



Oregon

Kate Brown, Governor

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October 15, 2020

Mark Willett
City of Klamath Falls
222 South 6th Street
Klamath Falls, OR 97601-6112

CERTIFIED MAIL #7018 0680 0001 9353 6346
RETURN RECEIPT REQUESTED

RE: Issuance of NPDES Permit #100701
File # 46763
EPA # OR0026301
Facility: Klamath Falls Wastewater Treatment and Reclamation Facility @ Spring Street,
1200 S. Spring St., Klamath Falls
Klamath County

Your National Pollutant Disposal Elimination System Permit has been renewed and is enclosed. This permit is DEQ's final action on permit renewal application #994888. DEQ only received comments from the city during the public comment period. Changes made to the proposed permit are addressed in the Response to Comments. Your permit is effective on December 1, 2020.

Please read your permit carefully. Compliance with your permit is required at all times.

If you are dissatisfied with the conditions of this permit, you have 20 days to request a hearing before the Environmental Quality Commission or its authorized representative. A request for a hearing must be made in writing and state the grounds for the request. Any hearing will be conducted as a contested case hearing in accordance with ORS 183.413 through 183.470 and OAR chapter 340, division 011. If a hearing is requested, the existing permit continues in effect until a final order is issued.

Please note that your required operator certification levels are no longer listed on the face page of your permit. Pursuant to OAR chapter 340, division 049 your systems are classified as follows:

- Collection System: Class III
- Treatment System: Class IV

If changes are made to your systems or if you have additional questions about operator certification requirements, please contact the DEQ Operator Certification program at opcet@deq.state.or.us or 503-229-5349. Current classifications for all systems requiring certified operators may be found at <https://www.oregon.gov/deq/wq/wqpermits/Pages/Wastewater-Operator-Certification.aspx>.

If you are interested in upgrading your wastewater treatment infrastructure or need assistance with treatment system design, DEQ's Clean Water State Revolving Fund offers below-market rate loans for qualified applicants to finance the planning, design and construction of water quality improvement projects. DEQ updates interest rates are updated quarterly and rates vary by loan term, type of loan and community economic conditions. DEQ works with borrowers to ensure access to the best rates available at the time of loan signature. To learn more about eligible water quality projects and application process, please visit the [Clean Water State Revolving Fund website at https://www.oregon.gov/deq/wq/cwsrf/Pages/default.aspx](https://www.oregon.gov/deq/wq/cwsrf/Pages/default.aspx) or call 503-229-LOAN.

If you have any questions about your permit requirements, please contact Justin Sterger at 541-633-2016 or sterger.justin@deq.state.or.us.

Sincerely,



Chad Gubala, Ph.D.
Water Quality Manager
Eastern Region

CG:jmt

Enclosure: Permit, Permit Fact Sheet, and Response to Comments

cc: WQ Permit Coordinator Files, Salem DEQ
Regional File, Pendleton DEQ
ec: Justin Sterger, Bend Office
DEQ Data Team, DEQ w/permit
EPA, Seattle /permit
ORMS
DEQ Wastewater Operator Certification Program



Permit Fact Sheet

Oregon Department of Environmental Quality
 Eastern Region Office
 800 SE Emigrant, #330
 Pendleton, OR 97801

Contact: David Feldman

Permittee:	Klamath Falls Wastewater Treatment Plant and Reclamation Facility 1200 S. Spring Street Klamath Falls, OR 97601
Existing Permit Information:	File Number: 46763 Permit Number: 100701 Expiration Date: 8/31/1995 EPA Reference Number: OR0026301
Source Contact:	Christopher Claymore, (541) 883-5386 Wastewater Division Manager
Facility Location:	1200 S. Spring Street Klamath Falls, OR 97601 Klamath County
LLID:	1221913420005 – RM 253
NHD:	18010204011523 – 63.73%
Receiving Stream/Basin:	Klamath River Klamath Lost
Proposed Action:	Renew Permit Application Number: 974888 Date Received: March 7, 1995
Source Category:	NPDES Major – Domestic
Sources Covered:	Treated Domestic Wastewater
Permit Type:	NPDES-DOM-Ba
Permit Writer:	David Feldman Senior Permit Writer\HQ\WQPPD 6/15/20

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1.0 Introduction

The Department of Environmental Quality (DEQ) proposes to renew the National Pollutant Discharge Elimination System (NPDES) wastewater permit for Klamath Falls Wastewater Treatment Plant and Reclamation Facility located at 1200 S. Spring Street, Klamath Falls, OR 97601. This permit allows and regulates the discharge of domestic treated wastewater to the Klamath River. The permit also authorizes the City of Klamath Falls to process, dispose of or beneficially reuse wastewater solids.

The purpose of this permit fact sheet is to explain and provide justification for the permit.

The Federal Water Pollution Control Act of 1972 (also known as the Clean Water Act) and its subsequent amendments, as well as Oregon Revised Statutes (ORS 468B.050), require a NPDES permit for the discharge of wastewater to surface waters. This proposed permit action by DEQ complies with both federal and state requirements.

2.0 Permit History

2.1 Issuance, Renewal and Modifications

The current NPDES Permit expired on Aug. 31, 1995. DEQ received renewal application number 994888 from the city of Klamath Falls on Mar. 7, 1995. Because the permittee submitted a renewal application to DEQ in a timely manner, the current permit will not expire until DEQ takes final action on the renewal application as per OAR 340-045-0040. The city also submitted application number 992627 to modify the permit to include the cooling and blowdown wastewater from a city-owned energy cogeneration facility. This wastewater was allowed to be discharged at the back end of the wastewater treatment plant by registering that discharge under the 100-J general discharge permit. That registration went into effect on Oct. 21, 1997. Since those applications were submitted, the cogeneration facility effluent is all directed to the WWTP for treatment as is covered under a local pretreatment permit.

2.2 Compliance History

The facility was inspected by DEQ on May 30, 2015, and Sept. 20, 2016. No violations were found during those inspections.

3.0 Proposed Revisions to Permit

The proposed permit contains the following substantive changes from the 1990 permit:

- Schedule A – New or updated limits included for temperature, excess thermal load, total nitrogen as N, total phosphorus as P, biochemical oxygen demand, total mercury, total residual chlorine
- Schedule B – updated monitoring requirements for all limited parameters in the effluent, upstream monitoring requirements to characterize the Klamath River, pretreatment, and Whole Effluent Toxicity requirements
- Schedule C – A compliance schedule is included for the WWTP to meet the new or updated limits in Schedule A
- Schedule D – Included requirements for inflow and infiltration, an emergency response plan, recycled water, biosolids management, wastewater solids, whole effluent toxicity testing, operator certification, and a requirement to complete an industrial user survey.
- Schedule E – updated pretreatment requirements

- Schedule F – Updated to the October 2015 version of the NPDES General Conditions

4.0 Facility Description

4.1 Wastewater Facilities Description

Nearly two-thirds of the existing sewer system was installed prior to 1932. Assuming that the sewers are not surcharged, the Collection System Master Plan (December 2006) concluded that the maximum flow that can be conveyed to the plant via the existing trunk sewers and wastewater pumping stations is 18.5 MGD. The City is currently reviewing its wet weather modeling to help in identifying critical areas for collection system rehabilitation. The existing plant layout, which excludes the solids composting area, is shown in Appendix A.

The plant is considered a conventional activated plant with primary, secondary, and disinfection processes. A pumping station and pipeline were constructed in 2001 to deliver the majority of treated effluent to a local cogeneration plant where the majority of the effluent is evaporated. The remaining effluent is returned to the end of the Spring Street Wastewater Treatment Plant (WWTP) and discharged to Lake Ewauna via one of the two adjacent pipes known as Outfall 001.

The existing facility consists of an influent pump station, manual bar screen, grit removal channel, fine screening, primary sedimentation, aeration basin, two secondary clarifiers, disinfection system, a dissolved air flotation (DAFT) unit, two anaerobic digesters, sludge thickening, belt filter presses, drying beds and composting. Some of the treated effluent is sent as cooling water for the Iberdola cogeneration plant steam condenser cooling water system where a large percentage of the effluent is evaporated. The used cooling and blowdown water from the cogeneration facility is routed to the dechlorination chamber at the WWTP then discharging to the Klamath River at Outfall 001. The City composts its biosolids and produces a Class A product. Many of the units at the City's existing facility are from the original construction over 50 years ago.



Figure 1: City of Klamath Falls WWTP Location

4.2 Outfalls

There are two co-located pipes that serve as Outfall 001. These pipes convey the treated effluent three feet offshore. They are approximately located at 42.215993, -121.776822.

4.3 Sewage Collection System

Sewage collection systems are designed to collect and transport raw sewage from residences and businesses to the municipality's wastewater treatment facility. City of Klamath Falls has a collection system that consists of approximately 150 miles of pipe, 12 pump stations and serves 30,000 people. The average age of the system is 50 years old. Some of the pipes in the system are more than 61 years old.

As collection systems age, the pipes develop cracks, allowing the infiltration of groundwater. Stormwater may also enter the system. Though no longer allowed under current plumbing codes, in the past it was common to connect stormwater drains directly to sewers. The entry of groundwater and stormwater into the collection system is known as infiltration and inflow, or I/I for short.

Although records of the oldest parts of the collection system are not available; sewers installed before 1932 were generally constructed with clay pipe and mortar joints. Nearly two-thirds of the existing sewer system was installed prior to 1932. Few sewers were constructed between the early 1930s and the mid-1950s. Trunk sewers installed in 1957 were made of reinforced concrete pipe with bell-and-spigot joints and rubber-ring gaskets.

Small sewers installed during the 1960s and 1970s were either asbestos cement or polyvinyl chloride (PVC) pipe. Early manholes were of brick and mortar construction. Later manholes were built with cast-in-place bases and pre-cast concrete sections. Manhole lids were a special casting with four 1-inch diameter holes and two lifting holes. The City of Klamath Falls began using standard lids and frames in the 1970s.

The area is served mainly by gravity flow sanitary sewers. In the City limits, storm runoff is collected and conveyed by a separate storm drainage system to the stormwater pump station at the Spring Street WWTP. The service area contains eight lift stations: six of the lift stations serve areas near Klamath Lake, one serves the area on the west side of the Klamath River, and one is part of Kingsley Field’s decommissioned treatment plant collection system.

When a collections system experiences excessive I/I, most of the flow that makes it to the treatment plant may in fact be stormwater or groundwater that by itself does not require treatment. This can result in the following:

- Overflows from the sanitary sewer system when it rains. These are referred to as SSOs (sanitary sewer overflows).
- The release of untreated or partially treated sewage from all or a portion of the treatment plant. Such a release is termed a bypass. Bypasses may be necessary to avoid damaging the plant.
- Increased operation and maintenance costs.
- Excessive I/I is defined within 40 CFR 35.2005 (b) (16) as “the quantities of infiltration/inflow which can be economically eliminated from a sewer system as determined in a cost-effective analysis that compares the costs for correcting the infiltration/inflow conditions to the total costs for transportation and treatment of the infiltration/inflow.” The 2010 *Spring Street Facilities Plan* established that the influent wastewater flows have not changed in the last 15 years and is not the result of “excessive I/I”. As a result, the WWTP meets all three of the conditions.

The ratio of wet weather to dry weather flows measured at the treatment plant is an indication of how much I/I is occurring in the collection system. This information is summarized in the following table.

Table 1: Average and Peak Flow Statistics for the City of Klamath Falls

Flow Statistic	Millions of Gallons/Day (MGD)	Ratio to Average Dry Weather Design Flow (ADWDF)
Average Dry Weather Design Flow (ADWDF)	3.5	1
Average Wet Weather Flow over last 13 years	4.1	1.2
Highest Monthly Average over last 13 years (month/year occurred)	6.4	1.8
Peak Daily Flow over last 13 years (Dec. 2015)	14.8	4.2

As can be seen from this table, the collection system and treatment plant does exhibit high levels of I/I.

DEQ recognizes that it is not practical to attempt to build and operate treatment plants and collection systems so as to eliminate any and all bypasses or overflows, and that at some point, attempts to do so represent a poor investment of public funds. Therefore, DEQ is interested in encouraging communities to reduce the rate at which SSOs and bypasses occur. To this end, the permit requires the following:

- The municipality must continue the program to reduce I/I and submit a progress report on an annual basis (see Schedule D, Condition 1).
- The municipality must develop and maintain an emergency response and public notification plan to cover bypass and SSO events (Schedule F, sections B.7 and B.8).

The municipality must report all SSOs and bypasses (Schedule F, sections B.6, B.7 and B.8).

4.4 Recycled Water

The permit holder currently operates a recycled water use program and anticipates continuing to do so. An updated recycled water use plan will be submitted to DEQ and will be available for public comment as soon as it is completed.

4.5 Wastewater Solids

The purpose of this section is to describe and document how wastewater solids are handled in the treatment plant. The term wastewater solid includes sewage sludge and biosolids. Sewage sludge refers to solids from primary, secondary, or advanced treatment of domestic wastewater that have not been treated or determined to be suitable for land application as fertilizer or soil amendment. The term biosolids refers to domestic wastewater treatment facility solids that have undergone adequate treatment and are suitable for application to the land as a fertilizer or soil amendment.

Annually, the permit holder produces approximately 400 dry tons of sewage sludge from primary and secondary wastewater treatment for beneficial land application and/or disposal.

More detail on how the permittee has chosen to handle wastewater solids is provided in the sections below.

4.5.1 Storage of Sewage Sludge

The permit holder stores dewatered sewage sludge at the treatment facility on asphalt surface areas for up to 30 days.

4.5.2 Land Application

The permit holder currently land applies biosolids or produces biosolids for sale or distribution, and anticipates continuing to do so. The biosolids management plan and land application plan are available for public review and comment with the permit.

4.5.3 Other Beneficial Reuse

The permit holder does not currently practice other types of beneficial reuse, such as energy recovery.

4.6 Stormwater

General NPDES permits for stormwater are not required for wastewater treatment facilities with a design flow of greater than 1 MGD when stormwater is collected, treated, and discharged as part of its treated wastewater.

4.7 Groundwater

Based on the DEQ's current information and a review of DEQ's Groundwater Prioritization Worksheets, this facility has a low potential for adversely affecting groundwater quality. The permit includes a condition in Schedule A that prohibits any adverse effect on groundwater quality.

4.8 Industrial Pretreatment

Municipalities that receive wastewater from certain categories of industries must have in place approved pretreatment programs. These programs are designed to reduce the discharge of pollutants from identified industries that the treatment plant is not able to treat. These pollutants can interfere with treatment plant operation, reduce the value of wastewater and biosolids for reuse, cause worker health or safety concerns, and pose a risk to the public or the environment.

The City of Klamath Falls implements an industrial pretreatment program that was approved by DEQ in 1983. The current NPDES permit includes federal and state pretreatment requirements.

The City of Klamath Falls currently permits a total of 2 significant industrial users (SIUs) of which both are federally designated categorical industrial users. The City has submitted annual pretreatment program reports including updated industrial waste surveys. DEQ conducted a Pretreatment Compliance Audit of the industrial pretreatment program on Mar. 4, 2019. The primary focus of the audit was to assess the core pretreatment program functions including legal authorities, inter-jurisdictional agreements, industrial waste survey methods, permitting, and compliance oversight activities.

As a result of this audit, DEQ identified several minor program deficiencies and is working with the permittee to address deficiencies.

5.0 Receiving Water

5.1 Flows

The flow gage nearest to the city of Klamath Falls STP's outfall is USGS gauge 11507500 located at Klamath Falls. The stream flow statistics below were calculated using data collected between 1990 and 2018.

The effect of the city of Klamath Falls STP's discharge on the Klamath River is likely to be the greatest in the late summer and early fall when flows in the Klamath River are lowest. This period is sometimes referred to as the critical period.

The impact of a discharge on the receiving stream is evaluated with respect the flows likely to occur during the critical period. To standardize this analysis, DEQ makes use of four different flow statistics. Each is designed to work with a different type of water quality impact and associated water quality criteria. These flow statistics and their application are summarized in the following table.

Table 2: Summary of Flow Statistics

Streamflow Statistic	What It Is	Potential Impacts ¹ Statistic is Used to Analyze	Value for Klamath River (cfs)
1Q10	The lowest one day average flow with a recurrence frequency of once in 10 years.	Acute toxicity to aquatic life	125
7Q10	The lowest seven day average flow with a recurrence frequency of once in 10 years.	Chronic toxicity to aquatic life	145
30Q5	The lowest 30 day average flow with a recurrence frequency of once in 5 years.	Impacts to human health from toxics classified as non-carcinogens	296
Harmonic mean	<p>Long term mean flow value calculated by dividing the number of daily flows by the sum of the reciprocals of those daily flows. The equation is:</p> $\frac{n}{\sum 1/Q_{i-n}}$ <p>where n = number of daily flows and Q = flow</p>	Impacts to human health from toxics classified as carcinogens	741

¹Impacts are evaluated with respect to pollutants for which DEQ has developed water quality criteria. More information may be found at <https://www.oregon.gov/deq/wq/Pages/WQ-Standards-Toxics.aspx>

5.2 Designated Uses

Under the Clean Water Act, DEQ is required to identify the beneficial uses of every waterbody in Oregon. The intent of this requirement is to insure that the water quality standards DEQ develops are consistent with how the waterbody is used. Permits issued by DEQ must in turn reflect the water quality standards that apply to the basin in which permits are issued.

The City of Klamath Falls WWTP discharges to the Klamath River. The following beneficial uses have been identified for the Klamath River.

- public and private domestic water supply,
- industrial water supply,
- irrigation and livestock watering,
- fish and aquatic life (including salmonid rearing, migration and spawning),
- wildlife and hunting,
- fishing,
- boating,
- water contact recreation,
- aesthetic quality,
- hydro power, and
- commercial navigation and transportation

The water quality standards for the Klamath Basin developed to protect these beneficial uses can be found in Oregon Administrative Rules 340-041-0180.

5.3 Receiving Stream Water Quality

The Klamath River exceeds water quality standards at Klamath Falls for some parameters and is therefore deemed to be water quality-limited for those parameters. The parameters are listed in Table 3.

Table 3: Water Quality Limited Parameters

Waterbody Name	River Mile	Parameter	Season
Klamath River	254.9 to 278.5	Aquatic Weeds, Algae	Year-round
Klamath River	207 to 285.3	Arsenic	Year-round
Klamath River	232.7 to 253.7	Dissolved Oxygen	Year-round (Non-spawning)
Klamath River	254.9 to 278.5	pH	Year-round
Klamath River	254.9 to 278.5	Chlorophyll-a	Summer
Klamath River	207 to 231.1	Temperature	Year-round (Non-spawning)
Klamath River	232.7 to 253.7	Ammonia	Year-round

All of these parameters have been addressed in a TMDL except Arsenic. All WLAs associated with Dissolved Oxygen, BOD₅, total phosphorus, and total nitrogen limits for this permit were addressed in the Upper Klamath and Lost River Subbasins TMDL and Water Quality Management Plan, Dec 2017. Temperature and Excess Thermal Load Limits were addressed in the Upper Klamath and Lost Subbasins Temperature TMDL and Water Quality Management Plan, Final September 2019.

5.4 Mixing Zone Analysis

Permits issued by DEQ sometimes specify mixing zones. Also known as “allocated impact zones” or “regulatory mixing zones”, mixing zones are allowed under both state and federal regulation. They are areas in the vicinity of outfalls in which all or some of Oregon’s water quality standards can be suspended. DEQ allows mixing zones when the overall impact, evaluated with respect to Oregon’s Mixing Zone Rule (OAR 340-041-0053) appears to be negligible.

Two mixing zones can be developed for each discharge: 1) The acute mixing zone, also known as the “zone of initial dilution” (ZID), and 2) the chronic mixing zone, usually referred to as “the mixing zone.” The ZID is a small area where acute criteria can be exceeded as long as it does not cause acute toxicity to organisms drifting through it. The mixing zone is an area where acute criteria must be met but chronic criteria can be exceeded. It must be designed to protect the integrity of the entire water body.

The permit for city of Klamath Falls STP specifies a mixing zone as follows:

The allowable mixing zone shall not extend beyond that portion of the Klamath River (Lake Ewauna) within a radius of 100 feet from the point of discharge.

Table 4: Water Quality Standards, Applicable Flow Rates and Dilutions

Water Quality Standards	Applicable River Flow Conditions	Applicable Effluent Flow Rate	Dilution after Mixing
Aquatic Life, Freshwater Acute	125 cfs (1Q10)	Max. Daily: 3.3 MGD	1 at edge of ZID
Aquatic Life, Freshwater Chronic	145 cfs (7Q10)	Max. Monthly: 3.3 MGD	1 at edge of RMZ
Human Health, Non-Carcinogen	296 cfs (30Q5)	Avg. Dry Weather Design Flow: 3.5 MGD	1 at edge of RMZ
Human Health, Carcinogen	741 cfs (Harmonic Mean Flow)	Avg. Annual Flow: 1.6 MGD	1 at edge of RMZ

Explanation of terms:

ZID - Zone of Initial Dilution

RMZ - Regulatory mixing zone

6.0 Overview of Permit Development

6.1 Types of Permit Limits

Effluent limitations serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters. Effluent limitations can be based on either the technology available to control the pollutants or limits that are protective of the water quality standards for the receiving water. These two types of permit limits are referred to as technology-based effluent limitations (TBELs) and water quality-based effluent limits (WQBELs) respectively. When a TBEL is not restrictive enough to protect the receiving stream, a WQBEL must be placed in the permit. More explanation of each is provided below.

- TBELs:
 - The intent of TBELs is to require a minimum level of treatment of pollutants based on available treatment technologies, while allowing the discharger to use any available control technique to meet the limits
 - TBELs for municipal treatment plants, also known as federal secondary treatment standards have been developed for the following parameters: biochemical oxygen demand measured over 5 days (BOD₅), total suspended solids (TSS) and pH. These are found in the Code of Federal of Federal Regulations (CFR) and are known as secondary treatment standards. The CFR also allows special considerations and exceptions to these standards for certain circumstances and types of treatment facilities such as lagoons.
- WQBELs:
 - The intent of WQBELs is to ensure the water quality standards of a receiving stream are met. The water quality standards are developed to protect the beneficial uses of the receiving stream such as swimming and fishing. In many cases TBELs are not restrictive enough to ensure the receiving stream meets water quality standards. In these cases, WQBELs need to be established to protect the receiving stream.
 - Oregon is unique in that it has minimum design criteria for BOD and TSS that are only applicable to sewage treatment plants. These design criteria vary by watershed basin and were developed to protect water quality in their respective basins. These are often times more stringent than the federal secondary treatment standards. When this is the case, the basin standards supersede the federal standards.

TBELs are likely to be the most stringent if the receiving stream is large relative to the discharge, and WQBELs are likely to be the most stringent when the receiving stream is small or does not meet water quality standards.

In some cases, both a TBEL and a WQBEL will be developed for a particular parameter. Permit writers must include the more stringent of the two in the permit.

Permit limits for bacteria are WQBELs when they are derived from the water quality standards found in OAR 340-041-0009 for freshwater, marine, and estuarine waters or 40 CFR § 131.41 for coastal recreation waters. Bacteria limits are designed to protect human health when swimming or eating shellfish. Note: When enforcing permit limits, DEQ categorizes bacteria exceedances in OAR 340-012 as technology-based effluent limitation violations because bacteria violations are typically due to the failure of disinfection equipment.

Each time a permit is renewed, the permit writer evaluates the existing limits to see if they need to be modified as a result of changes to technology based standards or water quality standards that may have occurred during the permit term. Antibracksliding provisions (described in CFR 122.44(l)) generally do not allow relaxation of effluent limits in renewed/reissued permits. The more stringent of the existing or new limits must be included in the renewal permit.

6.2 Existing Permit Limits

The existing permit limits are as follows:

1. Outfall 001 - Treated Effluent

a. BOD₅, and TSS

- i. June 1 – October 31: During this time period the permittee must comply with the limits in the following table:

Parameter	Average Effluent Concentrations, mg/L		Monthly Average lbs/day	Weekly Average lbs/day	Daily Maximum lbs
	Monthly	Weekly			
BOD ₅	20	30	1000	1500	2000
TSS	20	30	1000	1500	2000

- ii. November 1 – May 31: During this time period the permittee must comply with the limits in the following table.

Parameter	Average Effluent Concentrations, mg/L		Monthly Average lbs/day	Weekly Average lbs/day	Daily Maximum Lbs
	Monthly	Weekly			
BOD ₅	30	45	1500	2250	3000
TSS	30	45	1500	2250	3000

- b. Additional Parameters. Permittee must comply with the limits in the following table (year-round except as noted).

Table 5: Limits for Additional Parameters

Year-round (except as noted)	Limits
BOD ₅ and TSS Removal Efficiency	May not be less than 85% monthly average for BOD ₅ and TSS
Fecal Coliform Bacteria	Monthly mean may not exceed 200 organisms per 100 ml. Weekly mean may exceed 400 organisms per 100 ml.
pH	May not be outside the range of 6.0 to 9.0 S.U.
Total Residual Chlorine/ Total Ammonia as N	Chlorine and ammonia nitrogen shall not be discharged at rates or in quantities that create acute toxicity within or chronic toxicity

As part of this renewal, some of these permit limits are being modified. Many parameters were added or updated based upon state and federal regulations put into place after the current version of this permit was completed in 1990. The basis for developing the new limits is described in detail in Section 7.2.

6.3 Overview of Whole Effluent Toxicity (WET) Analysis

Once the permit writer has determined the appropriate TBEL or QBEL permit limits (described in the previous section) for the facility, the permit writer must determine whether there is reasonable potential for the discharge to cause toxicity due to combinations of chemicals that may be present in the effluent. This is done via Whole Effluent Toxicity (WET) testing. WET testing involves controlled laboratory experiments in which aquatic organisms are exposed to samples of effluent at different dilutions. EPA recommends running WET tests using an invertebrate, vertebrate, and a plant test organism, and has developed WET test protocols using freshwater, marine, and estuarine test species that measure both acute and chronic effects. Depending on the test, the measured effect may be fertilization, growth, reproduction, or survival.

For facilities that have mixing zones, an acute WET test is considered to show toxicity if significant mortality occurs at effluent concentrations less than that which is found at the edge of the zone of immediate dilution (ZID). A chronic WET test is considered to show toxicity if significant adverse effects occur at effluent concentration less than that which is known to occur at the edge of the mixing zone. If the facility does not have a mixing zone, the tests are conducted using 100% effluent.

The permit holder must submit the results of WET tests as part of the permit application process. If the permit writer determines, based on the results of these tests that there is a potential for the effluent to cause toxicity in the receiving stream, the permit writer will include WET test requirements in the Special Conditions section of the permit. These conditions in the permit will describe follow-up requirements in the event that the WET tests indicate toxicity.

At this time, DEQ generally uses this special conditions approach rather than numeric limits; however, if the permit writer elects to include WET requirements in the permit as numeric limits, the permit writer should consult EPA's Technical Support Document for TSD for possible approaches.

6.3.1 Whole Effluent Toxicity Analysis for City of Klamath Falls WWTP

In addition to analyzing the effluent for individual pollutants, the permittee also tested the effluent to determine its aggregate effect on aquatic organisms. As described previously, these tests are known as

whole effluent toxicity (WET) tests. Effluent samples are collected and aquatic organisms are subjected to various effluent concentrations in controlled laboratory experiments.

DEQ has included WET testing in the proposed renewal permit. Details of the WET testing are found in Schedule D of the proposed renewal permit.

6.4 Trading

This facility currently does not employ trading for any parameter. The city is attempting to use multiple options to comply with the requirements in the proposed permit, including temperature trading. If trading is found to be the most effective manner for the facility to comply with any of the final permit limits in the proposed permit, the city will present them to DEQ for review and approval prior to implementing any trading agreements. If the city decides to use trading as a method for complying with the thermal load limits, the city would need to submit a request to DEQ.

6.5 Recycled Water

Historically, the treatment facility has produced 697 MG of recycled water for use as summarized in the following table.

Table 6: Annual Recycled Water Use 2016-2018

Use and Location	Recycled Water Class	Volume (MG)
Cogeneration facility	Minimum of Class C	697

The permit holder maintains a recycled water use plan that describes how the facility will comply with permit requirements. The recycled water use plan also includes specific locations where recycled water use occurs. The permit holder's recycled water use plan was last updated July 2000. The updated recycled water use plan will be available for public review prior to being implemented.

6.6 Biosolids

Biosolids may be used as a soil amendment and fertilizer on agricultural land. For this beneficial use to be allowed, wastewater solids must meet federal criteria for pathogen reduction (Class A or Class B biosolids), vector attraction reduction for sludge stability, nutrients and pollutant concentrations (40 CFR Part 503).

6.6.1 Biosolids Production

Historically, the treatment facility generates an average of 400 dry tons of biosolids per year as summarized in the following table.

Table 7: Annual Biosolids Production and Use 2018

Type of Biosolids	Use	Quantity (dry tons)
Class A	Sold or distributed for reuse	400

6.6.2 Beneficial Reuse of Biosolids

OAR 340-050-0031 requires facilities that reuse biosolids through land application to maintain a biosolids management plan and land application plan. The biosolids management plan describes how the facility will generate biosolids that are suitable for beneficial use as a fertilizer or soil amendment via land application. The land application plan identifies and describes the management of current and potential biosolids land application sites. Conditions in the biosolids management plan and land application plan are enforceable permit conditions. The permit holder's biosolids management plan and land application plan were last updated Feb 2002. The permittee will be required to update this plan as part of this permit renewal.

6.6.3 Pollutant Limits

Pollutant concentrations from the facility's most recent year of biosolids production are given in the following table.

Table 8: Biosolids Pollutant Concentrations in mg/kg Dry Weight

	As	Cd	Cu	Pb	Hg	Mo	Ni	Se	Zn
2018 concentration	21.3	1.23	166	46.2	0.873	10.4	23.1	3.9	678
Pollutant limit	41	39	1500	300	17	N/A	420	100	2800
Ceiling concentration	75	85	4300	840	57	75	420	100	7500

6.6.4 Agronomic Limits

Biosolids must be land applied at or below the agronomic loading rate needed for maximum crop production, based on the nitrogen requirement of the crop being grown. Nutrient concentrations from the facility's most recent year of biosolids production are given in the following table.

Table 9: Biosolids Nutrient Conventional Parameters in mg/kg (Total Solids in % Dry Solids; pH in S.U.)

Year	TKN	NO ₃ -N	NH ₄ -N	K	P	Total Solids	Volatile Solids	pH
2018	24,200	1820	69,100	7,570	29,000	15.25	71.6	6.8

6.6.5 Pathogen Reduction

The permit holder meets the pathogen reduction requirements of 40 CFR Part 503.15(a) and OAR 340-050-0026(2)(b) using the alternative(s) identified below.

Class A Pathogen Requirements

Either the density of fecal coliform in the biosolids must be less than 1,000 MPN per gram total solids (dry weight basis), or the density of *Salmonella* sp. bacteria in the biosolids must be less than 3 MPN per 4 grams of total solids (dry weight basis). Sampling must consist of at least seven (7) discrete samples taken over a two week period, unless otherwise specified in the permit.

Alternative 5: Biosolids shall be treated in one of the Processes to Further Reduce Pathogens (PFRP) described in the table below.

Table 10: Processes to Further Reduce Pathogens (PFRP) Listed in Appendix B of 40 CFR Part 503

<input checked="" type="checkbox"/>	Composting	Using either the within-vessel composting method or the static aerated pile composting method, the temperature of sewage sludge is maintained at 55°C (131°F) or higher for 3 consecutive days. Using the windrow composting method, the temperature of the sewage sludge is maintained at 55°C (131°F) or higher for 15 consecutive days or longer. During the period when the compost is maintained at 55°C (131°F) or higher, there shall be a minimum of five turnings of the windrow.
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Table 11: Processes to Significantly Reduce Pathogens (PSRP) Listed in Appendix B of 40 CFR Part 503

<input checked="" type="checkbox"/>	Air Drying	Sewage sludge is dried on sand beds or on paved or unpaved basins. The sewage sludge dries for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 0°C (32°F).
<input checked="" type="checkbox"/>	Composting	Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the sewage sludge is raised to 40°C (104°F) or higher and remains at 40°C (104°F) or higher for 5 days. For 4 hours during the 5-day period, the temperature in the compost pile exceeds 55°C (131°).

6.6.6 Vector Attraction Reduction

The permit holder satisfies the vector attraction reduction (VAR) requirements of 40 CFR Part 503.15(c) and OAR 340-050-0026(2)(c) using the option(s) identified below.

Table 12: Vector Attraction Reduction Options

40 CFR Part 503 Requirement	What is Required?	Most Appropriate For
<input checked="" type="checkbox"/> Option 1 503.33(b)(1)	At least 38% reduction in volatile solids during sewage sludge treatment	Sewage sludge processed by: Anaerobic biological treatment Aerobic biological treatment

6.6.7 Management Practices

All biosolids used for beneficial reuse by application to land must meet the management practices described under 40 CFR §503.14. Class B biosolids must be land applied following the site restrictions described under 40 CFR §503.32(b)(5). In addition, Class B biosolids land applied in bulk must follow the best management practices for site selection and the use and application of biosolids described under OAR 340-050-0060, -0065, -0070, and -0080. The specific site management practices followed by the facility are described in their Biosolids Management Plan, Land Application Plan and site authorization letters. All site management practices followed by the permit holder must meet or exceed the referenced standards.

6.6.8 Current DEQ-authorized Land Application Sites

The permit holder proposes to produce Class A biosolids for land application.

The permit holder may add new biosolids land application sites during the term of the permit. New Class B sites must meet the site selection criteria described in the land application plan. The permit holder will notify the public of newly added Class B sites as describes in the land application plan.

Class A biosolids do not require DEQ authorization or public notification for land application activities.

6.7 Antidegradation

As part of renewing a permit, DEQ must demonstrate that the discharge does not lower water quality from the existing condition. DEQ is required to make this demonstration is required under Oregon's Antidegradation Policy for Surface Waters found in OAR 340-041-0004.

DEQ has performed an antidegradation review for this discharge. The proposed permit contains the same discharge loadings as the existing permit. Permit renewals with the same discharge loadings as the previous permit are not considered to lower water quality from the existing condition. DEQ is not aware of any information that existing limits are not protective of the designated beneficial uses listed in Section 5.2. These uses are very broad and include fish and aquatic life (including cold water species, salmonid migration, spawning and rearing), fishing, boating, and water contact recreation. DEQ is also not aware of any existing uses present within the waterbody that are not currently protected by standards developed to protect the designated uses. Therefore, DEQ has determined that the proposed discharge complies with DEQ's antidegradation policy (see Antidegradation Review Worksheet in Appendix D).

7.0 Permit Draft Discussion

7.1 Face Page

The face page provides information about the permittee, description of the wastewater, outfall locations, receiving stream information, permit approval authority, and a description of permitted activities. The permit allows discharge to the Klamath River within limits set by Schedule A and the following schedules. It prohibits all other discharges.

