# Permit Fact Sheet

## General Information

| | |
|---|---|
| Permit Number | WI-0022756-10-0 |
| Permittee Name and Address | Wisconsin Department of Natural Resources<br>N5871 State Rd 22, Wild Rose, WI 54984 |
| Permitted Facility Name and Address | WI DNR Wild Rose Fish Hatchery<br>N5871 STATE ROAD 22, WILD ROSE, WISCONSIN |
| Permit Term | October 01, 2025 to September 30, 2030 |
| Discharge Location | Outfall 001: 44.190427° N, 89.245226° W<br>Outfall 018: 44.190938° N, 89.242174° W |
| Receiving Water | Pine River in Pine and Willow Rivers of Wolf River in Waushara County |
| Stream Flow ($Q_{7,10}$) | 7.4 cfs |
| Stream Classification | Cold water fish community (Public Water Supply criteria used for bioaccumulation compounds of concern, because the discharge is located in the Great Lakes Basin). The Pine River at this location is classified as an Exceptional Resource Water. |
| Discharge Type | Existing, Continuous |

## Facility Description

The Wisconsin Department of Natural Resources owns and operates the Wild Rose Fish Hatchery (hereafter Wild Rose) in north-central Waushara County. The hatchery produces trout, salmon, muskellunge, walleye, sturgeon, suckers and minnows. Separate coldwater and coolwater facilities are maintained and produce approximately 120,000 pounds of fish each calendar year.

Source water is pumped from six wells onsite (Wells A, B, C, D, E, and F). Wells A, D, and C are used for the coldwater facility, and Wells B, E, and F are used for the coolwater facility. After first use, the water is UV disinfected. The coldwater and coolwater facilities have separate identical treatment systems for any wastewater that contains fish waste. Water from both facilities passes through a set of microscreens and is discharged together to the Pine River at Outfall 018. The microscreens are backwashed and the backwash water goes to a sludge clarifier and then to sludge storage which is monitored regularly.

Solar pond water is unused well water warmed by the sun and pumped back up to the coolwater rearing ponds during harvest. When additives are used, water is diverted to the detention ponds to allow time for the additives to degrade or dissipate.

Any decanted water from the coldwater sludge clarifier meets with the historic raceways (previously identified as Outfall 015). This combined discharge travels through the two old settling ponds before discharging at Outfall 001. Since Outfall 001 and 018 both discharge to the Pine River, Outfall 019 is identified as the combined discharge (sample point) from both outfalls to consider the total surface water discharge from the facility.

## Substantial Compliance Determination

After a review of all discharge monitoring reports, land app reports, compliance schedule items, and a site visit on May 28, 2025, this facility has been found to be in substantial compliance with their current permit.

Compliance determination made by Barti Oumarou on June 26, 2025

# Sample Point Descriptions

| Sample Point Designation | | |
|---|---|---|
| **Sample Point Number** | **Discharge Flow, Units, and Averaging Period** | **Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)** |
| 001 | 1.71 MGD (2020-2024) | Effluent: Coldwater settling pond effluent sampled prior to discharge to the Pine River, located approximately 100 yards east of Highway 22. |
| 018 | 2.71 MGD (2020-2024) | Effluent: Coolwater facilities effluent to the Pine River, time proportional samples taken from a concrete vault prior to discharge to the Pine River. |
| 019 | N/A | Combined Total: Combined Total: Representative sample of the flow weighted combined sample from Outfalls 001 and 018. Calculation of TMDL mass limits and temperature shall be flow weighted calculations. Calculations shall be on the same day sampling occurs at Outfall 001 and 018. |
| 026 | N/A -No land app in previous permit term | Sludge from the coldwater facility sludge storage tank shall be sampled prior to land application. |
| 027 | N/A -No land app in previous permit term | Sludge from the coolwater facility sludge storage tank (Sludge Storage #2) shall be sampled prior to land application. |

# Permit Requirements

# 1 Surface Water - Monitoring and Limitations

## 1.1 Sample Point Number: 001- COLDWATER SETTLING PONDS

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | 5/Week | Total Daily | |
| BOD5, Total | | mg/L | Quarterly | Grab | |
| Suspended Solids, Total | | mg/L | Monthly | Grab | |
| Suspended Solids, Total | | lbs/day | Monthly | Calculated | |
| Suspended Solids, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the DMR. See TMDL Calculations section. |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| pH Field | Daily Max | 9.0 su | 5/Week | Grab | |
| pH Field | Daily Min | 6.0 su | 5/Week | Grab | |
| Phosphorus, Total | | mg/L | Monthly | Grab | Narrative Limit, see Total Phosphorus section. |
| Phosphorus, Total | | lbs/day | Monthly | Calculated | |
| Phosphorus, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of Phosphorus and report on the last day of the month on the DMR. See TMDL Calculations section. |
| Temperature | | deg F | Daily | Continuous | |
| Chloride | | mg/L | Quarterly | Grab | |
| Halogen, Total Residual as Cl2 | Daily Max | 34 ug/L | Quarterly | Grab | |
| Halogen, Total Residual as Cl2 | Weekly Avg | 9.0 ug/L | Quarterly | Grab | |
| Halogen, Total Residual as Cl2 | Monthly Avg | 9.0 ug/L | Quarterly | Grab | |
| Nitrogen, Ammonia (NH3-N) Total | | mg/L | Quarterly | Grab | |

### 1.1.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **Nitrogen Ammonia** – Monitoring added to permit.
- **Suspended Solids, Total; Phosphorus, Total –** Sample frequency increased.
- **TMDL** – Required TMDL reporting included at the outfall.

### 1.1.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated April 16, 2025.

**Monitoring Frequencies-** The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this

permit term. Sampling frequencies were increased to be in line with standard surface water sampling requirements for fish hatcheries. Sample frequency for TSS and TP have been set to monthly. This sample frequency is warranted because of TMDL mass limitations and reporting requirements.

**TMDL:** Reporting of TMDL calculations is required at Outfall 001 and 018 to provide the required data for reporting the combined TSS and TP mass discharge. Collection of flow data on the same day as TSS and TP samples are taken at both Outfalls is critical to the calculation of total TP and TSS mass discharge for compliance with the TMDL limitations. This data is used for all water quality based effluent calculations including TMDL mass limitations. Accurate flow measurements are also a requirement of all industrial wastewater dischargers pursuant to s. NR 218.05, Wis. Adm. Code. The permittee anticipates that Outfall 001 will be discontinued in this permit term. When this occurs, the permittee shall notify the department.

## 1.2 Sample Point Number: 018- COOLWATER FACILITY

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Flow Rate | | MGD | Daily | Continuous | |
| BOD5, Total | | mg/L | Quarterly | 24-Hr Comp | |
| Suspended Solids, Total | | mg/L | Monthly | 24-Hr Comp | |
| Suspended Solids, Total | | lbs/day | Monthly | Calculated | |
| Suspended Solids, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the DMR. See TMDL Calculations section. |
| pH Field | Daily Max | 9.0 su | 5/Week | Grab | |
| pH Field | Daily Min | 6.0 su | 5/Week | Grab | |
| Phosphorus, Total | Monthly Avg | 1.0 mg/L | Monthly | 24-Hr Comp | |
| Phosphorus, Total | | lbs/day | Monthly | Calculated | |
| Phosphorus, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of Phosphorus and report on the last day of the month on the DMR. See TMDL Calculations section. |
| Temperature | | deg F | Daily | Continuous | |
| Chloride | | mg/L | Quarterly | 24-Hr Comp | |
| Halogen, Total Residual as Cl2 | Daily Max | 34 ug/L | Monthly | 24-Hr Comp | Monitoring required when chlorine-based additives are |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| | | | | | used. See Halogen section. |
| Halogen, Total Residual as Cl2 | Weekly Avg | 9.0 ug/L | Monthly | 24-Hr Comp | Monitoring required when chlorine-based additives are used. See Halogen section. |
| Halogen, Total Residual as Cl2 | Monthly Avg | 9.0 ug/L | Monthly | 24-Hr Comp | Monitoring required when chlorine-based additives are used. See Halogen section. |
| Nitrogen, Ammonia (NH3-N) Total | | mg/L | Quarterly | 24-Hr Comp | |

### 1.2.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **Suspended Solids, Total; Phosphorus, Total –** Sample frequency increased.
- **Phosphorus -** Concentration limit has been added.
- **Halogen –** sample frequency increased and details on when sampling is required update in the permit.
- **TMDL** – Required TMDL reporting included at the outfall.
- **Formaldehyde –** Limits have been removed.
- **Temperature –** Sample type changes to Continuous as permittee has continuous temperature probe.

### 1.2.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated April 16, 2025.

**Monitoring Frequencies-** The Monitoring Frequencies for Individual Wastewater Permits guidance (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term. Sampling frequencies were increased to be in line with standard surface water sampling requirements for fish hatcheries. Sample frequency for TSS and TP have been set to monthly. This sample frequency is warranted because of TMDL mass limitations and reporting requirements. This sample frequency may be reevaluated at permit reissuance and/or after the discharge at Outfall 001 is discontinued. Currently with a combined outfall using calculated mass, monthly samples allow for representative data.

**TMDL:** Reporting of TMDL calculations is required at Outfall 001 and 018 to provide the required data for reporting the combined TSS and TP mass discharge. Collection of flow data on the same day as TSS and TP samples are taken at both Outfalls is critical to the calculation of total TP and TSS mass discharge for compliance with the TMDL limitations. This data is used for all water quality based effluent calculations including TMDL mass limitations. Accurate flow measurements are also a requirement of all industrial wastewater dischargers pursuant to s. NR 218.05, Wis. Adm. Code.

The permittee anticipates that Outfall 001 will be discontinued in this permit term. When this occurs, the permittee shall notify the department. Following discontinuation of Outfall 001 all subsequent permit terms will have all sampling and limitations effective at Outfall 018.

**Halogen –** The sample frequency is set to monthly to reflect the reported usage of chlorine-based additives. Sampling is not required during months that chlorine-based additives are not in use. The permittee shall report on the eDMR if no chlorine-based additives were used.

