pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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

| | | | |
|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0097390** |
| Facility Type | **Municipal** | APS ID | **1058979** |
| Major / Minor | **Minor** | Authorization ID | **1388737** |

# NPDES PERMIT FACT SHEET
# INDIVIDUAL SEWAGE

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Marion Township** | Facility Name | **Vekaplast Plant** |
| Applicant Address | 485 Hartzell School Road | Facility Address | 100 Veka Drive |
| | Fombell, PA 16123-1303 | | Fombell, PA 16123-1424 |
| Applicant Contact | Marilyn Zona | Facility Contact | Same as Applicant |
| Applicant Phone | (724) 452-1986 | Facility Phone | Same as Applicant |
| Client ID | 39337 | Site ID | 465218 |
| Ch 94 Load Status | Not Overloaded | Municipality | Marion Township |
| Connection Status | No Limitations | County | Beaver |
| Date Application Received | February 28, 2022 | EPA Waived? | Yes |
| Date Application Accepted | March 21, 2022 | If No, Reason | |

Purpose of Application: Application for renewal of a NPDES Permit for an existing discharge of treated sewage.

## Summary of Review

The permittee has applied for a renewal of NPDES Permit No. PA0097390. PA0097390 was previously issued by the Pennsylvania Department of Environmental Protection (DEP) on August 7, 2017 and expired August 31, 2022. The permit application was received in a timely manner and the permit has been administratively extended.

Sewage at this facility is treated with flow equalization, extended aeration, phosphorus treatment, and final clarification, sand filtration, and chlorination prior to being discharged through Outfall 001 to Connoquenessing Creek which is classified as a Warm Water Fishery (WWF) per Chapter 93 Designated Use.

The permittee is currently enrolled in and will continue to use eDMR.

The applicant complied with Act 14 Notification with letters dated February 22, 2022 from Thomas Thompson.

Sludge produced at this facility is treated and pumped by Dalton Services Company, LLC and hauled to City of Beaver Falls STP (NPDES Permit No. PA0026883).

Vekaplast Plant STP has one industrial user, Veka Inc, which is a plastics molding and forming company. Plastic molding and forming company point sources are privy to 40 CFR 463, which sets technology based effluent limit guidelines for point sources. Because Vekaplast Plant STP receives the industrial wastewater and because it is a municipal wastewater treatment plant, it is not bound by 40 CFR 463. Veka Inc, however, is bound by the reporting requirements for POTW's and Industrial users in 40 CFR 403.12. The industrial user must contact the EPA in order to begin the Industrial User reporting process.

Changes since the last permit include:

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Stephanie Conrad / Environmental Engineering Specialist | May 18, 2023 |
| x | | Mahbuba Iasmin, Ph.D., P.E. / Environmental Engineering Manager | May 26, 2023 |

**Summary of Review**

- Addition of annual *E. coli* monitoring
- Addition of twice monthly influent $BOD_5$ and TSS monitoring
- Addition of $CBOD_5$ and TSS load limits
- Addition of ammonia-nitrogen load monitoring
- Increase of monitoring frequency for total nitrogen monitoring from annual to twice monthly

2022 Consent Assessment of Civil Penalty

Marion Township failed to comply with effluent limits on 13 occasions between January 2018 and February 2022. Primarily, these exceedances were for total phosphorus, but there were also violations for total residual chlorine (TRC), dissolved oxygen (DO), pH, and fecal coliform as well. The township consented to pay a civil penalty of $2,500 and a Consent Assessment of Civil Penalty (CACP) was executed on September 27, 2022.

Anti-Backsliding

Section 402(o) of the Clean Water Act (CWA), enacted in the Water Quality Act of 1987, establishes anti-backsliding rules governing two situations. The first situation occurs when a permittee seeks to revise a Technology-Based effluent limitation based on BPJ to reflect a subsequently promulgated effluent guideline which is less stringent. The second situation addressed by Section 402(o) arises when a permittee seeks relaxation of an effluent limitation which is based upon a State treatment standard of water quality standard.

Previous limits can be used pursuant to EPA's anti-backsliding regulation 40 CFR 122.44 **(l) Reissued permits. (1) Except as provided in paragraph (l)(2) of this section when a permit is renewed or reissued. Interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit (unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under §122.62). (2) In the case of effluent limitations established on the basis of Section 402(a)(1)(B) of the CWA, a permit may not be renewed, reissued, or modified on the basis of effluent guidelines promulgated under section 304(b) subsequent to the original issuance of such permit, to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit.**

**The facility is not seeking to revise the previously permitted effluent limits.**

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.

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

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.028 |
| Latitude | 40º 47' 55" | Longitude | -80º 10' 22" |
| Quad Name | Zelienople | Quad Code | 1204 |
| Wastewater Description: | Sewage Effluent | | |

| | | | |
|---|---|---|---|
| Receiving Waters | Connoquenessing Creek (WWF) | Stream Code | 34025 |
| NHD Com ID | 126223578 | RMI | 17.05 |
| Drainage Area | 324 | Yield (cfs/mi$^2$) | 0.0315 |
| $Q_{7-10}$ Flow (cfs) | 10.2 | $Q_{7-10}$ Basis | USGS Stream Stats |
| Elevation (ft) | 895 | Slope (ft/ft) | |
| Watershed No. | 20-C | Chapter 93 Class. | WWF |
| Existing Use | Aquatic Life | Existing Use Qualifier | |
| Exceptions to Use | | Exceptions to Criteria | |
| Assessment Status | Impaired | | |
| Cause(s) of Impairment | Organic Enrichment, Low DO | | |
| Source(s) of Impairment | Agriculture | | |
| TMDL Status | | Name | |

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

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | Beaver Falls Municipal Authority | | |
| PWS Waters | Beaver River | Flow at Intake (MGD) | 16.8 |
| PWS RMI | 5.42 | Distance from Outfall (mi) | 23.89 |

Changes Since Last Permit Issuance: $Q_{7-10}$ basis has changed since last permit issuance to reflect department policy changing from referencing Bulletin 12 to USGS Stream Stats. Receiving stream flow has changes as a result.

Other Comments:

**Treatment Facility Summary**

**Treatment Facility Name:** Vekaplast STP

| WQM Permit No. | Issuance Date | Purpose |
|---|---|---|
| 0488402 | May 6, 1988 | Permit issued by the PA DEP to Marion Township approving the construction of a 0.028 MGD sewage treatment facility consisting of:<br>• 75' of 8" PVC gravity sewer<br>• One (1) 5' diameter precast concrete pump station with two 130 gpm pumps and 4" force main<br>• One (1) 0.252 MGD comminutor and 1.5 inch back up manually cleaned bar screen<br>• One (1) 6,200-gallon equalization tank<br>• Two (2) 16 gpm pumps<br>• One (1) 8,476-gallon extended aeration treatment tank<br>• One (1) 5,682-gallon extended aeration treatment tank<br>• One (1) 2507-gallon final settling tank<br>• Tablet chlorination and a 345-gallon chlorine contact tank<br>• One 7,000-gallon aerobic biosolids digestion tank |
| 0488402-A1 | June 19, 2000 | Permit issued by PA DEP to Marion Township approving a sewage plant expansion by installing:<br>• One (1) 6,200-gallon aerated flow equalization tank<br>• Two (2) extended aeration tanks with a combined capacity of 14,158 gallons<br>• One (1) dual hopper final clarifier<br>• One (1) 7,000-gallon aerobic sludge holding tank<br>• One (1) 580-gallon chlorine contact tank. |

| Waste Type | Degree of Treatment | Process Type | Disinfection | Avg Annual Flow (MGD) |
|---|---|---|---|---|
| Sewage | Secondary | Extended Aeration | No Disinfection | 0.028 |

| Hydraulic Capacity (MGD) | Organic Capacity (lbs/day) | Load Status | Biosolids Treatment | Biosolids Use/Disposal |
|---|---|---|---|---|
| 0.028 | 47 | Not Overloaded | Hauled Offsite | Other WWTP |