In accordance with state and federal law, NPDES permits will be effective for a fixed term not to exceed 5 years. Upon issuance, this permit will be effective for no more than 5 years.

DEQ evaluated the classifications for the treatment and collection systems (see Appendix C). The treatment system is considered a Class IV system and the collection system is considered a Class III system. DEQ is not proposing any changes to the system classifications.

7.2 Permit Limit Derivation

7.2.1 Technology-Based Effluent Limits (TBELs)

TBELs must be met at the outfall. The applicable TBELs for this facility are the most stringent of the federal secondary treatment standards and the Oregon basin standards, adjusted as necessary for the type of treatment system.

The table below shows a comparison of the federal secondary treatment standards and Oregon basin standards and also lists bacteria standards. Basin standards and bacteria standards are not strictly speaking TBELs; however they function as such when they have to be met at the end of the pipe.

Table 13: Comparison of Federal Secondary Treatment and Basin Standards

Parameter	Federal Secondary Treatment Standards		Applicable Klamath Basin Standards (OAR 340-041-0180)
	30-Day Average	7-Day Average	30-Day Average
5-Day BOD See note 1.	30 mg/L	45 mg/L	May 1 – Oct. 31: BOD 20 mg/L; TSS 20 mg/L Nov. 1 – Apr. 30: Federal Secondary Treatment Standards apply
TSS	30 mg/L	45 mg/L	
pH	6.0 – 9.0. S.U, (instantaneous)		There are no technology-based pH limits set for the Klamath Basin
% Removal	85% BOD ₅ and TSS		Not specified

The limits for BOD₅ and TSS shown in this table are concentration-based limits.

The following equation is used to develop the monthly average mass load:

$$\text{Monthly Avg. Mass Load} = \text{POTW design flow} \times \text{Conc.-based limit} \times \text{Conversion factor}$$

The weekly average and maximum daily mass loads are developed from the monthly average by multiplying by 1.5 and 2 respectively.

The previous permit based the summer TBEL calculations on average wet weather design flow (6 mgd). DEQ policy is to use the average dry weather design flow to determine the mass load limitations during the summer. Therefore, this permit based the summer calculations off the average dry weather design flow (3.5 mgd). The winter calculations remain unchanged from the previous permit cycle.

The Klamath Falls WWTF’s summer mass load limits for BOD₅ and TSS are based on the average dry weather design flow of 3.5 MGD and a concentration of 20 mg/L. The summer calculations are:

$$\text{Monthly Average: } 3.5 \text{ MGD} \times 20 \text{ mg/L} \times 8.34 = 583.8 \text{ lbs/day rounded off to } 580 \text{ lbs/day}$$

$$\text{Weekly Average: } 580 \text{ lbs/day monthly average} \times 1.5 = 870 \text{ lbs/day}$$

$$\text{Daily Maximum: } 580 \text{ lbs/day monthly} \times 2 = 1,160 \text{ lbs/day}$$

The facility’s winter mass limits (monthly and weekly average and daily maximum) for BOD₅ and TSS are based on the flow of 6.0 MGD and a concentration of 30 mg/L. The winter calculations are:

$$\text{Monthly Average: } 6.0 \text{ MGD} \times 30 \text{ mg/L} \times 8.34 = 1,501.2 \text{ lbs/day rounded off to } 1,500 \text{ lbs/day}$$

$$\text{Weekly Average: } 1500 \text{ lbs/day} \times 1.5 = 2,250 \text{ lbs/day rounded off to } 2300 \text{ lbs/day}$$

$$\text{Daily Maximum: } 1500 \text{ lbs/day monthly} \times 2 = 3,000 \text{ lbs/day}$$

All mass load limitations are again rounded to two significant figures, consistent with the number of significant figures associated with flow measurements with this facility, and with the accuracy of BOD measurements of 10 or greater.

7.2.2 Water Quality-Based Effluent Limits

Once TBELs and applicable basin standards have been established for the treatment facility, WQBELs must be developed. DEQ has developed several tools for calculating WQBELs. The table below provides a summary of these tools.

Table 14: Summary of Tools to Calculate WQBELs

Parameter	Link to Analytical Tool/Description	Application
BOD	Streeter-Phelps D.O. Spreadsheet Use to perform a Streeter-Phelps analysis to see if discharge will result in a DO sag and/or violation of DO standard.	<ul style="list-style-type: none"> For new dischargers. For dischargers seeking a mass load increase.
pH	pH RPA Spreadsheet Use to perform a Reasonable Potential Analysis to see if the discharge has a reasonable potential to cause or contribute to violations of basin standards of pH.	<ul style="list-style-type: none"> For facilities that have a mixing zone, to see if basin standards will be met at the edge of the mixing zone.
Temperature	Temperature RPA Spreadsheet XLSX Use to perform a Reasonable Potential Analysis to see if the discharge has a reasonable potential to cause or contribute to water quality standards violations for temperature.	<ul style="list-style-type: none"> Use when facility does not already have a WLA for temperature.
Ammonia	For ammonia, chlorine and other toxics listed in tables 20, 33A, 33B and 40: Reasonable Potential Analysis Calculation Workbook, Domestic; Revision 3.1 (January 2013)	Ammonia: <ul style="list-style-type: none"> Use for facilities that discharge over 0.1 mgd, to insure no toxicity. Use for facilities that have an ammonia limit when conditions have changed.
Chlorine	Use to perform a Reasonable Potential Analysis to see if the discharge has a reasonable potential to cause or contribute to water quality standards violations for toxics.	Chlorine: <ul style="list-style-type: none"> Use for new facilities that do not have a limit for chlorine. If a facility already has a limit, and conditions have changed, use limits tab of spreadsheet to re-calculate.
Other toxics listed in Tables 20, 33A, 33B and 40 of OAR 340-041		Other toxics: <ul style="list-style-type: none"> Use for facilities that discharge over 1 mgd Use for facilities where pollutant is known to be present.

As can be seen from the above table, WQBELs are generally developed as a result of a Reasonable Potential Analysis (described in more detail later in subsequent sections). An exception to this is when DEQ has developed a TMDL for the receiving stream. When there is a TMDL, the permit limit(s) must be developed based on the wasteload allocation (WLA) developed for the facility as part of the TMDL. There are two TMDLs that applied WLAs to the City of Klamath Falls WWTP. Temperature (expressed as excess thermal loads) WLAs are from the September 2019 for the Upper Klamath River and Lost Subbasins Temperature TMDL and Water Quality Management Plan. Nutrient (Total nitrogen as N, total phosphorus as P, and BOD₅). The specific details for each of the WLAs applied as permit limits are explained in the specific RPA sections below.

7.2.2.1 General Discussion of Reasonable Potential Analysis

EPA has developed a methodology called Reasonable Potential Analysis (RPA) for determining if there is a reasonable potential for a discharge to cause or contribute to violations of water quality standards for a particular parameter. It takes into account effluent variability, available dilution (if applicable), receiving stream water quality and water quality standards for the protection of aquatic life and human health. If the RPA results indicate that there is a potential for the discharge to cause or contribute to exceedances of water quality standards, the methodology is then used to establish permit limits that will not cause or contribute to violations of water quality standards.

DEQ has adopted EPA’s methodology for RPA, and has developed spreadsheets that incorporate this analysis.

The parameters for which a RPA must be performed will vary with the size and type of discharge. They are listed in the NPDES Permit Testing Requirements for Publicly Owned Treatment Works contained in Appendix J of 40 CFR Part 122. The relevant sections are reproduced in Table 15.

Table 15: Testing Requirements for Publicly-Owned Treatment Works

Pollutant List	Parameters for which RPA Needed
Table 1A – Effluent Parameters for All POTWs	pH, Temperature
Table 1 – Effluent Parameters for All POTWs w. Flow ≥ 0.1 MGD	Ammonia, Chlorine
Table 2 – Effluent Parameters for Selected POTWs Metals Volatile Organic Compounds Acid-extractable Compounds Base-neutral Compounds	All Parameters Listed
Table 3 - Pesticides, PCBs and Other Parameters w. Water Quality Criteria Organochlorine Pesticides PCBS Other Parameters with State Water Quality Criteria	All Parameters Listed

The parameters for which a RPA must be performed will vary with the size and type of discharge. They are listed in the NPDES Permit Application Testing Requirements contained in Appendix D of 40 CFR Part 122, and are reproduced in Sections 2.2.4 and 2.2.5 of DEQ’s Internal Management Directive (IMD) entitled “Reasonable Potential Analysis Process for Toxic Pollutants” (RPA IMD). This document may be found at: <https://www.oregon.gov/deq/Filtered%20Library/rpaIMD.pdf>

A list of the tables in the RPA IMD that identify the parameters for which a RPA must be performed for The City of Klamath Falls WWTP is as follows:

Table 16: Toxic Monitoring Requirements for Industrial Facilities

Table	NPDES Permit Application Testing Requirements
1	Testing Requirements for Organic Toxic Pollutants by Industry Category
2	Organic Toxic Pollutants
3	Other Toxic Pollutants (Metals and Cyanide) and Total Phenols
4	Conventional and Nonconventional Pollutants Required to be Tested if Expected to be Present
5	Toxic Pollutants and Hazardous Substances Required to Be Identified by Existing Dischargers if Expected to be Present

Each of the parameters for which a RPA was performed is discussed in the next sections.

7.2.2.2 Reasonable Potential Analysis for pH

The pH of water is a measure of how acidic or basic a solution is. At a pH of 7.0, the solution is considered neutral. Most aquatic organisms can tolerate a fairly narrow range around 7.0.

In accordance with OAR 340-041-0185, the applicable water quality basin standard for pH in the Upper Klamath basin is 6.5 to 9.0 SU. As noted in Section 5.3, above, this segment of the Klamath River is listed as water quality impaired for pH. A TMDL has been developed to address this listing, with pollutant allocations (wasteload allocations) assigned to the permittee. These allocations are discussed in Section 7.2.2.7.

In addition to the TMDL allocations, an analysis must be made to determine if the discharge has the potential to cause violations of the pH criteria due to the pH of the discharge. Since the WWTP does not have a mixing zone, then pH standards must be met at the end of pipe and a Reasonable Potential Analysis will not be performed. The proposed permit therefore includes effluent limits requiring that the WWTP maintain pH between 6.5 and 9.0 standard units at Outfall 001.

7.2.2.3 Reasonable Potential Analysis for Temperature

Water temperatures affect the life cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations. The purpose of the temperature criteria in OAR 340-041-0028 is to protect designated, temperature-sensitive beneficial uses (including salmonid life cycle stages) from adverse warming caused by human activities. In general, the temperature of a permitted discharge must be low enough to ensure compliance with applicable water quality criteria and must be consistent with the requirements of any applicable TMDL wasteload allocation. As part of the permit renewal, the DEQ conducted an analysis to determine the appropriate seasonal temperature effluent limits to be assigned to the permittee. A summary of this analysis is presented below.

As described in Section 4.0, the permittee’s facility discharges into the Klamath River. Figure 180A under OAR 340-41-0180 indicates that this section of the Klamath River has a designated fish use of "cool water species (no salmonid use)". In addition, the basin-specific water quality standards under OAR 340-041-0185 includes the requirement that “(f)rom June 1 to September 30, no NPDES point source that discharges to the portion of the Klamath River designated for cool water species may cause the temperature of the water body to increase more that 0.3°C above the natural background after mixing with 25% of the stream flow.”

The Temperature TMDL developed by DEQ in March 2019 for the Upper Klamath River and Lost Basin resulted in a WLA summarized below for the Klamath Fall WWTP. The derivation of a permit limit for temperature based on this WLA is as follows:

- The TMDL addressed the applicable water quality criteria and associated beneficial uses including:
 - OAR 340-041-0028(4)(e): (e) Redband or Lahontan Cutthroat Trout Use. The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). (This use occurs downstream of the discharge location.)
 - OAR 340-041-0028 (12)(b)(B) Human Use Allowance. Following a temperature TMDL or other cumulative effects analysis, wasteload and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.
 - OAR 340-041-0028 (9) (a) Cool Water Species. No increase in temperature is allowed that would reasonably be expected to impair cool water species. The numeric benchmark in this TMDL implementing the cool water species narrative is an instream daily maximum temperature target of 28°C. In order to minimize short term lethal exposure in the mixing zone, effluent temperatures shall not exceed 32°C at the end of the outfall pipe. This requirement is superseded by OAR 340-041-0185 (2), and this requirement will be addressed following the TMDL wasteload allocations applied as daily calculated excess thermal load permit limits included in this permit.
 - OAR 340-041-0028 (11) (a) Protecting Cold Water: Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead, or bull trout are present.
 - OAR 340-041-0185(2) Point Source Site Specific Criteria. From June 1 to September 30, no NPDES point source that discharges to the portion of the Klamath River designated for cool water species may cause the temperature of the water body to increase more than 0.3°C above the natural background after mixing with 25% of the stream flow. Natural background for the Klamath River means the temperature of the Klamath River at the outflow from Upper Klamath Lake plus any natural warming or cooling that occurs downstream. This criterion supersedes OAR 340-041-0028(9)(a) during the specified time period for NPDES permitted point sources.
 - California Water Quality Standards: It is the policy of Oregon DEQ to achieve water quality standards established by neighboring states in interstate waters.

Based upon these uses and associated water quality criteria, and the TMDL developed a wasteload allocation (WLA) for the WWTP. There were three compliance options presented in the TMDL. These are summarized as follows:

- 1) Incorporating the numeric 7Q10 wasteload allocation as a single numeric value,
- 2) incorporating numeric values calculated using Equation 2-3 of the TMDL for different river flow ranges and/or facility effluent flow rates, or
- 3) incorporating Equation 2-3 of the TMDL directly into the permit with the wasteload allocation calculated on a daily basis.

The City of Klamath Falls selected option #3 for complying with the permit. This wasteload allocation equation, which is included in the proposed permit as an effluent limit, is as follows:

$$ETL = \Delta T \times [(Q_E \times 1.5472) + Q_R] \times 2.4467$$

Where,

ETL = Daily excess thermal load limit (million kilocalories/day).

Q_E = The daily mean effluent flow (MGD).

Q_R = The daily mean river flow rate, upstream (cfs). When river flow is ≤ 104 cfs, $Q_R = 104$ cfs. When river flow > 104 cfs, Q_R is equal to the mean daily river flow, upstream.

ΔT = The maximum allowable temperature increase ($^{\circ}\text{C}$) after mixing with 100% of river flow: 0.03°C for the October 1 – May 31 period and 0.05°C for the October June 1 – September 30 period.

The compliance equation to be used by the permittee to show daily compliance is as follows:

$$\text{Daily ETL} = (T_E - T_R) * Q_E * C_F$$

Where,

ETL = The daily excess thermal load (million kilocalories/day) discharged used to evaluate compliance limit.

T_R = The applicable river temperature criteria ($^{\circ}\text{C}$). For the WWTP, the temperature criteria from June 1 – September 30 is defined in OAR 340-041-0185(2) as the temperature of the Klamath River at the outflow from Upper Klamath Lake plus any natural warming or cooling that occurs downstream. The daily mean river temperature at Link River (USGS 11507500) is an appropriate estimate for T_R . Daily mean river temperatures immediately upstream of Outfall 001 may also be used for T_R as long as adjustments are made to eliminate any anthropogenic warming or cooling between the from the Upper Klamath River and Outfall 001.

T_E = The daily mean effluent temperature ($^{\circ}\text{C}$).

Q_E = The daily mean effluent flow (MGD)

C_F = Conversion factor using flow in millions of gallons per day (MGD): 3.785

In addition to the WLA, the TMDL also establishes a maximum effluent temperature of 32°C (89.6°F) that applies from June 1 to September 30. This temperature limit is intended to limit short-term exposure of Lost River and shortnose suckers to lethal temperatures above 28°C (82.4°F). From October 1 to May 31, when daily maximum river temperatures are greater than 28°C (82.4°F), the TMDL restricts daily maximum effluent temperatures to 28°C (82.4°F) to allow for no change in river temperatures.

Since this is a new water-quality based effluent limit and the permittee cannot meet the limits upon issuance of the renewed permit, a compliance schedule for meeting the limit is included in the proposed permit. Please see Section 7.5 for a full discussion of the compliance schedule.

Thermal Plume Criteria

In addition to the temperature standard discussed above, DEQ's water quality standards also include "temperature thermal plume limitations" in OAR 340-041-0053(2)(d). This rule contains criteria designed to prevent potential adverse impacts to salmonids that may result from thermal plumes. Since the fish use map applicable to the receiving stream (OAR 340-041-0180, Figure 180A) indicates no salmonid use, these criteria are not applicable to this discharge.

7.2.2.4 Reasonable Potential Analysis for Ammonia

Water quality criteria for ammonia vary with pH and temperature, and with the presence of salmonids. The RPA for ammonia performed was found to have a reasonable potential to exceed the ammonia water quality criteria. As noted in Section 5.3, a TMDL has been developed several water quality impairment listings in the receiving stream, with pollutant allocations (wasteload allocations) assigned to the permittee. The TMDL states that the nutrient allocations to address DO and pH impairments also result in achieving the ammonia toxicity standard in Klamath River. These allocations are discussed in Section 7.2.2.7.

The following criterion is applied for ammonia:

OAR 340-041-033 (2): Levels of toxic substances may not exceed the criteria listed in Table 20 [from the OAR].

Table 20 states that the ammonia criteria are pH and temperature dependent. The criteria is calculated different depending on whether salmonids or other sensitive cold-water species are present. For the entire Klamath River, the ammonia toxicity criteria are calculated assuming salmonids or other sensitive cold-water species are present which is the more conservative of the two calculation methods.

Since the 2019 Upper Klamath and Lost River Subbasins Nutrient TMDL and Water Quality Management Plan does not specifically address the ammonia impairment listing for point sources in the Klamath River, the WLA for Total nitrogen as N will be included as permit limits, and ammonia permit limits will be included in the proposed permit. Since the TMDL only addressed watershed-level pollution targets, DEQ also completed an ammonia RPA with the data arranged by the timeframes set forth in the TMDL (i.e., Oct 15 – May 15 and Oct 16 – May 14). The result of the analysis demonstrated that the effluent from the facility caused a reasonable potential to exceed the Oregon water quality criteria for freshwater. Therefore, ammonia limits were applied to the permit. Since the facility performance cannot meet the limits in the proposed permit (see below), a compliance schedule will be included in the proposed permit during the compliance period. Please refer to Section 7.5 of this document for a full discussion of the compliance schedule for the proposed permit.

Proposed Ammonia limits and current facility performance

	Average Monthly (mg/L)	Maximum Daily (mg/L)
Klamath Falls WWTP (May 15 – Oct 15)	7.0	33
Proposed Limit (May 15 – Oct 15)	2.2	5.5
Klamath Falls WWTP (Oct 16 – May 14)	8.8	48
Proposed Limit (Oct 16 – May 14)	2.4	5.7

7.2.2.5 Reasonable Potential Analysis for Total Residual Chlorine

The fresh water criteria for chlorine were used to calculate permit limitations. According to OAR 340-041, Table 33A, chlorine concentrations of 11 µg/L can result in chronic toxicity in fresh water while 19 µg/L can result in acute chlorine toxicity in fresh water. Based upon the RPA results, the WWTP’s draft permit will contain permit limits for total residual chlorine to meet the criteria. The limits will include a monthly average of 6.8 µg/L, and a daily maximum of 19 µg/L.

Since the facility performance cannot meet the limits in the proposed permit (see below), a compliance schedule will be included in the proposed permit during the compliance period. Please refer to Section 7.5 of this document for a full discussion of the compliance schedule for the proposed permit.

Proposed Total Residual Chlorine limits and current facility performance

	Average Monthly (µg/L)	Maximum Daily (µg/L)
Klamath Falls WWTP	2600	4700
Proposed Limit	6.8	19

As noted in Section 5.3, TMDLs have been developed to address water quality impairments in the receiving segment of the Klamath River. The temperature TMDL is discussed in Section 7.2.2.3. The second TMDL, the 2019 Upper Klamath and Lost River Subbasins TMDL, includes allocations to address DO, pH, excess algae and ammonia toxicity impairments. The TMDL assigned wasteload allocations (WLAs) to the WWTP for total phosphorus, total nitrogen and BOD₅. These WLAs, which vary seasonally, are presented in the tables below.

7.2.2.6 Reasonable Potential Analysis for Total Nitrogen as N and Total Phosphorus as P

DEQ evaluated the performance of the facility to meet the WLAs outlined in the 2019 Upper Klamath and Lost River Subbasins TMDL and Water Quality Management Plan. This evaluation was completed in order to determine if the BOD₅, total phosphorus and total nitrogen levels measured in the effluent from the WWTP can achieve the levels required by the WLAs now. The following tables summarizes the performance of the facility to treat BOD₅, total phosphorus and total nitrogen between 2016 and 2017. These effluent data were organized by the months set forth in the TMDL (i.e., May 15 – Oct 15 and Oct 16 – May 14 between 2016 and 2017). The TMDL WLAs are expressed as semi-annual averages, and the data provided from the WWTP were organized in the same manner.

Table 17: BOD₅ WLA summary

	Semiannual Average Daily Mass Load BOD ₅ (May 15 – Oct 15; lbs/day)	Semiannual Average Daily Mass Load BOD ₅ (Oct 16 – May 14; lbs/day)
WLA	439	549
WWTP	95	190

Table 18: Total Phosphorus as P WLA summary

	Semiannual Average Daily Mass Load Total Phosphorus as P (May 15 – Oct 15; lbs/day)	Semiannual Average Daily Mass Load Total Phosphorus as P (Oct 16 – May 14; lbs/day)
WLA	8.6	54
WWTP	31.9	No Data

Table 19: Total Nitrogen as N WLA summary

	Semiannual Average Daily Mass Load Total Nitrogen as N (May 15 – Oct 15; lbs/day)	Semiannual Average Daily Mass Load Total Nitrogen as N (Oct 16 – May 14; lbs/day)
WLA	556	671
WWTP	236	No Data

The results demonstrate that WWTP facility can immediately meet the TMDL limitations for BOD₅ and Total nitrogen. The proposed permit will include a compliance schedule and final effluent limits set at the WLA values (see Section 7.5 for a more detailed discussion on the compliance schedule). Since the WWTP can meet the proposed limits for Total nitrogen as N and BOD₅, the permit will not include a compliance schedule for these parameters. All of the limits for these parameters will be submitted to DEQ as a semi-annual average. This means that the data for these nutrient parameters will be collected daily and averaged over the set time periods (i.e., May 15 – Oct. 15 and Oct. 16 – May 14). Those results will be submitted twice per year via discharge monitoring reports.

7.2.2.7 Reasonable Potential Analysis for Other Toxic Pollutants

As discussed at the beginning of this section, the WWTP is required to test their effluent to determine if it contains specific toxic substances at levels sufficient to cause toxicity to aquatic organisms or to impact human health.

DEQ has conducted an RPA analysis based on the results of this monitoring. The flows used in the analysis are listed below.

Table 20: Applicable Flow Rates and Dilutions used in Reasonable Potential Analysis

Water Quality Standards	Applicable River Flow Conditions	Model-Predicted Dilution after Mixing
Aquatic Life, Freshwater Acute	125 cfs (1Q10)	1 at edge of ZID
Aquatic Life, Freshwater Chronic	145 cfs (7Q10)	1 at edge of RMZ
Human Health, Non-Carcinogen	296 cfs (30Q5)	1 at edge of RMZ
Human Health, Carcinogen	741 cfs (Harmonic Mean Flow)	1 at edge of RMZ

Explanation of terms:

ZID - Zone of Initial Dilution

RMZ - Regulatory mixing zone

The results of the RPA are summarized in the following table. Note: parameters for which no reasonable potential was found are not included.

Table 21: Summary of Results of Reasonable Potential Analysis

Parameter	Criteria Type/ RPA Spreadsheet	Type	Description of Available Effluent Monitoring Data and RPA Results	Conclusion
Total Mercury	Aquatic Life and Human Health	Toxic/Carcinogen	Ten samples with measurable mercury that demonstrated a reasonable potential to exceed the water quality criteria	Enhanced monitoring needed to determine if the levels meet Tier 2 criteria for permit limits. The permit will include MMP provisions to protect human health
Dissolved Silver	Aquatic Life	Toxic	All samples were Total Recoverable Silver	Enhanced monitoring of dissolved silver will be required.
Total Inorganic Arsenic	Human Health	Carcinogen	All samples included organic and inorganic Arsenic.	Enhanced monitoring of inorganic arsenic will be required
Free Cyanide	Aquatic Life	Toxic	All samples were measured only for Total Cyanide	Enhanced monitoring of free cyanide will be required.
Nitrate	Human Health	Acute/Chronic	All samples included nitrite and nitrate	Enhanced monitoring of nitrate will be required

Parameter	Criteria Type/ RPA Spreadsheet	Type	Description of Available Effluent Monitoring Data and RPA Results	Conclusion
Acrylonitrile	Human Health	Acute/Chronic	18 samples demonstrated that there was a reasonable potential to exceed the state criterion for this parameter	Enhanced monitoring of Acrylonitrile will be required to determine if the levels meet Tier 2 criteria for permit limits.
Bis (2-ethylhexyl) phthalate	Human Health	Acute/Chronic	15 samples demonstrated that there was a reasonable potential to exceed the state criterion for this parameter	Enhanced monitoring of Bis (2-ethylhexyl) phthalate will be required to determine if the levels meet Tier 2 criteria for permit limits.
DDD 4,4'	Human Health	Acute/Chronic	17 samples demonstrated that there was a reasonable potential to exceed the state criterion for this parameter	Enhanced monitoring of DDD 4,4' will be required to determine if the levels meet Tier 2 criteria for permit limits.
DDE 4,4'	Human Health	Acute/Chronic	17 samples demonstrated that there was a reasonable potential to exceed the state criterion for this parameter	Enhanced monitoring of DDE 4,4' will be required to determine if the levels meet Tier 2 criteria for permit limits.

7.2.2.8 Reasonable Potential Analysis for Mercury

Oregon's aquatic life water quality criterion for mercury is set under state water quality criteria. The discussion regarding how mercury levels are evaluated in the effluent. Please see Section 7.2.2.1 of this document for an in depth discussion of the Reasonable Potential Analysis and final mercury limits applied in this permit

Oregon's human health water quality criterion for mercury is expressed in terms of a fish tissue concentration rather than a water column concentration. Because of this, DEQ's approach to performing the Reasonable Potential Analysis for mercury is different than that for other parameters. This approach is described in an Internal Management Directive entitled "Implementation of Methylmercury in NPDES Permits". It can be found at:

<https://www.oregon.gov/deq/Filtered%20Library/IMDmethylmercuryCriterion.pdf>

According to the IMD, “Any facility contributing significant and consistent concentrations of total mercury to the receiving water body is considered to have the reasonable potential to exceed the water quality criterion unless a site-specific survey determines otherwise.” Consistent with this, when mercury is detected in treated effluent on a consistent basis, the permit needs to contain a WQBEL that consists of a Mercury Minimization Plan (MMP), continuing effluent monitoring and antidegradation provisions.

Because total mercury is present in the discharge and therefore there is a reasonable potential to cause or contribute to the exceedance of the human health water quality standard. Accordingly, the WWTP will be required to:

- Develop and implement a MMP (Mercury Minimization Plan) tailored to the facility’s potential to discharge mercury.
- Monitor for total mercury in the effluent using a sufficiently sensitive EPA-approved method to enable evaluation of the effectiveness and implementation of the MMP and to protect aquatic life.

Since the facility performance cannot meet the limits in the proposed permit (see below) and has reasonable potential to exceed the state total mercury criteria for the protection of aquatic life (see Appendix B), total mercury limits will be included in the proposed permit during the compliance period. Please refer to Section 7.5 of this document for a full discussion of the compliance schedule for the proposed permit.

Proposed Total Mercury limits and current facility performance

	Average Monthly (µg/L)	Maximum Daily (µg/L)
Klamath Falls WWTP	5.4	12
Proposed Limit	0.001	0.02

Since the facility cannot currently meet the proposed limits for total mercury, a compliance schedule will be developed to allow the city of Klamath Falls time to design and implement upgrades to the WWTP in order to achieve the new requirements as soon as possible. The permit will include a MMP and final numeric total mercury limits of 0.001 µg/L (average monthly) and 0.02 µg/L (maximum daily) limits. The numeric limits will apply at the end of the compliance schedule, and the MMP will be required as directed in Table B1 of the permit.

7.2.2.9 Total Dissolved Solids

DEQ conducted a statewide analysis showing that limits for total dissolved solids are not warranted for any domestic wastewater treatment plants because TDS concentrations that are typically found in domestic effluent do not have the reasonable potential to negatively impact beneficial uses.

7.3 Schedule A. Waste Discharge Limits

The proposed permit limits for The City of Klamath Falls WWTP are included in Schedule A of the permit. The numeric limits in Schedule A are reproduced below. These limits are the result of the analyses described in Section 7.2. Schedule A of the permit also contains conditions relating to the mixing zone, recycled water, biosolids, septage, chlorine and mercury.

The proposed effluent limits for Outfall 001 are as follows:

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	Semi-annual Average
BOD ₅ (May 1–October 31)	mg/L	20	30	N/A	N/A
	lbs/day	580	870	1,160	N/A
	% removal	85	N/A	N/A	N/A
TSS (May 1–October 31)	mg/L	20	30	N/A	N/A
	lbs/day	580	870	1,160	N/A
	% removal	85	N/A	N/A	N/A
BOD ₅ (November 1–April 30)	mg/L	30	45	N/A	N/A
	lbs/day	1500	2,250	3,000	N/A
	%	85	N/A	N/A	N/A
TSS (November 1–April 30)	mg/L	30	45	N/A	N/A
	lbs/day	1500	2,250	3,000	N/A
	%	85	N/A	N/A	N/A
BOD ₅ (May 15–October 15)	lbs/day	N/A	N/A	N/A	439
BOD ₅ (October 16–May 14)	lbs/day	N/A	N/A	N/A	549
Nitrogen as N, Total (May 15–October 15)	lbs/day	N/A	N/A	N/A	556
Nitrogen as N, Total (October 16–May 14)	lbs/day	N/A	N/A	N/A	671
pH See note b.	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 9.0			
<i>E. coli</i> See note c.	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406			
Mercury, Total (final, see note d.)	mg/L	0.01	N/A	0.02	N/A
Total Ammonia as N (May 15 – Oct 15, final, see note d.)	mg/L	2.2	N/A	5.5	N/A
Total Ammonia as N (Oct 16 – May 14, final, see note d.)	mg/L	2.4	N/A	5.7	N/A
Chlorine, Total Residual (final, see notes a. and d.)	mg/L	0.0068	N/A	0.019	N/A
Temperature (Oct 1 – May 31; see note f.)	degrees Celsius	N/A	N/A	32	N/A
Temperature (June 1 – Sept 30; see note g.)	degrees Celsius	N/A	N/A	28	N/A

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	Semi-annual Average
Excess Thermal Load (final, see note d.)	million kcal/day	Calculated as a Daily Maximum (see notes f and g.)			
Phosphorus as P, Total (final, see note d; May 15–October 15)	lbs/day	N/A	N/A	N/A	8.6
Phosphorus as P, Total (October 16 – May 14)	lbs/day	N/A	N/A	N/A	54

Notes:

- a. DEQ has established a minimum Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.
- b. May not be outside the range of 6.0 to 9.0 for more than a total of 7 hours and 26 minutes in any calendar month, and no individual excursion from this range may exceed 60 minutes. pH values may not fall outside the range of 6.5-9.0.
- c. The permittee may take at least 5 consecutive re-samples at 4 hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 *E. coli* organisms/100 mL to demonstrate compliance with the limit.
- d. The final limits for total residual chlorine, total mercury, ammonia, phosphorus, temperature and ETL are effective upon completion of the compliance schedules in Schedule C.
- e. Maximum effluent temperature applies when daily river temperatures are greater than 28°C.
- f. Use this equation to determine the daily ETL limit:

Schedule B: $ETL = \Delta T \times [(Q_E \times 1.5472) + Q_R] \times 2.4467$

- Where,
- ETL = Excess thermal load limit (million kilocalories/day).
- Q_E = The daily mean effluent flow (MGD).

Q_R = The daily mean river flow rate, upstream (cfs). When river flow is ≤ 104 cfs, $Q_R = 104$ cfs. When river flow > 104 cfs, Q_R is equal to the mean daily river flow, upstream.

ΔT = The maximum allowable temperature increase (°C) after mixing with 100% of river flow: 0.03 °C for the October 1 – May 31 period and 0.05 °C for the October June 1 – September 30 period.

Notes:

- g. DEQ has established a minimum Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.
- h. May not be outside the range of 6.0 to 9.0 for more than a total of 7 hours and 26 minutes in any calendar month, and no individual excursion from this range may exceed 60 minutes. pH values may not fall outside the range of 6.5-9.0.
- i. The permittee may take at least 5 consecutive re-samples at 4 hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 *E. coli* organisms/100 mL to demonstrate compliance with the limit.
- j. The final limits for total residual chlorine, total mercury, ammonia, phosphorus, temperature and ETL are effective upon completion of the compliance schedules in Schedule C.
- k. Maximum effluent temperature applies when daily river temperatures are greater than 28°C.
- l. Use this equation to determine the daily ETL limit:

Schedule A: $ETL = \Delta T \times [(Q_E \times 1.5472) + Q_R] \times 2.4467$

Where,

- ETL = Excess thermal load limit (million kilocalories/day).
- Q_E = The daily mean effluent flow (MGD).
- Q_R = The daily mean river flow rate, upstream (cfs). When river flow is ≤ 104 cfs, $Q_R = 104$ cfs. When river flow > 104 cfs, Q_R is equal to the mean daily river flow, upstream.
- ΔT = The maximum allowable temperature increase (°C) after mixing with 100% of river flow: 0.03 °C for the October 1 – May 31 period and 0.05 °C for the October June 1 – September 30 period.

7.3.1 Discussion of Permit Limits in Tables A1, A2 and A3

The limits in Tables A1, A2 and A3 are discussed in detail below, in the following order:

- a. BOD₅ and TSS
- b. Excess Thermal Load
- c. Bacteria
- d. pH
- e. Total Residual Chlorine
- f. Total nitrogen as N and Total phosphorus as P
- g. Ammonia

Discussion of permit limits and requirements pertaining to the mixing zone, the use of recycled water, biosolids, septage requirements and chlorine usage follow the discussions of individual permit limits in Section 7.3.2.

a. BOD₅ and TSS Concentration, Mass Load and Percent Removal Limits

BOD₅ and TSS can be thought of as indicators of the “strength” of the effluent. The development of concentration and mass limits for BOD₅ and TSS was described in Section 7.2.1.

The removal efficiency required by the permit is 85%.