**Formaldehyde** – The permittee no longer uses the additive Formalin, eliminating the need for the formaldehyde limit.

## 1.3 Sample Point Number: 019- COMBINED DISCHARGE

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Suspended Solids, Total | Daily Max | 1,212 lbs/day | Monthly | Calculated | See "TMDL Combined Loads" permit section. |
| Suspended Solids, Total | Monthly Avg | 741 lbs/day | Monthly | Calculated | See "TMDL Combined Loads" permit section. |
| Suspended Solids, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of TSS and report on the last day of the month on the DMR. See "TMDL Combined Loads" permit section. |
| Suspended Solids, Total | | lbs/yr | Monthly | Calculated | Calculate the 12-month rolling sum of total monthly mass of TSS discharged and report on the last day of the month on the DMR. See "TMDL Combined Loads" permit section. |
| Phosphorus, Total | Monthly Avg | 4.8 lbs/day | Monthly | Calculated | Monitoring only upon permit effective date. Final TMDL-based mass limits go into effect per the phosphorus compliance schedule. See "TMDL Combined Loads" and Phosphorus TMDL permit sections. |
| Phosphorus, Total | 6-Month Avg | 1.6 lbs/day | Monthly | Calculated | Monitoring only upon permit effective date. Final TMDL-based mass limits go into effect per the phosphorus compliance schedule. See "TMDL Combined Loads" and |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| | | | | | Phosphorus TMDL permit sections. |
| Phosphorus, Total | | lbs/month | Monthly | Calculated | Calculate the Total Monthly Discharge of Phosphorus and report on the last day of the month on the DMR. See "TMDL Combined Loads" permit section. |
| Phosphorus, Total | | lbs/yr | Monthly | Calculated | Calculate the 12-month rolling sum of total monthly mass of Phosphorus discharged and report on the last day of the month on the DMR. See "TMDL Combined Loads" permit section. |
| Temperature | Daily Max | 75 deg F | 3/week | Calculated | Effective July and August. See "Effluent Temperature Compliance" permit section for calculation. |
| Temperature | Weekly Avg | 54 deg F | 3/week | Calculated | Effective October. See "Effluent Temperature Compliance" permit section for calculation. |
| Arsenic, Total Recoverable | | ug/L | Once | 24-Hr Comp | |
| Acute WET | | TUa | See Listed Qtr(s) | 24-Hr Comp | See the Whole Effluent Toxicity (WET) Testing section. |
| Chronic WET | Monthly Avg | 1.2 TUc | See Listed Qtr(s) | 24-Hr Comp | 2x/year in rotating quarters. See the Whole Effluent Toxicity (WET) Testing Section. |

### 1.3.1 Changes from Previous Permit

Effluent limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

- **Phosphorus** – Sampling requirements and limits added.
- **Arsenic** – Sampling required once in permit term.

### 1.3.2 Explanation of Limits and Monitoring Requirements

Detailed discussions of limits and monitoring requirements can be found in the attached water quality-based effluent limits (WQBEL) memo dated April 16, 2025.

**Phosphorus TMDL Limits** - Mass based phosphorus limits of 1.6 lbs/day as a six-month average and 4.8 lbs/day as a monthly average have been added to the permit to comply with requirements of the Upper Fox Wolf River TMDL. Effluent concentration (mg/L) shall be monitored and reported monthly upon permit reissuance and will be used to calculate amounts reported for mass-based limits. An additional reporting requirement for lbs/month will be used to calculate the facility's 12-month rolling sum of total monthly discharge, which can be compared directly to the facility's designated WLA.

**Arsenic –** Arsenic sampling should be sampled once during the permit term with an LOD lower than 3.89 µg/L so that reasonable potential can be determined.

# 2 Land Application - Sludge/By-Product Solids (industrial only)

## 2.1 Sample Point Number: 026- COLDWATER CLARIFIER SLUDGE

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Solids, Total | | Percent | Quarterly | Grab | |
| Nitrogen, Total Kjeldahl | | Percent | Quarterly | Grab | |
| Chloride | | Percent | Quarterly | Grab | |
| pH Field | | su | Quarterly | Grab | |
| Nitrogen, Ammonia (NH3-N) Total | | Percent | Quarterly | Grab | |
| Phosphorus, Total | | Percent | Quarterly | Grab | |
| Phosphorus, Water Extractable | | % of Tot P | Quarterly | Grab | |
| Potassium, Total Recoverable | | Percent | Quarterly | Grab | |
| PFOA + PFOS | | ug/kg | Annual | Calculated | Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information. |
| PFAS Dry Wt | | | Annual | Grab | Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more information. |

### 2.1.1 Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

Sample frequency changed from annual to quarterly.

**PFAS** –Monitoring is required annually pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.

### 2.1.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214 Wis. Adm. Code.

**PFAS:** The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has released a draft assessment which documents the potential public health risks associated with land applying biosolids contaminated with PFOA and/or PFOS, and the department is currently evaluating this information. In the interim, the department has developed the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS".

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department's implementation of EPA's recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

## 2.2 Sample Point Number: 027- COOLWATER CLARIFIER SLUDGE

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| Solids, Total | | Percent | Quarterly | Grab | |
| Nitrogen, Total Kjeldahl | | Percent | Quarterly | Grab | |
| Chloride | | Percent | Quarterly | Grab | |
| pH Field | | su | Quarterly | Grab | |
| Nitrogen, Ammonia (NH3-N) Total | | Percent | Quarterly | Grab | |
| Phosphorus, Total | | Percent | Quarterly | Grab | |
| Phosphorus, Water Extractable | | % of Tot P | Quarterly | Grab | |
| Potassium, Total Recoverable | | Percent | Quarterly | Grab | |
| PFOA + PFOS | | ug/kg | Annual | Calculated | Report the sum of PFOA and PFOS. See PFAS Permit Sections for more information. |
| PFAS Dry Wt | | | Annual | Grab | Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR |

| Monitoring Requirements and Limitations | | | | | |
|---|---|---|---|---|---|
| **Parameter** | **Limit Type** | **Limit and Units** | **Sample Frequency** | **Sample Type** | **Notes** |
| | | | | | PFAS List. See PFAS Permit Sections for more information. |

### 2.2.1 Changes from Previous Permit:

Sludge limitations and monitoring requirements were evaluated for this permit term and the following changes were made from the previous permit. See additional explanation of limits under "Explanation of Limits and Monitoring Requirements" below.

Monitoring added to outfall

**PFAS** –Monitoring is required annually pursuant to s. NR 214.18(5)(b), Wis. Adm. Code.

### 2.2.2 Explanation of Limits and Monitoring Requirements

Requirements for land application of industrial sludge are determined in accordance with ch. NR 214 Wis. Adm. Code.

**PFAS:** The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA has released a draft assessment which documents the potential public health risks associated with land applying biosolids contaminated with PFOA and/or PFOS, and the department is currently evaluating this information. In the interim, the department has developed the "Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS".

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department's implementation of EPA's recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

# 3 Schedules

## 3.1 Land Application Management Plan

A management plan is required for the land application system.

| Required Action | Due Date |
|---|---|
| **Land Application Management Plan:** Submit a management plan to optimize the land application system performance and demonstrate compliance with Wisconsin Administrative Code NR 214. | 01/01/2026 |

### 3.1.1 Explanation of Schedule

An up-to-date Land Application Management plan is a standard requirement in reissued industrial permits per s. NR 214.17(6)(c), Wis. Adm. Code.

## 3.2 Water Quality Based Effluent Limits (WQBELs) for Total Phosphorus

The permittee shall comply with the WQBELs for Phosphorus as specified. No later than 14 days following each compliance date, the permittee shall notify the Department in writing of its compliance or noncompliance. If a submittal is required, a timely submittal fulfills the notification requirement.

| Required Action | Due Date |
|---|---|
| **Operational Evaluation Report:** The permittee shall prepare and submit to the Department for approval an operational evaluation report. The report shall include an evaluation of collected effluent data, possible source reduction measures, operational improvements or other minor facility modifications that will optimize reductions in phosphorus discharges from the treatment plant during the period prior to complying with final phosphorus WQBELs and, where possible, enable compliance with final phosphorus WQBELs by September 30, 2028. The report shall provide a plan and schedule for implementation of the measures, improvements, and modifications as soon as possible, but not later than September 30, 2028 and state whether the measures, improvements, and modifications will enable compliance with final phosphorus WQBELs. Regardless of whether they are expected to result in compliance, the permittee shall implement the measures, improvements, and modifications in accordance with the plan and schedule specified in the operational evaluation report.<br><br>If the operational evaluation report concludes that the facility can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the permittee shall comply with the final phosphorus WQBEL by September 30. 2028 and is not required to comply with the milestones identified below for years 3 through 9 of this compliance schedule ('Preliminary Compliance Alternatives Plan', 'Final Compliance Alternatives Plan', 'Final Plans and Specifications', 'Treatment Plant Upgrade to Meet WQBELs', 'Complete Construction', 'Achieve Compliance').<br><br>STUDY OF FEASIBLE ALTERNATIVES - If the Operational Evaluation Report concludes that the permittee cannot achieve final phosphorus WQBELs with source reduction measures, operational improvements and other minor facility modifications, the permittee shall initiate a study of feasible alternatives for meeting final phosphorus WQBELs and comply with the remaining required actions of this schedule of compliance. If the Department disagrees with the conclusion of the report, and determines that the permittee can achieve final phosphorus WQBELs using the existing treatment system with only source reduction measures, operational improvements, and minor facility modifications, the Department may reopen and modify the permit to include an implementation schedule for achieving the final phosphorus WQBELs sooner than September 30, 2030. | 09/30/2026 |
| **Compliance Alternatives, Source Reduction, Improvements and Modifications Status:** The permittee shall submit a 'Compliance Alternatives, Source Reduction, Operational Improvements and Minor Facility Modification' status report to the Department. The report shall provide an update on the permittee's: (1) progress implementing source reduction measures, operational improvements, and minor facility modifications to optimize reductions in phosphorus discharges and, to the extent that such measures, improvements, and modifications will not enable compliance with the WQBELs, (2) status evaluating feasible alternatives for meeting phosphorus WQBELs. | 09/30/2027 |
| **Final Compliance Alternatives Plan:** The permittee shall submit a final compliance alternatives plan to the Department.<br><br>If the plan concludes upgrading of the permittee’s wastewater treatment is necessary to meet final phosphorus WQBELs, the submittal shall include a final engineering design report addressing the treatment plant upgrades, and a facility plan if required pursuant to ch. NR 110, Wis. Adm. Code.<br><br>If the plan concludes Adaptive Management will be implemented, the submittal shall include a completed Watershed Adaptive Management Request Form 3200-139 and an engineering report addressing any treatment system upgrades necessary to meet interim limits pursuant to s. NR 217.18, | 09/30/2028 |

| | |
|---|---|
| Wis. Adm. Code.<br>If the plan concludes water quality trading will be used, the submittal shall identify potential trading partners.<br>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | |
| **Final Plans and Specifications:** Unless the permit has been modified, revoked and reissued, or reissued to include Adaptive Management or Water Quality Trading measures or to include a revised schedule based on factors in s. NR 217.17, Wis. Adm. Code, the permittee shall submit final construction plans to the Department for approval pursuant to s. 281.41, Stats., specifying treatment plant upgrades that must be constructed to achieve compliance with final phosphorus WQBELs, and a schedule for completing construction of the upgrades by the complete construction date specified below. (Note: Permit modification, revocation and reissuance, and reissuance are subject to s. 283.53(2), Stats.)<br>Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | 03/31/2029 |
| **Treatment Plant Upgrade to Meet WQBELs:** The permittee shall initiate construction of the upgrades. The permittee shall obtain approval of the final construction plans and schedule from the Department pursuant to s. 281.41. Stats. Upon approval of the final construction plans and schedule by the Department pursuant to s. 281.41, Stats., the permittee shall construct the treatment plant upgrades in accordance with the approved plans and specifications. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | 09/30/2029 |
| **Construction Upgrade Progress Report #1:** The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | 09/30/2030 |
| **Construction Upgrade Progress Report #2:** The permittee shall submit a progress report on construction upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | 09/30/2031 |
| **Complete Construction:** The permittee shall complete construction of wastewater treatment system upgrades. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | 08/30/2032 |
| **Achieve Compliance:** The permittee shall achieve compliance with final phosphorus WQBELs. Note: See 'Alternative Approaches to Phosphorus WQBEL Compliance' in the Surface Water section of this permit. | 09/30/2032 |

### 3.2.1 Explanation of Schedule

Subchapter NR 217.17, Wis. Adm. Code, allows the department to provide a schedule of compliance for water quality based phosphorus limits where the permittee cannot immediately achieve compliance. This compliance schedule requires the permittee to comply with the final water quality based phosphorus limits within 5 years.