Changes Since Last Permit Issuance:

Other Comments:

**Compliance History**

## Operations Compliance Check Summary Report

**Facility:** Vekaplast STP

**NPDES Permit No.:** PA0097390

**Compliance Review Period:** 3/1/2018-3/28/2023

**Inspection Summary:**

| INSPECTED DATE | INSP TYPE | AGENCY | INSPECTION RESULT DESC | INSPECTION COMMENT |
|---|---|---|---|---|
| 07/22/2021 | Compliance Evaluation | PA Dept of Environmental Protection | Violation(s) Noted | |
| 06/22/2021 | Administrative/File Review | PA Dept of Environmental Protection | Administratively Closed | Review of eDMR Non-Compliance data for routine monitoring |

**Violation Summary:**

| VIOLATION DATE | VIOLATION TYPE | VIOLATION TYPE DESC | RESOLVED DATE |
|---|---|---|---|
| 07/22/2021 | 92A.44 | NPDES - Violation of effluent limits in Part A of permit | 07/27/2021 |

**Open Violations by Client ID:** No open violations for Client ID 39337

**Enforcement Summary:**

| ENF TYPE | ENF TYPE DESC | EXECUTED DATE | VIOLATIONS | AMOUNT RECEIVED | ENF FINAL STATUS | ENF COMMENT |
|---|---|---|---|---|---|---|
| CACP | Consent Assessment of Civil Penalty | 09/27/2022 | 92A.44 | $2,500.00 | Comply/Closed | CACP for effluent exceedances from January 2018 through February 2022. |
| NOV | Notice of Violation | 07/27/2021 | 92A.44 | | Administrative Close Out | |

**Effluent Violation Summary:**

| MON_PD_BEGIN | MON_PD_END | OUTFALL | PARAMETER | SAMPLE | PERMIT | UNIT | STAT_BASE_CODE |
|---|---|---|---|---|---|---|---|
| 11/1/2022 | 11/30/2022 | 1 | pH | 5 | 6 | S.U. | Minimum |
| 2/1/2022 | 2/28/2022 | 1 | Total Phosphorus | 3.2 | 2 | mg/L | Average Monthly |
| 11/1/2020 | 11/30/2020 | 1 | Total Phosphorus | 2.64 | 2 | mg/L | Average Monthly |
| 11/1/2020 | 11/30/2020 | 1 | Phosphorus | 4.31 | 4 | mg/L | Instantaneous Maximum |
| 8/1/2020 | 8/31/2020 | 1 | Fecal Coliform | 2420 | 1000 | No./100 ml | Instantaneous Maximum |
| 8/1/2020 | 8/31/2020 | 1 | Fecal Coliform | 339 | 200 | No./100 ml | Geometric Mean |
| 6/1/2020 | 6/30/2020 | 1 | Dissolved Oxygen | 3 | 4 | mg/L | Minimum |
| 6/1/2019 | 6/30/2019 | 1 | Total Phosphorus | 2.94 | 2 | mg/L | Average Monthly |
| 6/1/2019 | 6/30/2019 | 1 | Phosphorus | 4.66 | 4 | mg/L | Instantaneous Maximum |
| 2/1/2019 | 2/28/2019 | 1 | pH | 5.5 | 6 | S.U. | Minimum |
| 1/1/2019 | 1/31/2019 | 1 | Total Phosphorus | 2.08 | 2 | mg/L | Average Monthly |
| 1/1/2019 | 1/31/2019 | 1 | Phosphorus | 4.01 | 4 | mg/L | Instantaneous Maximum |
| 6/1/2018 | 6/30/2018 | 1 | Total Residual Chlorine (TRC) | 1.71 | 1.6 | mg/L | Instantaneous Maximum |

**Compliance Status:** Facility currently has no open violations or pending enforcements.

**Completed by:** Amanda Schmidt

**Completed date:** 4/4/23

## Compliance History

**DMR Data for Outfall 001 (from February 1, 2022 to January 31, 2023)**

| Parameter | JAN-23 | DEC-22 | NOV-22 | OCT-22 | SEP-22 | AUG-22 | JUL-22 | JUN-22 | MAY-22 | APR-22 | MAR-22 | FEB-22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flow (MGD) Average Monthly | 0.0122 | 0.0101 | 0.0112 | 0.0132 | 0.0144 | 0.0147 | 0.0112 | 0.0135 | 0.0126 | 0.0111 | 0.0114 | 0.0124 |
| pH (S.U.) Minimum | 6.8 | 6.2 | 5.0 | 6.5 | 6.0 | 6.0 | 6.2 | 6.6 | 6.5 | 6.7 | 6.0 | 6.5 |
| pH (S.U.) Maximum | 7.7 | 7.6 | 7.5 | 7.7 | 7.5 | 7.4 | 7.5 | 7.6 | 7.6 | 7.8 | 7.5 | 7.3 |
| DO (mg/L) Minimum | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 5.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| TRC (mg/L) Average Monthly | 0.21 | 0.20 | 0.30 | 0.21 | 0.23 | 0.26 | 0.17 | 0.14 | 0.17 | 0.16 | 0.32 | 0.18 |
| TRC (mg/L) Instantaneous Maximum | 0.75 | 0.74 | 1.47 | 0.56 | 0.70 | 0.91 | 1.54 | 0.61 | 0.94 | 0.61 | 0.70 | 0.51 |
| CBOD5 (mg/L) Average Monthly | 6.25 | 3.5 | 3.0 | 3.0 | 3.25 | 3.0 | 5.8 | 3.0 | 4.15 | 7.4 | 5.1 | 3.0 |
| CBOD5 (mg/L) Instantaneous Maximum | 7.4 | 4.0 | 3.0 | 3.0 | 3.5 | 3.0 | 8.6 | 3.0 | 5.3 | 8.0 | 7.1 | 3.0 |
| TSS (mg/L) Average Monthly | 3.5 | 5.0 | 7.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 5.0 |
| TSS (mg/L) Instantaneous Maximum | 4.0 | 7.0 | 11.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 7.0 |
| Fecal Coliform (No./100 ml) Geometric Mean | 4.0 | 1 | 1 | 1 | 3 | 1 | 1 | 20 | 1 | 7 | 6.5 | 2 |
| Fecal Coliform (No./100 ml) Instantaneous Maximum | 15 | 1 | 1 | 1 | 8 | 1 | 1 | 68 | 1 | 43 | 42 | 5 |
| Total Nitrogen (mg/L) Daily Maximum | | 25.9 | | | | | | | | | | |
| Ammonia (mg/L) Average Monthly | 11.55 | 17.4 | 5.0 | 3.73 | 3.38 | 3.53 | 8.39 | 15.85 | 8.22 | 11.5 | 6.14 | 1.0 |
| Ammonia (mg/L) Instantaneous Maximum | 21.2 | 23.6 | 8.33 | 5.26 | 3.44 | 6.88 | 12.4 | 21.0 | 8.93 | 15.3 | 6.48 | 1.71 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Phosphorus (lbs/day) Average Monthly | 0.195 | 0.032 | 0.050 | 0.031 | 0.086 | 0.120 | 0.086 | 0.101 | 0.0129 | 0.15 | 0.12 | 0.33 |
| Total Phosphorus (mg/L) Average Monthly | 1.92 | 0.38 | 0.54 | 0.285 | 0.715 | 0.975 | 0.92 | 0.895 | 1.23 | 1.57 | 1.26 | 3.2 |
| Total Phosphorus (mg/L) Instantaneous Maximum | 2.12 | 0.40 | 0.71 | 0.29 | 0.87 | 1.11 | 1.07 | 1.23 | 1.78 | 1.92 | 1.90 | 4.0 |