The derivation of this removal efficiency was described in Section 7.2.1; and is consistent with the Code of Federal Regulations (40 CFR part 133) for any type of activated sludge system.

The limits described above for BOD₅ and TSS are all TBELs. There are also TMDL WLAs for BOD₅. This makes those limits water quality based effluent limits as discussed below in the following section and in Section 7.2.2.

b. Excess Thermal Load (ETL) and Temperature

The permit limit for ETL is calculated daily and it is a WQBEL. Please see section 7.2.2.3 for a full discussion of the temperature and ETL limits.

c. Bacteria

Limits for bacteria are considered to be WQBELs. Since the Klamath Falls WWTP discharges to freshwater, the permit limit for bacteria is based on *E. coli*.

E. coli

The proposed permit limits are based on the *E. coli* standard contained in OAR 340-041-0009(5). The proposed limits are a monthly geometric mean of 126 *E. coli* per 100 mL, with no single sample exceeding 406 *E. coli* per 100 mL. If a single sample exceeds 406 *E. coli* per 100 mL, then the permittee may take five consecutive re-samples. If the log mean of the five re-samples is less than or equal to 126, a violation is not triggered. The re-sampling must be taken at four-hour intervals beginning within 28 hours after the original sample was taken.

d. pH

The derivation of pH limits is described in Section 7.2.2.3. These limits are equivalent to basin standards and must be met at the end of the pipe.

e. Total Residual Chlorine

The WWTP uses chlorine to disinfect the effluent before discharging to the Klamath River. Along with being an effective disinfectant, chlorine is toxic to many aquatic organisms. The current permit contains a limit for chlorine, where it is referred to as Total Residual Chlorine.

The RPA analysis described in Section 7.2 for chlorine resulted in permit limits of 6.8 µg/L as a monthly average and 19 µg/L as a daily maximum.

When the total residual chlorine limitation is lower than 0.05 mg/L, DEQ will use 0.05 mg/L as the compliance evaluation level; that is, daily maximum concentrations at or below 0.05 mg/L will be considered in compliance with the limit. In cases where an effluent limit is below the analytic range of available methods, the Quantitation Limit becomes the default compliance level. This is consistent with the example provided in Appendix D of the DEQ's RPA IMD. This IMD may be found at: <https://www.oregon.gov/deq/Data-and-Reports/Pages/imd.aspx>

The permit does not contain a mass load limit for chlorine. The primary purpose for mass limits is to prevent water quality violations from cumulative effects of conservative pollutants. Mass-based limits are particularly important for control of bioaccumulative pollutants. Chlorine is neither a conservative nor a bioaccumulative pollutant since chlorine rapidly reacts with organic matter. Therefore, cumulative effects outside of the regulatory mixing zone are not a concern.

f. Total Nitrogen as N and total Phosphorus as P

Generally, growth and respiration of excessive attached algae (periphyton) in shallow rivers and floating algae (phytoplankton) in impoundments and deeper rivers lead to DO and pH criteria violations. Available nutrients, light, and temperature affect the growth of algae. Additionally, available suitable substrate will limit periphyton growth and total amount of phytoplankton will be limited by self-shading.

Nutrient loading, specifically phosphorus and nitrogen, encourages algal growth and subsequent decay, settling, and transport downstream. The preferred forms of nutrients for algal growth are dissolved inorganic phosphorus (measured as dissolved orthophosphate or soluble reactive phosphorus) and ammonia. Algae can also utilize nitrite and nitrate but the preferred form of nitrogen is ammonia. Nutrients cycle between the water column and sediment through nutrient spiraling as aquatic plants assimilate dissolved nutrients, particularly orthophosphate. If sufficient nutrients are available in either the sediment or the water column, aquatic plants will store nutrients in excess of plants' needs. When plants die, the tissue decays in the water and the stored nutrients are either restored to the water or the detritus becomes incorporated into the river sediment. Once the nutrients are incorporated into the sediments they become part of the internal nutrient load. This cycle is known as nutrient spiraling.

This permit does contain mass load limits for both total nitrogen and total phosphorus. For a discussion of these limits assigned to the proposed permit, see Section 7.2.2.6.

g. Ammonia

Ammonia is a substance normally found in wastewater. The wastewater treatment processes, particularly aeration and biological treatment, can convert a large portion to nitrate and nitrite, but the treated effluent still contains some ammonia. After discharge, the continued process of oxidizing the ammonia removes dissolved oxygen from the receiving stream.

Unionized ammonia is also a toxic agent and may have to be limited to prevent toxicity. The water outside the boundary of the mixing zone must be free of materials in concentrations that will cause chronic (sublethal) toxicity while the water outside the ZID must be free of pollutants that will cause acute toxicity.

Finally, nitrogen compounds (including ammonia) are nutrients that can contribute to excessive biological growth that cause violations of water quality standards. The problems could manifest as visual or aesthetic impairment or could be the cause of excessive dissolved oxygen or pH fluctuations.

If ammonia is discharged at a level that will cause, has the reasonable potential to cause, or contribute to an excursion above any state water quality standard (either as a nutrient or to prevent dissolved oxygen depletion or toxicity), the permit must limit ammonia.

The proposed permit contains ammonia limits that were discussed in Section 7.2.2.4. These limits were derived from calculations performed in the RPA spreadsheet for ammonia toxicity that are based on the 1999 freshwater aquatic life criteria that was approved by EPA on August 4, 2013.

7.3.2 Discussion of Other Schedule A Requirements

In addition to permit limits for specific parameters, Schedule A also contains requirements pertaining to the mixing zone, groundwater protection, the use of recycled water, biosolids, septage requirements and chlorine usage. These are discussed in more detail below, in the following order:

- a. Mixing Zone
- b. Groundwater Protection
- c. Use of Recycled Water
- d. Biosolids
- e. Septage Requirements
- f. Chlorine Usage
- g. Mercury Minimization Plan

a. Mixing Zone

Permits issued by DEQ typically specify mixing zones. Mixing zones are allowed under both state and federal regulation. They are areas in the vicinity of outfalls in which all or some of Oregon's water quality standards can be suspended. DEQ allows mixing zones when the overall impact, evaluated with respect to Oregon's Mixing Zone Rule (OAR 340-041-0053) appears to be negligible.

Two mixing zones can be developed for each discharge: 1) The acute mixing zone, also known as the "zone of initial dilution" (ZID), and 2) the chronic mixing zone, usually referred to as "the mixing zone." The ZID is a small area where acute criteria can be exceeded as long as it does not cause acute toxicity to organisms drifting through it. The mixing zone is an area where acute criteria must be met but chronic criteria can be exceeded. It must be designed to protect the integrity of the entire water body.

The existing mixing zone is described as follows:

The allowable mixing zone shall not extend beyond that portion of the Klamath River (Lake Ewauna) within a radius of 100 feet from the point of discharge.

Brown and Caldwell conducted a mixing zone study for Klamath Falls in 1991. The study consisted of injecting dye into the effluent and then measuring dye concentrations in Lake Ewauna. Dye concentrations could not be measured within the 100-foot radius because the lake was too shallow for the boat to get that close to the shore. A dilution of 1.8:1 was measured 300 feet from the outfall. The study indicated that there is virtually no dilution within 100 feet of the outfall. This is because the outfalls discharge to shallow, slow moving water along the east bank of the lake. The shallow, slow moving water does not induce mixing and creates recirculation zones where the effluent is re-entrained into the plume. The location of the outfalls and hydraulic characteristics have not changed since 1991 so the same plume dynamics likely still exist. DEQ has determined that no dilution occurs within the mixing zone and used a dilution of 1 for all applicable water quality analyses. The City could consider performing an updated mixing zone study to determine if any dilution occurs at the edge of the mixing zone and submit the results to DEQ for use at the next permit renewal. The City might also want to consider moving their outfall to a location where better mixing will occur.

Critical Stream Flow Statistics

DEQ calculated critical stream flow statistics for the Klamath River using 1980-2018 data from USGS gage 11507500. DEQ used EPA's DFLOW software to calculate them. This gage is located about one mile upstream from the outfall location.

Flow Statistic	Stream Flow (cfs)
1Q10	125
7Q10	145
30Q5	296
Harmonic Mean	741

b. Recycled Water

The permit describes the treatment criteria and management practices the permit holder must satisfy to distribute water for reuse. The requirements in Schedule A of the permit are derived from OAR 340-055.

c. Biosolids

The permit describes what discharge limits and management practices WWTP must satisfy to beneficially reuse biosolids as a soil amendment or fertilizer. The requirements in Schedule A of the permit contain limits for biosolids and are derived from OAR 340-050.

d. Mercury Minimization Plan

Because mercury has been detected in the permittee's effluent, the permittee must develop and implement a MMP (Mercury Minimization Plan) tailored to the facility's potential to discharge mercury. The permit lists the requirements of the plan.

7.4 Schedule B – Minimum Monitoring and Reporting Requirements

Section 1 of Schedule B describes monitoring and reporting protocols for the permit and includes the following:

Sampling, Test Methods and Laboratory Quality Assurance and Quality Control (QA/QC)

- a. Re-analysis and Re-sampling if QA/QC Requirements Not Met
- b. Significant Figures and Rounding Conventions
- c. Reporting of Detection Levels and Quantitation Limits
- d. Reporting Sample Results
- e. Calculating and Reporting Mass Loads

Schedule B also describes the minimum monitoring and reporting necessary to demonstrate compliance with the conditions of this permit. The authority to require periodic reporting by permittees is included in ORS 468.065(5). Self-monitoring requirements are the primary means of ensuring that permit limits are being met. Other parameters may also need to be monitored when insufficient data exist to establish a limit, but where there is a potential for a water quality concern.

DEQ has developed monitoring and reporting matrices that establish monitoring and reporting frequencies based on the size and complexity of the facility. These matrices maybe found at:

<https://www.oregon.gov/deq/FilterPermitsDocs/MonMatrix.pdf>

<https://www.oregon.gov/deq/FilterPermitsDocs/ReportingMatrix.pdf>

These matrices and the EPA TSD were used to establish the monitoring and reporting requirements for the WWTP.

In addition to monitoring and reporting requirements, Schedule B includes the following:

Each of these tables is discussed in more detail below.

Table B1: Reporting Requirements and Due Dates

This table provides an overview of the monitoring requirements and reports to be submitted to DEQ in order to comply with the permit requirements.

Tables B2 through B3: Influent and Effluent Monitoring

These tables specify the parameters to be monitored on a regular basis in the influent and effluent, along with associated monitoring frequencies, sample types and related reporting requirements.

Table B4: Receiving Stream Monitoring for the Klamath River

This table specifies the parameters to be monitored on a regular basis in the Klamath River upstream of the outfall, along with associated monitoring frequencies, sample types and related reporting requirements.

Table B5: Pretreatment Monitoring

This table specifies the parameters to be monitored on a regular basis in the influent, effluent and biosolids along with associated monitoring frequencies, sample types and related reporting requirements.

Table B6: Copper Biotic Ligand Model and Aluminum Sampling Requirements

EPA's criteria are based on the biotic ligand model (BLM). The BLM relies on ten input parameters in order to calculate the criterion. The proposed permit requires effluent and stream monitoring for these input parameters and for dissolved and total copper so that DEQ will have the needed information to evaluate this discharge relative to the copper BLM criteria at the next permit renewal.

Tables B7 through B12: Monitoring for Toxics Monitoring and Other Parameters

Because the WWTP discharges more than 1 mgd/day in its effluent or source water, the permit contains additional monitoring requirements for toxic pollutants. These parameters are listed in Tables B7 through B12 in Schedule B. The permit holder must collect a minimum of four samples for each of these parameters between 2021 and 2025. DEQ will then evaluate these results to determine if additional sampling will be needed.

If DEQ's analysis indicates that the permit holder's effluent may cause or contribute to exceedances of water quality standards at the point of discharge with no dilution present, the permit holder will first be required to submit a sample and analysis plan for DEQ approval. The requirements for the sampling plan are listed in Schedule B, Condition 6. The purpose of this follow-up monitoring will be to determine if the discharge has a reasonable potential to cause or contribute to exceedances of water quality for the toxics in question in the Klamath River.

Note: Tables B7 through B12 list QLs for each parameter. DEQ recognizes that there are circumstances under which these QLs may not be achievable, such as when there are high TSS levels

leading to matrix effects. In such circumstances, DEQ will allow re-sampling as described in Schedule B.

Table B13: WET Test Monitoring

This table specifies the frequency, type and location of sampling needed to perform WET testing.

Table B14: Recycled Water Monitoring Requirements

OAR 340-055-0012 requires the permittee to monitor and demonstrate compliance with the treatment criteria for a specific Class of recycled water. Table B14 lists the monitoring requirements consistent with OAR 340-055-0012. Specific monitoring and sampling procedures are described in the recycled water use plan.

Tables B15 and B16: Biosolids Monitoring Requirements and Monitoring Frequency

This table lists the monitoring requirements that pertain to biosolids, consistent with OAR 340-050-0035. Specific details on how and where biosolids monitoring will be conducted provided in the Biosolids Management Plan.

In addition to biosolids monitoring at the treatment facility, the facility is required to maintain records on the land application of Class B biosolids. Records must be sufficient to demonstrate that Class B biosolids were applied within agronomic loading rates and following required site management practices. The permit requires the permittee to record the date, quantity, and location of Class B biosolids applied to the land on a site map or electronic GIS system. The permit waives the requirement for recording land application activities for Class A biosolids.

7.5 Schedule C - Compliance Schedules and Conditions

The Clean Water Act requires that state-issued individual NPDES permits include effluent limits as stringent as necessary to meet water quality standards. Sometimes a permittee cannot immediately comply with new or newly applied water quality-based effluent limits upon the effective date of the permit because the permittee needs time to perform substantial modifications to their facility or processes in order to meet the new limits. Depending upon the circumstances, NPDES permits may include a series of required steps and deadlines (i.e., a compliance schedule), which upon completion, enables the permittee to meet the permit's water quality-based effluent limits (see 40 CFR § 122.47 and OAR. 340-041-0061(16)). Interim effluent permit limits may also be included in certain circumstances.

DEQ completed the reasonable potential analyses of the pollutants in the City of Klamath Falls WWTP. The result of the analyses demonstrated that the proposed permit will include WQBELs for total ammonia as N, total mercury, and total residual chlorine. These analyses are summarized in Section 7.2.2. of this document. Limits for total nitrogen as N, total phosphorus as P, and BOD₅ were included in the proposed permit based upon WLAs set in the 2019 Upper Klamath and Lost River Subbasins Nutrient TMDL and Water Quality Management Plan. As stated in Section 7.2.2.6 of this document, the WWTP can meet the proposed limits for total nitrogen as N and BOD. Therefore, the final limits will apply upon the permit effective date for those parameters. Limits for temperature and Excess Thermal Load are included in the proposed permit. These were based on TMDL WLAs assigned to the WWTP in the 2019 Upper Klamath and Lost Subbasins Temperature TMDL and Water Quality Management Plan. As stated in Section 7.2.2.3 of this document, the WWTP cannot currently meet the ETL requirements. On April 3, 2020 the city sent DEQ a memo with proposed timeframes for the city to comply with those requirements. A compliance schedule for Excess Thermal Load is included in the proposed permit

DEQ has reviewed the request for a compliance schedule and agrees that the City will not be able to meet the proposed limits upon issuance of the permit based on the following information submitted by the City in the request:

The City of Klamath Falls WWTP does not currently have adequate treatment units in place to remove total mercury, total ammonia as N, total phosphorus as P, and ETL in the effluent and meet the limits for these parameters prior to discharge year around. In addition, meeting the proposed total residual chlorine limits will require construction of an insulated shed to store the sodium bisulfate and equipment to pump and mix it into the chlorine contact chamber. The City will not be able to comply with these new limits upon permit issuance and needs time to:

- Complete ongoing capital improvement projects in the current budget to construct upgrades to the current facility;
- Gather information and prepare a facility plan acceptable to funding agencies to achieve final effluent limitations for ETL, total mercury, total residual chlorine, total ammonia as N, and total phosphorus as P including but not limited to, monitoring, data analysis, surveys, and funding requirements;
- Submit a plan that evaluates engineering and non-engineering options available based on the facility plan to achieve final effluent limitations for ETL, total mercury, total residual chlorine, total ammonia as N, and total phosphorus as P; secure adequate funding for developing a planning document acceptable to funding agencies to identify upgrades, design engineering plans, and complete construction of new or upgraded facilities;
- Develop a facility plan acceptable to funding agencies to identify upgrade alternatives to meet the ETL, total residual chlorine, total mercury, total ammonia as N, total phosphorus as P effluent limits;
- Submit engineering plans and specifications of selected alternatives for DEQ approval; and,
- Submit a construction schedule for completing new or upgraded facilities to meet the ETL, total mercury, total ammonia as N, total phosphorus as P and final effluent limits.
- Construct the upgrades to the current facility to meet the temperature, ETL, total mercury, total ammonia as N, total phosphorus as P final effluent limits.

With City input, DEQ has developed a Compliance Schedule C in the proposed permit to meet the final ETL, total mercury, total residual chlorine, total ammonia as N, and total phosphorus as P limits. The compliance schedule contains interim compliance dates and a final compliance date. The City has a responsibility to meet the compliance dates and must notify DEQ in writing of its compliance or noncompliance with the interim requirements. Given the complexity of the issues for the overall projects and the financial impacts of the project on the City, DEQ considers the proposed schedule to be reasonable, requires the final effluent limits to be met as soon as possible and is in compliance with 40 CFR § 122.47.

7.6 Schedule D - Special Conditions

7.6.1 Inflow and Infiltration

As described in Section 4.3 on the sewage collection system, it is important for the permit holder to assess and take steps to reduce the rate of infiltration and inflow of stormwater and groundwater into the sewer system. Consistent with this, Schedule D of the permit requires the permit holder to undertake activities to track and reduce I/I in the sewer system.

7.6.2 Emergency Response and Public Notification Plan

Municipal wastewater treatment facilities are required, under General Condition B.8. in Schedule F, to have an Emergency Response and Public Notification Plan

7.6.3 Recycled Water Use Plan

Conditions requiring the permit holder to develop and maintain a recycled water use plan are provided in Schedule D. The recycled water use plan must meet the requirements in OAR 340-055-0025 and include location-specific information describing where and how recycled water is managed to protect public health and the environment. The permit holder's recycled water use plan was last updated July, 2000 and all of their recycled water reuse sites are registered with the Oregon Water Resources Department.

7.6.4 Exempt Wastewater Reuse at the Treatment System

Schedule D exempts the permit holder from the recycled water requirements in OAR 340-055, when recycled water is used for landscape irrigation at the treatment facility or for in-plant processes, such as in-plant maintenance activities. Landscape irrigation includes water applied to small-scale irrigation such as supplying supplemental irrigation to turf grass, shrubs, and ornamental trees. Landscape irrigation may include the irrigation of native vegetation along dikes, banks, and earthen impounds around wastewater lagoons—especially as needed to reduce erosion and maintain structural integrity. Landscape irrigation does not include large-scale of pasture, hayfields, or native vegetation adjacent to wastewater treatment facility (i.e., these activities are subject to OAR 340-055 and require development of a recycled water use plan). All of the conditions listed in (6)(i) through (6)(iv), Schedule D of the permit must be satisfied for an exempt use to be valid.

7.6.5 Biosolids Management Plan and Land Application Plan

Conditions requiring the permit holder to develop and maintain a biosolids management plan and land application plan are provided in Schedule D. The biosolids management plan and the land application plan must meet the requirements in OAR 340-050-0031 and describe where and how the land application of biosolids is managed to protect public health and the environment.

The land application plan includes all sites authorized by DEQ for land application of Class B biosolids and described in individual, DEQ-issued site authorization letters. Site authorization letters are not required for Class A biosolids. During permit renewal, all previously authorized biosolids land application sites are available for public comment with the biosolids management plan and land application plan. During the term of the permit, DEQ-initiated public notice of previously authorized sites identified in the land application plan is not required.

When the permit holder needs a new land application site for Class B biosolids, the permit holder is responsible for getting authorization from DEQ as well as notifying neighbors and providing them with an opportunity to comment. Any proposed new site must meet the site selection and site management criteria described in the land application plan. DEQ-initiated public notice will be provided for any new site that does not meet these criteria and/or that DEQ considers sensitive with respect to residential housing, runoff potential, and/or threat to groundwater.

The permit holder's biosolids management plan and land application plan were last updated July 2005. All of the biosolids are converted to compost and sold to the public.

If the facility produces Exceptional Quality (EQ) biosolids, the permittee is exempt from the requirements to obtain written authorization from DEQ for land application sites and to provide public notice on proposed land application sites. EQ biosolids are highly treated solids in which pollutant concentrations are less than the pollutant concentration limits in Schedule A, pathogen reduction requirements for Class A biosolids have been met, and vector attraction reduction requirements have been met.

7.6.6 Wastewater Solids Transfers

The permit allows the facility to transfer treated or untreated wastewater solids to other in-state or out-of-state facilities that are permitted to accept the wastewater solids. The permittee is required to monitor, report, and dispose of solids as required by the permit of the receiving facility. Wastewater solids that are transferred out-of-state must meet all requirements for the use of disposal or wastewater solids as required by both Oregon and the receiving state.

7.6.7 Whole Effluent Toxicity (WET) Testing

As discussed previously, the permit holder is required to conduct WET tests to determine the aggregate effect of the effluent on aquatic organisms. EPA has developed protocols for performing these tests and for determining the percentage of effluent that produces an adverse effect on a group of test organisms. The language in this section of the permit describes the test procedures to be followed.

7.6.8 Operator Certification

The permit holder is required to have a certified operator consistent with the size and type of treatment plant covered by the permit. The language in this section of the permit describes the requirements relating to operator certification. An updated copy of the wastewater classification worksheet for the WWTP is attached as Appendix C.

7.6.9 Industrial User Survey

The permit holder is required to conduct an industrial user survey every five years. The purpose of the survey is to identify whether there are any categorical industrial users discharging to the POTW, and ensure regulatory oversight of these discharges to state waters.

7.7 Schedule E - Pretreatment

As described in Section 4.8, the WWTP implements an industrial pretreatment program that was initially approved by DEQ on August 29, 1983. The current NPDES permit Schedule E includes federal and state industrial pretreatment program requirements.

7.8 Schedule F - NPDES General Conditions

These conditions are standard to all domestic NPDES permits and include language regarding operation and maintenance of facilities, monitoring and record keeping, and reporting requirements. The General Conditions for all individual permits issued by DEQ were substantially revised in August 2009. Minor modifications have been made since then. A summary of the changes is as follows:

- There are additional citations to the federal Clean Water Act and CFR, including references to standards for sewage sludge use or disposal.
- There is additional language regarding federal penalties.

- Bypass language has been made consistent with the Code of Federal Regulations and with other EPA Region 10 states.
- Overflow language has been eliminated.
- Reporting requirements regarding overflows have been made more explicit.
- Requirements regarding emergency response and public notification plans have been made more explicit.
- Language pertaining to duty to provide information has been made more explicit.
- Confidentiality of information is addressed.
- A definition of CBOD has been added.

8.0 Next Steps

8.1 Public Comment Period

The proposed NPDES permit will be made available for public comment for 35 days. Public notice and links to the proposed permit will be posted on DEQ's website, advertised in newspapers, and sent to subscribers to DEQ's pertinent public notice e-mail lists. A Public Hearing will be scheduled if requested by 10 or more people, or by an authorized person representing an organization of at least 10 people. If a public hearing is to be held, then an additional public notice would be published to advertise the public hearing.

8.2 Response to Comments

DEQ will respond to comments received during the comment period. All those providing comment will receive a copy of DEQ's response. Interested parties may also request a copy of DEQ's response. Once comments are received and evaluated, DEQ will decide whether to issue the permit as proposed, to make changes to the permit, or to deny the permit. DEQ will notify the permittee of DEQ's decision.

8.3 Modifications to Permit Evaluation Report and Fact Sheet

Depending on the nature of the comments and any changes made to the permit as result of comments, DEQ may modify this permit evaluation report and fact sheet. DEQ may also choose to update the permit evaluation report and fact sheet through memorandum or addendum. If substantive changes are made to the permit, then an additional round of public comment may occur.

8.4 Issuance

DEQ mails the finalized, signed permit to the permittee. The permit is effective 20 days from the mailing date.

Appendix B: Reasonable Potential Analysis

Aquatic Life RPA

RPA Run Information	
Facility Name:	City of Klamath Falls ST
DEQ File Number:	46763
EPA Identification #:	OR0026301
Permit Number:	100701
Permit Writer Name:	Feldman
Preparation Date:	1/8/2020
Facility Flow Rate (MGD):	4
Outfall Number:	001
Determination Date:	1/8/20
RPA Run Notes:	
Color Key:	"*" = Enter data
Intermediate Calc.s	"--" = Will calculate
Calculation Results	

Facility Information			
1. Are there dilution #'s from mixing zone study? (Yes/No)			yes
2. Is the receiving waterbody fresh water? (Yes/No)			yes
3. If Question 1 = "No", then fill in the following table			
Eff. Flow Rate	MGD	4	Calculated dilution Factors
Stream Flow: 7Q10	CFS	0	Dilution @ ZID
Stream Flow: 1Q10	CFS	0	Dilution @ MZ
% dilution at ZID	%	10%	
% dilution at MZ	%	25%	
4. If answered "Yes" to Question #1, then fill in dilution values			
Dilution @ ZID (from study)			1
Dilution @ MZ (from study)			1
5. Enter Water Hardness. Ambient: 7Q10. Effluent: default of 25mg/l. Min/Max 25-400 mg/l CaCO3			
Effluent	mg/L CaCO ₃	219	
Up-stream	mg/L CaCO ₃	38	
ZID boundary	mg/L CaCO ₃	219	
MZ boundary	mg/L CaCO ₃	219	
6. Please enter statistical Confidence and Probability values (note: defaults already entered)			
Confidence Level	%	99%	
Probability Basis	%	95%	

Pollutant Parameter	Identify Pollutants of Concern						Determine In-Stream Conc.			Det. Reasonable Potential			
	Evaluation Required?	# of Sample	Highest Effluent Conc.	Coefficient of Variation	Est. Max Eff. Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. @ ZID	Max Total Conc. @ RMZ	WQ Crit: 1 Hour (CMC)	WQ Crit: 4 Day (CCC)	Is there Reasonable Potential to Exceed? (Yes/No)	
	(Yes/No)		(µg/l)	Default=0.6	(µg/l)	(Yes/No)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	Acute	Chronic
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD													
Table 2 Effluent Parameters for Selected POTWs													
Hardness (Total as CaCO ₃)	Yes	Must be collected for metals criteria calculation. Submit data to the fields at the top of the spreadsheet											
Table 2: Metals (total recoverable), cyanide and total phenols										Use total recoverable data as surrogate.		yes	
Arsenic (total recoverable)	Yes	10	55.4	0.170941171	--	No Aquatic Water Quality Criteria							
Arsenic (Dissolved)	Yes	10	55.4	0.170941171	66.48	No	0	66.48	66.48	340.00	150.00	NO	NO
Arsenic (total inorganic)	Yes	10	55.4	0.170941171	66.48	No	0	66.48	66.48	340.00	150.00	NO	NO

Cadmium (total recoverable)	Yes	10	0.13	0.743728251	0.312	No	0.1	0.312	0.312	9.50	--	NO	--
Cadmium (dissolved)	Yes	10	0.13	0.743728251	0.312	No	0	0.312	0.312	--	0.48	--	NO
Chromium (total recoverable)	Yes	10	1.99	0.271423602	--	No Aquatic Water Quality Criteria							
Chromium III (dissolved)	Yes	10	1.99	0.271423602	2.786	No	0	2.786	2.786	3426.35	163.77	NO	NO
Chromium VI (dissolved)	Yes	10	1.99	0.271423602	2.786	No	0	2.786	2.786	16.00	11.00	NO	NO
Copper (total recoverable)	Yes	6	3.31	0.6	--	No Aquatic Water Quality Criteria							
Copper (dissolved)	Yes	6	3.31	0.6	8.606	No	0	8.606	8.606	See BLM	See BLM	--	--
Iron (total recoverable)	Yes	--	--	--	--	Data	*	--	--	--	1000.00	--	--
Lead (total recoverable)	Yes	10	0.578	0.189645497	--	No Aquatic Water Quality Criteria							
Lead (dissolved)	Yes	10	0.578	0.189645497	0.7514	No	0.22	0.7514	0.7514	221.47	8.63	NO	NO
Mercury (total)	Yes	10	0.0123	0.560880248	0.0246	Yes	0	0.0246	0.0246	2.40	0.01	NO	YES
Nickel (total recoverable)	Yes	10	6.19	0.221600549	--	No Aquatic Water Quality Criteria							
Nickel (dissolved)	Yes	10	6.19	0.221600549	8.047	No	0	8.047	8.047	910.65	101.25	NO	NO
Selenium (total)	Yes	--	--	--	--	No Aquatic Water Quality Criteria							
Selenium (dissolved)	Yes	--	--	--	--	Data	0	--	--	13.00	4.60	--	--
Silver (total recoverable)	Yes	10	0.074	0.580131752	--	No Aquatic Water Quality Criteria							
Silver (dissolved)	Yes	10	0.074	0.580131752	0.148	Yes	0	0.148	0.148	14.57	0.10	NO	YES
Zinc (total recoverable)	Yes	10	85	0.416023939	--	No Aquatic Water Quality Criteria							
Zinc (dissolved)	Yes	10	85	0.416023939	144.5	No	0	144.5	144.5	232.80	232.80	NO	NO
Cyanide (total)	Yes	10	40	0.934428782	--	No Aquatic Water Quality Criteria							
Cyanide (free)	Yes	10	40	0.934428782	112	Yes	0	112	112	22.00	5.20	YES	YES
Total phenolic compounds	Yes	No Aquatic Water Quality Criteria											
Table 2: Volatile organic compounds													
Table 2: Acid-extractable compounds													
Pentachlorophenol	Yes	3	0	0	0	No	0	0	0	14.42	11.06	NO	NO
Table 2: Base-neutral compounds													
Table 3: Pesticides and PCBs													
Aldrin	Yes	3	0	0	0	No	*	--	--	3.00	na	--	--
BHC-gamma (Lindane)	Yes	3	0	0	0	No	*	--	--	0.95	0.08	--	--
Chlordane	Yes	3	0	0	0	No	*	--	--	2.40	0.00	--	--
Chlorpyrifos	Yes	--	--	--	--	Data	*	--	--	0.08	0.04	--	--
Demeton	Yes	--	--	--	--	Data	*	--	--	na	0.10	--	--

DDT 4,4'	Yes	17	0	0	0	No	*	--	--	1.10	0.00	--	--
Dieldrin	Yes	3	0	0	0	No	*	--	--	0.24	0.06	--	--
Endosulfan alpha	Yes	3	0	0	0	No	*	--	--	0.22	0.06	--	--
Endosulfan beta	Yes	3	0	0	0	No	*	--	--	0.22	0.06	--	--
Endosulfan	Yes	--	--	--	--	Data	*	--	--	0.22	0.06	--	--
Endrin	Yes	3	0	0	0	No	*	--	--	0.09	0.04	--	--
Guthion	Yes	--	--	--	--	Data	*	--	--	na	0.01	--	--
Heptachlor	Yes	3	0	0	0	No	*	--	--	0.52	0.00	--	--
Heptachlor Epoxide	Yes	3	0	0	0	No	*	--	--	0.52	0.00	--	--
Malathion	Yes	--	--	--	--	Data	*	--	--	na	0.10	--	--
Methoxychlor	Yes	--	--	--	--	Data	*	--	--	na	0.03	--	--
Mirex	Yes	--	--	--	--	Data	*	--	--	na	0.00	--	--
Parathion	Yes	--	--	--	--	Data	*	--	--	0.07	0.01	--	--
Toxaphene	Yes	3	0	0	0	No	*	--	--	0.73	0.00	--	--
Total PCBs (Sum of PCB	Yes	--	--	--	--	Data	*	--	--	2.00	0.01	--	--
Table3: Other parameters with state water quality criteria													
Hydrogen Sulfide (dissolved as S)	TBD	--	--	--	--	--	*	--	--	na	2.00	--	--
Phosphorus, Elemental	TBD	--	--	--	--	--	*	--	--	na	na	--	--
tributyltin (TBT)	TBD	--	--	--	--	--	*	--	--	0.46	0.06	--	--

Aquatic Life Limits

RPA Run Information	
Facility Name:	ty of Klamath Falls ST
DEQ File Number:	46763
EPA Identification #:	OR0026301
Permit Number:	100701
Permit Writer Name:	Feldman
Preparation Date:	43838
Facility Flow Rate (MGD):	4
Outfall Number:	001
Determination Date:	1/8/2020
RPA Run Notes:	
Color Key:	"*" = Enter data
Intermediate Calc.s	"--" = Will calculate
Calculation Results	

* All criteria and effluent limits are in terms of total concentration

Facility Information			
1. Do I have dilution values from a mixing zone study? (Yes/No)			yes
2. Is the receiving waterbody fresh water? (Yes/No)			yes
3. If answered "No" to Question 1, then fill in the following table			
Eff. Flow Rate	MGD	4	Calculated dilution Factors
Stream Flow: 7Q10	CFS	0	Dilution @ ZID
Stream Flow: 1Q10	CFS	0	Dilution @ MZ
% dilution at ZID	%	10%	
% dilution at MZ	%	25%	
4. If answered "Yes" to Question #1, then fill in dilution values			
Dilution @ ZID (from study)			1
Dilution @ MZ (from study)			1
5. Please enter Water Hardness Data below to reflect critical conditions (values from 25 to 400 mg/l of CaCO3)			
Effluent	mg/L CaCO ₃	219	
Up-stream	mg/L CaCO ₃	38	
ZID boundary	mg/L CaCO ₃	219	
MZ boundary	mg/L CaCO ₃	219	
6. Probability basis for WLA Multipliers and Effluent Limits			
Probability Basis		%	99%
Confidence Level		%	95%
Confidence Level		%	99%

Pollutant Parameter	WQ Criteria							Effluent Limits		Compliance Limit	
	Analysis req? (Is there RP? Yes/No)		WQ Crit: 1 Hour (CMC)	WQ Crit: 4 Day (CCC)	Ambient Conc.	CV	Compliance Monitoring Req.	Monthly (AML ug/l)	Max Daily (MDL ug/l)	Monthly (AML ug/l)	Max Daily (MDL ug/l)
	Acute	Chronic	(µg/l)	(µg/l)	(µg/l)	(µg/l)	#/Month	95%	99%		
Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD											
Table 2 Effluent Parameters for Selected POTWs											
Table 2: Metals (total recoverable), cyanide and total phenols											
Arsenic (Dissolved)	No	No	--	--	--	--	*	--	--	--	--
Arsenic (total inorganic)	No	No	--	--	--	--	*	--	--	--	--
Cadmium (total recoverable)	No	No	--	--	--	--	*	--	--	--	--
Cadmium (dissolved)	No	No	--	--	--	--	*	--	--	--	--
Chromium III (dissolved)	No	No	--	--	--	--	*	--	--	--	--
Chromium VI (dissolved)	No	No	--	--	--	--	*	--	--	--	--

