travel Time (days) | Complete Mix Time (min) |
|------|-------------------|----------------------|-----------------------|-------------------------------|---------------|------------|------------|-----------|----------------|--------------------|-------------------------|
| 37.8 | 103.66 | | 103.66 | 0.002 | 0.001 | 1.81 | 74.288 | 41.034 | 0.771 | 2.997 | 98.192 |
| 0 | 5876.881 | 1.547 | 5875.33 | | | | | | | | |

☒ Wasteload Allocations

☒ AFC

CCT (min): 15

PMF: 0.229

Analysis Hardness (mg/l): 116.53

Analysis pH: 7.20

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|----------------------------------|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | 750 | 750 | 1,508,045 | |
| Total Antimony | 0 | 0 | | 0 | 1,100 | 1,100 | 2,211,799 | |
| Total Arsenic | 0 | 0 | | 0 | 340 | 340 | 683,647 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 21,000 | 21,000 | 42,225,261 | |
| Total Boron | 0 | 0 | | 0 | 8,100 | 8,100 | 16,286,886 | |
| Total Cadmium | 0 | 0 | | 0 | 2.337 | 2.49 | 5,011 | Chem Translator of 0.938 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 645.810 | 2,044 | 4,109,325 | Chem Translator of 0.316 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 16 | 16.3 | 32,761 | Chem Translator of 0.982 applied |
| Total Cobalt | 0 | 0 | | 0 | 95 | 95.0 | 191,019 | |
| Total Copper | 0 | 0 | | 0 | 15.523 | 16.2 | 32,512 | Chem Translator of 0.96 applied |

Model Results

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NPDES Permit Fact Sheet
Crooked Creek Treatment Facility

NPDES Permit No. PA0253588

| | | | | | | | | |
|---------------------------------|---|---|--|---|---------|------|-----------|----------------------------------|
| Free Cyanide | 0 | 0 | | 0 | 22 | 22.0 | 44,236 | |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | 76.254 | 99.2 | 199,459 | Chem Translator of 0.769 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 1.400 | 1.65 | 3,312 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 532.928 | 534 | 1,073,719 | Chem Translator of 0.998 applied |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Selenium | 0 | 0 | | 0 | N/A | N/A | N/A | Chem Translator of 0.922 applied |
| Total Silver | 0 | 0 | | 0 | 4.185 | 4.92 | 9,900 | Chem Translator of 0.85 applied |
| Total Thallium | 0 | 0 | | 0 | 65 | 65.0 | 130,697 | |
| Total Zinc | 0 | 0 | | 0 | 133.397 | 136 | 274,258 | Chem Translator of 0.978 applied |
| Total Strontium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Osmotic Pressure | 0 | 0 | | 0 | 50 | 50.0 | 100,536 | |

☒ **CFC**

CCT (min): #####

PMF: 1

Analysis Hardness (mg/l): 116.12

Analysis pH: 7.20

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|----------------------------------|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 220 | 220 | 1,934,286 | |
| Total Arsenic | 0 | 0 | | 0 | 150 | 150 | 1,318,831 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 4,100 | 4,100 | 36,048,056 | |
| Total Boron | 0 | 0 | | 0 | 1,600 | 1,600 | 14,067,534 | |
| Total Cadmium | 0 | 0 | | 0 | 0.273 | 0.3 | 2,658 | Chem Translator of 0.903 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 83.766 | 97.4 | 856,377 | Chem Translator of 0.86 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 10 | 10.4 | 91,395 | Chem Translator of 0.962 applied |
| Total Cobalt | 0 | 0 | | 0 | 19 | 19.0 | 167,052 | |
| Total Copper | 0 | 0 | | 0 | 10.176 | 10.6 | 93,196 | Chem Translator of 0.96 applied |
| Free Cyanide | 0 | 0 | | 0 | 5.2 | 5.2 | 45,719 | |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | 1,500 | 1,500 | 13,188,313 | WQC = 30 day average; PMF = 1 |
| Total Lead | 0 | 0 | | 0 | 2,960 | 3.85 | 33,836 | Chem Translator of 0.769 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 0.770 | 0.91 | 7,965 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 59.016 | 59.2 | 520,446 | Chem Translator of 0.997 applied |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Selenium | 0 | 0 | | 0 | 4.600 | 4.99 | 43,866 | Chem Translator of 0.922 applied |
| Total Silver | 0 | 0 | | 0 | N/A | N/A | N/A | Chem Translator of 1 applied |
| Total Thallium | 0 | 0 | | 0 | 13 | 13.0 | 114,299 | |
| Total Zinc | 0 | 0 | | 0 | 134.089 | 136 | 1,195,675 | Chem Translator of 0.986 applied |
| Total Strontium | 0 | 0 | | 0 | N/A | N/A | N/A | |