## Compliance History

**Effluent Violations for Outfall 001, from: March 1, 2022 To: January 31, 2023**

| Parameter | Date | SBC | DMR Value | Units | Limit Value | Units |
|---|---|---|---|---|---|---|
| pH | 11/30/22 | Min | 5.0 | S.U. | 6.0 | S.U. |

Summary of Inspections:

Other Comments:

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** 0.028
**Latitude** 40º 47' 55.00" **Longitude** -80º 10' 22.00"
**Wastewater Description:** 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) |

### Industrial Users

Vekaplast Plant STP has one industrial user, Veka Inc, which is a plastics molding and forming company that discharges storm water, non-contact cooling water, and contact cooling water.

Plastic molding and forming company point sources are privy to 40 CFR 463, which sets technology based effluent limit guidelines for point sources. Because Vekaplast Plant STP receives the industrial wastewater and because it is a municipal wastewater treatment plant, it is not bound by 40 CFR 463. Veka Inc, however, is bound by the reporting requirements for publicly owned treatment works and Industrial users in 40 CFR 403.12. The industrial user must contact the EPA in order to begin the Industrial User reporting process.

Because the Vekaplast Plant STP is less than 5 MGD and the volume and/or the nature of the industrial influent does not upset the STP process, contaminate the sludge, or cause effluent violations, Marion Township is not required to create and maintain a pre-treatment program. No effluent limits are being imposed as a result of the industrial user.

### Water Quality-Based Limitations (WQBELs)

Pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory change published in the *Pennsylvania Bulletin* on July 11, 2020, new water quality criteria for ammonia-nitrogen apply to waters of the commonwealth. Therefore, WQBELs for Outfall 001 are being re-evaluated even though there have been no changes to the STP.

#### WQM 7.0 Water Quality Modeling

DEP's WQM 7.0 version 1.1 model is a Microsoft Access Program used for sewage discharges to determine whether TBELs are sufficient to meet in-stream water quality criteria for ammonia-nitrogen, carbonaceous biochemical oxygen demand ($CBOD_5$), and dissolve oxygen (DO). To accomplish this, the model simultaneously simulates mixing and degradation of ammonia-nitrogen and mixing and consumption of DO through $CBOD_5$ and ammonia-nitrogen degradation. WQM 7.0

determines the highest pollutant loadings that the stream can assimilate while still meeting water quality criteria under design conditions.

The model is a two-step process. The discharge is first modeled for the summer period (May through October) because warm temperatures are more likely to result in critical loading conditions. Reduced DO levels likely also play a role in ammonia toxicity and solubility of DO decreases at increased water temperature. If summer modeling determines that WQBELs are appropriate for the summer period, then modeling is completed for the winter period (November through April). This is in accordance with DEP's *"Implementation Guidance of Section 93.7 Ammonia Criteria"* [Doc. No. 391-2000-013] (Ammonia Guidance).

River Mile Index (RMI) was measured in eMAP PA as the distance from the facility's outfall to the mouth of Connoquenessing Creek. Elevation was read by applying a topomap in eMAP PA. Discharge point and downstream drainage areas were generated by USGS Stream Stats. $Q_{7-10}$ flow data was also generated in USGS Stream Stats. USGS Stream Stats output files are included in Attachment A. In the absence of site-specific data, discharge temperature, stream temperature, and stream pH were assumed to be 20, 25, and 7 in accordance with the Ammonia Guidance. Stream width to depth ratio was assumed to be 10 in accordance with the Department's *Technical Reference Guide (TRG) WQM 7.0 for Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen Version 1.0* [Doc. No. 391-2000-007]. Discharge concentrations for ammonia-nitrogen, $CBOD_5$, and DO are set as the effluent limits from the 2017 permit.

| **Discharge Characteristics** | | **Basin/Stream Characteristics** | |
|---|---|---|---|
| **Parameter** | **Value** | **Parameter** | **Value** |
| River Mile Index (RMI) | 17.05 | Drainage Area | 324 |
| Discharge Flow (MGD) | 0.028 | $Q_{7-10}$ (cfs) | 10.37 |
| Discharge Temp ($^oC$) | 20 | Low-flow yield (cfs/$mi^2$) | 0.032 |
| Ammonia-Nitrogen (mg/L) | 25 | Elevation (ft) | 895 |
| $CBOD_5$ (mg/L) | 25 | Stream Width/Depth | 10 |
| Dissolved Oxygen (mg/L) | 4.0 | Stream Temp ($^oC$) | 25 |
| | | Stream pH (s.u.) | 7 |

The discharge was evaluated using WQM 7.0 to evaluate $CBOD_5$, ammonia-nitrogen, and Dissolved Oxygen (DO) parameters. Modeling results confirmed that technology based effluent limits are adequate to meet in-stream water quality criteria for $CBOD_5$, ammonia-nitrogen, and Dissolved Oxygen. WQBELs for these parameters will not be imposed during this permit cycle. WQM 7.0 modeling output files are included in Attachment B.

In accordance with Section 1.A Note 4. of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9] for existing permits where WQM modeling results for summer indicate that an average monthly limit of 25 mg/L is acceptable, a year-round monitoring requirement will be imposed for ammonia-nitrogen as a minimum. Year-round monitoring is being re-imposed at a sampling frequency of 2/month in accordance with Table 6.3, Self-Monitoring Requirements for Sewage Discharges, from the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc. No. 362-0400-001]. This requirement is not changing from the previous permit.

**Total Residual Chlorine Modeling**

The Department's Total Residual Chlorine (TRC) Spreadsheet is a Microsoft Excel ® Program to evaluate WQBELs for TRC using mass balance. In accordance with the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], default values of 0.3 mg/L and 0 mg/L for in-stream and discharge chlorine demand were used as model inputs. A discharge of 0.028 and a $Q_{7-10}$ of 10.37 were also used as model inputs.

TRC was modeled with the TRC Spreadsheet, which confirmed that a TBEL limit was adequate to meet in-stream water quality standards. The TRC Spreadsheet output file is provided in Attachment C.

**Toxics Management Spreadsheet Water Quality Modeling Program and Procedure for Evaluating Reasonable Potential**

The Department's Toxic Management Spreadsheet Version 1.3 (TMS) is a Microsoft Excel ® spreadsheet that facilitates the evaluation of a single discharger by performing the calculations necessary to complete a Reasonable Potential Analysis and determine WQBELs for discharges of toxic and nonconventional pollutants.