Copper (dissolved)	No	No	--	--	--	--	*	--	--	--	--
Iron (total recoverable)	--	--	--	--	--	--	*	--	--	--	--
Lead (dissolved)	No	No	--	--	--	--	*	--	--	--	--
Mercury (total)	No	Yes	--	0.012	0	0.561	4	0.009948	0.0193477	0.001	0.001
Nickel (dissolved)	No	No	--	--	--	--	*	--	--	--	--
Selenium (dissolved)	--	--	--	--	--	--	*	--	--	--	--
Silver (dissolved)	No	Yes	--	0.1	0	0.58	4	0.082391	0.162761	0.1	0.1
Zinc (dissolved)	No	No	--	--	--	--	*	--	--	--	--
Cyanide (free)	Yes	Yes	22	5.2	0	0.934	4	3.841397	9.4201716	10	N/A
Table 2: Volatile organic compounds											
Table 2: Acid-extractable compounds											
Pentachlorophenol	No	No	--	--	--	--	*	--	--	--	--
Table 2: Base-neutral compounds											
Table 3: Pesticides and PCBs											
Aldrin	No	No	--	--	--	--	*	--	--	--	--
BHC-gamma (Lindane)	No	No	--	--	--	--	*	--	--	--	--
Chlordane	No	No	--	--	--	--	*	--	--	--	--
Chlorpyrifos	--	--	--	--	--	--	*	--	--	--	--
Demeton	--	--	--	--	--	--	*	--	--	--	--
DDT 4,4'	No	No	--	--	--	--	*	--	--	--	--
Dieldrin	No	No	--	--	--	--	*	--	--	--	--
Endosulfan alpha	No	No	--	--	--	--	*	--	--	--	--
Endosulfan beta	No	No	--	--	--	--	*	--	--	--	--
Endosulfan	--	--	--	--	--	--	*	--	--	--	--
Endrin	No	No	--	--	--	--	*	--	--	--	--
Guthion	--	--	--	--	--	--	*	--	--	--	--
Heptachlor	No	No	--	--	--	--	*	--	--	--	--
Heptachlor Epoxide	No	No	--	--	--	--	*	--	--	--	--
Malathion	--	--	--	--	--	--	*	--	--	--	--
Methoxychlor	--	--	--	--	--	--	*	--	--	--	--
Mirex	--	--	--	--	--	--	*	--	--	--	--
Parathion	--	--	--	--	--	--	*	--	--	--	--
Toxaphene	No	No	--	--	--	--	*	--	--	--	--

Total PCBs (Sum of PCB Aroclors)	--	--	--	--	--	--	*	--	--	--	--
Table3: Other parameters with state water quality criteria											
Hydrogen Sulfide (dissolved as S)	--	--	--	--	--	--	*	--	--	--	--
Phosphorus, Elemental	--	--	--	--	--	--	*	--	--	--	--
tributyltin (TBT)	--	--	--	--	--	--	*	--	--	--	--

Human Health RPA

RPA Run Information	
Facility Name:	City of Klamath Falls STP
DEQ File Number:	46763
EPA Identification #:	OR0026301
Permit Number:	100701
Permit Writer Name:	Feldman
Preparation Date:	001
Facility Flow Rate (MGD):	4
Outfall Number:	001
Determination Date:	1/8/20

Color Key:	"*" = Enter data
Intermediate Calc.s	"--" = Will calculate
Calculation Results	

Facility Information			
1. Do I have dilution values from a mixing zone study? (Yes/No)			Yes
2. If answered "No" to Question 1, then fill in the following table			
Eff. Flow Rate	MGD	N/A	Calculated dilution Factors
Stream Flow: Harmonic M	CFS	N/A	Dilution @ Harmonic Mean
Stream Flow: 30Q5	CFS	N/A	Dilution @ 30Q5
% dilution at MZ	%	25%	
3. If answered "Yes" to Question #1, then fill in dilution values			
Dilution @ RMZ: harmonic mean flow			1
Dilution @ RMZ: 30Q5 flow			1
4. Please enter statistical Confidence and Probability values (note: defaults already)			
Confidence Level		%	95%
Probability Basis		%	95%
5. Is the water "fresh" or "salt"?			Fresh
RPA Run Notes:			

Pollutant Parameter	Identify Pollutants of Concern							In-Stream Conc.		Det. Reasonable Potential			
	Evaluation Required?	Carcinogen Status	# of Sample	Effluent Conc.	Coefficient of Variation	Est. Max Eff. Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. @ RMZ	WQ Crit: Water + Fish	WQ Crit: Fish	Is there Reasonable Potential to Exceed? (Yes/No)	
	(Yes/No)	(Yes/No)		(µg/l)	Default=0.6	(µg/l)	(Yes/No)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	Water + Fish	Fish

Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD

Nitrates-Nitrite	Yes	n	30	23200	1.031221637	30840.3	Yes	0.518	30840.3	10000	na	YES	--
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Table 2 Effluent Parameters for Selected POTWs

Table 2: Metals (total recoverable), cyanide and total phenols

	Use total recoverable data as surrogate. Yes												
Antimony (total recoverable)	Yes	n	--	--	--	--	Data	*	--	5	64	--	--
Arsenic (total recoverable)	Yes	y	10	38.849	0.170941171	No Human Health Water Quality Criteria							
Arsenic (total inorganic)	Yes	Y	10	38.849	0.170941171	46.0196	Yes	9.88	46.0196	2	2	YES	YES
Copper (total recoverable)	Yes	N	6	3.31	0.6	7.08897	No	*	--	1300	na	--	--
Mercury (total)	Yes	N	10	0.0123	0.560880248	No Human Health Water Quality Criteria							
Methyl Mercury	Yes	N	10	0.0123	0.560880248	0.02073	Yes	*	--	na	0.00014	--	--
Nickel (total recoverable)	Yes	N	10	6.19	0.221600549	7.70176	No	*	--	140	170	--	--
Selenium (total recoverable)	Yes	N	--	--	--	--	Data	*	--	120	420	--	--
Thallium (total recoverable)	Yes	N	--	--	--	--	Data	*	--	0	0	--	--
Zinc (total recoverable)	Yes	N	10	85	0.416023939	126.645	No	*	--	2100	2600	--	--
Cyanide (total)	Yes	N	10	40	0.934428782	88.1931	No	0	88.1931	130	130	NO	NO

Table 2: Volatile organic compounds													
Acrolein	Yes	N	3	0	0	0	No	*	--	1	1	--	--
Acrylonitrile	Yes	Y	18	0.162	2.9104275	0.41203	Yes	0	0.41203	0	0	YES	YES
Benzene	Yes	Y	3	0	0	0	No	*	--	0	1	--	--
Bromoform	Yes	y	3	0	0	0	No	*	--	3	14	--	--
Carbon Tetrachloride	Yes	Y	3	0	0	0	No	*	--	0	0	--	--
Chlorobenzene	Yes	N	3	0	0	0	No	*	--	74	160	--	--
Chlorodibromomethane	Yes	y	3	0	0	0	No	*	--	0	1	--	--
Chloroform	Yes	n	3	0.062	0.6	0.18597	No	*	--	260	1100	--	--
1,2-Dichlorobenzene (o)	Yes	n	3	0	0	0	No	*	--	110	130	--	--
1,3-Dichlorobenzene (m)	Yes	n	--	--	--	--	Data	*	--	80	96	--	--
1,4-Dichlorobenzene (p)	Yes	n	3	0	0	0	No	*	--	16	19	--	--
Dichlorobromomethane	Yes	y	--	--	--	--	Data	*	--	0	2	--	--
1,2-dichloroethane	Yes	y	3	0.0227	0.6	0.06803	No	0	0.06803	0	4	NO	NO
1,2-trans-dichloroethylene	Yes	n	3	0	0	0	No	*	--	120	1000	--	--
1,1-dichloroethylene	Yes	n	3	0	0	0	No	*	--	230	710	--	--
1,2-dichloropropane	Yes	y	3	0	0	0	No	*	--	0	2	--	--
1,3-dichloropropene	Yes	y	3	0	0	0	No	*	--	0	2	--	--
Ethylbenzene	Yes	n	3	0.03	0.6	0.08999	No	*	--	160	210	--	--
Methyl Bromide	Yes	n	3	0	0	0	No	*	--	37	150	--	--
Methylene Chloride	Yes	y	3	0	0	0	No	*	--	4	59	--	--
1,1,2,2-tetrachloroethane	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Tetrachloroethylene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Toluene	Yes	n	3	0.032	0.6	0.09599	No	*	--	720	1500	--	--
1,1,2-trichloroethane	Yes	y	3	0	0	0	No	*	--	0	2	--	--
Trichloroethylene	Yes	y	3	0	0	0	No	*	--	1	3	--	--
Vinyl Chloride	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Table 2: Acid-extractable compounds													
2-chlorophenol	Yes	n	3	0	0	0	No	*	--	14	15	--	--
2,4-dichlorophenol	Yes	n	3	0	0	0	No	*	--	23	29	--	--
2,4-dimethylphenol	Yes	n	3	0	0	0	No	*	--	76	85	--	--
4,6-dinitro-o-cresol	Yes	n	3	0	0	0	No	*	--	9	28	--	--
2,4-dinitrophenol	Yes	n	3	0	0	0	No	*	--	62	530	--	--
Pentachlorophenol	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Phenol	Yes	n	12	82	1.679150411	226.003	No	*	--	9400	86000	--	--

2,4,5-trichlorophenol	Yes	n	--	--	--	--	Data	*	--	330	360	--	--
2,4,6-trichlorophenol	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Table 2: Base-neutral compounds													
Acenaphthene	Yes	n	3	0	0	0	No	*	--	95	99	--	--
Anthracene	Yes	n	3	0	0	0	No	*	--	2900	4000	--	--
Benzidine	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Benzo(a)anthracene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Benzo(a)pyrene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Benzo(b)fluoranthene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Benzo(k)fluoranthene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Bis(2-chloroethyl)ether	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Bis(2-chloroisopropyl)ether	Yes	n	--	--	--	--	Data	*	--	1200	6500	--	--
Chloromethyl Ether, bis	Yes	y	--	--	--	--	Data	*	--	0	0	--	--
Bis (2-ethylhexyl)phthalate	Yes	y	15	0.6288	3.872983346	2.13254	Yes	0	2.13254	0	0	YES	YES
Butylbenzyl phthalate	Yes	n	3	0	0	0	No	*	--	190	190	--	--
2-chloronaphthalene	Yes	n	3	0	0	0	No	*	--	150	160	--	--
Chrysene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Di-n-butyl phthalate	Yes	n	3	0.46	0.6	1.37979	No	*	--	400	450	--	--
Dibenzo(a,h)anthracene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
3,3-Dichlorobenzidine	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Diethyl phthalate	Yes	n	3	0.33	0.6	0.98985	No	*	--	3800	4400	--	--
Dimethyl phthalate	Yes	n	3	0	0	0	No	*	--	84000	110000	--	--
2,4-dinitrotoluene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
1,2-diphenylhydrazine	Yes	y	--	--	--	--	Data	*	--	0	0	--	--
Fluoranthene	Yes	n	3	0	0	0	No	*	--	14	14	--	--
Fluorene	Yes	n	3	0	0	0	No	*	--	390	530	--	--
Hexachlorobenzene	Yes	n	3	0	0	0	No	*	--	0	0	--	--
Hexachlorobutadiene	Yes	y	3	0	0	0	No	*	--	0	2	--	--
Hexachlorocyclopentadiene	Yes	n	3	0	0	0	No	*	--	30	110	--	--
Hexachloroethane	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Indeno(1,2,3-cd)pyrene	Yes	y	--	--	--	--	Data	*	--	0	0	--	--
Isophorone	Yes	n	3	0	0	0	No	*	--	27	96	--	--
Nitrobenzene	Yes	n	3	0	0	0	No	*	--	14	69	--	--
N-nitrosodimethylamine	Yes	y	3	0	0	0	No	*	--	0	0	--	--
N-nitrosodi-n-propylamine	Yes	y	3	0	0	0	No	*	--	0	0	--	--

N-nitrosodiphenylamine	Yes	y	3	0	0	0	No	*	--	1	1	--	--
Pentachlorobenzene	Yes	n	--	--	--	--	Data	*	--	0	0	--	--
Pyrene	Yes	n	3	0	0	0	No	*	--	290	400	--	--
1,2,4-trichlorobenzene	Yes	n	3	0	0	0	No	*	--	6	7	--	--
Tetrachlorobenzene,1,2,4,5	Yes	n	--	--	--	--	Data	*	--	0	0	--	--

Table 3: Pesticides and PCBs

Aldrin	Yes	y	3	0	0	0	No	*	--	0	0	--	--
BHC-Technical	No	y	--	--	--	--	--	*	--	0	0	--	--
BHC-alpha	Yes	y	3	0	0	0	No	*	--	0	0	--	--
BHC-beta	Yes	y	--	--	--	--	Data	*	--	0	0	--	--
BHC-gamma (Lindane)	Yes	n	3	0	0	0	No	*	--	0	0	--	--
Chlordane	Yes	y	3	0	0	0	No	*	--	0	0	--	--
DDD 4,4'	Yes	y	17	0.0012	4.123105626	0.00359	Yes	0	0.00359	0	0	YES	YES
DDE 4,4'	Yes	y	17	0.0015	4.123105626	0.00453	Yes	0	0.00453	0	0	YES	YES
DDT 4,4'	Yes	y	17	0	0	0	No	*	--	0	0	--	--
Dieldrin	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Endosulfan alpha	Yes	n	3	0	0	0	No	*	--	9	9	--	--
Endosulfan beta	Yes	n	3	0	0	0	No	*	--	9	9	--	--
Endosulfan Sulfate	Yes	n	3	0	0	0	No	*	--	9	9	--	--
Endrin	Yes	n	3	0	0	0	No	*	--	0	0	--	--
Endrin Aldehyde	Yes	n	3	0	0	0	No	*	--	0	0	--	--
Heptachlor	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Heptachlor Epoxide	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Methoxychlor	Yes	n	--	--	--	--	Data	*	--	100	na	--	--
Toxaphene	Yes	y	3	0	0	0	No	*	--	0	0	--	--
Total PCBs (Sum of PCB Aroclors)	Yes	y	--	--	--	--	Data	*	--	0	0	--	--

Table3: Other parameters with state water quality criteria

Barium (total recoverable)	TBD	n	--	--	--	--	--	*	--	1000	na	--	--
Manganese (total recoverable)	TBD	n	--	--	--	--	--	*	--	Withdrawn	100	--	--
2,4,5-TP [2-(2,4,5-Trichlorophenoxy) propanoic acid]d	TBD	n	--	--	--	--	--	*	--	10	na	--	--
2,4-D (2,4-Dichlorophenoxy) acetic acid)	TBD	n	--	--	--	--	--	*	--	100	na	--	--

Dioxin 2,3,7,8-TCDD	TBD	y	--	--	--	--	--	*	--	0	0	--	--
Nitrosamines	yes	y	--	--	--	--	Data	*	--	0	0	--	--
N-Nitrosodibutylamine	TBD	y	--	--	--	--	--	*	--	0	0	--	--
N-Nitrosodiethylamine	TBD	y	--	--	--	--	--	*	--	0	0	--	--
N-Nitrosopyrrolidine	TBD	y	--	--	--	--	--	*	--	0	3	--	--

Human Health Limits

RPA Run Information	
Facility Name:	City of Klamath Falls STP
DEQ File Number:	46763
EPA Identification #:	OR0026301
Permit Number:	100701
Permit Writer Name:	Feldman
Preparation Date:	001
Facility Flow Rate (MGD):	6
Outfall Number:	001
Determination Date:	1/8/2020

Color Key:	"*" = Enter data
Intermediate Calc.s	"..." = Will calculate
Calculation Results	

Facility Information			
1. Do I have dilution values from a mixing zone study? (Yes/No)			Yes
2. If answered "No" to Question 1, then fill in the following table			
Eff. Flow Rate	MGD	N/A	Calculated dilution Factors
Stream Flow: Harmonic	CFS	N/A	Dilution @ Harmonic Mean
Stream Flow: 30Q5	CFS	N/A	Dilution @ 30Q5
% dilution at MZ	%	25%	
3. If answered "Yes" to Question #1, then fill in			
Dilution @ RMZ: Harmonic Mean			1
Dilution @ RMZ: 30Q5 flow			1
4. Please enter statistical values (note: defaults already entered)			
Confidence Level: Mor	%	95%	
Confidence Level: Daily	%	99%	
Probability Basis	%	95%	
RPA Run Notes:			

Pollutant Parameter	RP Status		Carcinogen Status	WQ: Criteria		Ambient Conc.	WLAs		CV	Compliance Monitoring Req.	Effluent Limit		Compliance Limit	
	Water + Fish	Fish		Water + Fish	Fish		Water + Fish	Fish			Monthly (AML)	Max. Daily (MDL)	Monthly (AML)	Max. Daily (MDL)
	(Yes/No)	(Yes/No)		(µg/l)	(µg/l)		(µg/l)	(µg/l)			(µg/l)	(µg/l)	(µg/l)	(µg/l)

Table 1 Effluent Parameters for all POTWs w/a Flow > 0.1 MGD

Nitrates-Nitrite	YES	--	no	10000	na	0.518	10000	--	1.031222	4	10000	25523.0542	--	--
------------------	-----	----	----	-------	----	-------	-------	----	----------	---	-------	------------	----	----

Table 2 Effluent Parameters for Selected POTWs

Table 2: Metals (total recoverable), cyanide and total phenols

Antimony (total)	--	--	no	5.1	64	--	--	--	--	*	--	--	--	--
Arsenic (total)	YES	YES	yes	2.1	2.1	9.88	2.1	2.1	0.170941	4	2.1	2.67956225	--	--
Copper (total)	--	--	no	1300	na	--	--	--	--	*	--	--	--	--
Methyl Mercury	--	--	no	na	0.00014	--	--	--	--		--	--	--	--
Nickel (total)	--	--	no	140	170	--	--	--	--	*	--	--	--	--
Selenium (total)	--	--	no	120	420	--	--	--	--	*	--	--	--	--
Thallium (total recoverable)	--	--	no	0.043	0.047	--	--	--	--	*	--	--	--	--
Zinc (total)	--	--	no	2100	2600	--	--	--	--	*	--	--	--	--

Cyanide (total)	NO	NO	no	130	130	--	--	--	--	*	--	--	--	--
Table 2: Volatile organic compounds														
Acrolein	--	--	no	0.88	0.93	--	--	--	--	*	--	--	--	--
Acrylonitrile	YES	YES	yes	0.018	0.025	0	0.018	0.025	2.910428	4	0.018	0.05849627	5	5
Benzene	--	--	yes	0.44	1.4	--	--	--	--	*	--	--	--	--
Bromoform	--	--	yes	3.3	14	--	--	--	--	*	--	--	--	--
Carbon Tetrachloride	--	--	yes	0.1	0.16	--	--	--	--	*	--	--	--	--
Chlorobenzene	--	--	no	74	160	--	--	--	--	*	--	--	--	--
Chlorodibromometha	--	--	yes	0.31	1.3	--	--	--	--	*	--	--	--	--
Chloroform	--	--	no	260	1100	--	--	--	--	*	--	--	--	--
1,2-Dichlorobenzene (o)	--	--	no	110	130	--	--	--	--	*	--	--	--	--
1,3-Dichlorobenzene (m)	--	--	no	80	96	--	--	--	--	*	--	--	--	--
1,4-Dichlorobenzene (p)	--	--	no	16	19	--	--	--	--	*	--	--	--	--
Dichlorobromomethane	--	--	yes	0.42	1.7	--	--	--	--	*	--	--	--	--
1,2-dichloroethane	NO	NO	yes	0.35	3.7	--	--	--	--	*	--	--	--	--
1,2-trans-dichloroethylene	--	--	no	120	1000	--	--	--	--	*	--	--	--	--
1,1-dichloroethylene	--	--	no	230	710	--	--	--	--	*	--	--	--	--
1,2-dichloropropane	--	--	yes	0.38	1.5	--	--	--	--	*	--	--	--	--
1,3-dichloropropene	--	--	yes	0.3	2.1	--	--	--	--	*	--	--	--	--
Ethylbenzene	--	--	no	160	210	--	--	--	--	*	--	--	--	--
Methyl Bromide	--	--	no	37	150	--	--	--	--	*	--	--	--	--
Methylene Chloride	--	--	yes	4.3	59	--	--	--	--	*	--	--	--	--
1,1,2,2-tetrachloroethane	--	--	yes	0.12	0.4	--	--	--	--	*	--	--	--	--
Tetrachloroethylene	--	--	yes	0.24	0.33	--	--	--	--	*	--	--	--	--
Toluene	--	--	no	720	1500	--	--	--	--	*	--	--	--	--
1,1,2-trichloroethane	--	--	yes	0.44	1.6	--	--	--	--	*	--	--	--	--
Trichloroethylene	--	--	yes	1.4	3	--	--	--	--	*	--	--	--	--

Vinyl Chloride	--	--	yes	0.023	0.24	--	--	--	--	*	--	--	--	--
Table 2: Acid-extractable compounds														
2-chlorophenol	--	--	no	14	15	--	--	--	--	*	--	--	--	--
2,4-dichlorophenol	--	--	no	23	29	--	--	--	--	*	--	--	--	--
2,4-dimethylphenol	--	--	no	76	85	--	--	--	--	*	--	--	--	--
4,6-dinitro-o-cresol	--	--	no	9.2	28	--	--	--	--	*	--	--	--	--
2,4-dinitrophenol	--	--	no	62	530	--	--	--	--	*	--	--	--	--
Pentachlorophenol	--	--	yes	0.15	0.3	--	--	--	--	*	--	--	--	--
Phenol	--	--	no	9400	86000	--	--	--	--	*	--	--	--	--
2,4,5-trichlorophenol	--	--	no	330	360	--	--	--	--	*	--	--	--	--
2,4,6-trichlorophenol	--	--	yes	0.23	0.24	--	--	--	--	*	--	--	--	--
Table 2: Base-neutral compounds														
Acenaphthene	--	--	no	95	99	--	--	--	--	*	--	--	--	--
Anthracene	--	--	no	2900	4000	--	--	--	--	*	--	--	--	--
Benzidine	--	--	yes	2E-05	0.00002	--	--	--	--	*	--	--	--	--
Benzo(a)anthracene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--
Benzo(a)pyrene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--
Benzo(b)fluoranthene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--
Benzo(k)fluoranthene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--
Bis(2-chloroethyl)ether	--	--	yes	0.02	0.053	--	--	--	--	*	--	--	--	--
Bis(2-chloroisopropyl)ether	--	--	no	1200	6500	--	--	--	--	*	--	--	--	--
Chloromethyl Ether, bis	--	--	yes	2E-05	2.9E-05	--	--	--	--	*	--	--	--	--
Bis (2-ethylhexyl)phthalate	YES	--	yes	0.2	0.22	0	0.2	--	3.872983	4	0.2	0.67284781	1	1
Butylbenzyl phthalate	--	--	no	190	190	--	--	--	--	*	--	--	--	--
2-chloronaphthalene	--	--	no	150	160	--	--	--	--	*	--	--	--	--
Chrysene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--

Di-n-butyl phthalate	--	--	no	400	450	--	--	--	--	*	--	--	--	--
Dibenzo(a,h)anthracene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--
3,3-Dichlorobenzidine	--	--	yes	0.003	0.0028	--	--	--	--	*	--	--	--	--
Diethyl phthalate	--	--	no	3800	4400	--	--	--	--	*	--	--	--	--
Dimethyl phthalate	--	--	no	84000	110000	--	--	--	--	*	--	--	--	--
2,4-dinitrotoluene	--	--	yes	0.084	0.34	--	--	--	--	*	--	--	--	--
1,2-diphenylhydrazine	--	--	yes	0.014	0.02	--	--	--	--	*	--	--	--	--
Fluoranthene	--	--	no	14	14	--	--	--	--	*	--	--	--	--
Fluorene	--	--	no	390	530	--	--	--	--	*	--	--	--	--
Hexachlorobenzene	--	--	no	3E-05	2.9E-05	--	--	--	--	*	--	--	--	--
Hexachlorobutadiene	--	--	yes	0.36	1.8	--	--	--	--	*	--	--	--	--
Hexachlorocyclopentadiene	--	--	no	30	110	--	--	--	--	*	--	--	--	--
Hexachloroethane	--	--	yes	0.29	0.33	--	--	--	--	*	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	yes	0.001	0.0018	--	--	--	--	*	--	--	--	--
Isophorone	--	--	no	27	96	--	--	--	--	*	--	--	--	--
Nitrobenzene	--	--	no	14	69	--	--	--	--	*	--	--	--	--
N-nitrosodimethylamine	--	--	yes	7E-04	0.3	--	--	--	--	*	--	--	--	--
N-nitrosodi-n-propylamine	--	--	yes	0.005	0.051	--	--	--	--	*	--	--	--	--
N-nitrosodiphenylamine	--	--	yes	0.55	0.6	--	--	--	--	*	--	--	--	--
Pentachlorobenzene	--	--	no	0.15	0.15	--	--	--	--	*	--	--	--	--
Pyrene	--	--	no	290	400	--	--	--	--	*	--	--	--	--
1,2,4-trichlorobenzene	--	--	no	6.4	7	--	--	--	--	*	--	--	--	--

Tetrachlorobenzene,1,2,4,5	--	--	no	0.11	0.11	--	--	--	--	*	--	--	--	--
Table 3: Pesticides and PCBs														
Aldrin	--	--	yes	5E-06	5E-06	--	--	--	--	*	--	--	--	--
BHC-Technical	--	--	yes	0.001	0.0015	--	--	--	--	*	--	--	--	--
BHC-alpha	--	--	yes	5E-04	0.00049	--	--	--	--	*	--	--	--	--
BHC-beta	--	--	yes	0.002	0.0017	--	--	--	--	*	--	--	--	--
BHC-gamma (Lindane)	--	--	no	0.17	0.18	--	--	--	--	*	--	--	--	--
Chlordane	--	--	yes	8E-05	8.1E-05	--	--	--	--	*	--	--	--	--
DDD 4,4'	YES	YES	yes	3E-05	3.1E-05	0	3E-05	0.000031	4.123106	4	0.000031	0.00010509	0.01	0.01
DDE 4,4'	YES	YES	yes	2E-05	2.2E-05	0	2E-05	0.000022	4.123106	4	0.000022	7.4582E-05	0.01	0.01
DDT 4,4'	--	--	yes	2E-05	2.2E-05	--	--	--	--	*	--	--	--	--
Dieldrin	--	--	yes	5E-06	5.4E-06	--	--	--	--	*	--	--	--	--
Endosulfan alpha	--	--	no	8.5	8.9	--	--	--	--	*	--	--	--	--
Endosulfan beta	--	--	no	8.5	8.9	--	--	--	--	*	--	--	--	--
Endosulfan Sulfate	--	--	no	8.5	8.9	--	--	--	--	*	--	--	--	--
Endrin	--	--	no	0.024	0.024	--	--	--	--	*	--	--	--	--
Endrin Aldehyde	--	--	no	0.03	0.03	--	--	--	--	*	--	--	--	--
Heptachlor	--	--	yes	8E-06	7.9E-06	--	--	--	--	*	--	--	--	--
Heptachlor Epoxide	--	--	yes	4E-06	3.9E-06	--	--	--	--	*	--	--	--	--
Methoxychlor	--	--	no	100	na	--	--	--	--	*	--	--	--	--
Toxaphene	--	--	yes	3E-05	2.8E-05	--	--	--	--	*	--	--	--	--
Total PCBs (Sum of PCB Aroclors)	--	--	yes	6E-06	6.4E-06	--	--	--	--	*	--	--	--	--
Table 3: Other parameters with state water quality criteria														
Barium (total recoverable)	--	--	no	1000	na	--	--	--	--	*	--	--	--	--
Manganese (total recoverable)	--	--	no	withdraw	100	--	--	--	--	*	--	--	--	--
2,4,5-TP [2-(2,4,5-Trichloro- phenoxy) propanoic acid]d	--	--	no	10	na	--	--	--	--	*	--	--	--	--

2,4-D (2,4-Dichlorophenoxy) acetic acid)	--	--	no	100	na	--	--	--	--	*	--	--	--	--
Dioxin 2,3,7,8-TCDD	--	--	yes	5E-10	5.1E-10	--	--	--	--	*	--	--	--	--
Nitrosamines	--	--	yes	8E-04	0.046	--	--	--	--	*	--	--	--	--
N-Nitrosodibutylamine	--	--	yes	0.005	0.022	--	--	--	--	*	--	--	--	--
N-Nitrosodiethylamine	--	--	yes	8E-04	0.046	--	--	--	--	*	--	--	--	--
N-Nitrosopyrrolidine	--	--	yes	0.016	3.4	--	--	--	--	*	--	--	--	--

CHLORINE

Facility Name: City of Klamath Falls WWTP	Run Notes:
Permit Writer: Feldman	
Outfall: 001	
Run Date: 2/25/2020	
Data Sources:	
INPUT	
1. Is the receiving waterbody fresh water? (Yes/No)	Fresh
Acute Criteria	19
Chronic Criteria	11
2. Enter current chlorine effluent limits	
Maximum Daily (ug/l)	*
Monthly Avg. (ug/l)	*
3. Do current chlorine WQBEL's exceed criteria?	
"Yes" = proceed, "No" = stop, No limits = proceed	--
4. Dilution Factors - (Qe+Qr)/Qe	
Dilution @ ZID	1
Dilution @ RMZ	1
5. Ambient Characteristics	
Max. or 90% Chlorine Concentration (ug/l)	0.0
6. Effluent Characteristics	
Max Chlorine Concentration (ug/l)	4700.0
OUTPUT	
WLA Multiplier	1.2
%	0.9
Sigma	1.0
Projected Maximum Effluent Concentration	5783.4
Reasonable Potential	
RP at the End of Pipe	Yes
Max Total Conc. @ ZID	5783.4
Max Total Conc. @ RMZ	5783.4
RP (Acute)	Yes
RP (Chronic)	Yes
EFFLUENT LIMITS	
Number of monitoring events per month	4
Avg. Monthly WQBEL (ug/l)	6.8
Max Daily WQBEL (ug/l)	19.0

AMMONIA

(May 15 – Oct 15)

Ammonia RPA Calculation (2013 Criteria) Revision 2.0

RPA Run Information		Enter Information Below		
Facility Name:	City of Klamath Falls	Enter Dilution Values		
Outfall Number:	001	Dilution @ ZID (from study)		1
Permit Writer Name:	Feldman	Dilution @ MZ 7Q10 (from study)		1
Date of RPA Run:	5/15/2020	Dilution @ MZ 30Q5 (from study)		1
RPA Run Notes: The winter alkalinity data were used for the summer analysis because no summer alkalinity data were collected		Is waterbody fresh or salt water? (Fresh/Salt)		
KEY:		Fresh		
* Enter data here		If Saltwater, then enter salinity (ppt)		
-- Intermediate calc.s		Ambient Salinity	ppt	
-- Calculated results		Effluent Salinity	ppt	
		Are Salmonid present? (Yes/No)		
		Yes		
		Confidence Level and Probability Basis		
		Confidence Level	%ile	99%
		Probability Basis	%ile	95%

Dilution Calculations

Inputs				Outputs			
	ZID	MZ (7Q10)	MZ (30Q5)		ZID	MZ (7Q10)	MZ (30Q5)
Dilution Factors				Upstream			
	1.0	1.0	1.0	pKa		6.4	6.4
Upstream Characterization				Ionization Fraction		1.0	1.0
Temperature	deg. C	24.3	20.0	Total Inorganic Carb	mg/L CaCO ₃	55.8	55.8
pH		10.1	9.5	Effluent			
Alkalinity	mg/L CaCO ₃	55.8	55.8	pKa		6.4	6.4
Effluent Characterization				Ionization Fraction		1.0	0.9
Temperature	deg. C	21.7	17.4	Total Inorganic Carb	mg/L CaCO ₃	94.4	98.2
pH		7.7	7.5	Mixing Zone			
Alkalinity	mg/L CaCO ₃	90.2	90.2	Temperature	deg. C	21.7	17.4
*Calculation of pH of a mixture of two flows based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington D.C.)				Alkalinity	mg/L CaCO ₃	90.2	90.2
** Selection of acute alkalinity %ile is based on pH of effluent vs ambient. For the chronic criteria, average alkalinity values are used.				Total Inorganic Carb	mg/L CaCO ₃	94.4	98.2
				pKa		6.4	6.4
				pH		7.7	7.5
				Salinity	ppt	--	--

Reasonable Potential Analysis

Pollutant Parameter	Pollutants of Concern					Determine In-Stream Conc.				WQ CRITERIA			
	# of Samples	Highest Effluent Conc.	Coefficient of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ (7Q10)	Max Total Conc. at RMZ (30Q5)	Acute CMC	Chronic Calc. (4-day avg.)	Chronic Calc. (7Q10)	Chronic Calc. (30 day avg.)
Ammonia (Freshwater Salmonids)	150	48.3	1.0	48.3	Yes	0.1	48.3	48.3	48.3	5.8	4.3		1.7
Ammonia (Freshwater, Salmonids absent)	--	--	--	--	--	--	--	--	--	--	--		--
Ammonia (Salt Water)	--	--	--	--	--	--	--	--	--	--	--		--
Det. Reasonable Potential													
Is there Reasonable Potential to Exceed? (Yes/No)													
	Acute	Chronic (4 day avg.)	Chronic (7Q10)	Chronic (30 day avg.)									
Ammonia (Freshwater Salmonids)	YES	YES		YES									
Ammonia (Freshwater, Salmonids absent)	--	--		--									
Ammonia (Salt Water)	--	--	--	--									

Effluent Limits

Pollutant Parameter	# of Req's Samples	Load Allocations								Effluent Limits		
		Long Term Average								Max Daily (MDL)	Monthly (AML)	
		Acute WLA	Chronic WLA (4 day avg.)	Chronic WLA (7Q10)	Chronic WLA (30Q5)	Acute LTA	Chronic LTA (4 day avg.)	Chronic LTA (7Q10)	Chronic LTA (30Q5)	Min. LTA		
	#/month	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	99%	95%
Ammonia (Freshwater, Salmonids)	4	5.8	4.3		1.7	1.2	1.7		1.2	1.2	5.5	2.2
Ammonia (Freshwater, Salmonids absent)	--	--	--		--	--	--		--	--	--	--
Ammonia (Salt Water)	--	--	--		--	--	--		--	--	--	--

AMMONIA

(Oct 16 – May 14)

Ammonia RPA Calculation (2013 Criteria) Revision 2.0

RPA Run Information		Enter Information Below		
Facility Name:	City of Klamath Falls	Enter Dilution Values		
Outfall Number:	001	Dilution @ ZID (from study)		1
Permit Writer Name:	Feldman	Dilution @ MZ 7Q10 (from study)		1
Date of RPA Run:	5/15/2020	Dilution @ MZ 30Q5 (from study)		1
RPA Run Notes:		Is waterbody fresh or salt water? (Fresh/Salt)		
KEY:	-- Intermediate calc.s	Fresh		
* Enter data here	-- Calculated results	If Saltwater, then enter salinity (ppt)		
		Ambient Salinity	ppt	
		Effluent Salinity	ppt	
		Are Salmonid present? (Yes/No)		
		Yes		
		Confidence Level and Probability Basis		
		Confidence Level	%ile	99%
		Probability Basis	%ile	95%

Dilution Calculations

Inputs				Outputs			
	ZID	MZ (7Q10)	MZ (30Q5)		ZID	MZ (7Q10)	MZ (30Q5)
Dilution Factors	1.0	1.0	1.0	Upstream			
Upstream Characterization		Acute	Chronic	pKa	6.4	6.5	6.5
Temperature	deg. C	15.5	8.1	Ionization Fraction	1.0	1.0	1.0
pH		8.4	8.1	Total Inorganic Carbon mg/L CaCO ₃	56.5	57.4	57.4
Alkalinity	mg/L CaCO ₃	55.9	55.9	Effluent			
Effluent Characterization				pKa	6.4	6.4	6.4
Temperature	deg. C	17.2	15.6	Ionization Fraction	1.0	0.9	0.9
pH		7.9	7.5	Total Inorganic Carbon mg/L CaCO ₃	93.1	98.3	98.3
Alkalinity	mg/L CaCO ₃	90.2	90.2	Mixing Zone			
				Temperature	deg. C	17.2	15.6
				Alkalinity	mg/L CaCO ₃	90.2	90.2
				Total Inorganic Carbon mg/L CaCO ₃		93.1	98.3
				pKa		6.4	6.4
				pH		7.9	7.5
				Salinity	ppt	--	--

*Calculation of pH of a mixture of two flows based on the procedure in EPA's DESCON program (EPA, 1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of

** Selection of acute alkalinity %ile is based on pH of effluent vs ambient. For the chronic criteria, average alkalinity values are used.