The permittee may be required to meet the final phosphorus WQBEL sooner than September 30, 2030 (less than 5 years) if the required "Operational Evaluation Report" concludes that the phosphorus WQBEL can be met using the existing treatment system with only source reduction measures, operational improvements and minor facility modifications. Also, the permittee will conduct a "Study of Feasible Alternatives" to determine whether Water Quality Trading or Adaptive Management, either alone or in combination with plant upgrades will allow the plant to meet the phosphorus WQBEL.

The department believes that the compliance schedule suggested in the draft permit provides the appropriate length of time for the permittee to evaluate these options, implement the chosen option and meet the final phosphorus limits (WQBELs).

## Attachments

Water Quality-Based Effluent Limitations for the WI DNR Wild Rose Fish Hatchery WPDES Permit No. WI-0022756-10 by Nicole Krueger, PE, Water Resources Engineer, dated April 16, 2025

## Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

**Prepared By:** Ashley Clark, Wastewater Specialist

**Date:** July 8, 2025

# CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: 04/16/2025

TO: Ashley Clark – NER

FROM: Nicole Krueger – SER Nicole Krueger

SUBJECT: Water Quality-Based Effluent Limitations for the WI DNR Wild Rose Fish Hatchery WPDES Permit No. WI-0022756-10

This is in response to your request for an evaluation of the need for water quality-based effluent limitations (WQBELs) using chapters NR 102, 104, 105, 106, 207, 210, 212, and 217 of the Wisconsin Administrative Code (where applicable), for the discharge from the WI DNR Wild Rose Fish Hatchery in Waushara County. This facility discharges to the Pine River, located in the Willow Creek-Pine River Watershed in the Wolf River Basin. This discharge is included in the Upper Fox and Wolf River TMDL as approved by EPA in February 2020. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis:

**Outfall 001 – Coldwater Settling Ponds**

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Footnotes |
|---|---|---|---|---|---|
| Flow Rate | | | | | 1,2 |
| $BOD_5$ | | | | | 1,2 |
| TSS | | | | | 1,2 |
| pH | 9.0 s.u. | 6.0 s.u. | | | 1 |
| Temperature | | | | | 1,2 |
| Chloride | | | | | 1,2 |
| Halogen | 34 µg/L | | 9.0 µg/L | **9.0 µg/L** | 3 |
| Ammonia | | | | | 2 |
| Phosphorus | | | | | 1,2 |

**Outfall 018 – Coolwater Facility**

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Footnotes |
|---|---|---|---|---|---|
| Flow Rate | | | | | 1,2 |
| $BOD_5$ | | | | | 1,2 |
| TSS | | | | | 1,2 |
| pH | 9.0 s.u. | 6.0 s.u. | | | 1 |
| Temperature | | | | | 1,2 |
| Chloride | | | | | 1,2 |
| Halogen | 34 µg/L | | 9.0 µg/L | **9.0 µg/L** | 3 |
| Ammonia | | | | | 1,2 |
| Phosphorus | | | | 1.0 mg/L | 4 |

**Outfall 019 – Combined Discharge**

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Six-Month Average | Footnotes |
|---|---|---|---|---|---|---|
| Acute WET | | | | | | 5,6 |
| Chronic WET | | | | 1.2 TUc | | 5,6 |
| TSS<br>TMDL | <br>1,212 lbs/day | | | <br>741 lbs/day | | 7 |
| Phosphorus<br>Interim<br>TMDL | | | | <br>Narrative<br>4.8 lbs/day | <br><br>1.6 lbs/day | 7,8 |
| Temperature<br>July & August<br>October | <br>75 deg F | | <br><br>54 deg F | | | 1 |

Footnotes:

1. No changes from the current permit.
2. Monitoring only.
3. Additional limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
4. This is a technology-based limit.
5. 3x/permit term acute and 2x/annual chronic WET testing is recommended. The Instream Waste Concentration (IWC) to assess chronic test results is 81%. According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), chronic testing shall be performed using a dilution series of 100%, 75%, 50%, 25% & 12.5% and the dilution water used in WET tests conducted on Outfall 019 shall be a grab sample collected from the Pine River.
6. Sampling WET concurrently with any chemical-specific toxic substances is recommended. Tests should be done in rotating quarters, to collect seasonal information about this discharge and should continue after the permit expiration date (until the permit is reissued).
7. The TSS and phosphorus mass limits are based on the Total Maximum Daily Load (TMDL) for the Upper Fox and Wolf River Basins TMDL to address phosphorus water quality impairments within the TMDL area. The TMDL was approved by EPA in February 2020.
8. The interim limit for phosphorus shall be a narrative limit such as: "The plant shall be operated such that the amount of phosphorus being discharged on an annual basis does not increase over the permit term, and that the phosphorus reductions will occur over time through optimization."

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Nicole Krueger at Nicole.Krueger@wisconsin.gov or Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (3) – Narrative, Outfall Map, & Thermal Tables

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Attachment #1

**Water Quality-Based Effluent Limitations for**
**WI DNR Wild Rose Fish Hatchery**

**WPDES Permit No. WI-0022756-10**

Prepared by: Nicole Krueger

## PART 1 – BACKGROUND INFORMATION

### Facility Description

The Wisconsin Department of Natural Resources owns and operates the Wild Rose Fish Hatchery (hereafter Wild Rose) in north-central Waushara County. The hatchery produces trout, salmon, muskellunge, pike, walleye, sturgeon, suckers and minnows. Separate coldwater and coolwater facilities are maintained and produce approximately 120,000 pounds of fish each calendar year.

Source water is pumped from six wells onsite (Wells A, B, C, D, E, and F). Wells A, D, and C are used for the coldwater facility, and Wells B, E, and F are used for the coolwater facility. After first use, the water is UV disinfected. The coldwater and coolwater facilities have separate identical treatment systems for any wastewater that contains fish waste. Water from both facilities passes through a set of microscreens and is discharged together to the Pine River at Outfall 018. The microscreens are backwashed and the backwash water goes to a sludge clarifier and then to sludge storage which is monitored regularly.

Solar pond water is unused well water warmed by the sun and pumped back up to the coolwater rearing ponds during harvest. When additives are used, water is diverted to the detention ponds to allow time for the additives to degrade or dissipate.

Any decanted water from the coldwater sludge clarifier meets with the historic raceways (previously identified as Outfall 015). This combined discharge travels through the two old settling ponds before discharging at Outfall 001. Since Outfall 001 and 018 both discharge to the Pine River, Outfall 019 is identified as the combined discharge from both outfalls to consider the total surface water discharge from the facility.

Attachment #2 is a map of the area showing the approximate location of Outfall 001.

### Existing Permit Limitations

The current permit, which expired on 12/31/2023, includes the following effluent limitations and monitoring requirements.

**Outfall 001 – Coldwater Settling Ponds**

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Footnotes |
|---|---|---|---|---|---|
| Flow Rate | | | | | 1 |
| $BOD_5$ | | | | | 1 |
| TSS | | | | | 1 |
| pH | 9.0 s.u. | 6.0 s.u. | | | 2 |
| Temperature | | | | | 1 |

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Footnotes |
|---|---|---|---|---|---|
| Chloride | | | | | 1 |
| Halogen | 34 µg/L | | 9.1 µg/L | **9.1 µg/L** | 3 |
| Phosphorus | | | | | 1 |

**Outfall 018 – Coolwater Facility**

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Footnotes |
|---|---|---|---|---|---|
| Flow Rate | | | | | 1 |
| $BOD_5$ | | | | | 1 |
| TSS | | | | | 1 |
| pH | 9.0 s.u. | 6.0 s.u. | | | 2 |
| Temperature | | | | | 1 |
| Chloride | | | | | 1 |
| Halogen | 34 µg/L | | 9.1 µg/L | **9.1 µg/L** | 3 |
| Phosphorus | | | | | 1 |
| Formaldehyde | 1.7 mg/L | | 0.14 mg/L | | |

**Outfall 019 – Combined Discharge**

| Parameter | Daily Maximum | Daily Minimum | Weekly Average | Monthly Average | Six-month Average | Footnotes |
|---|---|---|---|---|---|---|
| Acute WET | | | | | | 4 |
| Chronic WET | | | | | | 4 |
| Temperature<br>July & August<br>October | 75 deg F | | 54 deg F | | | |

Footnotes:

1. Monitoring only.
2. These limitations are not being evaluated as part of this review. Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
3. Limits to comply with the expression of limits requirements in ss. NR 106.07 and NR 205.065(7), Wis. Adm. Codes, are included in bold.
4. Acute WET testing is required annually, and chronic WET testing is required twice annually. The instream waste concentration (IWC) is 80%.

**Receiving Water Information**

- Name: Pine River
- Waterbody Identification Code (WBIC): 247800
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Coldwater sport fish community, non-public water supply. The Pine River is listed in ch. NR 102, Wis. Adm. Code as an exceptional resource water. (Public Water Supply criteria are used for bioaccumulating compounds of concern, because the discharge is within the Great Lakes basin.)

- Low flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-$Q_{10}$ and 7-$Q_2$ values are from USGS for Station W70, updated 07/02/2008, where Outfall 001 is located.
  7-$Q_{10}$ = 7.4 cfs (cubic feet per second)
  7-$Q_2$ = 8.4 cfs
  Harmonic Mean Flow = 14 cfs using a drainage area of 27.1 $mi^2$
  The Harmonic Mean has been estimated based on average flow and the 7-$Q_{10}$ using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **7-$Q_{10}$ (cfs)** | 7.6 | 7.4 | 7.6 | 10.1 | 10.3 | 9.4 | 8.6 | 8.1 | 8.1 | 8.1 | 8.4 | 7.8 |
| **7-$Q_2$ (cfs)** | 8.8 | 8.6 | 9.4 | 11.7 | 11.3 | 10.8 | 10.1 | 9.5 | 9.4 | 9.5 | 9.8 | 9.3 |

- Hardness = 218 mg/L as $CaCO_3$. This value represents the geometric mean of data from chronic WET data from 05/11/2021 – 03/08/2022.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%.
- Source of background concentration data: Metals data from Chaffee Creek at Dakota has been used in the following evaluation. The ecological landscape at Dakota is similar and water quality characteristics are therefore assumed to also be similar. Background chloride data is from the Pine River at Highway A. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for ammonia nitrogen are described later.
- Multiple dischargers: The Wild Rose WWTF discharges about 0.5 miles upstream from the Wild Rose Fish Hatchery; however, they are not in the immediate vicinity and the mixing zones are not expected to overlap due to the low design flows compared to the low flows of the receiving water. Therefore, the other dischargers do not impact this evaluation.
- Impaired water status: The immediate receiving water is not 303(d) listed as impaired. Poygan Lake, approximately 20 miles downstream of Wild Rose Fish Hatchery, is listed as impaired for phosphorus and total suspended solids.

**Effluent Information**

- Flow rate(s):

**Outfall 001**
Maximum annual average = 2.04 MGD (Million Gallons per Day)
Peak daily = 7.24 MGD
Peak weekly = 3.38 MGD
Peak monthly = 2.43 MGD

**Outfall 018**
Maximum annual average = 2.94 MGD
Peak daily = 6.28 MGD
Peak weekly = 4.50 MGD
Peak monthly = 4.09 MGD

For this evaluation, the combined maximum annual average flow of 4.98 MGD is used to calculate limits due to the two outfalls discharging within 0.15 miles of each other, unless otherwise stated.