The TMS evaluates each pollutant by computing a Wasteload Allocation for each applicable criterion, determining the most stringent governing WQBEL, and comparing that governing WQBEL to the input discharge concentration to determine whether permit requirements apply in accordance with the following reasonable potential thresholds as documented in the Department's SOP for *Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers* [SOP No. BCW-PMT-037]:

- Establish limits in the permit where the maximum reported effluent concentration or calculated average monthly effluent concentration equals or exceeds 50% of the WQBEL. Use the average monthly, maximum daily, and instantaneous maximum (IMAX) limits for the permit as recommended by the TMS.

- For non-conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated average monthly effluent concentration is between 25% - 50% of the WQBEL.

- For conservative pollutants, establish monitoring requirements where the maximum reported effluent concentration or calculated average monthly concentration is between 10% - 50% of the WQBEL.

TMS requires input data including stream code, RMI, elevation, drainage area, low flow yield, discharge hardness and pH, and stream hardness and pH. The same discharge and basin characteristic values are used as for WQM 7.0. Discharge pH and hardness are taken from the effluent sample results reported in the application. In the absence of site-specific data, stream pH and hardness defaults to 7.0 s.u. and 100 mg/L in accordance with the Department's *DEP Toxics Management Spreadsheet (TMS) Instructions.* When known, individual information may be filled in to further define the model. In this case, a velocity rate of 0.18 fps was taken from the WQM 7.0 model output.

The facility receives industrial wastewater contributions, which necessitates sampling for total copper, total lead, and total zinc as part of the permit renewal process.

A Reasonable Potential Analysis was conducted using TMS. The model confirmed that there is not a reasonable potential for the toxic parameters measured and no WQBELs for toxics will therefore be imposed during this permit cycle. TMS Spreadsheet output files are provided in Attachment D.

**Mass Loading Limitations**

Section 1.A of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9] and Table 5.3 of the Department's *Technical Guidance for the Development and Specification of Effluent Limitations* [Doc No. 362-0400-001] establish mass loading for Publicly Owned Treatment Works (POTWs) for CBOD5, TSS, and ammonia-nitrogen. Average monthly load limits will be imposed for CBOD5 and TSS. Only a monitor and report average monthly requirement will be imposed for ammonia-nitrogen. Mass loading limits are calculated according to the following equation:

$$mass\ loading\ limit\ \left(\frac{lbs}{day}\right) = average\ annual\ flow\ (MGD) * concentration\ limit\ \left(\frac{mg}{L}\right) * 8.34\ (conversion\ factor)$$

| Parameter | Average Monthly (lbs/day) |
|---|---|
| TSS (mg/L) | 5.5 |
| $CBOD_5$ (mg/L) | 7.0 |
| Ammonia-Nitrogen | Report |

**Best Professional Judgment (BPJ) Limitations**

In accordance with Section 1.A. Note 6 of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9] and 25 Pa. Code §93, a dissolved oxygen minimum of 4.0 mg/L will be imposed based on BPJ to ensure adequate operation and maintenance.

**Additional Considerations**

In accordance with Section 1.A. of the Department's SOP for *Establishing Effluent Limitations for Individual Sewage Permits* [SOP No. BCW-PMT-033 Version 1.9], pursuant to EPA's approval of Pennsylvania's 2017 Triennial Review of Water Quality Standards and corresponding regulatory changes published in the *Pennsylvania Bulletin* July 11, 2020 and under the authority of 25 Pa. Code § 93.7(a) and § 92.a.61, sewage discharges will include monitoring, at a minimum for *E. coli* for new and reissued permits, a monitoring frequency of 1/year will be imposed for facilities with a design flow between 0.002 and 0.05 MGD.

In accordance with Section 1.A of the Department's SOP for *Establishing Effluent Limits for Individual Sewage Permits* [SOP No BCW-PMT-033 Version 1.9] and under the authority of 25 Pa. Code §92a.61(b), nutrient monitoring for total nitrogen will be imposed. The intent of this monitoring is to establish the nutrient load of the wastewater and evaluate the impact that load may have on the quality of the receiving stream. During the last permit cycle, total nitrogen monitoring resulted in 6 samples ranging from 12.6 to 37.8. The SOP states that a monitoring frequency shall be imposed equivalent to that imposed for conventional pollutants if the facility discharges to a nutrient impaired stream or a lesser frequency if the receiving water is not impaired. The receiving stream, Connoquenessing Creek is impaired for nutrients, therefore, the monitoring frequency for total nitrogen is being changed from annual to twice monthly.

Monitoring frequency for the proposed effluent limits are based upon Table 6-3, Self-Monitoring Requirements for Sewage Dischargers, from PADEP's *Technical Guidance for the Development and Specification of Effluent Limitations.* Please note that the only monitoring frequency that changed was for total nitrogen.

In accordance with Section IV.F.2 of the Department's SOP for *New and Reissuance Sewage Individual NPDES Permit Applications* [SOP No. BCW-PMT-002 Version 2.0]. For POTWs with design flows greater than 2,000 GPD, influent $BOD_5$ and TSS monitoring must be established in the permit at a frequency and sample type equivalent to that imposed for the effluent parameters. Twice monthly influent $BOD_5$ and TSS monitoring has been added to this permit.

The receiving stream, Connoquenessing Creek, is impaired for organic enrichment. In accordance with 25 PA Code §96.5c, a total phosphorus limit of 2 mg/L will be reimposed.

## 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) | 0.028 | XXX | XXX | XXX | XXX | XXX | 1/week | Measured |
| pH (S.U.) | XXX | XXX | 6.0 Inst Min | XXX | XXX | 9.0 | 1/day | Grab |
| DO | XXX | XXX | 4.0 Inst Min | XXX | XXX | XXX | 1/day | Grab |
| TRC | XXX | XXX | XXX | 0.5 | XXX | 1.6 | 1/day | Grab |
| $CBOD_5$ | 5.5 | XXX | XXX | 25.0 | XXX | 50.0 | 2/month | Grab |
| $BOD_5$ Raw Sewage Influent | XXX | XXX | XXX | Report | XXX | XXX | 2/month | Grab |
| TSS Raw Sewage Influent | XXX | XXX | XXX | Report | XXX | XXX | 2/month | Grab |
| TSS | 7.0 | XXX | XXX | 30.0 | XXX | 60.0 | 2/month | Grab |
| Fecal Coliform (No./100 ml) Oct 1 - Apr 30 | XXX | XXX | XXX | 2000 Geo Mean | XXX | 10000 | 2/month | Grab |
| Fecal Coliform (No./100 ml) May 1 - Sep 30 | XXX | XXX | XXX | 200 Geo Mean | XXX | 1000 | 2/month | Grab |
| E. Coli (No./100 ml) | XXX | XXX | XXX | XXX | XXX | Report | 1/year | Grab |
| Total Nitrogen | Report | XXX | XXX | Report | XXX | Report | 2/month | Grab |
| Ammonia-Nitrogen | XXX | XXX | XXX | Report | XXX | Report | 2/month | Grab |
| Total Phosphorus | 0.5 | XXX | XXX | 2.0 | XXX | 4.0 | 2/month | Grab |

Compliance Sampling Location: Outfall 001.