Model Results

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| | | | | | | |
|------------------|---|---|---|-----|-----|-----|
| Osmotic Pressure | 0 | 0 | 0 | N/A | N/A | N/A |
|------------------|---|---|---|-----|-----|-----|

☒ **THH**

CCT (min): **#####**

THH PMF: **1**

Analysis Hardness (mg/l): **N/A**

Analysis pH: **N/A**

PWS PMF: **1**

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---------------------------------|--------------------|-----------|------------------|-----------|------------|---------------|------------|--|
| Total Dissolved Solids (PWS) | 0 | 0 | 0 | 0 | 500,000 | 500,000 | ##### | WQC applied at RMI 0 with a design stream flow of 2070 cfs |
| Chloride (PWS) | 0 | 0 | 0 | 0 | 250,000 | 250,000 | ##### | WQC applied at RMI 0 with a design stream flow of 2070 cfs |
| Sulfate (PWS) | 0 | 0 | 0 | 0 | 250,000 | 250,000 | ##### | WQC applied at RMI 0 with a design stream flow of 2070 cfs |
| Fluoride (PWS) | 0 | 0 | 0 | 0 | 2,000 | 2,000 | ##### | WQC applied at RMI 0 with a design stream flow of 2070 cfs |
| Total Aluminum | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | 0 | 0 | 5.6 | 5.6 | 49,236 | |
| Total Arsenic | 0 | 0 | 0 | 0 | 10 | 10.0 | 87,922 | |
| Total Barium | 0 | 0 | 0 | 0 | 2,400 | 2,400 | 21,101,301 | |
| Total Boron | 0 | 0 | 0 | 0 | 3,100 | 3,100 | 27,255,847 | |
| Total Cadmium | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Chromium (III) | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Hexavalent Chromium | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Cobalt | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Copper | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Free Cyanide | 0 | 0 | 0 | 0 | 4 | 4.0 | 35,169 | |
| Dissolved Iron | 0 | 0 | 0 | 0 | 300 | 300 | 2,637,663 | |
| Total Iron | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Manganese | 0 | 0 | 0 | 0 | 1,000 | 1,000 | 8,792,209 | |
| Total Mercury | 0 | 0 | 0 | 0 | 0.050 | 0.05 | 440 | |
| Total Nickel | 0 | 0 | 0 | 0 | 610 | 610 | 5,363,247 | |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | 0 | 0 | 5 | 5.0 | 4,460,251 | WQC applied at RMI 0 with a design stream flow of 2070 cfs |
| Total Selenium | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Silver | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Thallium | 0 | 0 | 0 | 0 | 0.24 | 0.24 | 2,110 | |
| Total Zinc | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |
| Total Strontium | 0 | 0 | 0 | 0 | 4,000 | 4,000 | 35,168,835 | |
| Osmotic Pressure | 0 | 0 | 0 | 0 | N/A | N/A | N/A | |