In the last limits evaluation, a maximum annual average flow rate of 4.86 MGD. The updated flow may cause some calculated limits to differ from the previous evaluation.

- Hardness = 213 mg/L as $CaCO_3$ for Outfalls 001 and 018. This value represents the geometric mean of data from 11/06/2023 – 11/20/2023 from the permit reissuance application for both of the outfalls combined. The effluent hardness is expected to be similar for both outfalls.
- Acute dilution factor used in accordance with s. NR 106.06(3)(c), Wis. Adm. Code: Not applicable – this facility does not have an approved Zone of Initial Dilution (ZID).
- Water source: Private wells.
- Additives: 12 additives are used at Outfall 001 and 15 additives are used at Outfall 018. These are listed in the additives section of this memo.
- Effluent characterization: This facility is categorized as a secondary industry, so the permit application required effluent sample analyses for a limited number of common pollutants for Outfall 001, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus ammonia, chloride, hardness and phosphorus.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2 below, in the column titled "MEAN EFFL. CONC.". Otherwise, substances with multiple effluent data are shown in the tables below or in their respective parts in this evaluation.

**Effluent Chloride Data**

| | Outfall 001 Chloride mg/L | Outfall 018 Chloride mg/L |
|---|---|---|
| 1-day $P_{99}$ | 4.88 | 18.4 |
| 4-day $P_{99}$ | 4.45 | 10.9 |
| 30-day $P_{99}$ | 4.19 | 7.10 |
| Mean | 4.05 | 5.40 |
| Std | 0.33 | 3.60 |
| Sample size | 19 | 19 |
| Range | 3.59 – 4.69 | 3.17 – 16.1 |

The following table presents the average concentrations at Outfalls 001, 018, and 019 from 01/01/2020 – 11/30/2024 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

**Parameter Averages with Limits**

| | Outfall 001 Average Measurement | Outfall 018 Average Measurement | Outfall 019 Average Measurement |
|---|---|---|---|
| pH field | 7.86 s.u. | 7.97 s.u. | |
| Temperature | | | 54 deg F |

Attachment #1

## PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99$^{th}$ percentile (or $P_{99}$) value exceeds the comparable calculated limit (s. NR 106.05(4), Wis. Adm. Code)
3. If fewer than 11 detected results are available, the mean effluent concentration exceeds 1/5 of the calculated limit (s. NR 106.05(6), Wis. Adm. Code)

**Acute Limits based on 1-$Q_{10}$**

Daily maximum effluent limitations for toxic substances are based on the acute toxicity criteria (ATC), listed in ch. NR 105, Wis. Adm. Code. Previously daily maximum limits for toxic substances were calculated as two times the ATC. However, changes to ch. NR 106, Wis. Code, (September 1, 2016) require the Department to calculate acute limitations using the same mass balance equation as used for other limits along with the 1-$Q_{10}$ receiving water low flow to determine if more restrictive effluent limitations are needed to protect the receiving stream from discharges which may cause or contribute to an exceedance of the acute water quality standards. The mass balance equation is provided below.

$$\text{Limitation} = \frac{(WQC)\,(Qs + (1-f)\,Qe) - (Qs - f\,Qe)\,(Cs)}{Qe}$$

Where:

WQC =Acute toxicity criterion or secondary acute value according to ch. NR 105, Wis. Adm. Code.

Qs = average minimum 1-day flow which occurs once in 10 years (1-day $Q_{10}$) if the 1-day $Q_{10}$ flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day $Q_{10}$).

Qe = Effluent flow (in units of volume per unit time) as specified in s. NR 106.06(4)(d), Wis. Adm. Code.

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

Cs = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-$Q_{10}$ method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is the case for Wild Rose Fish Hatchery.

The following tables list the calculated WQBELs for this discharge along with the results of effluent sampling. All concentrations are expressed in terms of micrograms per Liter (µg/L), except for hardness and chloride (mg/L).

**Daily Maximum Limits based on Acute Toxicity Criteria (ATC)**

RECEIVING WATER FLOW = 5.92 cfs, (1-$Q_{10}$ (estimated as 80% of 7-$Q_{10}$)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

Attachment #1

| SUBSTANCE | REF. HARD.* mg/L | ATC | MEAN BACK-GRD. | MAX. EFFL. LIMIT** | 1/5 OF EFFL. LIMIT | MEAN EFFL. CONC. | **001** 1-day $P_{99}$ | **001** 1-day MAX. CONC. | **018** 1-day $P_{99}$ | **018** 1-day MAX. CONC. |
|---|---|---|---|---|---|---|---|---|---|---|
| Halogen | | 19.0 | | 33.7 | 6.73 | | | | | |
| Arsenic | | 340 | | 601 | 120 | <7 | | | | |
| Cadmium | 213 | 10.4 | | 18.3 | 3.7 | <0.5 | | | | |
| Chromium | 213 | 3349 | 0.69 | 5922 | 1184 | <2 | | | | |
| Copper | 213 | 31.7 | 0.25 | 55.8 | 11.2 | <5 | | | | |
| Lead | 213 | 222 | 0.15 | 392 | 78.5 | <5 | | | | |
| Nickel | 213 | 889 | | 1573 | 315 | <2 | | | | |
| Zinc | 213 | 233 | 0.97 | 412 | 82.3 | <5 | | | | |
| Chloride (mg/L) | | 757 | 3 | 1336 | | | 4.88 | 4.69 | 18.4 | 16.1 |

* The indicated hardness may differ from the effluent hardness because the effluent hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the acute criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

* * Per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016 consideration of ambient concentrations and 1-$Q_{10}$ flow rates yields a more restrictive limit than the 2 × ATC method of limit calculation.

**Weekly Average Limits based on Chronic Toxicity Criteria (CTC)**

RECEIVING WATER FLOW = 1.85 cfs (¼ of the 7-$Q_{10}$), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

| SUBSTANCE | REF. HARD.* mg/L | CTC | MEAN BACK-GRD. | WEEKLY AVE. LIMIT | 1/5 OF EFFL. LIMIT | MEAN EFFL. CONC. | **001** 4-day $P_{99}$ | **018** 4-day $P_{99}$ |
|---|---|---|---|---|---|---|---|---|
| Halogen | | 7.28 | | 9.03 | 1.81 | | | |
| Arsenic | | 148 | | 184 | 36.7 | <7 | | |
| Cadmium | 175 | 3.82 | | 4.74 | 0.95 | <0.5 | | |
| Chromium | 218 | 163 | 0.69 | 202 | 40.4 | <2 | | |
| Copper | 218 | 20.2 | 0.25 | 24.9 | 4.99 | <5 | | |
| Lead | 218 | 59.5 | 0.15 | 73.7 | 14.7 | <5 | | |
| Nickel | 218 | 101 | | 125 | 25.0 | <2 | | |
| Zinc | 218 | 238 | 0.97 | 295 | 59.0 | <5 | | |
| Chloride (mg/L) | | 395 | 3 | 489 | | | 4.45 | 10.9 |

* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

**Monthly Average Limits based on Wildlife Criteria (WC)**

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

**Monthly Average Limits based on Human Threshold Criteria (HTC)**

RECEIVING WATER FLOW = 3.55 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

| SUBSTANCE | HTC | MEAN BACK-GRD. | MO'LY AVE. LIMIT | 1/5 OF EFFL. LIMIT | MEAN EFFL. CONC. |
|---|---|---|---|---|---|
| Cadmium | 370 | | 541 | 108 | <0.5 |
| Chromium (+3) | 3818000 | 0.69 | 5579211 | 1115842 | <2 |

| | | | | | |
|---|---|---|---|---|---|
| Lead | 140 | 0.15 | 205 | 40.9 | <5 |
| Nickel | 43000 | | 62836 | 12567 | <2 |

**Monthly Average Limits based on Human Cancer Criteria (HCC)**
RECEIVING WATER FLOW = 3.55 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

| SUBSTANCE | HCC | MEAN BACK-GRD. | MO'LY AVE. LIMIT | 1/5 OF EFFL. LIMIT | MEAN EFFL. CONC. |
|---|---|---|---|---|---|
| Arsenic | 13.3 | | 19.4 | 3.89 | <7 |

In addition to evaluating the need for limits for each individual substance for which HCC exist, s. NR 106.06(8), Wis. Adm. Code, requires the evaluation of the cumulative cancer risk. Because no effluent limits are needed based on HCC, determination of the cumulative cancer risk is not needed per s. NR 106.06(8), Wis. Adm. Code.

**Conclusions and Recommendations**
Based on a comparison of the effluent data and calculated effluent limitations, effluent limitations are required for total halogen.

Total Halogen – Because multiple additives containing halogens are used at the facility, effluent limitations are recommended. Specifically, **a daily maximum limit of 34 µg/L is required.** The **weekly average effluent limitation of 9.0 µg/L shall also be included in the permit** because it is more restrictive than the daily maximum limit.

Sections NR 106.07(4) and NR 205.067(7), Wis. Adm. Code require WPDES permits contain daily maximum and monthly average limitations for industrial dischargers whenever practicable and necessary to protect water quality. **Therefore, a monthly average limit of 9.0 µg/L is required,** equal to the weekly average limit, to meet expression of limits requirements in addition to the daily max and weekly average limits.

Chloride – Considering available effluent data from the current permit term (03/25/2020 – 09/17/2024), the 1-day $P_{99}$ chloride concentration is 4.88 mg/L for Outfall 001 and 18.4 mg/L for Outfall 018, and the 4-day $P_{99}$ of effluent data is 4.45 mg/L for Outfall 001 and 10.9 mg/L for Outfall 018.

These effluent concentrations are below the calculated WQBELs for chloride, therefore no effluent limits are needed. **Chloride monitoring is recommended to continue for Outfalls 001 and 018 to ensure that 11 sample results are available at the next permit issuance to meet the data requirements of s. NR 106.85, Wis. Adm. Code.**

Arsenic – The limit of detection for the arsenic sampling from the permit application is 7 µg/L which is greater than 1/5$^{th}$ of the most stringent calculated limit of 3.89 µg/L. Therefore, reasonable potential cannot be determined at this time. **It's recommended that arsenic be sampled once during the permit term with an LOD lower than 3.89 µg/L so that reasonable potential can be determined.**

Formaldehyde – The current permit has formaldehyde limits when the additive Formalin was used. However, this additive is no longer used at this facility, so **these limits are recommended to be removed the reissued permit.** Antidegradation and antibacksliding requirements in ch. NR 207, Wis. Adm. Code are met because the source of formaldehyde is removed.

PFOS and PFOA – The need for PFOS and PFOA monitoring is evaluated in accordance with s. NR 106.98(2), Wis. Adm. Code. Based on the type of discharge, PFOS and PFOA monitoring is not recommended. The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

## PART 3 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR AMMONIA NITROGEN

The State of Wisconsin promulgated revised water quality standards for ammonia nitrogen in ch. NR 105, Wis. Adm. Code, effective March 1, 2004 which includes criteria based on both acute and chronic toxicity to aquatic life. Given the fact that Wild Rose Fish Hatchery does not currently have ammonia nitrogen limits, the need for limits is evaluated at this time.