Other Comments:

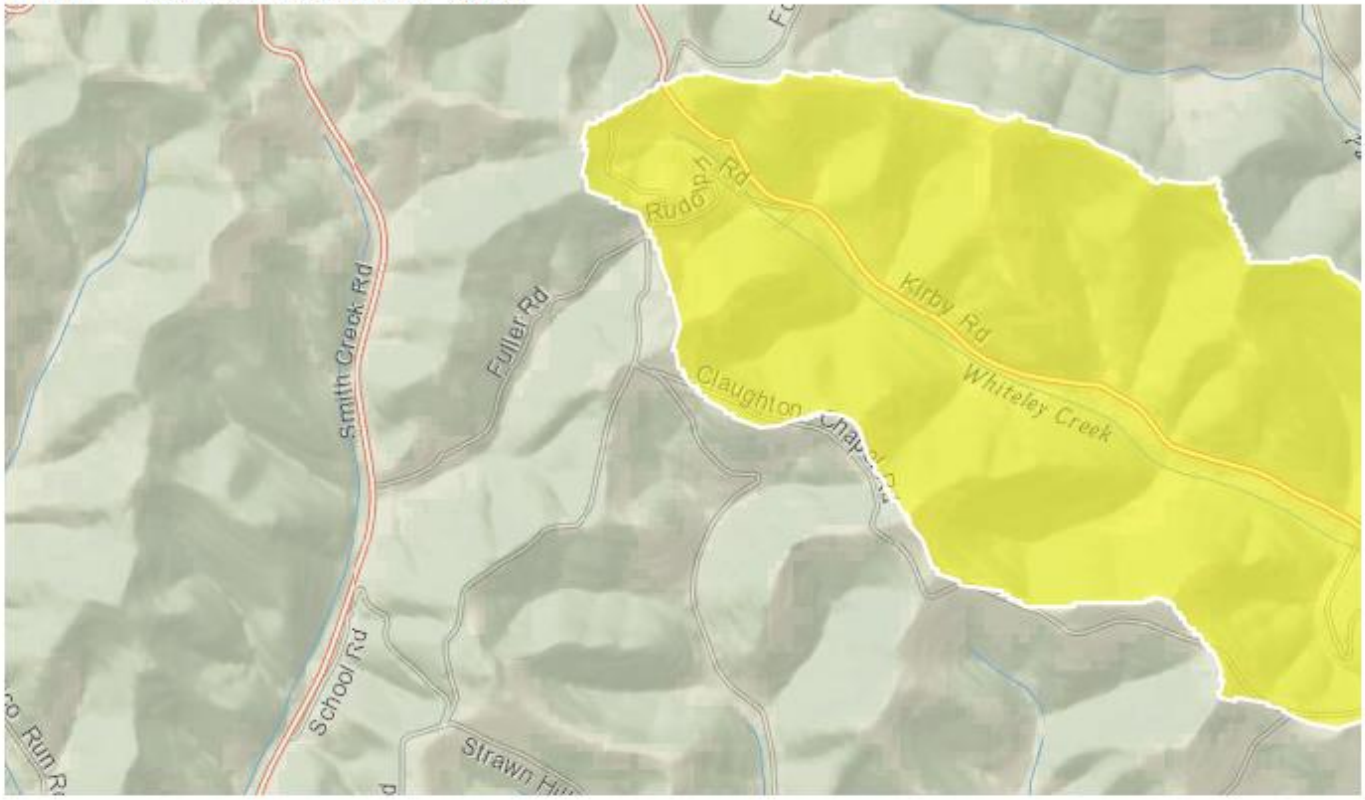
# ATTACHMENT A

# USGS Stream Stats Output

# Discharge Point

# StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20220614122307588000
**Clicked Point (Latitude, Longitude):** 39.79521, -80.16049
**Time:** 2022-06-14 08:23:27 -0400




Collapse All

## Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 1.77 | square miles |
| ELEV | Mean Basin Elevation | 1291 | feet |

## 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 | 0.0572 | ft^3/s |
| 30 Day 2 Year Low Flow | 0.108 | ft^3/s |
| 7 Day 10 Year Low Flow | 0.0173 | ft^3/s |
| 30 Day 10 Year Low Flow | 0.0358 | ft^3/s |
| 90 Day 10 Year Low Flow | 0.0723 | ft^3/s |

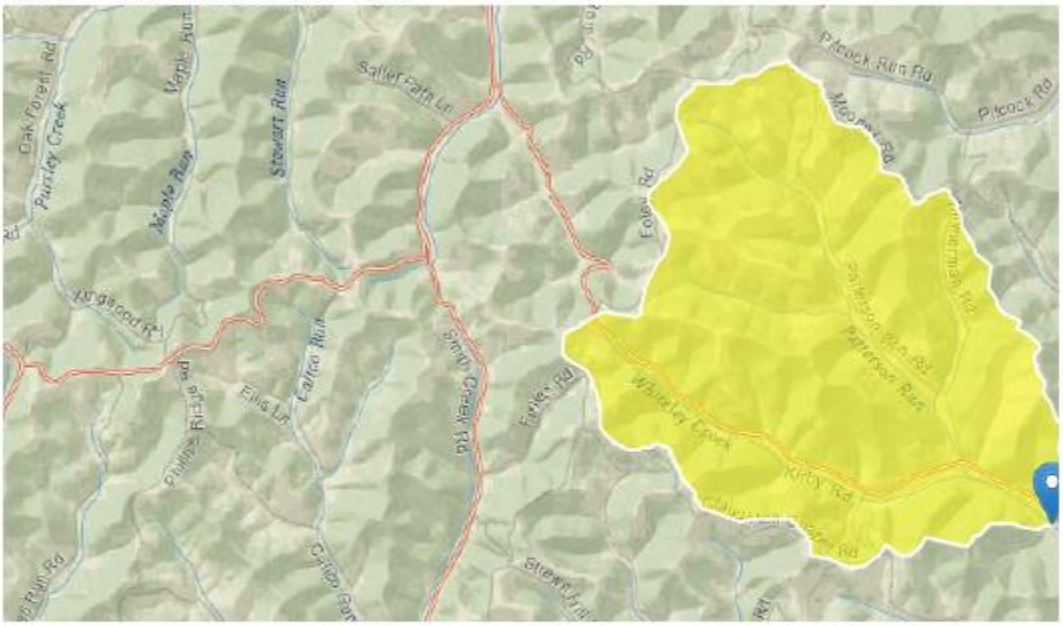
*Low-Flow Statistics Citations*

**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/)**

# Downstream of Discharge

# StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20220614123117103000
**Clicked Point (Latitude, Longitude):** 39.79241, -80.14363
**Time:** 2022-06-14 08:31:37 -0400




Collapse All

## Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 5.45 | square miles |
| ELEV | Mean Basin Elevation | 1273 | feet |

# ATTACHMENT B

# WQM 7.0 Modeling 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 | 34025 | CONNOQUENESSING CREEK | 17.050 | 895.00 | 324.00 | 0.00000 | 0.00 | ☑ |

### Stream Data

| Design Cond. | LFY (cfsm) | Trib Flow (cfs) | Stream Flow (cfs) | Rch Trav Time (days) | Rch Velocity (fps) | WD Ratio | Rch Width (ft) | Rch Depth (ft) | Tributary Temp (°C) | Tributary pH | Stream Temp (°C) | Stream pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q7-10 | 0.032 | 0.00 | 0.00 | 0.000 | 0.000 | 10.0 | 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 |
|---|---|---|---|---|---|---|---|
| Vekaplast | PA0097390 | 0.0000 | 0.0280 | 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 |