Reasonable Potential Analysis

Pollutant Parameter	Identify Pollutants of Concern					Determine In-Stream Conc.				WQ CRITERIA			
	# of Samples	Highest Effluent Conc.	Coefficient of Variation	Est. Maximum Effluent Conc.	RP at end of pipe?	Ambient Conc.	Max Total Conc. at ZID	Max Total Conc. at RMZ (7Q10)	Max Total Conc. at RMZ (30Q5)	Acute CMC	Chronic Calc. (4-day avg.)	Chronic Calc. (7Q10)	Chronic Calc. (30 day avg.)
		mg/l	Default=0.6	mg/l	(Yes/No)	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/l	mg/l
Ammonia (Freshwater Salmonids)	83	48.3	0.9	48.3	Yes	0.6	48.3	48.3	48.3	5.9	4.8		1.9
Ammonia (Freshwater, Salmonids absent)	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia (Salt Water)	--	--	--	--	--	--	--	--	--	--	--	--	--
Pollutant Parameter	Det. Reasonable Potential												
	Is there Reasonable Potential to Exceed? (Yes/No)												
	Acute	Chronic (4 day avg.)	Chronic (7Q10)	Chronic (30 day avg.)									
Ammonia (Freshwater Salmonids)	YES	YES		YES									
Ammonia (Freshwater, Salmonids absent)	--	--		--									
Ammonia (Salt Water)	--	--		--									

Effluent Limits

Pollutant Parameter	# of Req's Sample s	Waste Load Allocations				Long Term Average					Effluent Limits	
		Acute WLA	Chronic WLA (4 day avg.)	Chronic WLA (7Q10)	Chronic WLA (30Q5)	Acute LTA	Chronic LTA (4 day avg.)	Chronic LTA (7Q10)	Chronic LTA (30Q5)	Min. LTA	Max Daily (MDL)	Monthly (AML)
		mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	99%	95%
Ammonia (Freshwater Salmonids)	4	5.9	4.8		1.9	1.4	2.0		1.4	1.4	5.7	2.4
Ammonia (Freshwater, Salmonids absent)	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia (Salt Water)	--	--	--	--	--	--	--	--	--	--	--	--

Appendix C: Operator Certification Review

 Oregon Department of Environmental Quality Wastewater System Classification Worksheet for Operator Certification	
STEP 1: Criteria for Classifying Wastewater Treatment Systems (OAR 340-049-0025)	
NOTE : see bottom two spreadsheet tabs for Worksheet Instructions & Worksheet Information. *See SYSTEM CLASSIFICATION CHART at bottom of this worksheet for Classes SWWS-IV.	
Wastewater System Common Name:	Klamath Falls STP at Spring Street
Address Location:	1200 S. South Street
County:	Klamath
WQ File ID #:	46763
Design ADWF (Influent MGD):	18.5
Design Population:	42,000
Design BOD (Influent lbs/day):	5,700
Current Population size:	26,000
Is this a change from a prior classification? (yes/no)	
Design Population	42,000
OR Population Equivalent	
Based on:	Flow (gallons/person/day) 124 Or BOD (pounds/person/day)
Region:	Eastern
Date:	2/24/2020
Classified by:	Feldman/Hesse
WWC Class*:	III
WWT Class*:	IV
Small WWS*:	No
If Small WWS, # of connections:	
Total Points:	83.0
1. Design Population or Population Equivalent Points	
Less than 750 Design Population or Population Equivalent	0.5
751 to 2,000 Design Population or Population Equivalent	1.0
2,001 to 5,000 Design Population or Population Equivalent	1.5
5,001 to 10,000 Design Population or Population Equivalent	2.0
Greater than 10,000 Design Population or Population Equivalent (3 points + 1 point per each additional 10 K)	3.0
2. Average Dry Weather Flow (Design Capacity) Points	
Less than 0.075 MGD	0.5
Greater than 0.075 MGD to 0.1 MGD	1.0
Greater than 0.1 to 0.5 MGD	1.5
Greater than 0.5 to 1.0 MGD	2.0
Greater than 1.0 MGD (3 points + 1 point for each additional 1.0 MGD)	3.0
3. Unit Process Points	
<i>Preliminary Treatment and Plant Hydraulics</i>	
Comminution (cutter, shredder, grinder, barminutor, etc.)	1.0
Grit Removal (gravity)	1.0
Grit Removal (mechanical)	2.0
Screen(s) (in-situ or mechanical, coarse solids only)	1.0
Pump/Lift Station(s) (pumping of main flow)	2.0
Flow Equalization (any type)	1.0
<i>Primary Treatment</i>	
Community Septic Tank(s) (STEP, STEG, etc.)	2.0
Clarifier(s)	5.0
Flotation Clarifier(s)	7.0
Chemical Addition System	2.0
Imhoff Tanks (large septic tank or similar sedimentation & digestion)	3.0
<i>Secondary, Advanced, and Tertiary Treatment</i>	
Low Rate Trickling Filter(s) (no recirculation)	7.0
High Rate Trickling Filter(s) (recirculating)	10.0
Trickling Filter - Solids Contact System	12.0
Activated Sludge (includes SBR & basic MBR process)	15.0
Pure Oxygen Activated Sludge	20.0
Activated Bio Filter Tower (less than 0.1 MGD)	6.0

Activated Bio Filter Tower (greater than 0.1 MGD)	12.0	
Rotating Biological Contactors (1 to 4 shafts)	7.0	
Rotating Biological Contactors (5 or more shafts)	12.0	
Stabilization Lagoons (1 to 3 cells without aeration)	5.0	
Stabilization Lagoons (1 or more cells with primary aeration)	7.0	7.0
Stabilization Lagoons (2 or more cells with full aeration)	9.0	
Recirculating Gravel Filter (or recirculating textile filters)	7.0	
Chemical Precipitation Unit(s)	3.0	
Gravity Filtration Unit(s)	2.0	
Pressure Filtration Unit(s)	4.0	
Nitrogen Removal (Biological (BNR) or Chemical/Biological System)	4.0	
Nitrogen Removal (Design Extended Aeration Only - Nitrification)	2.0	
Phosphorous Removal Unit(s)	4.0	
Effluent Microscreen(s)	2.0	
Chemical Flocculation Unit(s)	3.0	
Ultra Filtration Membrane(s)	15.0	
Chemical Addition System	Description: <input type="text"/>	2.0
<i>Solids Handling (excludes long-term storage in treatment lagoons above)</i>		
Anaerobic Primary Sludge Digester(s) w/o Mixing and Heating	5.0	
Anaerobic Primary Sludge Digester(s) with Mixing and Heating	7.0	
Anaerobic Primary and Secondary Sludge Digesters	10.0	10.0
Sludge Digester Gas Reuse	3.0	
Aerobic Sludge Digester(s)	8.0	
Sludge Storage Lagoon(s) (List Basin(s) or Tank(s) in Step 2)	2.0	
Sludge Lagoon(s) with Aeration	3.0	
Sludge Drying Bed(s)	1.0	
Sludge Air or Gravity Thickening	3.0	
Sludge Composting (in Vessel)	12.0	
Sludge Belt(s) or Vacuum Press/Dewatering	5.0	5.0
Sludge Centrifuge(s)	5.0	
Sludge Incineration	12.0	
Sludge Chemical Addition Unit(s) (alum, polymer, alkaline stab, etc.)	2.0	
Non-Beneficial Sludge Disposal (landfill or burial)	1.0	
Beneficial Sludge Utilization (see also Step 2)	3.0	3.0
Solids Reduction Processing	4.0	
<i>Disinfection</i>		
Liquid Chlorine Disinfection	2.0	2.0
Gas Chlorine Disinfection	5.0	
Dechlorination System	4.0	
Other Disinfection System including Ultraviolet and Ozonation	5.0	
On-Site Chlorine Generation of Disinfectants	5.0	
4. Effluent Permit Requirements Points		
Minimum of Secondary Effluent Limitation for BOD and/or TSS	2.0	
Minimum of 20 mg/L BOD and/or Total Suspended Solids	3.0	3.0
Minimum of 10 mg/L and/or Total Suspended Solids	4.0	
Minimum of 5 mg/L BOD and/or Total Suspended Solids	5.0	
Effluent Limitations for Effluent Oxygen	1.0	
Other Limits (see Step 2)		
5. Variation in Raw Waste Points		
<i>Points in this category will be awarded only when conditions are extreme to the extent that operation and handling procedure changes are needed to adequately treat waste due to variation of raw waste (strength or flow).</i>		
Recurring deviations or excessive variations (100 - 200 %)	2.0	
Recurring deviations or excessive variations of more than 200 %, or conveyance and treatment of industrial wastes covered by the pretreatment program.	4.0	

Septage or truck-hauled waste	2.0	2.0
6. Sampling and Laboratory Testing Points		
Sample for BOD, Total Suspended Solids (performed by outside lab)	2.0	
BOD or Total Suspended Solids analysis (performed at treatment plant)	4.0	
Bacteriological analysis (performed by outside lab)	1.0	
Bacteriological analysis (performed at wastewater treatment plant lab)	2.0	
Nutrient, Heavy Metals, or Organic analysis (performed by outside lab, ≤ 1 per month = 1 pt)	*3.0	
Nutrient, Heavy Metals or Organic analysis (performed at WWTP)	5.0	
	Points based on 340-049-0025:	69.0
	Treatment Classification based on 340-049-0025:	Class III
STEP 2: Complexity Reflected in OAR 340-049 0020(4)		
<i>Note: Include additional points from Step 2 only if the complexity of the wastewater treatment system is not reflected in the points from Step 1. Be sure to justify any additional points from Step 2 in the permit Fact Sheet. Points shown below are given as guidance.</i>		
Fine Screen Preliminary Treatment (includes washing & compaction)	2.0	
SCADA or similar instrumentation providing data/w process op.	2.0 - 4.0	3.0
Post-aeration (includes mechanical and diffused aeration - not cascade)	1.0	
Class A recycled water (storage, distribution & monitoring)	6.0	
Class B, C, D and Non-disinfected Recycle (surface & subsurface)	3.0	
Sludge dewatering using bag or tube system	1.0	
Solids Composting (ASP or windrow)	6.0	6.0
Land application of biosolids by system operator	5.0	
Odor or corrosion control (separate or combined)	2.0	
Chemical/physical advanced waste treatment	10 - 15.0	
Reverse Osmosis, Electro-dialysis, Membrane Filtration	15.0	
Standby power	1.0 - 3.0	2.0
Digester Gas Recovery Systems	1.0 - 3.0	3.0
Other Effluent Limitations (describe below)	1.0	
Description:		
	Total	83.0
	Treatment Classification based on 340-049-0025:	Class IV

Appendix D: Antidegradation Review Sheet

Applicant: City of Klamath Falls Sewage Treatment Plant

1. What is the name of the surface water that receives the discharge? Klamath River

Briefly describe the proposed activity: Municipal wastewater treatment

This review is for a: Renewal New

[Go to Step 2.](#)

2. Are there any existing uses associated with the water body that are not included in the list of designated uses? Example: DEQ's Fish Use Designation Maps identify the waterbody as supporting salmonid migration; however ODFW has determined that it also supports salmonid spawning.

Yes. Identify additional use(s), the basis for conclusion, and the applicable criteria: salmonid spawning and migration. Go to [Step 3.](#)

No. Go to [Step 3.](#)

3. Was the analysis of the impact of the proposed activity performed relative to criteria applicable to the most sensitive beneficial use?

Yes. Go to [Step 4.](#)

No. Re-do analysis to develop permit limits using correct criteria, and modify permit as necessary. Go to [Step 4.](#)

4. Is this surface water an **Outstanding Resource Water** or **upstream** from an **Outstanding Resource Water**? Note: OAR 340-041-0004(8)(a) contains criteria for designating such waters. Example: North Fork Smith River

Yes. [Go to Step 7.](#) No. [Go to Step 5.](#)

5. Is this surface water a **High Quality Water**? A High Quality Water is one for which none of the pollutants are Water Quality Limited. To determine, go to the database at <http://www.deq.state.or.us/wq/assessment/rpt2010/search.asp> and under Listing Status, select "Water Quality Limited – All (Categories 4 and 5)".

Yes. [Go to Step 10.](#) No. [Go to Step 6.](#)

6. Is this surface water a **Water Quality Limited Water**? To determine, use the same database query as Step 5.

Yes. [Go to Step 16.](#) No. [Go to Step 4.](#) (you must answer "yes" to either question 4, 5, or 6)

Note: The surface water must fall into one of 3 categories: Outstanding Resource Water ([Step 4](#)), High Quality Water ([Step 5](#)), or Water Quality Limited Water ([Step 6](#)).

7. Will the proposed activity result in a permanent new or expanded source of pollutants directly to or affecting the **Outstanding Resource Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from antidegradation review; otherwise see “Is an Activity Likely to Lower Water Quality?” in *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications*.]
- Yes, Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23](#).
- No. Please provide basis for conclusion: [Go to Step 8](#).
8. Will the proposed activity result in a lowering of water quality in the **Outstanding Resource Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from antidegradation review; otherwise see “Is an Activity Likely to Lower Water Quality?” in *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications*.]
- Yes. Provide basis for conclusion: [Go to Step 9](#).
- No. Provide basis for conclusion: [Go to Step 20](#).
9. If the proposed activity results in a non-permanent new or expanded source of pollutants directly to or affecting an **Outstanding Resource Water**, will the lowering of water quality in the **Outstanding Resource Water** be on a short-term basis in response to an emergency or to protect human health and welfare?
- Yes. Proceed with Application Process to Interagency Coordination and Public Comment. [Go to Step 23](#).
- No. Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 20](#).
10. Will the proposed activity result in a Lowering of Water Quality in the **High Quality Water** [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from antidegradation review; otherwise see “Is an Activity Likely to Lower Water Quality?” in *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications*.]
- Yes. [Go to Step 11](#).
- No. Proceed with Permit Application. Applicant should provide basis for conclusion: [Go to Step 23](#).
11. OAR 340-041-0004(6)(c) of the *High Quality Waters Policy* requires that the Department evaluate the application to determine that all water quality standards will be met and beneficial uses protected after allowing discharge to **High Quality Waters**. Will all water quality standards be met and beneficial uses protected?
- Yes. Provide basis for conclusion: Proceed with Application Process to Interagency Coordination and Public Comment. [Go to Step 12](#).
- No. Provide basis for conclusion. Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23](#).

12. OAR 340-041-0004(6)(a) of the High Quality Waters Policy requires that the Department evaluate the application to determine if no other reasonable alternatives exist except to discharge to High Quality Waters.

At a minimum, the following list must be considered:

- Improved operation and maintenance of existing treatment system
- Recycling or reuse with no discharge
- Discharge to on-site system
- Seasonal or controlled discharges to avoid critical water quality periods
- Discharge to sanitary sewer
- Land application

Were any of the alternatives feasible?

Yes. Provide basis for conclusion (see below for information requirements):
Recommend Preliminary Decision that applicant use alternative. [Go to Step 10.](#)

No. Provide basis for conclusion (see below for information requirements): [Go to Step 13.](#)

In a separate statement to this application, please explain the **technical feasibility** of the alternative, explain the **economic feasibility** of the alternative, and provide an **estimated cost** of NPDES permit alternative for a five-year period from start-up.

13. OAR 340-041-0004(6)(b) of the *High Quality Waters Policy* requires that the Department evaluate the application to determine if there are social and economic benefits that outweigh the environmental costs of allowing discharge to High Quality Waters. Do the social and economic benefits outweigh the environmental costs of lowering the water quality?

Yes. Provide basis for conclusion (see below for information requirements): [Go to Step 14.](#)

No. Provide basis for conclusion (see below for information requirements): [Go to Step 23.](#)

The basis for conclusion should include a discussion of whether the lowering of water quality is necessary and important. “Necessary” means that the same social and economic benefits cannot be achieved with some other approach. “Important” means that the value of the social and economic benefits due to lowering water quality is greater than the environmental costs of lowering water quality.

Benefits can be created from measures such as:

- Creating or expanding employment (provide current/expected number of employees, type & relative amount of each type)
- Increasing median family income
- Increasing community tax base (provide current/expected annual sales, tax info)
- Providing necessary social services
- Enhancing environmental attributes

Environmental costs can include:

- Losing assimilative capacity otherwise used for other industries/development
- Impacting fishing, recreation, and tourism industries negatively
- Impacting health protection negatively
- Impacting societal value for environmental quality negatively

14. OAR 340-041-0004(6)(d) of the *High Quality Waters Policy* requires that DEQ prevent federal threatened and endangered aquatic species from being adversely affected. Will lowering the water quality likely result in adverse effects on federal threatened and endangered aquatic species?
- Yes, please provide basis for conclusion (see below for information requirements): [Go to Step 23.](#)
- No, please provide basis for conclusion (see below for information requirements): [Go to Step 15.](#)
15. Will lowering water quality in the **High Quality Water** be on a short-term basis in response to an emergency or to protect human health and welfare?
- Yes, [go to Step 20.](#)
- No, recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)
16. Will the proposed activity result in a lowering water quality in the **Water Quality Limited Water**? [see OAR 340-041-0004(3)-(5) for a description in rule of discharges that do not result in lowering of water quality or do not constitute a new and/or increased discharge or are otherwise exempt from anti-degradation review; otherwise see “Is an Activity Likely to Lower Water Quality?” in *Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications.*]
- Yes, [go to Step 17.](#)
- No, proceed with Permit Application. Permit writer should provide basis for determination in permit evaluation report: This is an existing discharge that will be removed during the permit cycle. [Go to Step 23.](#)
17. OAR 340-041-0004(9)(a)(A) of the *Water Quality Limited Waters Policy* requires that the Department evaluate the application to determine that all water quality standards will be met. Will all water quality standards be met?
- Yes, please provide basis for conclusion: [Go to Step 18.](#)
- No, please provide basis for conclusion. Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)
18. OAR 340-041-0004(9)(a)(C) of the *Water Quality Limited Waters Policy* requires that the Department evaluate the application to determine that all recognized beneficial uses will be met and that threatened or endangered species will not be adversely affected. Will all beneficial uses be met and will threatened or endangered species be protected from adverse effects?
- Yes, please provide basis for conclusion: [Go to Step 19.](#)
- No, please provide basis for conclusion: Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)
19. OAR 340-041-0004(9)(a)(D)(i-iv) of the *Water Quality Limited Waters Policy* requires that the Department evaluate the application for **one of the following**:
- 19A. Will the discharge be associated (directly or indirectly) with the pollution parameter(s) causing the waterbody to be designated a Water Quality Limited Water?
- Yes, please provide basis for conclusion: . Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)
- No, please provide basis for conclusion: [Go to Step 20.](#)

19B. Have TMDLs, WLAs, LAs, and reserve capacity been established, compliance plans been established, and is there sufficient reserve capacity to assimilate the increased load under the established TMDL?

Yes, please provide basis for conclusion: [Go to Step 20.](#)

No, please provide basis for conclusion: Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)

19C. Will the proposed activity meet the requirements, as specified under OAR 340-041-0004(9)(a)(D)(iii), for dissolved oxygen?

Yes, please provide basis for conclusion: The WLAs in the Upper Klamath Nutrient are designed to meet the dissolved oxygen requirements for the Klamath Falls WWTP. [Go to Step 20.](#)

No, please provide basis for conclusion: Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)

19D. Will the activity solve an existing, immediate, and critical environmental problem?

Yes, please provide basis for conclusion: [Go to Step 20.](#)

No, please provide basis for conclusion: Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)

20. Is the proposed activity consistent with local land use plans?

Yes, [go to Step 21.](#)

No, please provide basis for conclusion: Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)

21. OAR 340-041-0004(9)(c)(A) requires the Department to consider alternatives to lowering water quality. At a minimum, the following list must be considered:

- Improved operation and maintenance of existing treatment system
- Recycling or reuse with no discharge
- Discharge to on-site system
- Seasonal or controlled discharges to avoid critical water quality periods
- Discharge to sanitary sewer
- Land application

Were any of the alternatives feasible?

Yes, please provide basis for conclusion (see below for information requirements): Recommend Preliminary Decision that applicant **use alternative.** [Go to Step 16.](#)

No, please provide basis for conclusion (see below for information requirements): Go to Step 22.

In a separate statement to this application, please explain the **technical feasibility** of the alternative, explain the **economic feasibility** of the alternative, and provide an **estimated cost** of NPDES permit alternative for a five-year period from start-up.

22. OAR 340-041-0004(9)(c)(B) of the *Water Quality Limited Waters Policy* requires the Department to consider the economic effects of the proposed activity, which in this context consists of determining if the social and economic

benefits of the activity outweigh the environmental costs of allowing a lowering of water quality.
Do the social and economic benefits outweigh the environmental costs of lowering the water quality?

- Yes. Provide basis for conclusion: Proceed with Application Process to Interagency Coordination and Public Comment. [Go to Step 23.](#)
- No. Provide basis for conclusion: Recommend Preliminary Decision to **deny** proposed activity (subject to Interagency Coordination and Public Comment). [Go to Step 23.](#)

The basis for conclusion should include a discussion of whether the lowering of water quality is necessary and important. “Necessary” means that the same social and economic benefits cannot be achieved with some other approach. “Important” means that the value of the social and economic benefits due to lowering water quality is greater than the environmental costs of lowering water quality.

Benefits can be created from measures such as:

- Creating or expanding employment (provide current/expected number of employees, type & relative amount of each type)
- Increasing median family income
- Increasing community tax base (provide current/expected annual sales, tax info)
- Providing necessary social services
- Enhancing environmental attributes

Environmental Costs can include:

- Losing assimilative capacity otherwise used for other industries/development
- Impacting fishing, recreation, and tourism industries negatively
- Impacting health protection negatively
- Impacting societal value for environmental quality negatively

23. On the basis of the Antidegradation Review, the following is recommended:

- Proceed with Application to Interagency Coordination and Public Comment Phase.
- Deny Application; return to applicant and provide public notice.
- ACTION APPROVED

Review prepared by: DEQ, [go to **DEQ info.**](#) Other, [go to **Other info.**](#)

DEQ info

Name: David Feldman
Phone: 503-229-6850
Date Prepared: 11/18/2019



State of Oregon Department of Environmental Quality

Response to Comments for the Draft City of Klamath Falls Wastewater Treatment Facility Permit Number 100701

Contact: David Feldman

700 NE Multnomah Avenue, Suite 600, Portland, OR 97232-4100

Overview

DEQ accepted public comment on the proposed permit number 100701 from August 26, 2020 through September 30, 2020. The current version of this permit originally expired on August 31, 1995, and was administratively continued. This document provides a summary of each comment and a response from DEQ.

Comments (Submitted by the City of Klamath Falls):

1. In the permit, mercury limits appear to have been translated from ug/L to mg/L incorrectly. There appears to be a referencing error in the RPA's Aquatic Life calculations in tab "6. Aquatic Toxicity Limit" in columns K & L (columns K & L should return N/A for mercury), and Section 7.2.2.8 of the fact sheet notes a different set of values (potentially copied from the ammonia table). These various references to mercury limits are inconsistent. Revise the compliance limit formulas (columns K & L) on tab "6. Aquatic Toxicity Limit" of the RPA spreadsheet to correctly reference the Quantitation Limits rather than the minimum sample frequency from tab "1. Monitoring Req'd" when comparing Effluent Limits to QLs to determine applicability of Compliance Limit values higher than the Effluent Limits. With those corrections the average monthly and daily maximum limits should be 0.01 and 0.02 ug/L respectively. The City also requests that DEQ corrects the limits in the Permit's Table A1 and noted twice (table and following paragraph) in Section 7.2.2.8 of the fact sheet to match. The numbers in Table A1 are currently correct but appear to have the wrong units.

DEQ Response: DEQ updated the units in Table A1 in the permit to show that the final mercury limits are: 0.02 µg/L (maximum daily) and 0.001 µg/L (average monthly). Section 7.2.2.8 of the fact sheet was corrected to match the limits in the proposed permit.

2. In the fact sheet, Table 21 notes for Total Mercury that enhanced monitoring is needed to determine if the levels meet Tier 2 criteria for permit limits. However, Total Mercury limits are included in Table A1 of the public notice permit draft based on the aquatic toxicity RPA. Address the discrepancy between the fact sheet and permit.

DEQ Response: The term "enhanced monitoring" refers to the amount of sampling required in the draft permit. The parameters in Table 21 are collected a minimum of 4 times during a permit cycle. DEQ determined that more data were needed for these parameters for 2 reasons: First, because the data were collected using parameters that did not match those included with numeric water quality criteria (e.g., dissolved silver vs. total recoverable silver), and second, there was an initial determination of a reasonable potential that some of the parameters exceeded their water quality criterion under the Tier 1 of the DEQ toxics RPA Internal Management Directive. Therefore, DEQ is adding more sampling in the proposed permit to determine if the amounts of those parameters exceed the water quality criteria in order to meet the Tier 2 requirements under the RPA IMD. No changes were made to the permit or fact sheet based upon this comment.

3. The City still has serious concerns with the use and implementation of daily maximum ammonia limits. While we understand that ammonia limits are necessary to be protective of river water quality, by requiring daily maximum ammonia limits, it will be very difficult and extremely expensive to ensure the plant can meet a daily maximum limit when plant flows are high. The currently designed upgrades would be prepared to meet all ammonia requirements other than a daily maximum limit or if an unusually high influent ammonia load

occurs. High flow events at the plant are typically short in duration but happen during the coldest times of year when removing ammonia is the most challenging. In order to retain sufficient biomass in the secondary treatment system necessary to treat ammonia to the daily maximum limits during a peak flow event, the City will need to build one or more additional secondary clarifiers. These clarifiers would likely cost 10 to 20 million dollars and be expected to mostly sit empty, except for a few days every few years. Additionally, information on influent ammonia loads is somewhat limited, and while the secondary process upgrade, as currently designed, should meet the daily maximum limit the vast majority of the time, in order to ensure that there is enough treatment capacity to handle a large daily fluctuation in influent ammonia, two or more additional aeration basins would be needed. And similar to the clarifiers, these basins would only be needed a few days every few years and likely cost 10 to 20 million dollars. At the end of the facility plan requirement description in Table C2 add the following language: "At the permittee's discretion, the Facility Plan may include an evaluation of outfall modifications and an associated mixing zone study. If the permittee decides to modify the outfall as indicated in the Facility Plan, then the permit limit calculations for ammonia shall be reevaluated and the permit limits modified as appropriate. Contingent on implementation of outfall modifications, the permittee shall notify DEQ and request applicable permit modifications, as stated above, which may also include changes to the schedule of compliance."

DEQ Response: Daily maximum ammonia limits are needed to ensure compliance with the acute criterion per EPA's guidance and effluent limit derivation methodology. The City may include an option to modify the outfall as part of the facility plan without changing the language in table C2. If the City chooses this option, they City may need to request DEQ recalculate the ammonia limits via a permit modification request. The ammonia limits were included in the draft permit based upon the ammonia data collected from the effluent. The limits were included because the levels of ammonia were found to exceed the water quality criterion for ammonia in the Klamath River. The permit limit and compliance schedule requirements for meeting the final limits were developed in consultation with the city. The requested note is not necessary because the city will be able to achieve the goals listed in the note via consultation with DEQ during the established compliance period in Table C2. There were no changes to the permit or fact sheet based upon this comment.

4. In Table A1 of the permit, a compliance schedule for total nitrogen is not provided for the Oct 16-May 14 time period, however, as noted in Table 19 of the fact sheet (p. 27), no data has been collected to make a determination that TMDL limits can immediately be met. Following the table, it states "the results demonstrate that WWTP facility can immediately meet the TMDL limitations for BOD₅ and Total nitrogen," though Table 19 notes no data has been collected to make a determination that TMDL limits can immediately be met. While historical data during the summer shows that the plant should currently be able to meet the summer seasonal limit, there is no indication that total nitrogen limits can be met in the winter when nutrient loads are expected to be greater. Total nitrogen be given a compliance schedule during the Oct 16-May 14 winter season (similar to the duration granted for total phosphorus) with time provided to monitor and assess whether current limits can be met or whether secondary treatment upgrades will need to address a total nitrogen removal deficiency prior to being able to comply with these new TMDL-based limits.

DEQ Response: The timeframes and limits for BOD₅ and total nitrogen were set in the 2019 Upper Klamath and Lost Subbasins Nutrient TMDL. Since there were no BOD₅ nor total nitrogen data collected within the winter/spring months (i.e., October 16 – May 14), therefore no determination could be made to conclude if the facility can meet the associated TMDL WLAs. DEQ cannot allow a compliance schedule for monitoring purposes. The enhanced monitoring in the proposed permit will allow an analysis of these parameters in the future. There were no changes to the permit or fact sheet based upon this comment.

5. As we have noted in conversations with DEQ staff, and documented in our formal responses to the Upper Klamath and Lost Subbasins Temperature TMDL, we have serious concerns about the use of a thermal waste load allocation during periods of near-freezing river temperatures. The California requirement of no measurable anthropogenic warming year-round at the state line requires the City to find a way to cool their effluent to near-freezing temperatures during the coldest days of the year, to ensure near-freezing river temperatures more than 40 miles downstream are not affected. Initial high-level estimates for temperature reduction solutions range between 10 and 30 million dollars to chill plant effluent to near-freezing temperatures in the winter. As noted in our Temperature TMDL Request for Reconsideration letter (from November 2019), the California natural conditions criteria driving the year-round allocations are overprotective (and potentially harmful) to salmonid species (the most sensitive beneficial use for the Klamath River) during the coldest months of the year as California's North Coast Regional Water Quality Board's TMDL depicts in Appendix 4. Potential removal of a number of Klamath River dams is also expected to affect river temperature and what the allowable point source thermal allocations would then be, however the timing of these dam removals is still uncertain. At the end of the assessment report requirement description in Table C3 of the permit, add the following language: "If trading or construction options are not

identified as feasible by the permittee, then the permittee shall provide for DEQ's approval an alternative regulatory approach that complies with DEQ regulations. If the alternative approach requires permit modification prior to the end date of the compliance schedule, the permittee shall notify DEQ and request applicable permit modifications to implement an approved alternative regulatory approach, which may also include changes to the compliance schedule."

DEQ Response: The TMDL Wasteload allocations were included in this permit, and DEQ consulted with the city to establish the timeframes for compliance with these final requirements. The city is encouraged to request a permit modification when new information is available that trading and/or construction options are not going to achieve the TMDL-based limits. Based upon this comment, no changes were made to the permit or fact sheet.

6. The City has already provided 10 months of recent copper BLM and aluminum sampling data from December 2018 through May 2019 and July 2019 through October 2019, some of which was coordinated with South Suburban Sanitary District. Note c in Table B6 appears to have given the City credit for the recent 10 months of data collection as it states samples must be collected for a period of 14 months beginning in September 2023. However, Table B1 notes that copper BLM and aluminum sampling should occur monthly for the first 24 months after the permit's effective date. And the first paragraph of Section 5 of Schedule B notes a 24-month sampling period starting in the third year of the permit cycle. Reduce the copper BLM and aluminum sampling duration from 24 months to 14 months in Table B1 and in Section 5 of Schedule B to match the duration noted in note c of Table B6, giving the City credit for having already started this sampling program in a similar fashion to the credit given to South Suburban in their recent permit renewal. The City also requests the sampling frequency noted in Table B1 be revised for Copper and Aluminum to start in September 2023, matching the timeline noted in Section 5 of Schedule B.

DEQ Response: Based upon this comment, the first paragraph now states that 14 months of copper must be collected for this requirement. Table B1 was updated to reflect that the monthly Copper and Aluminum sampling requirement will occur for a total of 14 months beginning September 2023. The first paragraph in Section 5 was also updated to reflect that the sampling will occur monthly for 14 months.

7. Report statistics should be reviewed for clarity and consistency with frequency and sample type. For example: 1. In Table B2, Flow requires a daily maximum report statistic. If each day's total flow is being requested, the statistic should be revised to say daily value as it is a summation of the water volume passing through the plant over the day and does not have multiple values that could potentially be reported for a given day. If daily maximum is intended to mean the single highest value over the month's reporting period, monthly maximum should be used for clarity or daily maximum should be clearly defined as the single maximum value over the reporting period and should be used consistently throughout the document. In Table B3, daily maximum is used with parameters that have daily limits where daily values would need to be reported and so we assume the first definition is what was intended. 2. Similarly, in Table B3, Flow, BOD₅, TSS, and Excess Thermal Load should all use daily values in place of daily maximum as there is only one potential value reported due to the composite nature of the data collection. All report statistics be reviewed for consistency with frequency and sample type.