### Effluent Data

The following table summarizes the available ammonia data from the current permit term (03/25/2020 – 10/22/2024):

**Ammonia Nitrogen Effluent Data – Outfall 018**

| | Ammonia Nitrogen mg/L |
|---|---|
| 1-day $P_{99}$ | 0.18 |
| 4-day $P_{99}$ | 0.12 |
| 30-day $P_{99}$ | 0.095 |
| Mean* | 0.080 |
| Std | 0.031 |
| Sample size | 16 |
| Range | 0.0363 – 0.143 |

Theses concentrations are low, and well below any of the applicable criteria or acute water quality-based effluent limits for the receiving water. The ammonia concentrations are expected to be similar at both outfalls. Therefore, **no water quality-based effluent limits are recommended in the reissued permit. Monitoring at Outfalls 001 and 018 is recommended** to determine reasonable potential at the next reissuance.

## PART 4 – PHOSPHORUS

### Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires industrial facilities that discharge greater than 60 pounds of Total Phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit.

Because Wild Rose Fish Hatchery does not currently have an existing technology-based limit, the need for this limit in the reissued permit is evaluated. The data demonstrates that the annual monthly average

phosphorus loading is less than 60 lbs/month, which is the threshold for industrial facilities in accordance to s. NR 217.04(1)(a)2, Wis. Adm. Code. **Therefore, a technology-based limit is required for Outfall 018.**

**Annual Average Mass Total Phosphorus Loading – Outfall 001**

| Month | Result mg/L | Monthly Avg. Flow MGD | Total Phosphorus lb./mo. |
|---|---|---|---|
| Mar 2023 | 0.0646 | 1.803 | 29.1 |
| Jun 2023 | 0.019 | 1.432 | 6.81 |
| Sept 2023 | 0.0336 | 1.379 | 11.6 |
| Oct 2023 | 0.0292 | 1.456 | 10.6 |
| Mar 2024 | 0.0243 | 1.502 | 9.13 |
| Jun 2024 | 0.026 | 1.449 | 9.43 |
| Sept 2024 | 0.0239 | 1.473 | 8.81 |
| Average | | | 12.2 |

Total P (lbs/month) =
Result (mg/L) × monthly average flow (MGD) × 8.34 (lbs/gallon) × 30 (day/month)

**Annual Average Mass Total Phosphorus Loading – Outfall 018**

| Month | Monthly Avg. mg/L | Total Flow MG/month | Total Phosphorus lb./mo. |
|---|---|---|---|
| Mar 2023 | 0.0249 | 93.45 | 19.4 |
| Jun 2023 | 0.0552 | 76.23 | 35.1 |
| Sept 2023 | 0.183 | 115.9 | 177 |
| Oct 2023 | 0.0619 | 108.1 | 55.8 |
| Mar 2024 | 0.1 | 86.35 | 72.0 |
| Jun 2024 | 0.0749 | 81.20 | 50.7 |
| Sept 2024 | 0.036 | 88.36 | 26.5 |
| Average | | | 62.4 |

Total P (lbs/month) = Monthly average (mg/L) × total flow (MG/month) × 8.34 (lbs/gallon)
Where total flow is the sum of the actual (not design) flow (in MGD) for that month

**TMDL Limits**

Total phosphorus (TP) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs (*April 2020) and are based on the annual phosphorus wasteload allocation (WLA) given in pounds per year. This WLA found in Appendix H of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Upper Fox and Wolf River Basins (UFW TMDL)* report dated February 2020 are expressed as maximum annual loads (lbs/year).

For the reasons explained in the April 30, 2012 paper entitled *Justification for Use of Monthly, Growing Season and Annual Average Periods for Expression of WPDES Permit Limits for Phosphorus Discharges in Wisconsin*, WDNR has determined that the phosphorus WQBELs set equal to WLAs would not be consistent with the assumptions and requirements of the TMDL. Therefore, limits given to facilities included in the Upper Fox and Wolf River Basins TMDL are given monthly average mass limits and, if the equivalent effluent concentration is less than or equal to 0.3 mg/L, six-month average mass limits are also included. The following equation shows the calculation of equivalent effluent concentration:

TP Equivalent Effluent Concentration = WLA ÷ (365 days/yr * Flow Rate * Conversion Factor)

= 446 lbs/yr ÷ (365 days/yr * 4.98 MGD * 8.34)
= 0.029 mg/L

Since this value is less than 0.3 mg/L, both a six-month average mass limit and a monthly average mass limit are applicable for total phosphorus. The monthly average limit is set equal to three times the six-month average limit.

TP 6-Month Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (446 lbs/yr ÷ 365 days/yr) * 1.30
= 1.6 lbs/day

TP Monthly Average Permit Limit = TP 6-Month Average Permit Limit * 3
= 1.6 lbs/day * 3
= 4.8 lbs/day

The multiplier used in the six-month average calculation was determined according to the implementation guidance. A coefficient of variation of 0.6 was selected because there is limited phosphorus data from this permit term. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies phosphorus monitoring as quarterly; however, the frequency is recommended to be increased to weekly as recommended by the EPA. If a different monitoring frequency is used, the stated limits should be reevaluated.

Six-month average and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to concentrations of 0.038 mg/L and 0.11 mg/L, respectively, at the maximum annual average flow of 4.98 MGD of Outfalls 001 and 018 combined. **The limits shall be effective at Outfall 019.**

The UFW TMDL establishes TP wasteload allocations to reduce the loading in the entire watershed including WLAs to meet water quality standards for tributaries to the Upper Fox and Wolf River. Therefore, WLA-based WQBELs are protective of immediate receiving waters and TP WQBELs derived according to s. NR 217.13, Wis. Adm. Code are not required.

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TP. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

**Effluent Data**

The following table summarizes effluent total phosphorus monitoring data from 03/25/2020 – 09/17/2024.

**Total Phosphorus Effluent Data**

| | **Phosphorus mg/L Outfall 001** | **Phosphorus mg/L Outfall 018** | **Phosphorus mg/L Combined** |
|---|---|---|---|
| 1-day $P_{99}$ | 0.062 | 0.197 | 0.170 |
| 4-day $P_{99}$ | 0.042 | 0.121 | 0.098 |
| 30-day $P_{99}$ | 0.032 | 0.083 | 0.062 |
| Mean | 0.027 | 0.065 | 0.046 |

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| | Phosphorus mg/L Outfall 001 | Phosphorus mg/L Outfall 018 | Phosphorus mg/L Combined |
|---|---|---|---|
| Std | 0.011 | 0.038 | 0.034 |
| Sample size | 18 | 18 | 36 |
| Range | 0.0185 – 0.0646 | 0.0249 – 0.183 | 0.0185 – 0.183 |

**Interim Limit**
An interim limit is required per s. NR 217.17, Wis. Adm. Code, when a compliance schedule is needed in the permit to meet the WQBEL. The interim limit should reflect a concentration that the facility is able to meet without investing in additional "temporary" treatment, but also should prevent backsliding from current conditions.

*Outfall 001*
There is limited data set for phosphorus from this facility and the final limits are mass-based. Therefore, a narrative interim phosphorus limit is deemed more appropriate than a numeric interim concentration phosphorus limit and a **narrative Interim Phosphorus Limitation similar to the following is recommended: "The plant shall be operated such that the amount of phosphorus being discharged on an annual basis does not increase over the permit term, and that the phosphorus reductions will occur over time through optimization."**

*Outfall 018*
**It is recommended that the interim limit be set equal to 1.0 mg/L for permit reissuance along with requirements for optimization of phosphorus removal.** This interim limit is the same as the recommended technology-based limit, but the reissued permit will also include requirements for optimization of phosphorus removal.

## PART 5 – TOTAL SUSPENDED SOLIDS

Total Suspended Solids (TSS) effluent limits in lbs/day are calculated as recommended in the *TMDL Development and Implementation Guidance: Integrating the WPDES and Impaired Waters Programs (*April 2020). This WLAs found in Appendix I of the *Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Upper Fox and Wolf Basins (UFW TMDL)* report dated February 2020 are expressed as maximum annual loads (lbs/year).

Revisions to chs. NR 106 and 205, Wis. Adm. Code align Wisconsin water quality-based effluent limits with 40 CFR 122.45(d), which requires WPDES permits to contain the following concentration limits, whenever practicable and necessary to protect water quality:

- Weekly average and monthly average limitations for continuous discharges subject to ch. NR 210.
- Daily maximum and monthly average limitations for all other discharges.

Wild Rose Fish Hatchery is an industrial facility and is therefore subject to weekly average and monthly average TSS limits derived from TSS annual WLAs.

TSS Monthly Average Permit Limit = WLA ÷ 365 days/yr * multiplier
= (142,267 lbs/yr ÷ 365 days/yr) * 1.90

= 741 lbs/day

TSS Daily Maximum Permit Limit = WLA ÷ 365 days/yr * daily multiplier
= (142,267 lbs/yr ÷ 365 days/yr) * 3.11
= 1,212 lbs/day

The multiplier used in the weekly average and monthly average calculation was determined according to implementation guidance. A coefficient of variation was calculated, based on TSS mass monitoring data, to be 1.67. This is the standard deviation divided by the mean of mass data. However, it is believed that the optimization of the wastewater treatment system to achieve the WLA-derived permit limits will reduce effluent variability. Thus, the maximum anticipated coefficient of variation expected by the facility is 0.6. This value, along with monitoring frequency, is used to select the multiplier. The current permit specifies TSS monitoring as quarterly; however, the frequency is recommended to be increased to weekly as recommended by the EPA. If a different monitoring frequency is used, the stated limits should be reevaluated.

Daily maximum and monthly average mass effluent limits are recommended for this discharge. The limits are equivalent to concentrations of 29 mg/L and 18 mg/L, respectively, at the maximum annual average flow of 4.98 MGD. **The limits shall be effective at Outfall 019.**

Since wasteload allocations are expressed as annual loads (lbs/yr), permits with TMDL-derived monthly average permit limits should require the permittee to calculate and report rolling 12-month sums of total monthly loads for TSS. Rolling 12-month sums can be compared directly to the annual wasteload allocation.

**Effluent Data**

The following table summarizes effluent total suspended solids monitoring data from 03/25/2020 – 09/17/2024.

**Total Suspended Solids Effluent Data**

| | TSS mg/L Outfall 001 | TSS mg/L Outfall 018 | TSS lbs/day Combined |
|---|---|---|---|
| 1-day $P_{99}$ | 9.75 | | 211 |
| 4-day $P_{99}$ | 6.24 | | 115 |
| 30-day $P_{99}$ | 3.425 | | 59.1 |
| Mean* | 2.137 | 0.12 | 29.5 |
| Std | 2.051 | | 49.1 |
| Sample size | 19 | 19 | 38 |
| Range | <2 – 8.2 | <2 – 2.2 | 25.9 – 190 |

*Results below the level of detection (LOD) were included as zeroes in calculation of average.

**Wild Rose can currently meet the TSS mass limits, and a compliance schedule is not needed.**

## PART 6 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are

detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

In accordance with s. NR 106.53(2)(b), Wis. Adm. Code, the highest daily maximum flow rate for a calendar month is used to determine the acute (daily maximum) effluent limitation. In accordance with s. NR 106.53(2)(c), Wis. Adm. Code, the highest 7-day rolling average flow rate for a calendar month is used to determine the sub-lethal (weekly average) effluent limitation. These values were based off actual flow reported from 01/01/2020 – 11/30/2024.

The table below summarizes the maximum temperatures reported during monitoring from 01/01/2020 – 11/30/2024.