## 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 | 34025 | CONNOQUENESSING CREEK | 16.780 | 894.00 | 324.10 | 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 | 0.032 | 0.00 | 0.00 | 0.000 | 0.000 | 10.0 | 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 |

## WQM 7.0 Hydrodynamic Outputs

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 20C | 34025 | CONNOQUENESSING 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** | | | | | | | | | | | | |
| 17.050 | 10.21 | 0.00 | 10.21 | .0433 | 0.00070 | .875 | 63.56 | 72.6 | 0.18 | 0.090 | 24.98 | 7.00 |
| **Q1-10 Flow** | | | | | | | | | | | | |
| 17.050 | 6.53 | 0.00 | 6.53 | .0433 | 0.00070 | NA | NA | NA | 0.14 | 0.115 | 24.97 | 7.00 |
| **Q30-10 Flow** | | | | | | | | | | | | |
| 17.050 | 13.88 | 0.00 | 13.88 | .0433 | 0.00070 | NA | NA | NA | 0.22 | 0.075 | 24.98 | 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 | | |

# WQM 7.0 Wasteload Allocations

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 20C | 34025 | CONNOQUENESSING 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 |
|---|---|---|---|---|---|---|---|
| 17.050 | Vekaplast | 11.1 | 50 | 11.1 | 50 | 0 | 0 |

## NH3-N Chronic Allocations

| RMI | Discharge Name | Baseline Criterion (mg/L) | Baseline WLA (mg/L) | Multiple Criterion (mg/L) | Multiple WLA (mg/L) | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|
| 17.050 | Vekaplast | 1.37 | 25 | 1.37 | 25 | 0 | 0 |

## Dissolved Oxygen Allocations

| RMI | Discharge Name | CBOD5 | | NH3-N | | Dissolved Oxygen | | Critical Reach | Percent Reduction |
|---|---|---|---|---|---|---|---|---|---|
| | | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | Baseline (mg/L) | Multiple (mg/L) | | |
| 17.05 | Vekaplast | 25 | 25 | 25 | 25 | 4 | 4 | 0 | 0 |

## WQM 7.0 D.O.Simulation

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 20C | 34025 | CONNOQUENESSING CREEK |

| RMI | Total Discharge Flow (mgd) | Analysis Temperature (°C) | Analysis pH |
|---|---|---|---|
| 17.050 | 0.028 | 24.979 | 7.000 |
| **Reach Width (ft)** | **Reach Depth (ft)** | **Reach WDRatio** | **Reach Velocity (fps)** |
| 63.559 | 0.875 | 72.601 | 0.184 |
| **Reach CBOD5 (mg/L)** | **Reach Kc (1/days)** | **Reach NH3-N (mg/L)** | **Reach Kn (1/days)** |
| 2.10 | 0.070 | 0.11 | 1.027 |
| **Reach DO (mg/L)** | **Reach Kr (1/days)** | **Kr Equation** | **Reach DO Goal (mg/L)** |
| 8.225 | 0.992 | Tsivoglou | 5 |
| **Reach Travel Time (days)** | | | |
| 0.090 | | | |

**Subreach Results**

| TravTime (days) | CBOD5 (mg/L) | NH3-N (mg/L) | D.O. (mg/L) |
|---|---|---|---|
| 0.009 | 2.10 | 0.10 | 7.54 |
| 0.018 | 2.09 | 0.10 | 7.54 |
| 0.027 | 2.09 | 0.10 | 7.54 |
| 0.036 | 2.09 | 0.10 | 7.54 |
| 0.045 | 2.09 | 0.10 | 7.54 |
| 0.054 | 2.09 | 0.10 | 7.54 |
| 0.063 | 2.09 | 0.10 | 7.54 |
| 0.072 | 2.08 | 0.10 | 7.54 |
| 0.081 | 2.08 | 0.10 | 7.54 |
| 0.090 | 2.08 | 0.10 | 7.54 |

## WQM 7.0 Effluent Limits

| SWP Basin | Stream Code | Stream Name |
|---|---|---|
| 20C | 34025 | CONNOQUENESSING 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) |
|---|---|---|---|---|---|---|---|
| 17.050 | Vekaplast | PA0097390 | 0.000 | CBOD5 | 25 | | |
| | | | | NH3-N | 25 | 50 | |
| | | | | Dissolved Oxygen | | | 4 |

Friday, April 29, 2022 Version 1.1 Page 1 of 1

# ATTACHMENT C

# TRC Modeling Results

TRC_CALC_PA0097390

## TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9

| | | | |
|---|---|---|---|
| 10.2 | = Q stream (cfs) | 0.5 | = CV Daily |
| 0.028 | = Q discharge (MGD) | 0.5 | = CV Hourly |
| 30 | = no. samples | 1 | = AFC_Partial Mix Factor |
| 0.3 | = Chlorine Demand of Stream | 1 | = CFC_Partial Mix Factor |
| 0 | = Chlorine Demand of Discharge | 15 | = AFC_Criteria Compliance Time (min) |
| 0.5 | = BAT/BPJ Value | 720 | = CFC_Criteria Compliance Time (min) |
| 0 | = % Factor of Safety (FOS) | | =Decay Coefficient (K) |

| Source | Reference | AFC Calculations | | Reference | CFC Calculations | |
|---|---|---|---|---|---|---|
| TRC | 1.3.2.iii | WLA afc = | 75.137 | 1.3.2.iii | WLA cfc = | 73.245 |
| PENTOXSD TRG | 5.1a | LTAMULT afc = | 0.373 | 5.1c | LTAMULT cfc = | 0.581 |
| PENTOXSD TRG | 5.1b | LTA_afc= | 27.998 | 5.1d | LTA_cfc = | 42.581 |

| Source | | Effluent Limit Calculations | | |
|---|---|---|---|---|
| PENTOXSD TRG | 5.1f | AML MULT = | 1.231 | |
| PENTOXSD TRG | 5.1g | AVG MON LIMIT (mg/l) = | 0.500 | BAT/BPJ |
| | | INST MAX LIMIT (mg/l) = | 1.635 | |

| | |
|---|---|
| WLA afc | (.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... ...+ Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100) |
| LTAMULT afc | EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5) |
| LTA_afc | wla_afc*LTAMULT_afc |
| WLA_cfc | (.011/e(-k*CFC_tc) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc) )... ...+ Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100) |
| LTAMULT_cfc | EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5) |
| LTA_cfc | wla_cfc*LTAMULT_cfc |
| AML MULT | EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1)) |
| AVG MON LIMIT | MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT) |
| INST MAX LIMIT | 1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc) |

