



Oregon Department of Environmental Quality  
**National Pollutant Discharge Elimination System**  
**Permit Fact Sheet Modification #3**  
**Final: March 5, 2024**

State of Oregon  
 Department of  
 Environmental  
 Quality

Western Region – Salem Office  
 4026 Fairview Industrial Drive SE  
 Salem, OR 97302

<b>Permittee:</b>	Oregon Department of Fish and Wildlife 4034 Fairview Industrial Drive SE Salem, OR 97302
<b>Existing Permit Information:</b>	File Number: 64490 Permit Number: 101914 Expiration Date: Aug. 31, 2026 EPA Reference Number: OR0027642
<b>Source Contact:</b>	Erik Withalm, 541-896-3294 x221 Hatchery Manager
<b>Source Location:</b>	90700 Fish Hatchery Road Leaburg, OR 97489 Lane County
<b>LLID:</b>	NHD: 17090004000099, 31.6% LLID: 1230673441173, RM 33.7
<b>Receiving Stream/Basin:</b>	McKenzie River / McKenzie Basin
<b>Proposed Action:</b>	<b>Major Modification #3 – Department Initiated</b> Application Number: 948207 Date Received: Oct. 23, 2023
<b>Source Category:</b>	NPDES Minor (NPDES-IW-B17-Tier 2)– Industrial
<b>Sources Covered:</b>	Discharges from aquatic animal production facility (Fish Hatchery)
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## 1.0 Introduction

The Department of Environmental Quality (DEQ) proposes to renew the facility's National Pollutant Discharge Elimination System (NPDES) wastewater permit for the Oregon Department of Fish and Wildlife's Leaburg Fish Hatchery, located at 90700 Fish Hatchery Road, Leaburg, OR 97489 which is owned by the Army Corps of Engineers. The Leaburg Fish Hatchery (see Figure 1) is located close to Mile Post 24 on Highway 126, approximately four miles east of Leaburg, Oregon and twenty-four miles east of the Interstate Highway 5 and City of Springfield - Highway 126 interchange. The facility treats and discharges hatchery wastewater into the McKenzie River at River Mile 33.7, through Outfalls 001, 002, and 003, according to National Pollutant Discharge Elimination System (NPDES) Permit number 101914.

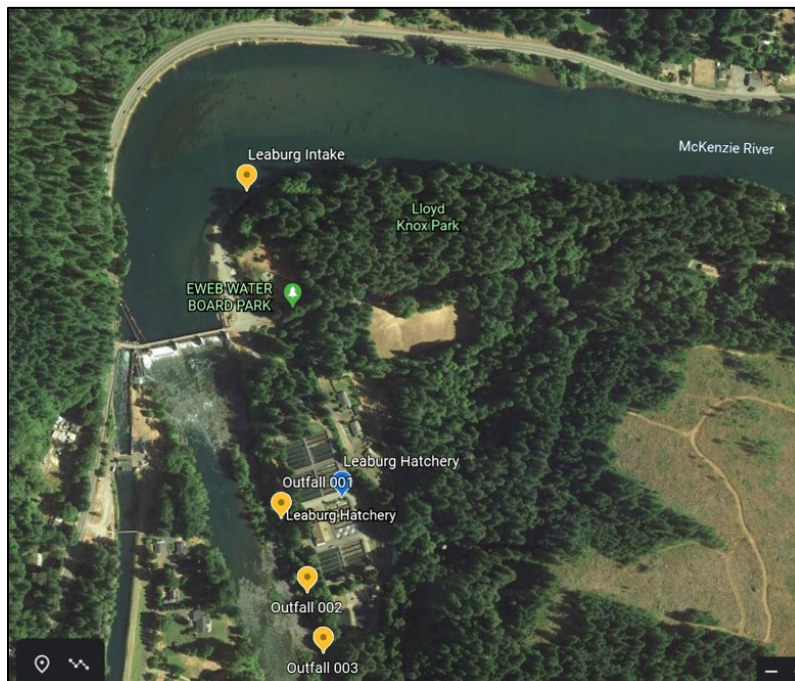
The proposed permit allows and regulates the discharge of water used in the hatchery to the McKenzie River in the McKenzie Sub-basin of the McKenzie Basin.

DEQ received application number 965894 from ODFW on Oct. 28, 2011. The proposed permit is DEQ's action in response to this application.

This permit fact sheet describes the basis and methodology DEQ used to develop the permit. The permit is divided into the following sections:

- Schedule A – Waste discharge limits
- Schedule B – Minimum monitoring and reporting requirements
- Schedule C – Compliance conditions and schedules
- Schedule D – Special conditions
- Schedule F – General conditions

The Federal Water Pollution Control Act of 1972 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 complies with both federal and state requirements.



**Figure 1: Facility Location**

## 2.0 Facility Description

### 2.1 General

The U.S. Army Corps of Engineers (COE) built the Leaburg Fish Hatchery in 1953 as mitigation for lost recreational fishing opportunities due to the building of various flood control projects in the Willamette Valley, including Blue River and Cougar Reservoirs on the upper McKenzie River. The COE leases the facility to the Oregon Department of Fish and Wildlife (ODFW), which funds and operates it. The hatchery is used for rearing rainbow trout, summer steelhead, and spring Chinook. The facility draws and discharges hatchery water into the McKenzie River, which is a tributary to the Willamette River.