**Monthly Temperature Effluent Data & Limits – Outfall 001**

| | (°F) | | | Daily Maximum Effluent Limitation (°F) |
|---|---|---|---|---|
| JAN | 44 | 45 | 55 | 89 |
| FEB | 44 | 46 | 53 | 86 |
| MAR | 49 | 51 | 58 | 86 |
| APR | 53 | 55 | 62 | 82 |
| MAY | 57 | 59 | 67 | 81 |
| JUN | 61 | 62 | 69 | 76 |
| JUL | 59 | 63 | 68 | 74 |
| AUG | 58 | 59 | 66 | 79 |
| SEP | 55 | 56 | 62 | 80 |
| OCT | 53 | 54 | 55 | 82 |
| NOV | 48 | 51 | 52 | 85 |
| DEC | 45 | 47 | 53 | 89 |

**Monthly Temperature Effluent Data & Limits – Outfall 018**

| Month | Representative Highest Monthly Effluent Temperature | | Calculated Effluent Limit | |
|---|---|---|---|---|
| | Weekly Maximum (°F) | Daily Maximum (°F) | Weekly Average Effluent Limitation (°F) | Daily Maximum Effluent Limitation (°F) |
| JAN | 49 | 49 | 51 | 78 |

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| Month | Representative Highest Monthly Effluent Temperature | | Calculated Effluent Limit | |
|---|---|---|---|---|
| | Weekly Maximum (°F) | Daily Maximum (°F) | Weekly Average Effluent Limitation (°F) | Daily Maximum Effluent Limitation (°F) |
| FEB | 49 | 49 | 50 | 78 |
| MAR | 49 | 49 | 55 | 80 |
| APR | 50 | 51 | 61 | 75 |
| MAY | 54 | 63 | 65 | 76 |
| JUN | 62 | 66 | 69 | 74 |
| JUL | 59 | 65 | 68 | 76 |
| AUG | 57 | 63 | 66 | 75 |
| SEP | 57 | 60 | 61 | 75 |
| OCT | 55 | 56 | **54** | 75 |
| NOV | 49 | 50 | 50 | 74 |
| DEC | 49 | 49 | 50 | 80 |

Because the Outfalls 001 and 018 are close in proximity, the need for thermal limits shall be evaluated at Outfall 019. The current permit has daily maximum limits for July and August and a weekly average limit for October.

Flow-weighted temperature was reported during the permit term for July, August, and October, shown below. The effluent flow used to calculate these limits was the summation of flow from Outfall 001 and 018. Where flow wasn't reported for Outfall 001, the maximum annual flow of 2.04 MGD was substituted.

**Monthly Temperature Effluent Data & Limits – Outfall 019**

| Month | Representative Highest Monthly Effluent Temperature | | Calculated Effluent Limit | |
|---|---|---|---|---|
| | Weekly Maximum (°F) | Daily Maximum (°F) | Weekly Average Effluent Limitation (°F) | Daily Maximum Effluent Limitation (°F) |
| JUL | 59 | 63 | 68 | 74 |
| AUG | 57 | 61 | 65 | 75 |
| OCT | 54 | 55 | **54** | 74 |

**Reasonable Potential**

Permit limits for temperature are recommended based on the procedures in s. NR 106.56, Wis. Adm. Code.

- An acute limit for temperature is recommended for each month in which the representative daily maximum effluent temperature for that month exceeds the acute WQBEL. The representative daily maximum effluent temperature is the greater of the following:
  (a) The highest recorded representative daily maximum effluent temperature
  (b) The projected 99th percentile of all representative daily maximum effluent temperatures
- A sub−lethal limitation for temperature is recommended for each month in which the representative weekly average effluent temperature for that month exceeds the weekly average WQBEL. The representative weekly average effluent temperature is the greater of the following:
  (a) The highest weekly average effluent temperature for the month.
  (b) The projected 99th percentile of all representative weekly average effluent temperatures for the month

Comparing the representative highest effluent temperature to the calculated effluent limits determines the reasonable potential of exceeding the effluent limits. The months in which limitations are recommended are shown in bold. Based on this analysis, a **weekly average temperature maximum limit of 54 deg F is necessary for the month of October for Outfall 019.**

**The current permit contains a daily maximum temperature limit of 75 deg F for July and August. This limit is recommended to continue per antibacksliding requirements per Subchapter II in ch. NR 207, Wis. Adm. Code.**

## PART 7 – WHOLE EFFLUENT TOXICITY (WET)

WET testing is used to measure, predict, and control the discharge of toxic materials that may be harmful to aquatic life. In WET tests, organisms are exposed to a series of effluent concentrations for a given time and effects are recorded. Decisions below related to the selection of representative data and the need for WET limits were made according to ss. NR 106.08 and 106.09, Wis. Adm. Code. WET monitoring frequency and toxicity reduction evaluation (TRE) recommendations were made using the best professional judgment of staff familiar with the discharge after consideration of the guidance in the *Whole Effluent Toxicity (WET) Program Guidance Document (2022).*

- Acute tests predict the concentration that causes lethality of aquatic organisms during a 48 to 96-hour exposure. To assure that a discharge is not acutely toxic to organisms in the receiving water, WET tests must produce a statistically valid $LC_{50}$ (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic tests predict the concentration that interferes with the growth or reproduction of test organisms during a seven-day exposure. To assure that a discharge is not chronically toxic to organisms in the receiving water, WET tests must produce a statistically valid $IC_{25}$ (Inhibition Concentration) greater than the instream waste concentration (IWC), according to s. NR 106.09(3)(b), Wis. Adm Code. The IWC is an estimate of the proportion of effluent to total volume of water (receiving water + effluent). The IWC of **81%** shown in the WET Checklist summary below was calculated according to the following equation, as specified in s. NR 106.03(6), Wis. Adm Code:

$$IWC\ (as\ \%) = Q_e \div \{(1 - f)\ Q_e + Q_s\} \times 100$$

Where:

$Q_e$ = annual average flow = 4.98 MGD = 7.71 cfs
f = fraction of the $Q_e$ withdrawn from the receiving water = 0

$Q_s$ = ¼ of the 7-$Q_{10}$ = 7.4 cfs ÷ 4 = 1.85 cfs

*The IWC from the current permit term is 80% which slightly differs from the IWC calculated in this evaluation due to slight changes in the maximum annual flow rates from Outfalls 001 and 018.

- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), a synthetic (standard) laboratory water may be used as the dilution water and primary control in acute WET tests, unless the use of different dilution water is approved by the Department prior to use. The primary control water must be specified in the WPDES permit.
- According to the *State of Wisconsin Aquatic Life Toxicity Testing Methods Manual* (s. NR 219.04, Table A, Wis. Adm. Code), receiving water must be used as the dilution water and primary control in chronic WET tests, unless the use of different dilution water is approved by the Department prior to use. The dilution water used in WET tests conducted on Outfall 019 shall be a grab sample collected from the receiving water location, upstream and out of the influence of the mixing zone and any other known discharge. The specific receiving water location must be specified in the WPDES permit.
- Shown below is a tabulation of all available WET data for Outfall 019. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations.

**WET Data History**

| Date Test Initiated | Acute Results $LC_{50}$ % | | | | Chronic Results $IC_{25}$ % | | | | | Footnotes or Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | *C. dubia* | Fathead minnow | Pass or Fail? | Used in RP? | *C. dubia* | Fathead Minnow | Algae ($IC_{50}$) | Pass or Fail? | Use in RP? | |
| 05/11/2010 | | | | | >100 | >100 | | | Yes | |
| 11/27/2012 | | | | | >100 | >100 | | | Yes | |
| 06/25/2019 | >100 | >100 | Pass | Yes | 20.1 | >100 | >100 | | No | 1 |
| 07/30/2019 | | | | | >100 | | | Pass | Yes | |
| 10/15/2019 | | | | | 85.5 | >100 | >100 | Pass | Yes | |
| 03/17/2020 | | | | | >100 | 23.4 | | Fail | Yes | |
| 04/14/2020 | | | | | >100 | 97.1 | | Pass | Yes | |
| 04/21/2020 | | | | | 22.2 | 33.8 | | Fail | Yes | |
| 07/14/2020 | >100 | >100 | Pass | Yes | >100 | >100 | >100 | Pass | Yes | |
| 04/06/2021 | | | | | >100 | 62.2 | >100 | Fail | Yes | |
| 05/11/2021 | | | | | >100 | >100 | >100 | Pass | Yes | |
| 05/18/2021 | | | | | >100 | >100 | >100 | Pass | Yes | |
| 11/02/2021 | >100 | >100 | Pass | Yes | >100 | >100 | >100 | Pass | Yes | |
| 03/08/2022 | >100 | >100 | Pass | Yes | >100 | 58.8 | >100 | Fail | Yes | |
| 08/16/2022 | | | | | >100 | >100 | >100 | Pass | Yes | |
| 05/02/2023 | >100 | >100 | Pass | Yes | >100 | >100 | >100 | Pass | Yes | |
| 10/24/2023 | | | | | >100 | >100 | >100 | Pass | Yes | |
| 05/14/2024 | >100 | >100 | Pass | Yes | >100 | >100 | >100 | Pass | Yes | |

Footnotes:

1. *Qualified or Inconclusive Data.* Chronic C. dubia test was inconclusive and was retested but other species were considered conclusive and not retested.

- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. **WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.**

  Acute Reasonable Potential = [(TUa effluent) (B)(AMZ)]
  Chronic Reasonable Potential = [(TUc effluent) (B)(IWC)]

  According to s. NR 106.08(6)(d), Wis. Adm. Code, TUa and TUc effluent values are equal to zero whenever toxicity is not detected (i.e. when the $LC_{50}$, $IC_{25}$ or $IC_{50} \geq 100\%$).

  Acute Reasonable Potential = $0 < 1.0$, reasonable potential is not shown, and a limit is not required.

  Chronic Reasonable Potential = [($TU_c$ effluent) (B)(IWC)]

**Chronic WET Limit Parameters**

| **TUc** (maximum) $100/IC_{25}$ | **B** (multiplication factor from s. NR 106.08(6)(c), Wis. Adm. Code, Table 4) | **IWC** |
|---|---|---|
| 100/22.2 = 4.5 | 2.1 Based on 6 detects | 81% |

[(TUc effluent) (B)(IWC)] = 7.66 > 1.0

Therefore, reasonable potential is shown chronic WET limits using the procedures in s. NR 106.08(6) and representative data from 07/30/2019 – 05/14/2024.

Expression of WET limits
Chronic WET limit = [100/IWC] $TU_c$ = 1.2 $TU_c$ expressed as a monthly average

The WET checklist was developed to help DNR staff make recommendations regarding WET limits, monitoring, and other related permit conditions. The checklist indicates whether acute and chronic WET limits are needed, based on requirements specified in s. NR 106.08, Wis. Adm. Code. The checklist steps the user through a series of questions, assesses points based on the potential for effluent toxicity, and suggests monitoring frequencies based on points accumulated during the checklist analysis. As toxicity potential increases, more points accumulate, and more monitoring is recommended to ensure that toxicity is not occurring. A summary of the WET checklist analysis completed for this permittee is shown in the table below. Staff recommendations based on best professional judgment are provided below the summary table. For guidance related to reasonable potential and the WET checklist, see Chapter 1.3 of the WET Guidance Document: https://dnr.wisconsin.gov/topic/Wastewater/WET.html.