# ATTACHMENT D

# TMS Spreadsheet Output

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

# Discharge Information

Instructions | Discharge | Stream

Facility: **Vekaplast Plant** NPDES Permit No.: **PA0097390** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Treated Sewage Effluent**

| Discharge Characteristics | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Design Flow (MGD)* | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) | | | | Complete Mix Times (min) | |
| | | | AFC | CFC | THH | CRL | $Q_{7-10}$ | $Q_h$ |
| 0.028 | 100 | 7 | | | | | | |

| | Discharge Pollutant | Units | Max Discharge Conc | | 0 if left blank: Trib Conc | 0 if left blank: Stream Conc | 0.5 if left blank: Daily CV | 0.5 if left blank: Hourly CV | 0 if left blank: Strea m CV | 0 if left blank: Fate Coeff | 0 if left blank: FOS | 1 if left blank: Criteri a Mod | 1 if left blank: Chem Transl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group 1 | Total Dissolved Solids (PWS) | mg/L | | | | | | | | | | | |
| | Chloride (PWS) | mg/L | | | | | | | | | | | |
| | Bromide | mg/L | | | | | | | | | | | |
| | Sulfate (PWS) | mg/L | | | | | | | | | | | |
| | Fluoride (PWS) | mg/L | | | | | | | | | | | |
| Group 2 | Total Aluminum | µg/L | | | | | | | | | | | |
| | Total Antimony | µg/L | | | | | | | | | | | |
| | Total Arsenic | µg/L | | | | | | | | | | | |
| | Total Barium | µg/L | | | | | | | | | | | |
| | Total Beryllium | µg/L | | | | | | | | | | | |
| | Total Boron | µg/L | | | | | | | | | | | |
| | Total Cadmium | µg/L | | | | | | | | | | | |
| | Total Chromium (III) | µg/L | | | | | | | | | | | |
| | Hexavalent Chromium | µg/L | | | | | | | | | | | |
| | Total Cobalt | µg/L | | | | | | | | | | | |
| | Total Copper | µg/L | | 36.3 | | | | | | | | | |
| | Free Cyanide | µg/L | | | | | | | | | | | |
| | Total Cyanide | µg/L | | | | | | | | | | | |
| | Dissolved Iron | µg/L | | | | | | | | | | | |
| | Total Iron | µg/L | | | | | | | | | | | |
| | Total Lead | µg/L | | 1.14 | | | | | | | | | |
| | Total Manganese | µg/L | | | | | | | | | | | |
| | Total Mercury | µg/L | | | | | | | | | | | |
| | Total Nickel | µg/L | | | | | | | | | | | |
| | Total Phenols (Phenolics) (PWS) | µg/L | | | | | | | | | | | |
| | Total Selenium | µg/L | | | | | | | | | | | |
| | Total Silver | µg/L | | | | | | | | | | | |
| | Total Thallium | µg/L | | | | | | | | | | | |
| | Total Zinc | µg/L | | 87.6 | | | | | | | | | |
| | Total Molybdenum | µg/L | | | | | | | | | | | |
| | Acrolein | µg/L | < | | | | | | | | | | |
| | Acrylamide | µg/L | < | | | | | | | | | | |
| | Acrylonitrile | µg/L | < | | | | | | | | | | |
| | Benzene | µg/L | < | | | | | | | | | | |
| | Bromoform | µg/L | < | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group 3 | Carbon Tetrachloride | µg/L | < | | | | | | | | | | | |
| | Chlorobenzene | µg/L | | | | | | | | | | | | |
| | Chlorodibromomethane | µg/L | < | | | | | | | | | | | |
| | Chloroethane | µg/L | < | | | | | | | | | | | |
| | 2-Chloroethyl Vinyl Ether | µg/L | < | | | | | | | | | | | |
| | Chloroform | µg/L | < | | | | | | | | | | | |
| | Dichlorobromomethane | µg/L | < | | | | | | | | | | | |
| | 1,1-Dichloroethane | µg/L | < | | | | | | | | | | | |
| | 1,2-Dichloroethane | µg/L | < | | | | | | | | | | | |
| | 1,1-Dichloroethylene | µg/L | < | | | | | | | | | | | |
| | 1,2-Dichloropropane | µg/L | < | | | | | | | | | | | |
| | 1,3-Dichloropropylene | µg/L | < | | | | | | | | | | | |
| | 1,4-Dioxane | µg/L | < | | | | | | | | | | | |
| | Ethylbenzene | µg/L | < | | | | | | | | | | | |
| | Methyl Bromide | µg/L | < | | | | | | | | | | | |
| | Methyl Chloride | µg/L | < | | | | | | | | | | | |
| | Methylene Chloride | µg/L | < | | | | | | | | | | | |
| | 1,1,2,2-Tetrachloroethane | µg/L | < | | | | | | | | | | | |
| | Tetrachloroethylene | µg/L | < | | | | | | | | | | | |
| | Toluene | µg/L | < | | | | | | | | | | | |
| | 1,2-trans-Dichloroethylene | µg/L | < | | | | | | | | | | | |
| | 1,1,1-Trichloroethane | µg/L | < | | | | | | | | | | | |
| | 1,1,2-Trichloroethane | µg/L | < | | | | | | | | | | | |
| | Trichloroethylene | µg/L | < | | | | | | | | | | | |
| | Vinyl Chloride | µg/L | < | | | | | | | | | | | |
| Group 4 | 2-Chlorophenol | µg/L | < | | | | | | | | | | | |
| | 2,4-Dichlorophenol | µg/L | < | | | | | | | | | | | |
| | 2,4-Dimethylphenol | µg/L | < | | | | | | | | | | | |
| | 4,6-Dinitro-o-Cresol | µg/L | < | | | | | | | | | | | |
| | 2,4-Dinitrophenol | µg/L | < | | | | | | | | | | | |
| | 2-Nitrophenol | µg/L | < | | | | | | | | | | | |
| | 4-Nitrophenol | µg/L | < | | | | | | | | | | | |
| | p-Chloro-m-Cresol | µg/L | < | | | | | | | | | | | |
| | Pentachlorophenol | µg/L | < | | | | | | | | | | | |
| | Phenol | µg/L | < | | | | | | | | | | | |
| | 2,4,6-Trichlorophenol | µg/L | < | | | | | | | | | | | |
| Group 5 | Acenaphthene | µg/L | < | | | | | | | | | | | |
| | Acenaphthylene | µg/L | < | | | | | | | | | | | |
| | Anthracene | µg/L | < | | | | | | | | | | | |
| | Benzidine | µg/L | < | | | | | | | | | | | |
| | Benzo(a)Anthracene | µg/L | < | | | | | | | | | | | |
| | Benzo(a)Pyrene | µg/L | < | | | | | | | | | | | |
| | 3,4-Benzofluoranthene | µg/L | < | | | | | | | | | | | |
| | Benzo(ghi)Perylene | µg/L | < | | | | | | | | | | | |
| | Benzo(k)Fluoranthene | µg/L | < | | | | | | | | | | | |
| | Bis(2-Chloroethoxy)Methane | µg/L | < | | | | | | | | | | | |
| | Bis(2-Chloroethyl)Ether | µg/L | < | | | | | | | | | | | |
| | Bis(2-Chloroisopropyl)Ether | µg/L | < | | | | | | | | | | | |
| | Bis(2-Ethylhexyl)Phthalate | µg/L | < | | | | | | | | | | | |
| | 4-Bromophenyl Phenyl Ether | µg/L | < | | | | | | | | | | | |
| | Butyl Benzyl Phthalate | µg/L | < | | | | | | | | | | | |
| | 2-Chloronaphthalene | µg/L | < | | | | | | | | | | | |
| | 4-Chlorophenyl Phenyl Ether | µg/L | < | | | | | | | | | | | |
| | Chrysene | µg/L | < | | | | | | | | | | | |
| | Dibenzo(a,h)Anthrancene | µg/L | < | | | | | | | | | | | |
| | 1,2-Dichlorobenzene | µg/L | < | | | | | | | | | | | |
| | 1,3-Dichlorobenzene | µg/L | < | | | | | | | | | | | |
| | 1,4-Dichlorobenzene | µg/L | < | | | | | | | | | | | |
| | 3,3-Dichlorobenzidine | µg/L | < | | | | | | | | | | | |
| | Diethyl Phthalate | µg/L | < | | | | | | | | | | | |
| | Dimethyl Phthalate | µg/L | < | | | | | | | | | | | |
| | Di-n-Butyl Phthalate | µg/L | < | | | | | | | | | | | |
| | 2,4-Dinitrotoluene | µg/L | < | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2,6-Dinitrotoluene | µg/L | < | | | | | | | | | | |
| | Di-n-Octyl Phthalate | µg/L | < | | | | | | | | | | |
| | 1,2-Diphenylhydrazine | µg/L | < | | | | | | | | | | |
| | Fluoranthene | µg/L | < | | | | | | | | | | |
| | Fluorene | µg/L | < | | | | | | | | | | |
| | Hexachlorobenzene | µg/L | < | | | | | | | | | | |
| | Hexachlorobutadiene | µg/L | < | | | | | | | | | | |
| | Hexachlorocyclopentadiene | µg/L | < | | | | | | | | | | |
| | Hexachloroethane | µg/L | < | | | | | | | | | | |
| | Indeno(1,2,3-cd)Pyrene | µg/L | < | | | | | | | | | | |
| | Isophorone | µg/L | < | | | | | | | | | | |
| | Naphthalene | µg/L | < | | | | | | | | | | |
| | Nitrobenzene | µg/L | < | | | | | | | | | | |
| | n-Nitrosodimethylamine | µg/L | < | | | | | | | | | | |
| | n-Nitrosodi-n-Propylamine | µg/L | < | | | | | | | | | | |
| | n-Nitrosodiphenylamine | µg/L | < | | | | | | | | | | |
| | Phenanthrene | µg/L | < | | | | | | | | | | |
| | Pyrene | µg/L | < | | | | | | | | | | |
| | 1,2,4-Trichlorobenzene | µg/L | < | | | | | | | | | | |
| Group 6 | Aldrin | µg/L | < | | | | | | | | | | |
| | alpha-BHC | µg/L | < | | | | | | | | | | |
| | beta-BHC | µg/L | < | | | | | | | | | | |
| | gamma-BHC | µg/L | < | | | | | | | | | | |
| | delta BHC | µg/L | < | | | | | | | | | | |
| | Chlordane | µg/L | < | | | | | | | | | | |
| | 4,4-DDT | µg/L | < | | | | | | | | | | |
| | 4,4-DDE | µg/L | < | | | | | | | | | | |
| | 4,4-DDD | µg/L | < | | | | | | | | | | |
| | Dieldrin | µg/L | < | | | | | | | | | | |
| | alpha-Endosulfan | µg/L | < | | | | | | | | | | |
| | beta-Endosulfan | µg/L | < | | | | | | | | | | |
| | Endosulfan Sulfate | µg/L | < | | | | | | | | | | |
| | Endrin | µg/L | < | | | | | | | | | | |
| | Endrin Aldehyde | µg/L | < | | | | | | | | | | |
| | Heptachlor | µg/L | < | | | | | | | | | | |
| | Heptachlor Epoxide | µg/L | < | | | | | | | | | | |
| | PCB-1016 | µg/L | < | | | | | | | | | | |
| | PCB-1221 | µg/L | < | | | | | | | | | | |
| | PCB-1232 | µg/L | < | | | | | | | | | | |
| | PCB-1242 | µg/L | < | | | | | | | | | | |
| | PCB-1248 | µg/L | < | | | | | | | | | | |
| | PCB-1254 | µg/L | < | | | | | | | | | | |
| | PCB-1260 | µg/L | < | | | | | | | | | | |
| | PCBs, Total | µg/L | < | | | | | | | | | | |
| | Toxaphene | µg/L | < | | | | | | | | | | |
| | 2,3,7,8-TCDD | ng/L | < | | | | | | | | | | |
| Group 7 | Gross Alpha | pCi/L | | | | | | | | | | | |
| | Total Beta | pCi/L | < | | | | | | | | | | |
| | Radium 226/228 | pCi/L | < | | | | | | | | | | |
| | Total Strontium | µg/L | < | | | | | | | | | | |
| | Total Uranium | µg/L | < | | | | | | | | | | |
| | Osmotic Pressure | mOs/kg | | | | | | | | | | | |
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DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