DEQ Response: The summary statistics in Schedule B of the permit are included for the purpose of monthly reporting to NetDMR. Please keep in mind that the city is responsible for submitting all of the daily values for ambient, influent and effluent monitoring via spreadsheet as an attachment to the monthly NetDMR submission, and entering the monthly summary statistics into NetDMR as directed in the permit. DEQ uses these two data formats in concert with each other to assess compliance with permit requirements. To clarify individual statistics addressed in the comment, the daily maximum summary statistic for influent and effluent flow is the highest of all total daily flow values for the month. For BOD₅ and TSS, daily maximum is the highest sample result recorded during the month. For excess thermal load, daily maximum is the highest daily calculated value for the month. There were no changes to the permit or fact sheet based on this comment.

8. The location noted for influent monitoring, "before manual grit screens" is inaccurate. Currently, influent monitoring is located at the manual bar screens, however the plant headworks is being replaced, with construction underway. When the upgrade project is complete, the new influent monitoring location will be immediately downstream of the multi-rake bar screens. Both the current and future locations be noted in the permit or use language inclusive of both current and future monitoring locations, (e.g., "at the plant headworks upstream of the introduction of any plant recycle streams").

DEQ Response: Based on this comment, the description of the monitoring location will now state: "at the plant headworks upstream of the introduction of any plant recycle streams"

9. In Table B3, BOD₅ has its minimum sampling frequency set at daily, unlike TSS, which has a minimum monitoring frequency of 2/week. BOD₅ and TSS have the same permitting requirements, other than the WQBEL semiannual limits for BOD₅, which also do not necessitate daily monitoring. Historically, City data has shown BOD₅ to have less variability than TSS. In addition, the existing permit set the minimum BOD₅ monitoring frequency at 2/week and the plant has had no historical problems demonstrating and achieving compliance. The minimum sampling frequency for BOD₅ (for both concentration and mass) in Table B3 be revised to 2/week to match the existing permit and the sampling frequency of TSS in this renewed permit.

DEQ Response: Based upon this comment, the sampling for BOD₅ is now set at 2/week in Table B3 of the permit.

10. In Table B3, Total Recoverable Mercury has monthly maximum as the reporting statistic, while Table A1 notes daily maximum and average monthly limits. Monthly average and daily maximum reporting statistics replace the monthly maximum entry in the last column to reflect the daily maximum limit in Table A1.

DEQ Response: DEQ set the monthly monitoring requirement for total recoverable mercury as the data point that will be used to determine compliance for both the daily maximum and monthly average permit limits. Based on this comment, the summary statistics for total recoverable mercury are updated to Daily maximum and monthly average in Table B3 of the permit.

11. Table B3 note d describes the formula to calculate effluent flow from flowmeters located on key streams here flow can be measured. In the formula, "reclaimed effluent flow" is one of the variables used in the calculation. The measured parameter should not have effluent in the name (i.e., reclaimed flow) as the flow meter measures a reclaimed flow comprised of both reclaimed effluent and makeup water (i.e., potable water) when recycled water flows do not provide sufficient water supply for the end user (i.e., cogeneration facility). The formula variable "reclaimed effluent flow" be changed to "reclaimed water flow" because "effluent" is only one of two components being measured by the reclaimed water flowmeter.

DEQ Response: While this formula still measures the effluent flow discharged from the facility from all of the wastestreams, based on this comment, "reclaimed effluent flow" be changed to "reclaimed water flow."

12. Table 21 of the fact sheet notes that enhanced monitoring of nitrate will be required, however the permit's monitoring schedule Table B3, notes "Total Nitrogen as Nitrate." Total Nitrogen is not a measure of nitrate in the system and should say "Nitrate as Nitrogen." The parameter "Total Nitrogen as Nitrate" be revised to "Nitrate (as N)" in Table B3.

DEQ Response: Based upon this comment, the parameter "Total Nitrogen as Nitrate" was revised to "Nitrate (as N)" in Table B3.

13. The location noted for effluent sampling is correctly described in Section 3.b of Schedule B, but not in the first paragraph of Section 6 in Schedule B. The effluent monitoring location described in Section 6 of Schedule B be revised to accurately describe the current effluent monitoring location, as correctly noted in Section 3.b of Schedule B.

DEQ Response: Based upon this comment, the description of the monitoring location now states: "Outfall 001 downstream of the confluence of the chlorine contact basin effluent and blowdown at the manhole prior to discharging to the Klamath River."

14. Total phosphorus and total nitrogen are listed twice in Table B3, once for mass and once for concentration. Both have reporting statistics of a semiannual average. While concentration monitoring is required to calculate mass loads, concentrations do not have permit limits associated with them. Concentration values seem to more appropriately fall under the ancillary data reporting required in note a of Table B3 to accompany discharge monitoring reports. In Table B3, for rows noting sampling for total phosphorus and total nitrogen concentrations, the report statistic cell state "no statistic to be reported, parameter monitoring required for mass load reporting."

DEQ Response: While there are no limits associated with the concentrations for total phosphorus and total nitrogen, those values are necessary information for determining compliance with the mass load values. Also, the city is required to submit all effluent data collected as per 40 CFR part 122.41 and applied in

Schedule F, sections C1 and C5 in order to make certain that the data are representative of the effluent. There were no changes to the permit based on this comment.

15. Nearby Ambient Monitoring data is recorded for temperature and flow at USGS station 11507500. Ambient monitoring for pH occurs at USGS station 11507501. Note c of Table B4 allows pH data from USGS station 11507500 to be used in lieu of grab samples. Allow use of USGS station 11507500 data for flow and temperature in lieu of grab samples and City supplied flow measurements, and USGS station 11507501 data for pH (instead of station 11507500 because station 11507500 does not report pH).

DEQ Response: Based upon this comment, note c in Table B4 now states: "Flow, pH, and temperature data collected from USGS Link River monitoring station (USGS 11507500) may be used in lieu of a grab sample. Data may be collected from a different monitoring station (USGS or other) with prior written approval from DEQ."

16. In note c of Table B5 and note d of Table B7, cyanide composite sampling notes preserving the sample with sodium hydroxide to ensure sample integrity. Some studies have found that the sample preservation method of chlorinated effluent (i.e., pH adjustments with sodium hydroxide) can lead to cyanide formation during sample storage prior to testing and result in false positives and measured concentrations that are higher than are actually present in the effluent at the time of sampling (Khoury 2008; Weinberg 2005). City and DEQ discuss appropriate sample preservation and testing procedures prior to the permit execution and start of monitoring to ensure that the City does not carry out cyanide testing potentially resulting in artificially increased cyanide concentrations.

DEQ Response: All of the sampling and preservation requirements included in the permit are approved by EPA and included under 40 CFR part 136. These requirements apply to all parameters. If the proposed sampling requirements are included as an approved method under 40 CFR part 136, they are allowed for purposes of the permit with consultation with DEQ. Otherwise, the permittee will follow the requirements outlined in schedule B of the permit. There are no changes to the permit based on this comment.

17. In the fact sheet, Table 21 notes Free Cyanide as a parameter requiring enhanced monitoring. Both Total and Free Cyanide are included in Table B7 of the permit for Tier 1 monitoring, however note d of Table B7 states "if the result for Total Cyanide exceeds 5.0 ug/L the permittee must monitor for Free Cyanide as part of Tier 2 monitoring." Clarify whether Free Cyanide is required in addition to Total Cyanide for Tier 1 monitoring or if Free Cyanide is only required for Tier 2 monitoring and is conditional on Total Cyanide concentrations during Tier 1 exceeding 5.0 ug/L. If Free Cyanide is conditionally required and only during Tier 2, the City requests that Free Cyanide be removed from Table B7, which covers Tier 1 requirements, and that Table 21's conclusions for Free Cyanide be revised appropriately.

DEQ Response: Based upon this comment, the cyanide monitoring requirement was removed from Table B7. All cyanide sampling conducted for compliance with the permit are included in Table B5 of the permit.

18. The existing chlorination and dechlorination systems at the Spring Street STP cannot reliably meet the proposed residual chlorine limits. In order to reliably meet the proposed limits, a more robust control system will need to be installed to effectively control the dose of sodium bisulfite based on residual chlorine concentration and flow. Additionally, the compliance point for measuring the residual in the effluent must be far enough downstream from the sodium bisulfite addition point to allow for a complete reaction to take place. To design and construct the improvements necessary to meet these limits, the following will need to be determined:
 - The reaction time needed for dechlorination under the range of operating conditions.
 - The optimal location for dosing sodium bisulfite. The location must be able to dechlorinate both blowdown water and CCB effluent and be far enough upstream of the final sampling location. This may require redesign of the effluent piping system and installation of a new manhole.
 - The potential influence of river water in the effluent piping near the effluent monitoring location. This may also require redesign of the effluent piping system. The following tasks and timelines are needed to meet the chlorine residual limits:
 - 6 months to develop and implement chlorination and dechlorination testing
 - 2 months to complete predesign of improvements
 - 6 months to secure financing for improvements
 - 6 months for final design of improvements
 - Up to 18 months for construction of improvements (duration depends on equipment and material lead times and time of year when construction can take place) 12 months for system optimization prior to final compliance

DEQ Response: Based on this comment, and assuming that the permit becomes effective December 2020 the following updates will be made to Table C1:

Complete By	Requirement
May 31, 2021	Submit a preliminary plan report for coming into compliance with the Total Residual Chlorine final effluent limits to DEQ for approval.
December 31, 2021	Secure financing for improvements to comply with the Total Residual Chlorine final effluent limits.
June 30, 2022	Submit engineering plans and specifications for improvements to comply with the Total Residual Chlorine final effluent limits.
December 31, 2023	Complete improvements and meet the Total Residual Chlorine final effluent limits included in Schedule A.

19. The City's outfall to the river does not include any diffusers. Remove "diffuser" from the description of the outfall.

DEQ Response: Given that the city may add diffusers to upgrades, the outfall inspection language will be updated to the following statement:

"During the year 2023 (3rd year after permit issuance), the permittee must inspect Outfall 001 including the submerged portion of the current outfall line to document its integrity and to determine whether it is functioning as designed. The inspection must determine whether any ports are intact, clear and fully functional. The permittee must submit a written report to DEQ regarding the results of the outfall inspection by the date in Table B1. The report must include a description of the outfall as originally constructed, the condition of the current outfall and identify any repairs needed to return the outfall to satisfactory condition."

20. The third paragraph of the fact sheet notes the various process components of the existing facility. Belt filter presses are the main method for solids dewatering at the plant currently, with drying beds used to a lesser extent. Belt filter presses be included in the list of process components in paragraph 3 of the Wastewater Facilities Description as it is a key component of solids handling.

DEQ Response: Based upon this comment, the first sentence of the third paragraph in Section 4.1 of the fact sheet now states: "The existing facility consists of an influent pump station, manual bar screen, grit removal channel, fine screening, primary sedimentation, aeration basin, two secondary clarifiers, disinfection system, a dissolved air flotation (DAFT) unit, two anaerobic digesters, sludge thickening, belt filter presses, drying beds and composting."

21. Section 6.4 of the fact sheet states "the facility does not employ trading for any parameter." Trading is noted as an option to further evaluate during compliance schedules per Table C3. Inclusion of water quality trading as an option, as presented in DEQ's WQ Trading Internal Management Directive, with language that generally allows for potential future trading options, even though specific options have not yet been evaluated. This provides a foundation for future discussions regarding trading for some of the parameters that have been granted a compliance schedule (e.g., temperature, nutrients).

DEQ Response: Based upon this comment, Section 6.4 of the fact sheet now contains the following language: "This facility currently does not employ trading for any parameter. The city is attempting to use multiple options to comply with the requirements in the proposed permit, including temperature trading. If trading is found to be the most effective manner for the facility to comply with any of the final permit limits in the proposed permit, the city will present them to DEQ for review and approval prior to implementing any trading agreements. If the city decides to use trading as a method for complying with the thermal load limits, the city would need to submit a request to DEQ."

22. In Section 7.2.2.5 of the fact sheet, a table notes the current facility's performance in relation to residual chlorine concentration. The table's average value is much higher than the City's average calculated and

recorded in discharge monitoring reports over the last five years. There also have been sampling constraints associated with the dechlorination process and outfall configuration that have limited the sampling to a location prior to the completion of dechlorination. Modify the average monthly value reported in the table in Section 7.2.2.5 of the fact sheet to correctly describe the historical chlorine concentrations found in monitoring data.

DEQ Response: The values presented in that table were obtained from the monthly DMRs from the City from 2015 - 2020. The maximum total residual chlorine value 4.7 was included in the March 2015 DMR. The intent of that table is to demonstrate that the facility does not treat the chlorine effectively in the effluent, and that a compliance schedule is necessary so that the city can upgrade the facility. Otherwise, the chlorine limits would apply on the effective date of the permit without any compliance period. There are no changes to the fact sheet or permit based on this comment.

23. In Section 7.2.2.5 and in Appendix D of the fact sheet, the document references SSSD rather than the City of Klamath Falls Sewage Treatment Plant. Revise reference to refer to the City of Klamath Falls Sewage Treatment Plant.

DEQ Response: Based upon this comment, the last two sentences of the final paragraph in Section 7.2.2.5 now state: "The TMDL assigned wasteload allocations (WLAs) to the WWTP for total phosphorus, total nitrogen and BOD₅. These WLAs, which vary seasonally, are presented in the tables below."

24. Under Table B14's description, the second sentence should reference Table B14 rather than B15. In Section 7.4 of the fact sheet, change the Table B14 description to reference Table B14 rather than Table B15.

DEQ Response: Based on this comment, the second sentence of the description for Table B14 now states: "Table B14 lists the monitoring requirements consistent with OAR 340-055-0012."



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM WASTE DISCHARGE PERMIT

Oregon Department of Environmental Quality
Eastern Region – Portland Office
800 SE Emigrant, #330
Pendleton, OR 97801
Telephone: 541-276-4063

Issued pursuant to ORS 468B.050 and the federal Clean Water Act

ISSUED TO:

City of Klamath Falls
Wastewater Treatment
Plant and Reclamation
Facility
1200 South Spring Street
Klamath Falls, OR 97601

SOURCES COVERED BY THIS PERMIT:

Type of Waste	Outfall Number	Outfall Location
Treated Domestic Wastewater	001	Klamath River River Mile - 253 42.215993, -121.776822
Biosolids	N/A	Specified in Biosolids Management/Land Application Plan

FACILITY LOCATION:

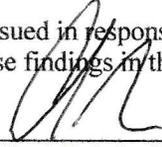
City of Klamath Falls Wastewater Treatment
Plant and Reclamation Facility
1200 South Spring Street
County: Klamath

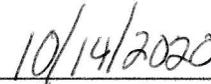
EPA Permit Type: Major

RECEIVING STREAM INFORMATION:

WRD Basin: Klamath
USGS Sub-Basin: Lost
Receiving Stream name: Klamath River
NHD Reach Code: 18010204011523 – 63.73%
LLID: 1221913420005 – 253

Issued in response to Application No. 974888 received March 7, 1995. This permit is issued based on the land use findings in the permit record.


Chad Gubala, Ph.D, Permit Manager,
Eastern Region


Issuance Date

December 1, 2020
Effective Date

PERMITTED ACTIVITIES

Until this permit expires or is modified or revoked, the permittee is authorized to: 1) operate a wastewater collection, treatment, control and disposal system; and 2) discharge treated wastewater to waters of the state only from the authorized discharge point or points in Schedule A in conformance with the requirements, limits, and conditions set forth in this permit.

Unless specifically authorized by this permit, by another NPDES or Water Pollution Control Facility permit, or by Oregon statute or administrative rule, any other direct or indirect discharge of pollutants to waters of the state is prohibited.

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SCHEDULE A: WASTE DISCHARGE LIMITS

1. Outfall 001 – Permit Limits

During the term of this permit, the permittee must comply with the limits in the following table:

Table A1: Permit Limits

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	Semi-annual Average
BOD ₅ (May 1–October 31)	mg/L	20	30	N/A	N/A
	lbs/day	580	870	1,160	N/A
	% removal	85	N/A	N/A	N/A
TSS (May 1–October 31)	mg/L	20	30	N/A	N/A
	lbs/day	580	870	1,160	N/A
	% removal	85	N/A	N/A	N/A
BOD ₅ (November 1–April 30)	mg/L	30	45	N/A	N/A
	lbs/day	1500	2,250	3,000	N/A
	%	85	N/A	N/A	N/A
TSS (November 1–April 30)	mg/L	30	45	N/A	N/A
	lbs/day	1500	2,250	3,000	N/A
	%	85	N/A	N/A	N/A
BOD ₅ (May 15–October 15)	lbs/day	N/A	N/A	N/A	439
BOD ₅ (October 16–May 14)	lbs/day	N/A	N/A	N/A	549
Nitrogen as N, Total (May 15–October 15)	lbs/day	N/A	N/A	N/A	556
Nitrogen as N, Total (October 16–May 14)	lbs/day	N/A	N/A	N/A	671
pH See note b	SU	Instantaneous limit between a daily minimum of 6.5 and a daily maximum of 9.0			
<i>E. coli</i> See note c	#/100 mL	Must not exceed a monthly geometric mean of 126, no single sample may exceed 406			
Mercury, Total (final, see note d)	μL	0.001	N/A	0.02	N/A
Total Ammonia as N (May 15 – Oct 15, final, see note d)	mg/L	2.2	N/A	5.5	N/A
Total Ammonia as N (Oct 16 – May 14, final, see note d)	mg/L	2.4	N/A	5.7	N/A
Chlorine, Total Residual (final, see notes a and d)	mg/L	0.0068	N/A	0.019	N/A

Parameter	Units	Average Monthly	Average Weekly	Daily Maximum	Semi-annual Average
Temperature (Oct 1 – May 31)	degrees Celsius	N/A	N/A	32	N/A
Temperature (June 1 – Sept 30; see note e)	degrees Celsius	N/A	N/A	28	N/A
Excess Thermal Load (final, see note d.)	million kcal/day	Calculated as a Daily Maximum (see note f.)			
Phosphorus as P, Total (final, see note d; May 15–October 15)	lbs/day	N/A	N/A	N/A	8.6
Phosphorus as P, Total (final, see note d; October 16 – May 14)	lbs/day	N/A	N/A	N/A	54

Notes:

- DEQ has established a minimum Quantitation Limit of 0.05 mg/L for Total Residual Chlorine. In cases where the average monthly or maximum daily limit for Total Residual Chlorine is lower than the Quantitation Limit, DEQ will use the reported Quantitation Limit as the compliance evaluation level.
- May not be outside the range of 6.0 to 9.0 for more than a total of 7 hours and 26 minutes in any calendar month, and no individual excursion from this range may exceed 60 minutes. pH values may not fall outside the range of 6.5-9.0.
- The permittee may take at least 5 consecutive re-samples at 4 hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the geometric mean of the 5 re-samples is less than or equal to 126 *E. coli* organisms/100 mL to demonstrate compliance with the limit.
- The final limits for total residual chlorine, total mercury, ammonia, phosphorus, and ETL are effective upon completion of the compliance schedules in Schedule C.
- Maximum effluent temperature applies when daily river temperatures are greater than 28°C.
- Use this equation to determine the daily ETL limit:

$$ETL = \Delta T \times [(Q_E \times 1.5472) + Q_R] \times 2.4467$$

Where,

ETL = Excess thermal load limit (million kilocalories/day).

Q_E = The daily mean effluent flow (MGD).

Q_R = The daily mean river flow rate, upstream (cfs). When river flow is ≤ 104 cfs, $Q_R = 104$ cfs. When river flow > 104 cfs, Q_R is equal to the mean daily river flow, upstream.

ΔT = The maximum allowable temperature increase (°C) after mixing with 100% of river flow: 0.03 °C for the October 1 – May 31 period and 0.05 °C for the June 1 – September 30 period.

2. Regulatory Mixing Zone

Pursuant to OAR 340-041-0053, the permittee is granted a regulatory mixing zone as described below:

The allowable mixing zone must not extend beyond that portion of the Klamath River within a radius of 100 feet from the point of discharge.

3. Use of Recycled Water

The permittee is authorized to distribute recycled water if it is:

- a. Treated and used according to the criteria listed in Table A2.
- b. Managed in accordance with its DEQ-approved Recycled Water Use Plan unless exempt as provided in Schedule D.
- c. Used in a manner and applied at a rate that does not adversely affect groundwater quality.
- d. Applied at a rate and in accordance with site management practices that ensure continued agricultural, horticultural, or silvicultural production and does not reduce the productivity of the site.
- e. Irrigated using sound irrigation practices to prevent:
 - i. Offsite surface runoff or subsurface drainage through drainage tile;
 - ii. Creation of odors, fly and mosquito breeding, or other nuisance conditions; and
 - iii. Overloading of land with nutrients, organics, or other pollutants.

Table A2: Recycled Water Limits

Class	Level of Treatment (after disinfection unless otherwise specified)	Beneficial Uses
C.	Class C recycled water must be oxidized and disinfected. Total coliform may not exceed: <ul style="list-style-type: none"> • A median of 23 total coliform organisms per 100 mL, based on results of the last 7 days that analyses have been completed. 240 total coliform organisms per 100 mL in any two consecutive samples.	Class C recycled water may be used for: <ul style="list-style-type: none"> • Class D and nondisinfected uses. • Irrigation of processed food crops; irrigation of orchards or vineyards if an irrigation method is used to apply recycled water directly to the soil. • Landscape irrigation of golf courses, cemeteries, highway medians, or industrial or business campuses. • Industrial, commercial, or construction uses limited to: industrial cooling, rock crushing, aggregate washing, mixing concrete, dust control, nonstructural firefighting using aircraft, street sweeping, or sanitary sewer flushing.

4. Biosolids

The permittee may land apply biosolids or provide biosolids for sale or distribution, subject to the following conditions:

- a. The permittee must manage biosolids in accordance with its DEQ-approved Biosolids Management Plan and Land Application Plan.
- b. The permittee must apply biosolids at or below the agronomic rates approved by DEQ in order to minimize potential groundwater degradation.
- c. The permittee must obtain written site authorization from DEQ for each land application site prior to land application (see Schedule D) and follow the site-specific management conditions in the DEQ-issued site authorization letter.
- d. Prior to application, the permittee must ensure that biosolids meet one of the pathogen reduction standards under 40 CFR 503.32 and one of the vector attraction reduction standards under 40 CFR 503.33.
- e. The permittee must not apply biosolids containing pollutants in excess of the ceiling concentrations shown in the table below. The permittee may apply biosolids containing pollutants in excess of the pollutant concentrations, but below the ceiling concentrations, however, the total quantity of biosolids applied cannot exceed the cumulative pollutant loading rates in the table below.

Table A3: Biosolids Limits

Pollutant See note a.	Ceiling concentrations (mg/kg)	Pollutant concentrations (mg/kg)	Cumulative pollutant loading rates (kg/ha)
Arsenic	75	41	41
Cadmium	85	39	39
Copper	4300	1500	1500
Lead	840	300	300
Mercury	57	17	17
Molybdenum	75	N/A	N/A
Nickel	420	420	420
Selenium	100	100	100
Zinc	7500	2800	2800

Note:

- a. Biosolids pollutant limits are described in 40 CFR 503.13, which uses the terms *ceiling concentrations*, *pollutant concentrations*, and *cumulative pollutant loading rates*.

5. Mercury Minimization Plan

By the date listed in Table B1, the permittee must submit an MMP (Mercury Minimization Plan) to DEQ for review and approval. At a minimum, the MMP must include the following:

- a. Identification and evaluation of current and potential mercury (both methylmercury and total mercury) sources
- b. Identification and evaluation of conditions (e.g., anaerobic conditions) that might contribute to the methylation of elemental mercury in the collection and treatment systems
- c. Identification of industrial, commercial and residential sources of mercury
- d. Identification of potential methods for reducing or eliminating mercury. These may include but are not limited to:
 - i. BMP requirements or limits for industrial and commercial sources of mercury to a collection system
 - ii. Material substitution
 - iii. Material recovery
 - iv. Spill control and collection
 - v. Waste recycling
 - vi. Process modifications
 - vii. Laboratory housekeeping, use and disposal practices and
 - viii. Public education.
 - ix. A monitoring plan to confirm current or potential sources of mercury (Monitoring Plan)
- e. Ongoing monitoring of effluent to enable evaluation of the effectiveness and implementation of the MMP.

Within 60 days of receiving DEQ comments on the MMP, the permittee must revise the plan to be consistent with DEQ's comments and resubmit for DEQ approval. Before approving the plan, DEQ will put the plan out on public notice. The permittee must use a DEQ-approved template unless authorized in writing by DEQ to use an alternative. The permittee must begin implementation of the approved plan within 30 days of DEQ's approval. If DEQ determines that the MMP is not effective at reducing sources of mercury from entering its collection system, or if a water column translation of the fish tissue criterion is developed, DEQ may reopen the permit to modify the permit conditions. These modifications may include, but are not limited to, the addition of a numeric effluent limit.

SCHEDULE B: MINIMUM MONITORING AND REPORTING REQUIREMENTS

1. Reporting Requirements

The permittee must submit to DEQ monitoring results and reports as listed below.

Table B1: Reporting Requirements and Due Dates

Reporting Requirement	Frequency	Due Date (See Note a.)	Report Form (See Note b.)	Submit To:
Tables B2 – B4 Influent Monitoring, Effluent Monitoring, and Receiving Stream Monitoring	Monthly	By the 15th of the following month	Specified in Schedule B. Section 2 of this permit	Electronic reporting as directed by DEQ
Pretreatment Report	Annually	March 15	1 electronic copy and 1 hard copy in a DEQ-approved format	<ul style="list-style-type: none"> • 1 Hard copy to DEQ Pretreatment Coordinator • 1 Electronic copy to Compliance Officer
Table B6: Copper Biotic Ligand Model and Aluminum Sampling Requirements	Monthly for 14 months starting September 2023	By the 15th of the following month	Electronic copy in a DEQ- approved format	Electronic reporting as directed by DEQ
Tables B7 – B12: Effluent Toxics Characterization	Quarterly for each of the first 4 quarters after permit effective date	By the 15 th of the month following each quarter	Electronic copy in a DEQ- approved format	Electronic reporting as directed by DEQ
Table B13: WET Test Monitoring	Minimum of 4 times per every 5 years. See note c.	With the first DMR submittal after receipt of the test results	Electronic copy in a DEQ- approved format	Electronic reporting as directed by DEQ
Recycled Water Annual Report (see Schedule D)	Annually	January 15	Electronic copy in the DEQ- approved format	Electronic reporting as directed by DEQ Electronic copy to DEQ Water Reuse Program Coordinator
Biosolids Annual Report (See Schedule D)	Annually	February 19	Electronic copy in the DEQ- approved form EPA NeT CDX web based reporting tool	Electronic reporting as directed by DEQ DEQ Biosolids Program Coordinator EPA NeT CDX

Reporting Requirement	Frequency	Due Date (See Note a.)	Report Form (See Note b.)	Submit To:
Inflow and Infiltration Report (see Schedule D)	Annually	February 15	Electronic copy in a DEQ-approved format	Electronic reporting as directed by DEQ
Outfall Inspection Report (see Schedule D)	Once per permit cycle	Submit by 09/15/2023	Electronic copy in a DEQ-approved format	Electronic reporting as directed by DEQ
Mercury Minimization Plan (see Schedule A)	One time	Submit by 10/15/2023	One electronic copy in a DEQ-approved format	Electronic reporting as directed by DEQ
Recycled Water Use Plan (see Schedule A)	One Time	Submit by 4/1/2022	One electronic copy in a DEQ-approved format	Electronic reporting as directed by DEQ

Notes:

- a. For submittals that are provided to DEQ by mail, the postmarked date must not be later than the due date.
- b. All reporting requirements are to be submitted in a DEQ-approved format, unless otherwise specified in writing.
- c. Each test will be conducted during a different quarter each year (e.g., Year 1, Qtr. 1) When possible, conduct the first WET testing concurrent with Effluent Toxics Characterization Monitoring in the first year of the permit term. All tests must be completed prior to submission of renewal application.

2. Monitoring and Reporting Protocols

a. Paper Submissions

The permittee must submit to DEQ the results of the monitoring required in Schedule B in a paper format as specified below.

- i. Until directed by DEQ, the permittee must submit any required Pretreatment Program Reports, Wastewater Solids and Biosolids Annual Report, Sanitary Sewer Overflow/Bypass Event Reports, and other required information to DEQ.
- ii. The permittee must sign and certify submittals of Discharge Monitoring Reports (DMRs), reports, and other information in accordance with the requirements of Section D8 within Schedule F of this permit.

b. Electronic Submissions

The permittee must submit to DEQ the results of monitoring indicated in Schedule B in an electronic format as specified below.

- i. When directed by DEQ, the permittee must submit monitoring results required by this permit via DEQ-approved web-based Discharge Monitoring Report (DMR) forms to the NetDMR webpage at: <https://cdx.epa.gov/>. Any data used to calculate summary statistics must be submitted as a separate attachment approved by DEQ via NetDMR.
- ii. The reporting period is the calendar month.

- iii. The permittee must submit monitoring data and other information required by this permit for all compliance points by the 15th day of the month following the reporting period unless specified otherwise in this permit or as specified in writing by DEQ.
- iv. Beginning after December 21, 2020, or when directed by DEQ, the permittee must submit electronic reports for any required Pretreatment Program Reports, Wastewater Solids and Biosolids Annual Report, Sewer Overflow/Bypass Event Reports, and other required information to DEQ via NetDMR or other designated web-based reporting process.

c. **Test Methods**

The permittee must conduct monitoring according to test procedures in 40 CFR part 136 and 40 CFR part 503 for biosolids or other approved procedures as per Schedule F.

d. **Detection and Quantitation Limits**

- i. Detection Level (DL) – The DL is defined as the minimum measured concentration of a substance that can be distinguished from method blank results with 99% confidence. The DL is derived using the procedure in 40 CFR part 136 Appendix B and evaluated for reasonableness relative to method blank concentrations to ensure results reported above the DL are not a result of routine background contamination. The DL is also known as the Method Detection Limit (MDL) or Limit of Detection (LOD).
- ii. Quantitation Limits (QLs) – The QL is the minimum level, concentration or quantity of a target analyte that can be reported with a specified degree of confidence. It is the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration for the analyte. It is normally equivalent to the concentration of the lowest calibration standard adjusted for sample weights, volumes, preparation and cleanup procedures employed. The QL as reported by a laboratory is also sometimes referred to as the Method Reporting Limit (MRL) or Limit of Quantitation (LOQ).
- iii. For compliance and characterization purposes, the maximum acceptable QL is stated in this permit.

e. **Implementation**

The Laboratory QLs (adjusted for any dilutions) for analyses performed to demonstrate compliance with permit limits or as part of effluent characterization, must be at or below the QLs specified in the permit unless one of the conditions below is met.

- i. The monitoring result shows a detect above the laboratory reported QL.
- ii. The monitoring result indicates non-detect at a DL which is less than the QL.
- iii. Matrix effects are present that prevent the attainment of QLs and these matrix effects are demonstrated according to procedures described in EPA's "Solutions to Analytical Chemistry Problems with Clean Water Act Methods", March 2007. If using alternative methods and taking appropriate steps to eliminate matrix effects does not eliminate the matrix problems, DEQ may authorize in writing re-sampling or allow a higher QL to be reported. In the case of effluent characterization monitoring, DEQ may allow the re-sampling to be done as part of Tier 2 monitoring. Sections B.5 and B.6 contain more information on Tier 1 and Tier 2 monitoring.

f. **Quality Assurance and Quality Control**

- i. Quality Assurance Plan – The permittee must develop and implement a written Quality Assurance Plan that details the facility sampling procedures, equipment calibration and maintenance, analytical methods, quality control activities and laboratory data handling and reporting. The QA/QC program must conform to the requirements of 40 CFR 136.7.
- ii. If QA/QC requirements are not met for any analysis, the permittee must re-analyze the sample. If the sample cannot be re-analyzed, the permittee must re-sample and analyze at the earliest opportunity. If the permittee is unable to collect a sample that meets QA/QC requirements, then the permittee must include the result in the discharge monitoring report (DMR) along with a notation (data qualifier). In addition, the permittee must explain how the sample does not meet QA/QC requirements. The permittee may not use the result that failed the QA/QC requirements in any calculation required by the permit unless authorized in writing by DEQ.
- iii. Flow measurement, field measurement, and continuous monitoring devices - The permittee must:
 - (A) Establish verification and calibration frequency for each device or instrument in the quality assurance plan that conforms to the frequencies recommended by the manufacturer.
 - (B) Verify at least once per year that flow-monitoring devices are functioning properly according to manufacturer's recommendation. Calibrate as needed according to manufacturer's recommendations.
 - (C) Verify at least weekly that the continuous monitoring instruments are functioning properly according to manufacturer's recommendation unless the permittee demonstrates a longer period is sufficient and such longer period is approved by DEQ in writing.
- iv. The permittee must develop an receiving water sampling and analysis plan that incorporates QA/QC prior to sampling. This plan must be kept at the facility and made available to DEQ upon request.

g. **Reporting Sample Results**

- i. The permittee must report the laboratory DL and QL as defined above for each analyte, with the following exceptions: pH, temperature, BOD, CBOD, TSS, Oil & Grease, hardness, alkalinity, bacteriological analytes and nitrate-nitrite. For temperature and pH, neither the QL nor the DL need to be reported. For the other parameters listed above, the permittee is only required to report the QL and only when the result is ND.
- ii. The permittee must report the same number of significant digits as the permit limit for a given parameter.
- iii. Chemical Abstracts Service (CAS) Numbers. CAS numbers (where available) must be reported along with monitoring results.

- iv. (For Discharge Monitoring Reports) If a sample result is above the DL but below the QL, the permittee must report the result as the DL preceded by DEQ’s data code “e”. For example, if the DL is 1.0 µg/l, the QL is 3.0 µg/L and the result is estimated to be between the DL and QL, the permittee must report “e1.0 µg/L” on the DMR. This requirement does not apply in the case of parameters for which the DL does not have to be reported.
- v. (For Discharge Monitoring Reports) If the sample result is below the DL, the permittee must report the result as less than the specified DL. For example, if the DL is 1.0 µg/L and the result is ND, report “<1.0” on the discharge monitoring report (DMR). This requirement does not apply in the case of parameters for which the DL does not have to be reported.

h. Calculating and Reporting Mass Loads

The permittee must calculate mass loads on each day the parameter is monitored using the following equation:

$$\text{Flow (in MGD)} \times \text{Concentration (in mg/L)} \times 8.34 = \text{Pounds per day}$$

- i. Mass load limits all have two significant figures unless otherwise noted.
- ii. When concentration data are below the DL: To calculate the mass load from this result, use the DL. Report the mass load as less than the calculated mass load.
- iii. When concentration data are above the DL, but below the QL: To calculate the mass load from this result, use the detection level. Report the mass load as the calculated mass load preceded by “e”.