**WET Checklist Summary – Outfall 019**

| | **Acute** | **Chronic** |
|---|---|---|
| **AMZ/IWC** | Not Applicable. | IWC = 81%. |

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| | Acute | Chronic |
|---|---|---|
| | **0 Points** | **15 Points** |
| **Historical Data** | 6 tests used to calculate RP.<br>No tests failed.<br><br>**0 Points** | 17 tests used to calculate RP.<br>4 tests failed.<br><br>**0 Points** |
| **Effluent Variability** | Little variability, no violations or upsets, consistent WWTF operations.<br><br>**0 Points** | Same as Acute.<br><br>**0 Points** |
| **Receiving Water Classification** | Exceptional Resource Water<br><br>**12 Points** | Same as Acute.<br><br>**12 Points** |
| **Chemical-Specific Data** | No reasonable potential for limits based on ATC; Chloride and ammonia detected. Additional Compounds of Concern: None.<br><br>**2 Points** | No reasonable potential for limits based on CTC; Chloride and ammonia detected. Additional Compounds of Concern: None.<br><br>**2 Points** |
| **Additives** | 5 Biocides and 7 Water Quality Conditioners added. Permittee is not using phosphorus removing chemicals.<br><br>**20 Points** | All additives used more than once per 4 days.<br><br>**20 Points** |
| **Discharge Category** | Fish Hatchery.<br><br>**0 Points** | Same as Acute.<br><br>**0 Points** |
| **Wastewater Treatment** | Microscreen.<br><br>**0 Points** | Same as Acute.<br><br>**0 Points** |
| **Downstream Impacts** | No impacts known.<br><br>**0 Points** | Same as Acute.<br><br>**0 Points** |
| **Total Checklist Points:** | **34 Points** | **49 Points** |
| **Recommended Monitoring Frequency (from Checklist):** | 3 tests during permit term | 2x yearly |
| **Limit Required?** | No | Yes<br>Limit = 1.2 $TU_c$ |
| **TRE Recommended? (from Checklist)** | No | No |

- After consideration of the guidance provided in the Department's WET Program Guidance Document (2022) and other information described above, 3x/permit term acute and 2x yearly chronic WET tests are recommended in the reissued permit. Tests should be done in rotating quarters to collect seasonal information about this discharge. WET testing should continue after the permit expiration date (until the permit is reissued).
- According to the requirements specified in s. NR 106.08, Wis. Adm. Code, a chronic WET limit is required. The chronic WET limit shall be expressed as 1.2 TUc as a monthly average in the effluent limits table of the permit.
- A minimum of annual chronic monitoring is required because a chronic WET limit is required. Federal

regulations in 40 CFR Part 122.44(i) require that monitoring occur at least once per year when a limit is present.

## PART 8 – ADDITIVE REVIEW

Unlike the metals and toxic substances evaluated in Part 2, most additives have not undergone the amount of toxicity testing needed to calculate water quality criteria. Instead, in cases where the minimum data requirements necessary to calculate a WQC are not met, a secondary value can be used to regulate the substance, according to s. NR 105.05, Wis. Adm. Code. Whenever an additive is discharged directly into a surface water without receiving treatment or an additive is used in the treatment process and is not expected to be removed before discharge, a review of the additive is needed. Secondary values should be derived according to s. NR 105.05, Wis. Adm. Code. Guidance related to conducting an additive review can be found in *Water Quality Review Procedures for Additives* (2019) (http://dnr.wi.gov/topic/wastewater/Guidance.html).

**Additive Parameters – Outfall 001**

| Additive Name | Manufacturer | Purpose of Additive | Intermittent or Continuous Feed | Frequency of Use | | Maximum Estimated Effluent Concentration | Potential Use Restriction mg/L[1] | Is Additive Authorized in Current Permit? |
|---|---|---|---|---|---|---|---|---|
| | | | | Months per/yr. | Days/ week | | | |
| 35% Hydrogen Peroxide | Arkema Inc. | Fungicide | I | 4 | 4 | 0 mg/L | 0.185 mg/L | Yes |
| Tricaine – S | Argent Laboratories | Anesthetic | I | 10 | 1 | 0 mg/L | N/A | No |
| Thiamine Mononitrate | Spectrum Chemical MFG Corp | Fish Vitamin | I | 3 | 3 | 0 mg/L | N/A | Yes |
| Muriatic Acid | Bayer Corporation | Cleaning | I | 1 | 1 | 0 mg/L | pH limits | Yes |
| Ovadine | Syndel | Disinfectant | I | 6 | 3 | 0 mg/L | Halogen limits | Yes |
| Sodium Thiosulfate | WEGO Chemical & Mineral Corp | Neutralizer for iodine and chlorine | I | 6 | 3 | 16 lbs/day | Halogen limits | Yes |
| Sodium Hypochlorite[2] | Online Packaging Inc. | Disinfectant | I | 9 | 1 | 0 mg/L | Halogen limits | Yes |
| Virkon S | LanXess | Disinfectant | I | 12 | 7 | 0 mg/L | 0.438 mg/L acute | No |
| Aquamycin | Sequoia Research Products | Antibiotic | I | 1 | 7 | 0 mg/L | N/A | Yes |
| Citric Acid | Cargill, Inc. | Cleaning | I | 3 | 1 | 0 mg/L | pH limits | Yes |
| Sodium Bicarbonate | Cargill, Inc. | Neutralizer for citric and muriatic acid | I | 3 | 3 | 0 mg/L | pH limits | Yes |
| Aquaflor | Cayman Chemical | Antibiotic | I | 1 | 7 | 0 mg/L | N/A | Yes |

1. Calculated based on toxicity data provided
2. Evaluation are not necessary for additives that have active ingredients consisting only of chlorine, caustic soda (sodium hydroxide), hypochlorite, sulfuric acid, hydrochloric acid

**Additive Parameters – Outfall 018**

| Additive Name | Manufacturer | Purpose of Additive | Intermittent or Continuous Feed | Frequency of Use | | Estimated Effluent Concentration mg/L | Potential Use Restriction mg/L[1] | Is Additive Authorized in Current Permit? |
|---|---|---|---|---|---|---|---|---|
| | | | | Months per/yr. | Days/ week | | | |
| 35% Hydrogen Peroxide | Arkema Inc. | Fungicide | I | 3 | 4 | 0 mg/L | 0.185 mg/L | Yes |
| Ovadine | Syndel | Disinfectant | I | 6 | 2 | 0 mg/L | Halogen limits | Yes |
| Sodium Thiosulfate | WEGO Chemical & Mineral Corp | Neutralizer for iodine and chlorine | I | 6 | 2 | 16 lbs/day | Halogen limits | Yes |
| Sodium Hypochlorite[2] | Online Packaging Inc. | Disinfectant | I | 9 | 1 | 0 mg/L | Halogen limits | Yes |
| Virkon S | LanXess | Disinfectant | I | 12 | 7 | 0 mg/L | 0.438 mg/L | No |
| Aqui-S | Aqui-S New Zealand | Anesthetic | I | 3 | 1 | 0 mg/L | | No |
| Citric Acid | Cargill, Inc. | Cleaning | I | 3 | 1 | 0 mg/L | pH limits | Yes |
| Sodium Bicarbonate | Cargill, Inc. | Neutralizer for citric and muriatic acid | I | 3 | 3 | Not discharged | | Yes |
| Urea (28% Liquid Nitrogen) | Agriliance, LLC | Pond Fertilizer | I | 1 | 2 | 2.25 gal/day | N/A | Yes |
| Blue Vail Pond Dye | Sensient Colors, LLC | Pond dye | I | 2 | 1 | 0.5 gal/day | No data available | Yes |
| Green Clean Pro | Biosafe Systems, LLC | Algaecide | I | 2 | 1 | 0.15 mg/L | 0.54 mg/L | Yes |
| 85% Phosphoric Acid | AquaPhoenix Scientific | Pond Fertilizer | I | 2 | 2 | 0 mg/L | pH limits | Yes |
| Tricaine – S | Argent Laboratories | Anesthetic | I | 8 | 3 | 0 mg/L | | No |
| Muriatic Acid | Bayer Corporation | Cleaning | I | 1 | 1 | 0 mg/L | pH limits | Yes |
| Thiamine Mononitrate | Spectrum Chemical MFG Corp | Fish Vitamin | I | 3 | 3 | 0 mg/L | | Yes |

1. Calculated based on toxicity data provided
2. Evaluation are not necessary for additives that have active ingredients consisting only of chlorine, caustic soda (sodium hydroxide), hypochlorite, sulfuric acid, hydrochloric acid

Hydrogen peroxide, Virkon S, citric acid, muriatic acid, sodium bicarbonate are not expected in the discharged and are approved at the requested usages. Additionally, citric acid and sodium bicarbonate are regulated through pH limits.

Ovadine and sodium hypochlorite aren't expected in the discharge. However, there are total halogen limits which would be protective should these be discharged. Additionally, sodium thiosulfate is used to neutralize iodine and chlorine in order to meet total halogen limits so a review is not needed.

Tricaine – S, Thiamine Mononitrate, Aquamycin, Aquaflor and Aqui-S are animal drugs which are consumed and not expected to be discharged.

85% phosphoric acid: A review is not needed because there are pH and phosphorus limits.

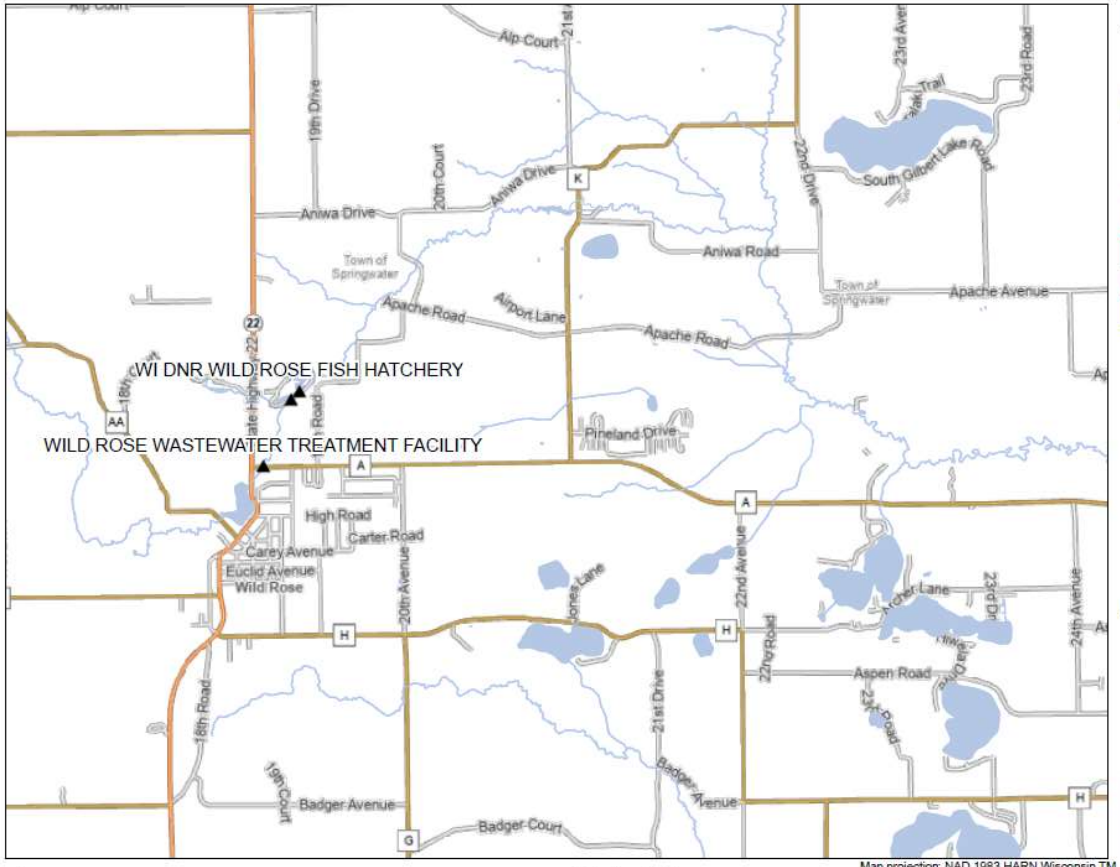
Urea: A review is not needed because the need for ammonia limits was evaluated, and they are not needed.