## Stream / Surface Water Information

**Vekaplast Plant, NPDES Permit No. PA0097390, Outfall 001**

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Connoquenessing Creek**

No. Reaches to Model: **1**

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

| Location | Stream Code* | RMI* | Elevation (ft)* | DA (mi²)* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|---|---|---|---|---|---|---|---|
| Point of Discharge | 034025 | 17.05 | 895 | 324 | | | Yes |
| End of Reach 1 | 034025 | 16.78 | 894 | 324.1 | | | Yes |

$Q_{7-10}$

| Location | RMI | LFY (cfs/mi²)* | 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 | 17.05 | 0.0315 | | | | 63.57 | 0.875 | 0.18 | | | | 100 | 7 | | |
| End of Reach 1 | 16.78 | 0.0315 | | | | 63.57 | 0.875 | 0.18 | | | | | | | |

$Q_h$

| Location | RMI | LFY (cfs/mi²) | 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 | 17.05 | | | | | | | | | | | | | | |
| End of Reach 1 | 16.78 | | | | | | | | | | | | | | |

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Toxics Management Spreadsheet
Version 1.3, March 2021

## Model Results

**Vekaplast Plant, NPDES Permit No. PA0097390, Outfall 001**

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ○ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.243 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

| 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 Copper | 0 | 0 | | 0 | 13.439 | 14.0 | 817 | Chem Translator of 0.96 applied |
| Total Lead | 0 | 0 | | 0 | 64.581 | 81.6 | 4,762 | Chem Translator of 0.791 applied |
| Total Zinc | 0 | 0 | | 0 | 117.180 | 120 | 6,989 | Chem Translator of 0.978 applied |

☑ ***CFC*** CCT (min): ###### PMF: 1 Analysis Hardness (mg/l): 100 Analysis pH: 7.00

| 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 Copper | 0 | 0 | | 0 | 8.956 | 9.33 | 2,207 | Chem Translator of 0.96 applied |
| Total Lead | 0 | 0 | | 0 | 2.517 | 3.18 | 753 | Chem Translator of 0.791 applied |
| Total Zinc | 0 | 0 | | 0 | 118.139 | 120 | 28,351 | Chem Translator of 0.986 applied |

☑ ***THH*** CCT (min): ###### 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 Copper | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ ***CRL*** CCT (min): 82.564 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 Copper | 0 | 0 | | 0 | N/A | N/A | N/A | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ ***Recommended WQBELs & Monitoring Requirements***

**No. Samples/Month:** 4

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

☑ ***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 Copper | 523 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead | 753 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Zinc | 4,480 | µg/L | Discharge Conc ≤ 10% WQBEL |
| | | | |
| | | | |