3. Monitoring and Reporting Requirements

- a. The permittee must monitor influent at the plant headworks upstream of the introduction of any plant recycle streams and report results in accordance with the following table.

Table B2: Influent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action See note b.	Report Statistic See note a.
Flow (50050)	MGD	Year-round	1/Day	Metered	Monthly Average Daily Maximum
BOD ₅ (00310)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average
TSS (00530)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average
pH (00400)	SU	Year-round	3/Week	Grab	Daily Minimum Daily Maximum
Notes:					
a. The permittee must submit all data used to determine summary statistics in a DEQ-approved format as an attachment in NetDMR unless otherwise directed by DEQ					
b. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 10 am and 5 pm until monitoring equipment is redeployed.					

- b. The permittee must monitor effluent at Outfall 001 downstream of the confluence of the chlorine contact basin effluent and blowdown at the manhole prior to discharging to the Klamath River and report results in accordance with Table B1 and the table below.

Table B3: Outfall 001 Effluent Monitoring Requirements

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
Flow (50050) See note d.	MGD	Year-round	Daily	Calculation	Monthly Average Daily Maximum
BOD ₅ (00310)	mg/L	Year-round	2/week	24-hour composite	Monthly Average Weekly Average
BOD ₅ (00310)	lbs/day	Year-round	2/week	Calculation	Daily Maximum Weekly Average Monthly Average Semiannual Average
BOD ₅ Percent Removal (81010) See note c.	%	Year-round	1/Month	Calculation based on monthly average BOD ₅ concentration values	Monthly Average
TSS (00530)	mg/L	Year-round	2/Week	24-hour composite	Monthly Average Weekly Average
TSS (00530)	lbs/day	Year-round	2/Week	Calculation	Daily Maximum Monthly Average Weekly Average
TSS Percent Removal (81011) See note c.	%	Year-round	1/Month	Calculation based on monthly average TSS concentration values	Monthly Average
Chlorine, Total Residual (50060)	mg/L	Year-round	1/Day	Grab	Daily Maximum Monthly Average
pH (00400)	SU	Year-round	1/Hour	Continuous	Daily Maximum Daily Minimum
<i>E. coli</i> (51040)	#/100 mL	Year-round	2/Week	Grab	Daily Maximum Monthly Geometric Mean
Temperature (00010)	°C	Year-round	1/Hour	Continuous	Daily Maximum
Nitrogen, Total (00600)	lbs/day	Year-round	1/Week	Calculation	Semiannual Average
Nitrogen, Total (00600)	mg/L	Year-round	1/Week	Grab	Semiannual Average

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
Phosphorus, Total (00665)	lbs/day	Year-round	1/Week	Calculation	Semiannual Average
Phosphorus, Total (00665)	mg/L	Year-round	1/Week	Grab	Semiannual Average
Excess Thermal Load Limit	Million kcal/day	Year-round	1/Day	Calculation (see Table A1, note f.)	Daily Maximum
Excess Thermal Load (51405)	Million kcal/day	Year-round	1/Day	Calculation (see note e.)	Daily Maximum
Copper, Total (01042)	µg/L	Year-round	1/Month	Grab	Monthly Maximum
Copper, Dissolved (01040)	µg/L	Year-round	1/Month	Grab	Monthly Maximum
Total Recoverable Mercury (71900)	µg/L	Year-round	1/Month	Grab	Daily Maximum Monthly Average
Total Ammonia (as N) (00610)	mg/L	Year-round	1/Week	24-hour composite	Monthly Average Daily Maximum
Hardness (00900)	mg/L	Year-round	1/Month	24-hour composite	Monthly Maximum
Chlorine Used (81400)	lbs/day	Year-round	1/Day	Scale reading	Daily Maximum
Dissolved Oxygen (00300)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Minimum
Total Kjeldahl Nitrogen (TKN) (00625)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Maximum
Nitrogen, Nitrate Total (as N) (NO ₃) (00620)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Maximum
Total Dissolved Solids (70295)	mg/L	Third year of permit cycle 2023	Quarterly	Grab	Quarterly Maximum

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type/ Required Action See note b.	Report Statistic See note a.
<p>Notes:</p> <p>a. The permittee must submit all data used to determine summary statistics in a DEQ-approved format as an attachment in NetDMR unless otherwise directed by DEQ.</p> <p>b. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 11 am and 5 pm until monitoring equipment is redeployed.</p> <p>c. Percent Removal must be calculated on a monthly basis using the following formula: $\text{Percent Removal} = \frac{[\text{Influent Concentration}] - [\text{Effluent Concentration}]}{[\text{Influent Concentration}]} \times 100$ Where: Influent Concentration = Corresponding monthly average influent concentration based on the analytical results of the reporting period. Effluent Concentration = Corresponding monthly average effluent concentration based on the analytical results of the reporting period.</p> <p>d. Outfall flow will be calculated as follows: Outfall 001 Flow = Secondary effluent flow – (reclaimed water flow – makeup water flow) + Blowdown flow from cogeneration facility.</p> <p>e. The daily excess thermal load (ETL) discharged must be calculated using the daily average effluent temperature and the corresponding daily average effluent flow using the formula below. If the calculation results in an ETL value less than zero, the results must be recorded as zero. The daily ETL discharged is calculated as follows: $ETL = (T_E - T_R) * Q_E * 3.785$ Where: ETL = Excess Thermal Load (million kcal/day) discharged Q_E = Daily average effluent flow (MGD) T_E = The daily average effluent temperature (degrees Celcius) T_R = The applicable river temperature criterion (degrees Celcius), which is the daily average river temperature from the USGS Link River monitoring station (USGS 11507500).</p>					

- c. The permittee must monitor the Klamath River and report the results in accordance with Table B1 and the table below. The permittee must collect samples such that the effluent does not impact the samples (e.g., upstream for riverine discharges).

Table B4: Receiving Stream Monitoring the Klamath River

Item or Parameter	Units	Time Period	Minimum Frequency	Sample Type / Required Action See note b.	Report Statistic See note a.
Flow, stream (00056) See note c	cfs	Year-round	1/Day	Measured	Daily average
pH (00400) See note c	SU	Year-round	1/Month	Grab	Monthly minimum Monthly maximum
Temperature (00010) See note c	°C	Year-round	1/Day	Grab	Daily average
Alkalinity as CaCO ₃ (00410)	mg/L	Year-round	1/Month	Grab	Value
<p>Note:</p> <p>a. The permittee must submit all data used to determine summary statistics in a DEQ-approved format as an attachment in NetDMR unless otherwise directed by DEQ.</p> <p>b. In the event of equipment failure or loss, the permittee must notify DEQ and deploy new equipment to minimize interruption of data collection. If new equipment cannot be immediately deployed, the permittee must monitor grab measurements daily between 4 pm and 7 pm until continuous monitoring equipment is redeployed.</p> <p>c. Flow, pH, and temperature data collected from USGS Link River monitoring station (USGS 11507500) may be used in lieu of a grab sample. Data may be collected from a different monitoring station (USGS or other) with prior written approval from DEQ.</p>					

4. Pretreatment Monitoring

The permittee must monitor influent, effluent, and biosolids according to the following table and report the results as noted in Table B1.

Table B5: Pretreatment Monitoring

Pollutant See notes b. & c.	CAS See note a.	Minimum Frequency	Sample Type	Report
Arsenic	7440382	Quarterly on 3 consecutive days between Monday and Friday, inclusive.	24-hour flow or time -based composite for influent and effluent samples (see note d.)	Daily values
Cadmium	7440439			
Chromium	7440473			
Copper	7440508			
Lead	7439921			
Mercury	7439976			
Molybdenum	7439987			
Nickel	7440020			
Selenium	7782492			
Silver	7440224			
Zinc	7440666			
Cyanide (Total, and Free)	57125			

Notes:

- a. Chemical Abstract Service.
- b. The permittee must analyze all metals for total concentration unless otherwise specified by DEQ in writing.
- c. When sampling for Cyanide, the permittee must collect at least six discrete grab samples over the operating day with samples collected no less than one hour apart. The aliquot must be at least 100 mL and collected and composited into a larger container that has been preserved with sodium hydroxide to insure sample integrity.
- d. All sampling and analyses must be performed in accordance with 40 CFR part 136 or 40 CFR part 503.

5. Copper Biotic Ligand Model and Aluminum Parameters

The permittee must monitor The Klamath River upstream of Outfall 001 and the effluent for Outfall 001 for copper biotic ligand model and aluminum parameters per the Table below. Samples must be collected monthly for a period of 14 months beginning in the third year of the permit cycle Sep. 2023. Effluent and ambient monitoring must be conducted concurrently.

Upstream/Ambient samples must be taken in a location outside of the influence of the effluent using appropriate sampling techniques and procedures. It is the responsibility of the permittee to ensure safe and practical sampling techniques and procedures are used. DEQ recommends that these procedures be included in a sample and analysis plan that can be reviewed by DEQ when necessary.

Table B6: Copper Biotic Ligand Model and Aluminum Sampling Requirements

Parameter See note b.	CAS See note f.	Units	Sampling Frequency See note c.	Sampling Location See note a.
Copper, Total and Dissolved See note e.	7440097	µg/L	1/month	Upstream and Effluent
Aluminum, Total See note d.	7429905	µg/L	1/month	Upstream and Effluent
Hardness (as CaCO ₃)	N/A	mg/L	1/month	Upstream and Effluent
Dissolved Organic Carbon	N/A	mg/L	1/month	Upstream and Effluent
pH	N/A	S.U.	1/month	Upstream and Effluent
Temperature	N/A	°C	1/month	Upstream and Effluent
Calcium, dissolved	7440702	mg/L	1/month	Upstream and Effluent
Magnesium, dissolved	7439954	mg/L	1/month	Upstream and Effluent
Sodium, dissolved	7440235	mg/L	1/month	Upstream and Effluent
Potassium, dissolved	7440097	mg/L	1/month	Upstream and Effluent
Sulfate, dissolved	14808798	mg/L	1/month	Upstream and Effluent
Chloride, dissolved	16887006	mg/L	1/month	Upstream and Effluent
Alkalinity, dissolved	N/A	mg/L	1/month	Upstream and Effluent
Notes:				
a. Samples must be collected upstream (outside the influence of the effluent) and from the effluent on the same day.				
b. All effluent samples must be 24-hr composite samples except grab samples must be collected for pH, alkalinity and temperature. All receiving stream samples must be grab samples.				
c. Samples must be collected monthly for a period of 14 months beginning in Sept. 2023. Samples collected for copper BLM requirements can be used for other permit requirements if they meet the requirements for those parameters.				
d. QL is 50.0 µg/L for aluminum				
e. QL is 2.0 µg/L for copper				
f. Chemical Abstract Service				

6. Effluent Toxics Characterization Monitoring (Tier 1 Monitoring)

The permittee must collect and analyze effluent samples for the parameters listed in the tables below. The permittee must collect effluent samples at Outfall 001 downstream of the confluence of the chlorine contact basin effluent and blowdown at the manhole prior to the effluent being sent to the cogeneration facility on the dates in Table B1.

Samples must be 24-hour composites, except as noted in the tables below for volatile organic compounds. Sample results must be submitted to DEQ using approved electronic format.

Table B7: Metals, Cyanide, and Hardness

(µg/L unless otherwise specified)

Pollutant See note a.	CAS See note b.	QL	Pollutant See note a.	CAS See note b.	QL
Antimony (total)	7440360	0.50	Nickel (total and dissolved)	7440020	1.0
Arsenic (total)	7440382	0.50	Selenium (total and dissolved)	7782492	1.0
Arsenic (Total Inorganic)	7440382	1.0	Silver (total and dissolved)	7440224	1.0
Arsenic (Total Inorganic Dissolved)	22541544	50	Thallium (total)	7440280	0.10
Beryllium (total)	7440417	0.10	Zinc (total and dissolved)	7440666	5.0
Cadmium (total and dissolved)	7440439	0.10	Hardness (Total as CaCO ₃)		
Chromium (total)	7440473	0.40	Iron (Total)	7439896	100
Chromium III (total and dissolved)	16065831	2.0			
Chromium VI (total and dissolved)	18540299	2.0			
Lead (total and dissolved)	7439921	1.0			
Mercury (total)	7439976	0.001			
Notes:					
a. The term “total” used in reference to metals is intended to cover all EPA-accepted standard digestion methods and is considered to be equivalent to the term “total recoverable”.					
b. Chemical Abstract Service					

Table B8: Volatile Organic Compounds
 (µg/L unless otherwise specified)

Pollutant See note a.	CAS	QL	Pollutant See note a.	CAS	QL
Acrolein See note k.	107028	5.0	1,2-trans-dichloroethylene See note d.	156605	0.50
Acrylonitrile See note k.	107131	5.0	1,1-dichloroethylene See note e.	75354	0.50
Benzene	71432	0.50	1,2-dichloropropane	78875	0.50
Bromoform	75252	0.50	1,3-dichloropropylene See note f.	542756	0.50
Carbon Tetrachloride	56235	0.50	Ethylbenzene	100414	0.50
Chlorobenzene	108907	0.50	Methyl Bromide See note g.	74839	1.00
Chlorodibromomethane See note b.	124481	0.50	Methyl Chloride See note h.	74873	1.00
Chloroethane	75003	0.50	Methylene Chloride	75092	2.00
2-Chloroethylvinyl Ether See note k.	110758	10	1,1,2,2-tetrachloroethane	79345	0.50
Chloroform	67663	0.50	Tetrachloroethylene See note i.	127184	0.50
Dichlorobromomethane See note c.	75274	0.50	Toluene	108883	0.50
1,2-Dichlorobenzene (o)	95501	0.50	1,1,1-trichloroethane	71556	0.50
1,3-Dichlorobenzene (m)	541731	0.50	1,1,2-trichloroethane	79005	0.50
1,4-Dichlorobenzene (p)	106467	0.50	Trichloroethylene See note j.	79016	0.50
1,1-dichloroethane	75343	0.50	Vinyl Chloride	75014	0.50
1,2-dichloroethane	107062	0.50			

Notes:

- a. The permittee must collect six discrete samples (not less than 40 mL) over the operating day at intervals of at least one hour. The samples may be analyzed separately or composited. If analyzed separately, the analytical results for all samples must be averaged for reporting purposes. If composited, they must be composited in the laboratory at the time of analysis in a manner that maintains the integrity of the samples and prevents the loss of volatile analytes. The quantitation limits listed above remain in effect for composite samples.
- b. Chlorodibromomethane is identified as Dibromochloromethane in 40 CFR 136.3, Table 1C.
- c. Dichlorobromomethane is identified as Bromodichloromethane in 40 CFR 136.3, Table 1C.
- d. 1,2-Trans-dichloroethylene is identified as Trans-1,2-dichloroethene in 40 CFR 136.3, Table 1C.
- e. 1,1-Dichloroethylene is identified as 1,1-Dichloroethene in 40 CFR 136.3, Table 1C.
- f. 1,3-Dichloropropylene consists of both cis-1,3-Dichloropropene and Trans-1,3-dichloropropene. Both should be reported individually.
- g. Methyl bromide is identified as Bromomethane in 40 CFR 136.3, Table 1C.
- h. Methyl chloride is identified as Chloromethane in 40 CFR 136.3, Table 1C.
- i. Tetrachloroethylene is identified as Tetrachloroethene in 40 CFR 136.3, Table 1C.
- j. Trichloroethylene is identified as Trichloroethene in 40 CFR 136.3, Table 1C.
- k. Acrolein, Acrylonitrile, and 2-Chloroethylvinyl ether must be tested from an unacidified sample.

Table B9: Acid-Extractable Compounds

(µg/L unless otherwise specified)

Pollutant	CAS	QL See note a.	Pollutant	CAS	QL See note a.
p-chloro-m-cresol See note b.	59507	1.0	2-nitrophenol	88755	2.0
2-chlorophenol	95578	1.0	4-nitrophenol	100027	5.0
2,4-dichlorophenol	120832	1.0	Pentachlorophenol	87865	1.0
2,4-dimethylphenol	105679	5.0	Phenol	108952	1.0
4,6-dinitro-o-cresol See note c.	534521	2.0	2,4,5-trichlorophenol See note d.	95954	2.0
2,4-dinitrophenol	51285	5.0	2,4,6-trichlorophenol	88062	1.0

Notes:

- Some QLs may need methods with modification allowed in 40 CFR 136.6 or EPA's Solutions for Analytical Chemistry Problems with Clean Water Methods, March 2007.
- p-chloro-m-cresol is identified as 4-Chloro-3-methylphenol in 40 CFR 136.3, Table 1C.
- 4,6-dinitro-o-cresol is identified as 2-Methyl-4,6-dinitrophenol in 40 CFR 136.3, Table 1C.
- To monitor for 2,4,5-trichlorophenol, use EPA Method 625.

Table B10: Base-Neutral Compounds

(µg/L unless otherwise specified)

Pollutant	CAS	QL See note a.	Pollutant	CAS	QL See note a.
Acenaphthene	83329	1.0	Dimethyl phthalate	131113	1.0
Acenaphthylene	208968	1.0	2,4-dinitrotoluene	121142	1.0
Anthracene	120127	1.0	2,6-dinitrotoluene	606202	1.0
Benzidine	92875	50.0	1,2-diphenylhydrazine See note d.	122667	5.0
Benzo(a)anthracene	56553	0.5	Fluoranthene	206440	2.0
Benzo(a)pyrene	50328	0.5	Fluorene	86737	1.0
3,4-benzofluoranthene See note b.	205992	0.5	Hexachlorobenzene	118741	1.0
Benzo(ghi)perylene	191242	1.0	Hexachlorobutadiene	87683	2.0
Benzo(k)fluoranthene	207089	0.5	Hexachlorocyclopentadiene	77474	2.0
Bis(2-chloroethoxy)methane	111911	2.0	Hexachloroethane	67721	1.0
Bis(2-chloroethyl)ether	111444	1.0	Indeno(1,2,3-cd)pyrene	193395	0.5
Bis(2-chloroisopropyl)ether See note c.	108601	2.0	Isophorone	78591	5.0
Bis (2-ethylhexyl)phthalate	117817	1.0	Napthalene	91203	1.0
4-bromophenyl phenyl ether	101553	1.0	Nitrobenzene	98953	1.0
Butylbenzyl phthalate	85687	1.0	N-nitrosodi-n-propylamine	621647	2.0
2-chloronaphthalene	91587	1.0	N-nitrosodimethylamine	62759	2.0
4-chlorophenyl phenyl ether	7005723	1.0	N-nitrosodiphenylamine	86306	1.0
Chrysene	218019	0.5	Pentachlorobenzene See note e.	608935	1.0
Di-n-butyl phthalate	84742	1.0	Phenanthrene	85018	1.0
Di-n-octyl phthalate	117840	1.0	Pyrene	129000	1.0
Dibenzo(a,h)anthracene	53703	0.5	1,2,4-trichlorobenzene	120821	1.0
3,3-Dichlorobenzidine	91941	2.0	Tetrachlorobenzene,1,2,4,5 See note e.	95943	1.0
Diethyl phthalate	84662	1.0			

Notes:

- Some QLs may need methods with modification allowed in 40 CFR 136.6 or EPA's *Solutions for Analytical chemistry Problems w/Clean Water Methods, March 2007*.
- 3,4-benzofluoranthene is listed as Benzo(b)fluoranthene in 40 CFR part 136.
- Bis(2-chloroisopropyl)ether is listed as 2,2'-oxybis(2-chloro-propane) in 40 CFR part 136.
- 1,2-diphenylhydrazine is difficult to analyze given its rapid decomposition rate in water. Azobenzene (a decomposition product of 1,2-diphenylhydrazine), should be analyzed as an estimate of this chemical.
- To analyze for Pentachlorobenzene and Tetrachlorobenzene 1,2,4,5, use EPA 625.

Table B11: Pesticides and PCBs

(µg/L unless otherwise specified)

Pollutant	CAS	QL See note a.	Pollutant	CAS	QL See note a.
DDD 4,4'	72548	0.010			
DDE 4,4'	72559	0.010			
DDT 4,4'	50293	0.010			

Notes:

- a. Some QLs may need methods with modification allowed in 40 CFR part 136.6 or EPA's Solutions for Analytical chemistry Problems w/Clean Water Methods, March 2007.

Table B12: Other Parameters with State Water Quality Criteria

(µg/L unless otherwise specified)

Pollutant	CAS	QL	Pollutant	CAS	QL
Barium, Total (See note a.)	7440393	0.10	Dioxin 2,3,7,8-TCDD (See note e.)	1746016	1.0x10 ⁻⁵
Sulfide-Hydrogen Sulfide (See note b.)	7783064	100	N-Nitrosodibutylamine	924163	2.0
2,4,5-TP [2-(2,4,5-Trichloro-phenoxy) propanoic acid] (See note c.)	93721	1.0	N-Nitrosodiethylamine	55185	2.0
2,4-D (2,4-Dichlorophenoxyacetic acid) (See note d.)	94757	1.0	N-Nitrosopyrrolidine	930552	2.0
			Total Phosphorus as P	7723140	10Yes

Notes:

- a. Barium, Total is identified as Barium-Total in 40 CFR 136.3, Table 1B.
 b. Report Sulfide-Hydrogen Sulfide as Dissolved Sulfide as S.
 c. This chemical is listed as Chlorophenoxy Herbicide (2,4,5-TP) in Table 40.
 d. This chemical is listed as Chlorophenoxy Herbicide (2,4-D) in Table 40
 e. Dioxin 2,3,7,8-TCDD is identified as 2,3,7,8-Tetrachloro-dibenzo-p-dioxin in 40 CFR 136.3, Table 1C. To achieve the QL, it may be necessary to use Method 1613B.

7. Additional Receiving Stream and Effluent Characterization Monitoring (Tier 2 Monitoring)

When DEQ evaluates the results of monitoring required under Schedule B condition Effluent Toxics Characterization section: Effluent Toxics Characterization Monitoring (also referred to as Tier 1 monitoring) to determine whether the permittee will be required to conduct additional ambient water quality and/or effluent monitoring (also referred to as Tier 2 monitoring). DEQ will notify the permittee of its determination through a written “Monitoring Action Letter.”

8. Whole Effluent Toxicity (WET) Requirements

The permittee must monitor final effluent for whole effluent toxicity as described in the table below using the testing protocols specified in Schedule D, Whole Effluent Toxicity Testing for Freshwater for Outfalls 001 and Outfall 001A must be collected at the location specified below.

Table B13: WET Test Monitoring

Parameter	Sample Type/Location	Minimum Frequency	Report
Acute toxicity	For acute toxicity: Composite, taken from Outfall 001.	See Table B1	Report must include test results and backup information such as bench sheets sufficient to demonstrate compliance with permit requirements. Report must include a statement certifying that the results do or do not show toxicity.
Chronic toxicity	For chronic toxicity: 24-hr composite, Outfall 001.		

9. Recycled Water Monitoring Requirements: Outfall 002

The permittee must monitor recycled water for Outfall 002 as listed below. The samples must be representative of the recycled water delivered for beneficial reuse at a location identified in the Recycled Water Use Plan.

Table B14: Recycled Water Monitoring

Item or Parameter	Time Period	Minimum Frequency	Sample Type/ Required Action	Report
Total Flow (MGD)	Year-round	Daily	Measurement	Annual Report
Quantity Chlorine Used (lbs)	Year-round	Daily	Measurement	Annual Report
Chlorine, Total Residual (mg/L)	Year-round	Daily	Grab	Annual Report
pH	Year-round	2/Week	Grab	Annual Report
Total Coliform See note a.	Year-round	Weekly (Class C)	Grab	Annual Report

Note:

- a. Calculations of the median total coliform levels in Class C are based on the results of the last seven days that analyses have been completed.

10. Biosolids Monitoring Requirements

The permittee must monitor biosolids land applied or produced for sale or distribution as listed below. The samples must be representative of the quality and quantity of biosolids generated and undergo the same treatment process used to prepare the biosolids.

Table B15: Biosolids Monitoring

Item or Parameter	Minimum Frequency	Sample Type
Nutrient and conventional parameters (% dry weight unless otherwise specified): <ul style="list-style-type: none"> • Total Kjeldahl Nitrogen (TKN) • Nitrate-Nitrogen (NO₃-N) • Total Ammoniacal Nitrogen (NH-N) • Total Phosphorus (P) • Potassium (K) • pH (S.U.) • Total Solids • Volatile Solids 	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Pollutants: As, Cd, Cu, Hg, Pb, Mo, Ni, Se, Zn, mg/kg dry weight	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Pathogen reduction	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Vector attraction reduction	As described in the DEQ-approved Biosolids Management Plan.	As described in the DEQ-approved Biosolids Management Plan
Record of Class B biosolids land application: date, quantity, location.	Each event	Record the date, quantity, and location of biosolids land applied on site location map or equivalent electronic system, such as GIS.

Table B16: Biosolids Minimum Monitoring Frequency

Quantity of biosolids land applied or produced for sale or distribution per calendar year		Minimum Sampling Frequency
(dry metric tons)	(dry U.S. tons)	
Less than 290	Less than 320	Once per year
290 to 1,500	320 to 1,653	Once per quarter (4x/year)
1500 to 15,000	1,653 to 16,535	Once per 60 days (6x/year)
15,000 or more	16,535 or more	Once per month (12x/year)

SCHEDULE C: COMPLIANCE SCHEDULE

Compliance Schedule to Meet Final Effluent Limitations

The permittee must comply with the following schedules:

Table C1: Total Residual Chlorine Compliance Schedule

Complete By	Requirement
May 31, 2021	Submit a preliminary plan report for coming into compliance with the Total Residual Chlorine final effluent limits to DEQ for approval.
December 31, 2021	Secure financing for improvements to comply with the Total Residual Chlorine final effluent limits.
June 30, 2022	Submit engineering plans and specifications for improvements to comply with the Total Residual Chlorine final effluent limits.
December 31, 2023	Complete improvements and meet the Total Residual Chlorine final effluent limits included in Schedule A.

Table C2: Total Mercury, Total Ammonia as N, and Total Phosphorus as P Compliance Schedule

Complete By	Requirement
February 15, 2021 and annually thereafter until all of the requirements are met in this compliance schedule or by December 31, 2030	Submit to DEQ a written Progress Report outlining the progress made towards achieving the final effluent limitations.
October 31, 2023	Complete a Facility Plan that selects options for improvements to the treatment facility to comply with the mercury, ammonia, and phosphorus final effluent limits and submit the Facility Plan to DEQ for review and approval.
October 31, 2024	Evaluate and obtain financing for wastewater facility improvements recommended in the Facility Plan acceptable.
October 31, 2024	Complete Preliminary Design Report and submit to DEQ for review and approval.
April 30, 2026	Complete Final Design and submit to DEQ for review and approval.
October 31, 2029	Complete construction of wastewater facility improvements to comply with the mercury, ammonia, and phosphorus final effluent limits.
December 1, 2030	The permittee must achieve compliance with the final effluent limits and provide DEQ with written notice of compliance with the mercury, ammonia, and phosphorus final effluent limits in Schedule A.

Table C3: Excess Thermal Load and Temperature Compliance Schedule

Complete By	Requirement
February 15, 2021 and annually thereafter until all of the requirements are met in this compliance schedule or by December 31, 2035	Progress Reports: The permittee must submit reports to DEQ outlining the progress made toward meeting the final effluent limits. (These reports may be the water quality trading annual reports required under OAR 340-039-0017, as long as the reports outline progress made toward meeting the final effluent limits.)
October 31, 2026	Draft Feasibility Study for Temperature Compliance: The permittee must perform an initial analysis of the need for a water quality trading plan and submit the analysis to DEQ. If the analysis concludes that a trading plan is necessary, the permittee must also submit a draft water quality trading plan to DEQ along with the analysis. The trading plan must be consistent with the requirements under OAR 340, Division 39. The permittee may generate water quality trading credits prior to plan approval. However, the permittee may only use thermal credits after an approved trading plan is incorporated into the permit.
October 31, 2030	Assessment Report and Schedule: The permittee must submit a report providing information regarding the potential for the facility to comply with the final excess thermal load limits. If necessary, the report must also inform DEQ on the proposed method to comply with the final limits. If the proposed method includes a construction project, the permittee must provide a construction plan. The construction plan must include a schedule to complete the project by the final compliance date noted below. If the proposed method includes a trading program, the permittee must submit a final water quality trading plan to DEQ for approval, consistent with the requirements under OAR 340, Division 39.
December 31, 2035	The permittee must achieve compliance with the final effluent limitation for Excess Thermal Loads in Schedule A of this permit.

1. Responsibility to Meet Compliance Dates

No later than 14 days following each compliance date listed in the table above, the permittee must notify DEQ in writing of its compliance or noncompliance with the requirements. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and a discussion of the likelihood of meeting the next scheduled requirement(s).

2. Re-opener Clause

This permit may be re-opened and modified to be consistent with conditions or mitigation measures imposed as a result of EPA's Endangered Species Act consultation with the National Marine Fisheries Service (NMFS) and the US Fish & Wildlife Service (USF&WS) on DEQ's rule authorizing the use of this compliance schedule. If necessary, DEQ will commence modification of this permit by notifying the permittee and seeking public comment on the proposed modifications within two years after the later of (1) the date EPA's re-approval of Oregon's compliance schedules rule becomes final, or (2) the date DEQ completes any required implementation of EPA re-approval, unless the date for completion of implementation exceeds two years from the date of EPA's action, in which case the modifications must commence within a period of four years from the date of EPA's re-approval.

SCHEDULE D: SPECIAL CONDITIONS

1. Inflow and Infiltration

The permittee must submit to DEQ an annual inflow and infiltration report on a DEQ-approved form as directed in Table B1. The report must include the following:

- a. An assessment of the facility's I/I issues based on a comparison of summer and winter flows to the plant.
- b. Details of activities performed in the previous year to identify and reduce inflow and infiltration.
- c. Details of activities planned for the following year to identify and reduce inflow and infiltration.
- d. A summary of sanitary sewer overflows that occurred during the previous year. This should include the following: date of the SSO, location, estimated volume, cause, follow-up actions and if performed, the results of receiving stream monitoring.

2. Emergency Response and Public Notification Plan

The permittee must develop an Emergency Response and Public Notification Plan ("plan"), or ensure the facility's existing plan is current and accurate, per Schedule F, Section B, and Condition 7 within 6 months of permit effective date. The permittee must update the plan annually to ensure all information contained in the plan, including telephone and email contact information for applicable public agencies, is current and accurate. An updated copy of the plan must be kept on file at the facility for DEQ review. The latest plan revision date must be listed on the plan cover along with the reviewer's initials or signature.

3. Recycled Water Use Plan

The permittee must update and maintain a DEQ-approved Recycled Water Use Plan meeting the requirements in OAR 340-055-0025. The permittee must submit this plan or any significant modifications to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to implementing changes to the recycled water program. The permittee must keep the plan updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plan are enforceable requirements under this permit. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications, changes to utilization dates or changes in use within the recycled water class.

- a. Recycled Water Annual Report – The permittee must submit a recycled water annual report by the date specified in Table B1: Reporting Requirements and Due Dates. The permittee must use the DEQ-approved recycled water annual report form. This report must include the monitoring data and analytical laboratory reports for the previous year's monitoring required under Schedule B.

4. Exempt Wastewater Reuse at the Treatment System

Recycled water used for landscape irrigation within the property boundary or in-plant processes at the wastewater treatment system is exempt from the requirements of OAR 340-055 if all of the following conditions are met:

- a. The recycled water is an oxidized and disinfected wastewater.
- b. The recycled water is used at the wastewater treatment system site where it is generated or at an auxiliary wastewater or sludge treatment facility that is subject to the same NPDES or WPCF permit as the wastewater treatment system. Land that is contiguous to the property upon which the treatment system is located is considered to be part of the wastewater treatment system site if under the same ownership.
- c. Spray and/or drift from the use does not migrate off the site.
- d. Public access to the site is restricted.

5. Biosolids Management Plan

The permittee must update and maintain a Biosolids Management Plan and Land Application Plan meeting the requirements in OAR 340-050-0031. The permittee must submit these plans and any significant modification of these plans to DEQ for review and approval with sufficient time to clear DEQ review and a public notice period prior to implementing any significant changes to the biosolids program. The permittee must keep the plans updated. All plan revisions require written authorization from DEQ and are effective upon permittee's receipt of DEQ written approval. No significant modifications can be made to a plan for an administratively extended permit (after the permit expiration date). Conditions in the plans are enforceable requirements under this permit.

a. Annual Report

The permittee must submit a Biosolids Annual Report by February 19 each year documenting biosolids management activities of the previous calendar year as described in OAR 340-050-0035(6). The permittee must use the DEQ-approved Biosolids Annual report form. This report must include the monitoring data and analytical laboratory reports for the previous year's monitoring specified under Schedule B.

b. Site Authorization

The permittee must obtain written authorization from DEQ for each land application site prior to its use. Conditions in site authorizations are enforceable requirements under this permit. The permittee is prohibited from land applying biosolids to a DEQ-approved site except in accordance with the site authorization, while this permit is effective and with the written approval of the property owner. DEQ may modify or revoke a site authorization following the procedures for a permit modification described in OAR 340-045-0055.

c. Public Participation

- i. DEQ will provide an opportunity for public review and comment on any significant plan modifications prior to approving or denying. Public review is not required for minor modifications or changes to utilization dates.
- ii. No DEQ-initiated public notice is required for continued use of sites identified in the DEQ-approved biosolids management plan.
- iii. For new sites that fail to meet the site selection criteria in the biosolids management plan or that are deemed by DEQ to be sensitive with respect to residential housing, runoff potential, or threat to groundwater, DEQ will provide an opportunity for public comment as directed by OAR 340-050-0015(10).

- iv. For all other new sites, the permittee must provide for public participation following procedures in its DEQ-approved land application plan.
- d. Exceptional Quality Biosolids
The permittee is exempt from the requirements in condition 5.b, 5.c.iii, and 5.c.iv above, if:
 - i. Pollutant concentrations of biosolids are less than the pollutant concentration limits in Schedule A, Table A3;
 - ii. Biosolids meet one of the Class A pathogen reduction alternatives in 40 CFR 503.32(a); and
 - iii. Biosolids meet one of the vector attraction reduction options in 40 CFR 503.33(b)(1) through (8).

6. Wastewater Solids Transfers

- a. *Within state.* The permittee may transfer wastewater solids including Class A and Class B biosolids, to another facility permitted to process or dispose of wastewater solids, including but not limited to: another wastewater treatment facility, landfill, or incinerator. The permittee must satisfy the requirements of the receiving facility. The permittee must report the name of the receiving facility and the quantity of material transferred in the wastewater solids annual report identified in Schedule B.
- b. *Out of state.* If wastewater solids, including Class A and Class B biosolids, are transferred out of state for use or disposal, the permittee must obtain written authorization from DEQ, meet Oregon requirements for the use or disposal of wastewater solids, notify in writing the receiving state of the proposed use or disposal of wastewater solids, and satisfy the requirements of the receiving state.