GreenClean PRO is expected to be discharged at a concentration of 0.15 mg/L which is less than the calculated use restriction of 0.54 mg/L so it is approved for use at the requested dosage rate.

No ecotoxicity data was provided for Blue Vail Pond Dye so the use of this additive is not approved at this time. This can be reviewed again when data is available.

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

# WI DNR Wild Rose Outfall Location




**Legend:** (some map layers may not be displayed)

- Surface Water Outfalls
- 24K Streams and Rivers
- 24K Lakes and Open Water
- Rivers and Streams
- Intermittent Streams
- Open Water

**Latest Leaf Off Imagery**

- Red: Band_1
- Green: Band_2
- Blue: Band_3

**Notes:**
Not to scale

Map projection: NAD 1983 HARN Wisconsin TM

Map: 0 3,000 6,000 Feet
0 1,000 2,000 Meters

N

Service Layer Credits:
Latest Leaf Off Imagery: , Basic Basemap (Cached):


This map is a product generated by a DNR web mapping application.

This map is for informational purposes only and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. The user is solely responsible for verifying the accuracy of information before using for any purpose. By using this product for any purpose user agrees to be bound by all disclaimers found here: https://dnr.wisconsin.gov/legal

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Attachment #3

# Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

| | | | | | | Temp Dates | Flow Dates |
|---|---|---|---|---|---|---|---|
| **Facility:** | Wild Rose Fish Hatchery | | **7-$Q_{10}$:** | 7.40 | cfs | | |
| **Outfall(s):** | 001 | | **Dilution:** | 25% | | **Start:** 01/01/20 | 01/06/20 |
| **Date Prepared:** | 1/3/2025 | | **f:** | 0 | | **End:** 11/30/24 | 11/28/24 |
| **Design Flow (Qe):** | 2.94 | MGD | **Stream type:** | Cold water community | | | |
| **Storm Sewer Dist.** | 0 | ft | **Qs:Qe ratio:** | 0.4 | :1 | | |
| | | | **Calculation Needed?** | YES | | | |

| Month | Water Quality Criteria | | | Receiving Water Flow Rate (Qs) | Representative Highest Effluent Flow Rate (Qe) | | f | Representative Highest Monthly Effluent Temperature | | Calculated Effluent Limit | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ta (default) | Sub-Lethal WQC | Acute WQC | | 7-day Rolling Average (Qesl) | Daily Maximum Flow Rate (Qea) | | Weekly Average | Daily Maximum | Weekly Average Effluent Limitation | Daily Maximum Effluent Limitation |
| | (°F) | (°F) | (°F) | (cfs) | (MGD) | (MGD) | | (°F) | (°F) | (°F) | (°F) |
| JAN | 35 | 47 | 68 | 7.40 | 1.905 | 1.905 | 0 | 44 | 45 | 55 | 89 |
| FEB | 36 | 47 | 68 | 7.40 | 2.121 | 2.121 | 0 | 44 | 46 | 53 | 86 |
| MAR | 39 | 51 | 69 | 7.40 | 2.121 | 2.121 | 0 | 49 | 51 | 58 | 86 |
| APR | 47 | 57 | 70 | 7.40 | 2.228 | 2.228 | 0 | 53 | 55 | 62 | 82 |
| MAY | 56 | 63 | 72 | 7.40 | 2.228 | 2.228 | 0 | 57 | 59 | 67 | 81 |
| JUN | 62 | 67 | 72 | 7.40 | 2.905 | 2.905 | 0 | 61 | 62 | 69 | 76 |
| JUL | 64 | 67 | 73 | 7.40 | 3.379 | 7.239 | 0 | 59 | 63 | 68 | 74 |
| AUG | 63 | 65 | 73 | 7.40 | 2.121 | 2.121 | 0 | 58 | 59 | 66 | 79 |
| SEP | 57 | 60 | 72 | 7.40 | 2.121 | 2.121 | 0 | 55 | 56 | 62 | 80 |
| OCT | 49 | 53 | 70 | 7.40 | 2.067 | 2.121 | 0 | 53 | 54 | 55 | 82 |
| NOV | 41 | 48 | 69 | 7.40 | 2.121 | 2.121 | 0 | 48 | 51 | 52 | 85 |
| DEC | 37 | 47 | 69 | 7.40 | 1.905 | 1.905 | 0 | 45 | 47 | 53 | 89 |

Attachment #3

# Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

| | | | | | | Temp Dates | Flow Dates |
|---|---|---|---|---|---|---|---|
| **Facility:** | Wild Rose Fish Hatchery | | **7-$Q_{10}$:** | 7.40 | cfs | | |
| **Outfall(s):** | 018 | | **Dilution:** | 25% | **Start:** | 01/01/20 | 01/01/20 |
| **Date Prepared:** | 1/3/2025 | | **f:** | 0 | **End:** | 11/30/24 | 11/30/24 |
| **Design Flow (Qe):** | 2.94 | MGD | **Stream type:** | Cold water community | | | |
| **Storm Sewer Dist.** | 0 | ft | **Qs:Qe ratio:** | 0.4 | :1 | | |
| | | | **Calculation Needed?** | YES | | | |

| Month | Water Quality Criteria | | | Receiving Water Flow Rate (Qs) | Representative Highest Effluent Flow Rate (Qe) | | f | Representative Highest Monthly Effluent Temperature | | Calculated Effluent Limit | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ta (default) | Sub-Lethal WQC | Acute WQC | | 7-day Rolling Average (Qesl) | Daily Maximum Flow Rate (Qea) | | Weekly Average | Daily Maximum | Weekly Average Effluent Limitation | Daily Maximum Effluent Limitation |
| | (°F) | (°F) | (°F) | (cfs) | (MGD) | (MGD) | | (°F) | (°F) | (°F) | (°F) |
| JAN | 35 | 47 | 68 | 7.40 | 3.886 | 3.916 | 0 | 49 | 49 | 51 | 78 |
| FEB | 36 | 47 | 68 | 7.40 | 3.782 | 3.883 | 0 | 49 | 49 | 50 | 78 |
| MAR | 39 | 51 | 69 | 7.40 | 3.296 | 3.388 | 0 | 49 | 49 | 55 | 80 |
| APR | 47 | 57 | 70 | 7.40 | 3.132 | 5.239 | 0 | 50 | 51 | 61 | 75 |
| MAY | 56 | 63 | 72 | 7.40 | 3.381 | 4.938 | 0 | 54 | 63 | 65 | 76 |
| JUN | 62 | 67 | 72 | 7.40 | 3.518 | 4.816 | 0 | 62 | 66 | 69 | 74 |
| JUL | 64 | 67 | 73 | 7.40 | 2.960 | 3.317 | 0 | 59 | 65 | 68 | 76 |
| AUG | 63 | 65 | 73 | 7.40 | 3.511 | 4.793 | 0 | 57 | 63 | 66 | 75 |
| SEP | 57 | 60 | 72 | 7.40 | 4.502 | 5.325 | 0 | 57 | 60 | 61 | 75 |
| OCT | 49 | 53 | 70 | 7.40 | 4.261 | 4.919 | 0 | 55 | 56 | **54** | 75 |
| NOV | 41 | 48 | 69 | 7.40 | 3.708 | 6.277 | 0 | 49 | 50 | 50 | 74 |
| DEC | 37 | 47 | 69 | 7.40 | 3.442 | 3.592 | 0 | 49 | 49 | 50 | 80 |

## Temperature limits for receiving waters with unidirectional flow

(calculation using default ambient temperature data)

| | | | | | | | Temp Dates | Flow Dates |
|---|---|---|---|---|---|---|---|---|
| **Facility:** | Wild Rose Fish Hatchery | | **7-$Q_{10}$:** | 7.40 | cfs | | | |
| **Outfall(s):** | 019 | | **Dilution:** | 25% | | **Start:** | 07/01/20 | 01/01/20 |
| **Date Prepared:** | 1/3/2025 | | **f:** | 0 | | **End:** | 10/31/21 | 11/30/24 |
| **Design Flow (Qe):** | 4.98 | MGD | **Stream type:** | Cold water community | | | | |
| **Storm Sewer Dist.** | 0 | ft | **Qs:Qe ratio:** | 0.2 | :1 | | | |
| | | | **Calculation Needed?** | YES | | | | |

| Month | Water Quality Criteria | | | Receiving Water Flow Rate (Qs) | Representative Highest Effluent Flow Rate (Qe) | | f | Representative Highest Monthly Effluent Temperature | | Calculated Effluent Limit | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ta (default) | Sub-Lethal WQC | Acute WQC | | 7-day Rolling Average (Qesl) | Daily Maximum Flow Rate (Qea) | | Weekly Average | Daily Maximum | Weekly Average Effluent Limitation | Daily Maximum Effluent Limitation |
| | (°F) | (°F) | (°F) | (cfs) | (MGD) | (MGD) | | (°F) | (°F) | (°F) | (°F) |
| JAN | 35 | 47 | 68 | 7.40 | 5.907 | 5.956 | 0 | | | 49 | 75 |
| FEB | 36 | 47 | 68 | 7.40 | 5.834 | 6.004 | 0 | | | 49 | 74 |
| MAR | 39 | 51 | 69 | 7.40 | 5.330 | 5.428 | 0 | | | 54 | 76 |
| APR | 47 | 57 | 70 | 7.40 | 5.137 | 7.279 | 0 | | | 59 | 74 |
| MAY | 56 | 63 | 72 | 7.40 | 5.421 | 6.978 | 0 | | | 65 | 75 |
| JUN | 62 | 67 | 72 | 7.40 | 5.492 | 6.856 | 0 | | | 68 | 74 |
| JUL | 64 | 67 | 73 | 7.40 | 5.574 | 10.111 | 0 | 59 | 63 | 68 | 74 |
| AUG | 63 | 65 | 73 | 7.40 | 5.551 | 6.833 | 0 | 57 | 61 | 65 | 75 |
| SEP | 57 | 60 | 72 | 7.40 | 6.442 | 6.926 | 0 | | | 61 | 75 |
| OCT | 49 | 53 | 70 | 7.40 | 6.132 | 6.904 | 0 | 54 | 55 | **54** | 74 |
| NOV | 41 | 48 | 69 | 7.40 | 5.530 | 8.317 | 0 | | | 50 | 73 |
| DEC | 37 | 47 | 69 | 7.40 | 5.433 | 5.632 | 0 | | | 49 | 76 |