☒ **CRL**

CCT (min): **98.192**

PMF: **1**

Analysis Hardness (mg/l): **N/A**

Analysis pH: **N/A**

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

| | | | | | | | |
|---------------------------------|---|---|--|---|-----|-----|-----|
| Total Arsenic | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Barium | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Boron | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Cadmium | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Chromium (III) | 0 | 0 | | 0 | N/A | N/A | N/A |
| Hexavalent Chromium | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Cobalt | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Copper | 0 | 0 | | 0 | N/A | N/A | N/A |
| Free Cyanide | 0 | 0 | | 0 | N/A | N/A | N/A |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Mercury | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Nickel | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Selenium | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Silver | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Thallium | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A |
| Total Strontium | 0 | 0 | | 0 | N/A | N/A | N/A |
| Osmotic Pressure | 0 | 0 | | 0 | N/A | N/A | N/A |

☒ Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

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

☒ Other Pollutants without Limits or Monitoring

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

| Pollutants | Governing WQBEL | Units | Comments |
|------------------------------|-----------------|-------|----------------------------|
| Total Dissolved Solids (PWS) | ##### | mg/L | Discharge Conc ≤ 10% WQBEL |
| Chloride (PWS) | ##### | mg/L | Discharge Conc ≤ 10% WQBEL |
| Bromide | N/A | N/A | No WQS |
| Sulfate (PWS) | ##### | mg/L | Discharge Conc ≤ 10% WQBEL |
| Fluoride (PWS) | 1,784,100 | mg/L | Discharge Conc ≤ 10% WQBEL |
| Total Aluminum | 966,596 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Antimony | 49,236 | µg/L | Discharge Conc ≤ 10% WQBEL |

NPDES Permit Fact Sheet
Crooked Creek Treatment Facility

NPDES Permit No. PA0253588

| | | | |
|---------------------------------|------------|--------|----------------------------|
| Total Arsenic | 87,922 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Barium | 21,101,301 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium | N/A | N/A | No WQS |
| Total Boron | 10,439,237 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cadmium | 2,658 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Chromium (III) | 856,377 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Hexavalent Chromium | 20,999 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cobalt | 122,435 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Copper | 20,839 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Free Cyanide | 28,353 | µg/L | Discharge Conc ≤ 25% WQBEL |
| Total Cyanide | N/A | N/A | No WQS |
| Dissolved Iron | 2,637,663 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Iron | 13,188,313 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead | 33,836 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Manganese | 8,792,209 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Mercury | 440 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Nickel | 520,446 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Phenols (Phenolics) (PWS) | 4,460,251 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Selenium | 43,866 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Silver | 6,345 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Thallium | 2,110 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Zinc | 175,788 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Molybdenum | N/A | N/A | No WQS |
| Gross Alpha | N/A | N/A | No WQS |
| Total Beta | N/A | N/A | No WQS |
| Radium 226/228 | N/A | N/A | No WQS |
| Total Strontium | 35,168,835 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Uranium | N/A | N/A | No WQS |
| Osmotic Pressure | 64,440 | mOs/kg | Discharge Conc ≤ 10% WQBEL |

Crooked Creek Treatment Facility

South Bend Township, Armstrong County

PA0253588

Discharge pH

Outfall 001

| <u>Date</u> | <u>pH min</u> | <u>pH max</u> | <u>10^{-pH min}</u> | <u>10^{-pH max}</u> | <u>& pH max)</u> | <u>-Log (Ave pH)</u> |
|-------------|---------------|---------------|-----------------------------|-----------------------------|----------------------|----------------------|
| Jul-20 | 7.6 | 8.3 | 2.51E-08 | 5.01E-09 | 1.51E-08 | 7.8 |
| Aug-20 | 7.5 | 7.9 | 3.16E-08 | 1.26E-08 | 2.21E-08 | 7.7 |
| Sep-20 | 7.6 | 8.1 | 2.51E-08 | 7.94E-09 | 1.65E-08 | 7.8 |
| Jul-21 | 6.3 | 7.5 | 5.01E-07 | 3.16E-08 | 2.66E-07 | 6.6 |
| Aug-21 | 7.1 | 7.7 | 7.94E-08 | 2E-08 | 4.97E-08 | 7.3 |
| Sep-21 | 6.9 | 7.0 | 1.26E-07 | 1E-07 | 1.13E-07 | 6.9 |
| Median: | | | | | | 7.5 |