7. Whole Effluent Toxicity Testing for Freshwater

- a. The permittee must conduct whole effluent toxicity (WET) tests as specified here and in Schedule B of this permit.
- b. Acute Toxicity Testing - Organisms and Protocols
 - i. The permittee must conduct 48-hour static renewal tests with *Ceriodaphnia dubia* (water flea) and 96-hour static renewal tests with *Pimephales promelas* (fathead minnow).
 - ii. All test methods and procedures must be in accordance with *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002*, or the most recent version of this publication if such edition is available. If the permittee wants to deviate from the bioassay procedures outlined in this method, the permittee must submit a written request to DEQ for review and approval prior to use.
 - iii. Treatments to the final effluent samples (for example, dechlorination, ammonia removal), except those included as part of the methodology, may not be performed by the laboratory unless approved by DEQ in writing prior to analysis.
 - iv. WET acute testing must be conducted using a dilution series based upon the effluent percentage at the ZID (EPZID) in the following manner: 100%; 50%; 25%; 12.5%; and 6.25% and a control (0% effluent).
 - v. An acute WET test shows toxicity if there is a statistically significant difference in survival between the control and 100% effluent reported as the NOEC < 100% effluent.

- c. Chronic Toxicity Testing - Organisms and Protocols
- i. The permittee must conduct tests with *Ceriodaphnia dubia* (water flea) for reproduction and survival test endpoint, *Pimephales promelas* (fathead minnow) for growth and survival test endpoint, and *Raphidocelis subcapitata* (green alga formerly known as *Selanastrum capricornutum*) for growth test endpoint.
 - ii. All test methods and procedures must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002*. If the permittee wants to deviate from the bioassay procedures outlined in the applicable method, the permittee must submit a written request to DEQ for review and approval prior to use.
 - iii. Treatments to the final effluent samples (for example, dechlorination, ammonia removal), except those included as part of the methodology, may not be performed by the laboratory unless approved by DEQ in writing prior to analysis.
 - iv. WET chronic testing must be conducted using a dilution series based upon the effluent percentage at the RMZ (EPRMZ) in the following manner: 100% effluent; 50%; 25%; 12.5%; and 6.25% and a control (0% effluent).
 - v. A chronic WET test shows toxicity if the IC25 (25% inhibition concentration) occurs at dilutions equal to or less than the dilution that is known to occur at the edge of the mixing zone, that is, $IC_{25} \leq 100\%$.
- d. Dual End-Point Tests
- i. WET tests may be dual end-point tests in which both acute and chronic end-points can be determined from the results of a single chronic test. The acute end-point will be based on 48-hours for the *Ceriodaphnia dubia* (water flea) and 96-hours for the *Pimephales promelas* (fathead minnow).
 - ii. All test methods and procedures must be in accordance with *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002*. If the permittee wants to deviate from the bioassay procedures outlined in this method, the permittee must submit a written request to DEQ for review and approval prior to use.
 - iii. Tests run as dual end-point tests must be conducted on a control (0%) and the following dilution series: 6.25%, 12.5%, 25%, 50%, and 100% effluent.
 - iv. Toxicity determinations for dual end-point tests must correspond to the acute and chronic tests described in conditions 7.b.v and 7.c.v above.
- e. Sampling Requirements
- At the time of WET sampling, the permittee must collect and analyze effluent samples for Inorganic Arsenic, and Total Ammonia as N.
- f. Evaluation of Causes and Exceedances
- i. If any test exhibits toxicity as described in conditions 7.b.v. and 7.c.v. above, the permittee must conduct another toxicity test using the same species and DEQ-approved methodology within two weeks unless an extension is granted by DEQ in writing.

- ii. If two consecutive WET test results indicate acute or chronic toxicity as described in conditions 7.b.v. and 7.c.v. above, the permittee must immediately notify DEQ of the results. DEQ will work with the permittee to determine the appropriate course of action to evaluate and address the toxicity.
- g. **Quality Assurance and Reporting**
 - i. Quality assurance criteria, statistical analyses, and data reporting for the WET tests must be in accordance with the EPA documents stated in this condition.
 - ii. For each test, the permittee must provide a bioassay laboratory report according to the EPA method documents referenced in this Schedule. The report must include all QA/QC documentation, statistical analysis for each test performed, standard reference toxicant test (SRT) conducted on each species required for the toxicity tests, and completed Chain of Custody forms for the samples including time of sample collection and receipt. The permittee must submit reports to DEQ within 60 days of test completion.
 - iii. The report must include all endpoints measured in the test: NOEC (No Observed Effects Concentration), LOEC (Lowest Observed Effects Concentration), and IC₂₅ (chronic effect 25% inhibition concentration).
 - iv. The permittee must make available to DEQ upon request the written standard operating procedures they, or the laboratory performing the WET tests, use for all toxicity tests required by DEQ.
- h. **Reopener**

DEQ may reopen and modify this permit to include new limits, monitoring requirements, and/or conditions as determined by DEQ to be appropriate, and in accordance with procedures outlined in OAR Chapter 340, Division 45 if:

 - i. WET testing data indicate acute and/or chronic toxicity.
 - ii. The facility undergoes any process changes.
 - iii. Discharge monitoring data indicate a change in the reasonable potential to cause or contribute to an exceedance of a water quality standard.
- i. Circumstances not addressed in this section, or that require deviation from the requirements of this section, must be approved in writing by DEQ before changes are implemented.

8. Operator Certification

- a. **Definitions**
 - i. “Supervise” means to have full and active responsibility for the daily on site technical operation of a wastewater treatment system or wastewater collection system.
 - ii. “Supervisor” or “designated operator”, means the operator delegated authority by the permittee for establishing and executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system in accordance with the policies of the owner of the system and any permit requirements.
 - iii. “Shift Supervisor” means the operator delegated authority by the permittee for executing the specific practice and procedures for operating the wastewater treatment system or wastewater collection system when the system is operated on more than one daily shift.
 - iv. “System” includes both the collection system and the treatment systems.

- b. The permittee must comply with OAR Chapter 340, Division 49, "Regulations Pertaining to Certification of Wastewater System Operator Personnel" and designate a supervisor whose certification corresponds with the classification of the collection and/or treatment system as specified on the Wastewater System Classification Worksheet in the fact sheet for this permit (including renewals and modifications). DEQ may revise the permittee's classification in writing at any time to reflect changes in the collection or treatment system. This reclassification is not considered a permit modification and may be made after the permit expiration date provided the permit has been administratively extended by DEQ.
- c. The permittee must have its system supervised full-time by one or more operators who hold a valid certificate for the type of wastewater treatment or wastewater collection system, and at a grade equal to or greater than the wastewater system's classification.
- d. The permittee's wastewater system may be without the designated supervisor for up to 30 consecutive days if another person who is certified at no more than one grade lower than the classification of the wastewater system supervises. The permittee must delegate authority to this operator to supervise the operation of the system.
- e. If the wastewater system has more than one daily shift, the permittee must have another properly certified operator available to supervise operation of the system. Each shift supervisor must be certified at no more than one grade lower than the system classification.
- f. The permittee is not required to have a supervisor on site at all times; however, the supervisor must be available to the permittee and operator at all times.
- g. The permittee must notify DEQ in writing of the name of the system supervisor by completing and submitting the Supervisory Wastewater System Operator Designation Form along with the Delegated Authority form?). The most recent version of this form may be found on the Operator Certification website (<https://www.oregon.gov/deq/FilterDocs/OPCertSupDesig.pdf>) *NOTE: This form is different from the Delegated Authority form. The permittee may replace or re-designate the system supervisor with another properly certified operator at any time and must notify DEQ in writing within 30 days of replacement or re-designation of the operator in charge. As of this writing, the notice of replacement or re-designation must be sent to Water Quality Division, Operator Certification Program, 700 NE Multnomah St, Suite 600, Portland, OR 97232-4100. This address may be updated in writing by DEQ during the term of this permit.
- h. When compliance with item (d) of this section is not possible or practicable because the system supervisor is not available or the position is vacated unexpectedly, and another certified operator is not qualified to assume supervisory responsibility, the Director may grant a time extension for compliance with the requirements in response to a written request from the system owner. The Director will not grant an extension longer than 120 days unless the system owner documents the existence of extraordinary circumstances.

9. Spill/Emergency Response Plan

The permittee must have an up-to-date spill response plan for prevention and handling of spills and unplanned discharges. This plan must be available for review during a DEQ inspection. The spill response plan must include all of the following:

- a. A description of the reporting system that will be used to alert responsible managers and legal authorities in the event of a spill.
- b. A description of preventive measures and facilities (including an overall facility plot showing drainage patterns) to prevent, contain, or treat spills.
- c. A description of the permittee's training program to ensure that employees are properly trained at all times to respond to unplanned and emergency incidents.
- d. A description of the applicable reporting requirements. These must be consistent with the reporting requirements found in Schedule F, condition D.5.

10. Outfall Inspection

During the year 2023 (3rd year after permit issuance), the permittee must inspect Outfall 001 including the submerged portion of the outfall line to document its integrity and to determine whether it is functioning as designed. The inspection must determine whether any ports are intact, clear and fully functional. The permittee must submit a written report to DEQ regarding the results of the outfall inspection by the date in Table B1. The report must include a description of the outfall as originally constructed, the condition of the current outfall and identify any repairs needed to return the outfall to satisfactory condition.

SCHEDULE E: PRETREATMENT ACTIVITIES

1. Program Administration

The permittee must conduct and enforce its Pretreatment Program, as approved by DEQ, and comply with the most current General Pretreatment Regulations (40 CFR part 403). The permittee must secure and maintain sufficient resources and qualified personnel to carry out the program implementation procedures described in this permit as required by 40 CFR 403.8(f)(3).

2. Legal Authorities

The permittee must adopt all legal authority necessary to fully implement its approved pretreatment program and to comply with all applicable state and federal pretreatment regulations. The permittee must also establish, where necessary, contracts or agreements with contributing jurisdictions to ensure compliance with pretreatment requirements by industrial users within these jurisdictions. These contracts or agreements must identify the agency responsible for all implementation and enforcement activities to be performed in the contributing jurisdictions. Regardless of jurisdictional situation, the permittee is responsible for ensuring that all aspects of the pretreatment program are fully implemented and enforced.

3. Local Limits

The permittee, in consultation with DEQ, must perform a technical evaluation of the local limits and update these local limits if necessary. The permittee must submit those findings as a report to DEQ within 18 months after permit re-issuance unless DEQ authorizes or requires, in writing, an alternate time frame. Locally derived discharge limits must be defined as pretreatment standards under section 307(d) of the Act and must conform to 40 CFR 403.5(c) and 403.8(f)(4). Technically based local limits must be developed in accordance with the procedures established by DEQ and the EPA's Local Limits Guidance.

4. Control Mechanisms

The permittee must issue an individual control mechanism to all Significant Industrial Users except where the permittee may, at its discretion, issue a general control mechanism as defined by 40 CFR 403.8(f)(1)(iii); or certification in lieu of a control mechanism for Non-Significant Categorical Industrial Users (NSCIUs) as defined by 40 CFR 403.3(v)(2), and Non-Discharging Categorical Industrial Users (NDCIUs). All individual and general control mechanisms must be enforceable and contain, at a minimum, the requirements identified in 40 CFR 403.8(f)(1)(iii)(B); and, may contain equivalent concentration and mass based effluent limits where appropriate under 40 CFR 403.6(c)(5) and (6). Unless a more stringent definition has been adopted by the permittee, the definition of Significant Industrial User must be as stated in 40 CFR 403.3(v).

5. Pretreatment Monitoring

a. POTW's Treatment Plant Monitoring

POTW Monitoring requirements (Schedule B - Table B5): The permittee must monitor its influent, effluent, and biosolids for pollutants expected from non-domestic sources. Influent, effluent and sludge samples must be tested for the priority pollutant metals on quarterly basis throughout the term of this permit as specified in Schedule B of the permit.

The permittee must sample POTW influent and effluent on a day when industrial discharges are occurring at normal to maximum levels. All reported test data for metals must represent the total amount of the constituent present. The permittee must include a summary of monitoring results in the Annual Pretreatment Report. The monitoring data collected in this manner must be used for re-evaluation of the POTWs local limits when sufficient data becomes available.

b. Industrial User Sampling and Inspection

The permittee must randomly sample and analyze the effluent from Industrial Users at a frequency commensurate with the character, consistency, and volume of the discharge and conduct surveillance activities in order to identify, independent of information supplied by Industrial Users, occasional and continuing noncompliance with Pretreatment Standards. The permittee must conduct a complete facility inspection; and, sample the effluent from each Significant Industrial User at least once a year at a minimum, unless otherwise specified below:

- i. Where the permittee has authorized the Industrial User subject to a categorical Pretreatment Standard to forego sampling of a pollutant regulated by a categorical Pretreatment Standard in accordance with 40 CFR 403.12(e)(2), the permittee must sample for the waived pollutant(s) at least once during the term of the Categorical Industrial User's control mechanism. In the event that the permittee subsequently determines that a waived pollutant is present or is expected to be present in the Industrial User's wastewater based on changes that occur in the User's operations, the permittee must immediately begin at least annual effluent monitoring of the User's Discharge and inspection.
- ii. Where the permittee has determined that an Industrial User meets the criteria for classification as a Non-Significant Categorical Industrial User, the permittee must evaluate, at least once per year, whether an Industrial User continues to meet the criteria in 40 CFR 403.3(v)(2).
- iii. In the case of Industrial Users subject to reduced reporting requirements under 40 CFR 403.12(e)(3), the permittee must randomly sample and analyze the effluent from Industrial Users and conduct inspections at least once every two years. If the Industrial User no longer meets the conditions for reduced reporting in 40 CFR 403.12(e)(3), the permittee must immediately begin sampling and inspecting the Industrial User at least once a year.

c. Industrial User Self Monitoring and Other Reports

The permittee must receive and analyze self-monitoring and other reports submitted by industrial users as required by 40 CFR 403.8(f)(2)(iv) and 403.12(b),(d),(e),(g) and (h). Significant Industrial User reports must include Best Management Practice (BMP) compliance information per 40 CFR 403.12(b), (e), (h), where appropriate.

d. Industrial User Monitoring in Lieu of Self-Monitoring

Where the permittee elects to conduct monitoring of an industrial user in lieu of requiring self-monitoring, the permittee must gather all information which would otherwise have been submitted by the user. The permittee must also perform the sampling and analyses in accordance with the protocols established for the user and must follow the requirements in 40 CFR 403.12(g)(2) if repeat sampling is required as the result of any sampling violation(s).

e. Sample Collection and Analysis

Sample collection and analysis, and the gathering of other compliance data, must be performed with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions. Unless specified otherwise by the Director in writing, all sampling and analyses must be performed in accordance with 40 CFR part 136 or 40 CFR part 503 for biosolids analytes.

6. **Slug Control Plans**

The permittee must evaluate whether each Significant Industrial User needs a slug control plan or other action to control slug discharges. Industrial Users identified as significant after October 14, 2005, must be evaluated within 1 year of being designated a Significant Industrial User. A slug discharge is any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge that has a reasonable potential to cause interference or pass through or in any other way violate the permittee's regulations, local limits, or conditions of this permit. Per 40 CFR 403:8(f)(2)(vi), the permittee is required to track and document any slug discharge by Significant Industrial Users and make it available to DEQ upon request. The permittee must require Significant Industrial Users to immediately notify the permittee of any changes at its facility affecting potential for a slug discharge. If the permittee determines that a slug control plan is needed, the requirements to control slug discharges must be incorporated into the Significant Industrial User's control mechanism and the slug plan must contain, at a minimum, the following elements:

- a. Description of discharge practices, including non-routine batch discharges;
- b. Description of stored chemicals;
- c. Procedures for immediately notifying the permittee of slug discharges, including any discharge that would violate a prohibition under 40 CFR 403.5(b) with procedures for follow-up written notification within five days; and
- d. If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants (including solvents), and/or measures and equipment for emergency response.

7. **Enforcement**

The permittee must identify all violations of the industrial user's permit or local ordinance. The permittee must investigate all such instances of industrial user noncompliance and take all necessary steps to return users to compliance. The permittee's enforcement actions must follow its approved legal authorities (for example, ordinances) and Enforcement Response Plan developed in accordance with 40 CFR 403.8(f)(5). The permittee must periodically review administrative penalties to ensure that the penalties serve as an effective deterrent of noncompliance.

8. **Public Notice of Significant Noncompliance**

The permittee must publish annual notification in a newspaper(s) of general circulation that provides meaningful public notice within the jurisdiction(s) served by the permittee of industrial users which, at any time during the previous 12 months, were in significant noncompliance with applicable pretreatment requirements. For the purposes of this requirement, an industrial user is in significant noncompliance if it meets one or more of the criteria listed in 40 CFR 403.8(f)(2)(viii).

9. Data and Information Management

The permittee must develop and maintain a data management system designed to track the status of the industrial user inventory, discharge characteristics, and compliance. In accordance with 40 CFR 403.12(o), the permittee must retain all records relating to pretreatment program activities for a minimum of 3 years and make such records available to DEQ and EPA upon request. The permittee must also provide public access to information considered effluent data under 40 CFR part 2.

10. Annual Pretreatment Program Report

The permittee must submit a complete report to DEQ on or before March 31 that describes the pretreatment program activities during the previous calendar year pursuant to 40 CFR 403.12(i). For guidance on the content and format of this report, contact DEQ's pretreatment coordinator. Reports submitted to DEQ regarding pretreatment must be signed by a principal executive officer, ranking elected official or other duly authorized employee if such employee is responsible for overall operation of the POTW.

11. Pretreatment Program Modifications

The permittee must submit in writing to DEQ a statement of the basis for any proposed modification of its approved program and a description of the proposed modification in accordance with 40 CFR 403.18. No substantial program modifications may be implemented by the delegated program prior to receiving written authorization from DEQ.

SCHEDULE F: NPDES GENERAL CONDITIONS

NPDES GENERAL CONDITIONS – DOMESTIC FACILITIES October 1, 2015 Version

SECTION A. STANDARD CONDITIONS

A1. Duty to Comply with Permit

The permittee must comply with all conditions of this permit. Failure to comply with any permit condition is a violation of Oregon Revised Statutes (ORS) 468B.025 and the federal Clean Water Act and is grounds for an enforcement action. Failure to comply is also grounds for DEQ to terminate, modify and reissue, revoke, or deny renewal of a permit.

A2. Penalties for Water Pollution and Permit Condition Violations

The permit is enforceable by DEQ or EPA, and in some circumstances also by third-parties under the citizen suit provisions of 33 USC § 1365. DEQ enforcement is generally based on provisions of state statutes and Environmental Quality Commission (EQC) rules, and EPA enforcement is generally based on provisions of federal statutes and EPA regulations.

ORS 468.140 allows DEQ to impose civil penalties up to \$25,000 per day for violation of a term, condition, or requirement of a permit.

Under ORS 468.943, unlawful water pollution in the second degree, is a Class A misdemeanor and is punishable by a fine of up to \$25,000, imprisonment for not more than one year, or both. Each day on which a violation occurs or continues is a separately punishable offense.

Under ORS 468.946, unlawful water pollution in the first degree is a Class B felony and is punishable by a fine of up to \$250,000, imprisonment for not more than 10 years, or both.

The Clean Water Act provides that any person who violates permit condition, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation.

The Clean Water Act provides that any person who negligently violates any condition, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than 1 year, or both.

In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than 2 years, or both.

Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than 3 years, or both.

In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than 6 years, or both.

Any person who knowingly violates section any permit condition, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both.

In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both.

An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.

Any person may be assessed an administrative penalty by the Administrator for violating any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act.

Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000.

Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.

A3. Duty to Mitigate

The permittee must take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit. In addition, upon request of DEQ, the permittee must correct any adverse impact on the environment or human health resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

A4. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and have the permit renewed. The application must be submitted at least 180 days before the expiration date of this permit.

DEQ may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

A5. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

- a. Violation of any term, condition, or requirement of this permit, a rule, or a statute.
- b. Obtaining this permit by misrepresentation or failure to disclose fully all material facts.
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
- d. The permittee is identified as a Designated Management Agency or allocated a wasteload under a total maximum daily load (TMDL).
- e. New information or regulations.
- f. Modification of compliance schedules.
- g. Requirements of permit reopener conditions
- h. Correction of technical mistakes made in determining permit conditions.
- i. Determination that the permitted activity endangers human health or the environment.
- j. Other causes as specified in 40 CFR §§ 122.62, 122.64, and 124.5.
- k. For communities with combined sewer overflows (CSOs):
 - (1) To comply with any state or federal law regulation for CSOs that is adopted or promulgated subsequent to the effective date of this permit.

- (2) If new information that was not available at the time of permit issuance indicates that CSO controls imposed under this permit have failed to ensure attainment of water quality standards, including protection of designated uses.
- (3) Resulting from implementation of the permittee's long-term control plan and/or permit conditions related to CSOs.

The filing of a request by the permittee for a permit modification, revocation or reissuance, termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

A6. Toxic Pollutants

The permittee must comply with any applicable effluent standards or prohibitions established under Oregon Administrative Rule (OAR) 340-041-0033 and section 307(a) of the federal Clean Water Act for toxic pollutants, and with standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

A7. Property Rights and Other Legal Requirements

The issuance of this permit does not convey any property rights of any sort, or any exclusive privilege, or authorize any injury to persons or property or invasion of any other private rights, or any infringement of federal, tribal, state, or local laws or regulations.

A8. Permit References

Except for effluent standards or prohibitions established under section 307(a) of the federal Clean Water Act and OAR 340-041-0033 for toxic pollutants, and standards for sewage sludge use or disposal established under section 405(d) of the federal Clean Water Act, all rules and statutes referred to in this permit are those in effect on the date this permit is issued.

A9. Permit Fees

The permittee must pay the fees required by OAR.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

B1. Proper Operation and Maintenance

The permittee must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

B2. Need to Halt or Reduce Activity Not a Defense

For industrial or commercial facilities, upon reduction, loss, or failure of the treatment facility, the permittee must, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It is not a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

B3. Bypass of Treatment Facilities

a. Definitions

- (1) "Bypass" means intentional diversion of waste streams from any portion of the treatment facility. The permittee may allow any bypass to occur which does not cause effluent limitations to be

- exceeded, provided the diversion is to allow essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs b and c of this section.
- (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- b. Prohibition of bypass.
- (1) Bypass is prohibited and DEQ may take enforcement action against a permittee for bypass unless:
- i. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - ii. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventative maintenance; and
 - iii. The permittee submitted notices and requests as required under General Condition B3.c.
- (2) DEQ may approve an anticipated bypass, after considering its adverse effects and any alternatives to bypassing, if DEQ determines that it will meet the three conditions listed above in General Condition B3.b.(1).
- c. Notice and request for bypass.
- (1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, a written notice must be submitted to DEQ at least ten days before the date of the bypass.
- (2) Unanticipated bypass. The permittee must submit notice of an unanticipated bypass as required in General Condition D5.

B4. Upset

- a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operation error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.
- b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of General Condition B4.c are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset must demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
- (1) An upset occurred and that the permittee can identify the causes(s) of the upset;
 - (2) The permitted facility was at the time being properly operated;
 - (3) The permittee submitted notice of the upset as required in General Condition D5, hereof (24-hour notice); and
 - (4) The permittee complied with any remedial measures required under General Condition A3 hereof.
- d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

B5. Treatment of Single Operational Upset

For purposes of this permit, a single operational upset that leads to simultaneous violations of more than one pollutant parameter will be treated as a single violation. A single operational upset is an exceptional incident that causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one federal Clean Water Act effluent discharge pollutant parameter. A single operational upset does not include federal Clean Water Act violations involving discharge without a NPDES permit or noncompliance to the extent caused by improperly designed or inadequate treatment facilities. Each day of a single operational upset is a violation.

B6. Overflows from Wastewater Conveyance Systems and Associated Pump Stations

- a. Definition. "Overflow" means any spill, release or diversion of sewage including:
 - (1) An overflow that results in a discharge to waters of the United States; and
 - (2) An overflow of wastewater, including a wastewater backup into a building (other than a backup caused solely by a blockage or other malfunction in a privately owned sewer or building lateral), even if that overflow does not reach waters of the United States.
- b. Reporting required. All overflows must be reported orally to DEQ within 24 hours from the time the permittee becomes aware of the overflow. Reporting procedures are described in more detail in General Condition D5.

B7. Public Notification of Effluent Violation or Overflow

If effluent limitations specified in this permit are exceeded or an overflow occurs that threatens public health, the permittee must take such steps as are necessary to alert the public, health agencies and other affected entities (for example, public water systems) about the extent and nature of the discharge in accordance with the notification procedures developed under General Condition B8. Such steps may include, but are not limited to, posting of the river at access points and other places, news releases, and paid announcements on radio and television.

B8. Emergency Response and Public Notification Plan

The permittee must develop and implement an emergency response and public notification plan that identifies measures to protect public health from overflows, bypasses, or upsets that may endanger public health. At a minimum the plan must include mechanisms to:

- a. Ensure that the permittee is aware (to the greatest extent possible) of such events;
- b. Ensure notification of appropriate personnel and ensure that they are immediately dispatched for investigation and response;
- c. Ensure immediate notification to the public, health agencies, and other affected public entities (including public water systems). The overflow response plan must identify the public health and other officials who will receive immediate notification;
- d. Ensure that appropriate personnel are aware of and follow the plan and are appropriately trained;
- e. Provide emergency operations; and
- f. Ensure that DEQ is notified of the public notification steps taken.

B9. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters must be disposed of in such a manner as to prevent any pollutant from such materials from entering waters of the state, causing nuisance conditions, or creating a public health hazard.

SECTION C. MONITORING AND RECORDS

C1. Representative Sampling

Sampling and measurements taken as required herein must be representative of the volume and nature of the monitored discharge. All samples must be taken at the monitoring points specified in this permit, and must be taken, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points must not be changed without notification to and the approval of DEQ. Samples must be collected in accordance with requirements in 40 CFR part 122.21 and 40 CFR part 403 Appendix E.

C2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices must be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices must be installed, calibrated and maintained to insure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected must be capable of measuring flows with a maximum deviation of less than ± 10 percent from true discharge rates throughout the range of expected discharge volumes.

C3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503 unless other test procedures have been specified in this permit.

For monitoring of recycled water with no discharge to waters of the state, monitoring must be conducted according to test procedures approved under 40 CFR part 136 or as specified in the most recent edition of Standard Methods for the Examination of Water and Wastewater unless other test procedures have been specified in this permit or approved in writing by DEQ.

C4. Penalties for Tampering

The federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit may, upon conviction, be punished by a fine of not more than \$10,000 per violation, imprisonment for not more than two years, or both. If a conviction of a person is for a violation committed after a first conviction of such person, punishment is a fine not more than \$20,000 per day of violation, or by imprisonment of not more than four years, or both.

C5. Reporting of Monitoring Results

Monitoring results must be summarized each month on a discharge monitoring report form approved by DEQ. The reports must be submitted monthly and are to be mailed, delivered or otherwise transmitted by the 15th day of the following month unless specifically approved otherwise in Schedule B of this permit.

C6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR part 136 or, in the case of sludge (biosolids) use and disposal, approved under 40 CFR part 503, or as specified in this permit, the results of this monitoring must be included in the calculation and reporting of the data submitted in the discharge monitoring report. Such increased frequency must also be indicated. For a pollutant parameter that may be sampled more than once per day (for example, total residual chlorine), only the average daily value must be recorded unless otherwise specified in this permit.

C7. Averaging of Measurements

Calculations for all limitations that require averaging of measurements must utilize an arithmetic mean, except for bacteria which must be averaged as specified in this permit.

C8. Retention of Records

Records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities must be retained for a period of at least 5 years (or longer as required by 40 CFR part 503). Records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit must be retained for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of DEQ at any time.

C9. Records Contents

Records of monitoring information must include:

- a. The date, exact place, time, and methods of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical techniques or methods used; and
- f. The results of such analyses.

C10. Inspection and Entry

The permittee must allow DEQ or EPA upon the presentation of credentials to:

- a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
- d. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by state law, any substances or parameters at any location.

C11. Confidentiality of Information

Any information relating to this permit that is submitted to or obtained by DEQ is available to the public unless classified as confidential by the Director of DEQ under ORS 468.095. The permittee may request that information be classified as confidential if it is a trade secret as defined by that statute. The name and address of the permittee, permit applications, permits, effluent data, and information required by NPDES application forms under 40 CFR § 122.21 are not classified as confidential [40 CFR § 122.7(b)].

SECTION D. REPORTING REQUIREMENTS

D1. Planned Changes

The permittee must comply with OAR 340-052, "Review of Plans and Specifications" and 40 CFR § 122.41(l)(1). Except where exempted under OAR 340-052, no construction, installation, or modification involving disposal systems, treatment works, sewerage systems, or common sewers may be commenced until the plans and specifications are submitted to and approved by DEQ. The permittee must give notice to DEQ as soon as possible of any planned physical alternations or additions to the permitted facility.

D2. Anticipated Noncompliance

The permittee must give advance notice to DEQ of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements.

D3. Transfers

This permit may be transferred to a new permittee provided the transferee acquires a property interest in the permitted activity and agrees in writing to fully comply with all the terms and conditions of the permit and EQC rules. No permit may be transferred to a third party without prior written approval from DEQ. DEQ may require modification, revocation, and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under 40 CFR § 122.61. The permittee must notify DEQ when a transfer of property interest takes place.

D4. Compliance Schedule

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance must include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirements.

D5. Twenty-Four Hour Reporting

The permittee must report any noncompliance that may endanger health or the environment. Any information must be provided orally (by telephone) to the DEQ regional office or Oregon Emergency Response System (1-800-452-0311) as specified below within 24 hours from the time the permittee becomes aware of the circumstances.

a. Overflows.

(1) Oral Reporting within 24 hours.

- i. For overflows other than basement backups, the following information must be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311. For basement backups, this information should be reported directly to the DEQ regional office.
 - (a) The location of the overflow;
 - (b) The receiving water (if there is one);
 - (c) An estimate of the volume of the overflow;
 - (d) A description of the sewer system component from which the release occurred (for example, manhole, constructed overflow pipe, crack in pipe); and
 - (e) The estimated date and time when the overflow began and stopped or will be stopped.
- ii. The following information must be reported to the DEQ regional office within 24 hours, or during normal business hours, whichever is earlier:
 - (a) The OERS incident number (if applicable); and
 - (b) A brief description of the event.

(2) Written reporting postmarked within 5 days.

- i. The following information must be provided in writing to the DEQ regional office within 5 days of the time the permittee becomes aware of the overflow:
 - (a) The OERS incident number (if applicable);
 - (b) The cause or suspected cause of the overflow;
 - (c) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the overflow and a schedule of major milestones for those steps;
 - (d) Steps taken or planned to mitigate the impact(s) of the overflow and a schedule of major milestones for those steps; and
 - (e) For storm-related overflows, the rainfall intensity (inches/hour) and duration of the storm associated with the overflow.

DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

b. Other instances of noncompliance.

- (1) The following instances of noncompliance must be reported:
 - i. Any unanticipated bypass that exceeds any effluent limitation in this permit;
 - ii. Any upset that exceeds any effluent limitation in this permit;
 - iii. Violation of maximum daily discharge limitation for any of the pollutants listed by DEQ in this permit; and
 - iv. Any noncompliance that may endanger human health or the environment.
- (2) During normal business hours, the DEQ regional office must be called. Outside of normal business hours, DEQ must be contacted at 1-800-452-0311 (Oregon Emergency Response System).
- (3) A written submission must be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission must contain:
 - i. A description of the noncompliance and its cause;
 - ii. The period of noncompliance, including exact dates and times;
 - iii. The estimated time noncompliance is expected to continue if it has not been corrected;
 - iv. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and
 - v. Public notification steps taken, pursuant to General Condition B7.
- (4) DEQ may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

D6. Other Noncompliance

The permittee must report all instances of noncompliance not reported under General Condition D4 or D5 at the time monitoring reports are submitted. The reports must contain:

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

D7. Duty to Provide Information

The permittee must furnish to DEQ within a reasonable time any information that DEQ may request to determine compliance with the permit or to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit. The permittee must also furnish to DEQ, upon request, copies of records required to be kept by this permit.

Other Information: When the permittee becomes aware that it has failed to submit any relevant facts or has submitted incorrect information in a permit application or any report to DEQ, it must promptly submit such facts or information.

D8. Signatory Requirements

All applications, reports or information submitted to DEQ must be signed and certified in accordance with 40 CFR § 122.22.

D9. Falsification of Information

Under ORS 468.953, any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, is subject to a Class C felony punishable by a fine not to exceed \$125,000 per violation and up to 5 years in prison per ORS chapter 161. Additionally, according to 40 CFR § 122.41(k)(2), any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit including monitoring reports or reports of compliance or non-compliance will, upon conviction, be punished

by a federal civil penalty not to exceed \$10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

D10. Changes to Indirect Dischargers

The permittee must provide adequate notice to DEQ of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the federal Clean Water Act if it were directly discharging those pollutants and;
- b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For the purposes of this paragraph, adequate notice must include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

SECTION E. DEFINITIONS

- E1. *BOD* or *BOD₅* means five-day biochemical oxygen demand.
- E2. *CBOD* or *CBOD₅* means five-day carbonaceous biochemical oxygen demand.
- E3. *TSS* means total suspended solids.
- E4. *Bacteria* means but is not limited to fecal coliform bacteria, total coliform bacteria, *Escherichia coli* (*E. coli*) bacteria, and *Enterococcus* bacteria.
- E5. *FC* means fecal coliform bacteria.
- E6. *Total residual chlorine* means combined chlorine forms plus free residual chlorine
- E7. *Technology based permit effluent limitations* means technology-based treatment requirements as defined in 40 CFR § 125.3, and concentration and mass load effluent limitations that are based on minimum design criteria specified in OAR 340-041.
- E8. *mg/l* means milligrams per liter.
- E9. *µg/l* means microgram per liter.
- E10. *kg* means kilograms.
- E11. *m³/d* means cubic meters per day.
- E12. *MGD* means million gallons per day.
- E13. *Average monthly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
- E14. *Average weekly effluent limitation* as defined at 40 CFR § 122.2 means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
- E15. *Daily discharge* as defined at 40 CFR § 122.2 means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge must be calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge must be calculated as the average measurement of the pollutant over the day.
- E16. *24-hour composite sample* means a sample formed by collecting and mixing discrete samples taken periodically and based on time or flow.
- E17. *Grab sample* means an individual discrete sample collected over a period of time not to exceed 15 minutes.
- E18. *Quarter* means January through March, April through June, July through September, or October through December.
- E19. *Month* means calendar month.
- E20. *Week* means a calendar week of Sunday through Saturday.
- E21. *POTW* means a publicly-owned treatment works.