The hatchery is a rearing facility located on 21.6 acres. The facility includes an office/shop building with feed storage, incubation building, spawning building, shop/garage building, three duplexes and one single-family dwelling for hatchery personnel. There are forty concrete 20' by 100' rectangular rearing ponds, one concrete 20' by 50' rectangular rearing pond, six concrete circular ponds, eleven 16' x 2.7' x 1.5' "Canadian" style fiberglass troughs, two 16' x 3' x 3' "Canadian" style fiberglass troughs, twelve 8 tray "Heath" style egg incubators, one 60' by 250' earthen lined show pond, and two pollution abatement settling ponds. The water source for the hatchery, with water rights of 100 cfs, is the McKenzie River. The intake is located approximately 300 yards upstream of the hatchery. All rearing units use single-pass water. A non-chlorinated well supplies the drinking water for the facility and the residences of the hatchery personnel. The facility has a 500-gallon gasoline and 1,000-gallon diesel double walled above ground fuel tank. In October 2023, ODFW has communicated that it will operate Leaburg hatchery as follows. ODFW will measure inflow temperature commencing April 1, and when inflow temperature (daily max) reaches 0.5 degrees C below the applicable temperature criterion ODFW will take actions to eliminate Leaburg hatchery operation discharges for the remainder of the dry season (April 1 – October 31) but in no event will discharges exceed the permit limits. In addition, ODFW has communicated that in no event will there be hatchery operation discharges after June 10.

### 2.2 Wastewater Treatment

During normal operations, the rearing ponds (ponds #1-12) northwest of the hatchery building and the incubation building, discharge their water through Outfall 001. All other rearing ponds discharge through Outfall 002.

During cleaning operations, ponds being actively cleaned are diverted into two pollution abatement settling ponds to settle out solids before discharge to the McKenzie River through Outfall 003. Perforated pipes distribute the effluent from the rearing ponds into the two pollution abatement settling ponds to lessen the disturbance to the settling solids. There is an abatement pump station near Outfall 001 for directing flows from ponds #1-12 and the incubation building to the pollution abatement settling ponds. All other ponds are diverted via gravity flow. There is no plumbing to the abatement system from the circular ponds. As such, these ponds are only used for short-term fish holding with no feeding or cleaning activities occurring.

When possible, water from chemical treatments of ponds is discharged through the abatement settling ponds to Outfall 003.

All monitoring occurs as the effluent exits the pollution abatement settling ponds.

Appendix A presents a water flow diagram for the facility.

## 2.3 Wastewater Characteristics

Facility personnel clean the rearing ponds by lowering the water level in the rearing ponds, opening the drain valve near the bottom of the pond, and sweeping the sediments and waste to a drain that leads to the pollution abatement settling ponds. Fish waste, unused fish food, and sediment from the rearing pond effluent water, collects in the bottom of the pollution abatement settling ponds. The frequency of production pond cleaning depends on fish production loading. The average time frame for cleaning a rearing pond is every one to two weeks. The treated effluent water flows out at the opposite end of the settling ponds through a collection vault and discharges into the McKenzie River.

Facility personnel collect the water quality samples from the effluent water before entering the McKenzie River from Outfalls 001, 002, and 003. Outfall 001 is located midway between the rearing ponds and close to the northwest corner of the hatchery building. Outfall 002 is located between the two pollution abatement settling ponds and the rearing ponds. Outfall 003 is located on the south side of the pollution abatement settling ponds.

Under normal operational procedures, water from the incubation building and rearing ponds discharges directly into the McKenzie River through Outfalls 001 and/or 002. When facility personnel clean a rearing pond, effluent water is diverted from that pond to the pollution abatement settling ponds before discharge to the McKenzie River through Outfall 003.

Facility personnel use the pollution abatement settling ponds to settle out solids from the cleaning operations in the rearing ponds, and to dissipate and further degrade any residual formalin or hydrogen peroxide that is contained in the water from the incubation building or rearing ponds. The maximum allowed sediments and solids for the pollution abatement settling ponds are 25% of the ponds' volume capacity. Facility personnel last removed the sediments from the pollution abatement settling ponds in June of 2018. Measurements at this time showed the water holding capacity of the east pond at 98.6% and the west pond at 98.4%. The cleaning process involves drying the ponds for several days, then removing sediments with a tractor. Facility personnel rent a dump truck and haul the sediments to the neighboring Whitewater Ranch for use as Christmas tree fertilizer.

In the past, the rearing ponds had a copper-based red paint coating to reduce the amount of organic build up on the walls. Facility personnel painted the rearing ponds with the copper base red paint every two years. The last permit contained a condition requiring the permittee to conduct an annual bioassay test on the effluent to determine whether the metals contained in the paint may be present in the effluent at acute or chronic toxicity levels. The permittee no longer uses metal-based paints in any of the rearing ponds or troughs in the hatchery, thus eliminating this concern. The results of the bioassay tests indicated that no acute or chronic toxicity existed during sampling.

The current NPDES permit for Leaburg Hatchery (expired on 04/30/2012) requires that unless DEQ approves in writing, the permittee must use chemicals approved or allowed for hatchery use by the USFDA or USEPA. The NPDES permit also requires that the chemicals be applied and disposed of according to the USEPA or products' labeling requirements. In 2019, ODFW developed the Best Management Practices (BMPs) for Leaburg Hatchery Operations that includes a list of the legally available chemicals for fish culture, purpose of use, safe disposal methods, and regulatory authority (see Appendix B). ODFW's Senior Aquatic Veterinarian maintains the list of potential chemicals that may be used per prescription(s) written by the ODFW's Fish Pathologist, if or whenever needed. All chemically treated wastewaters are diluted per the product's labeling requirements for safe disposal.

Facility staff also maintain a log of chemicals and paints used at the facility that come in direct contact with water discharging into waters of the state. An annual summary of chemical use report is submitted to DEQ by February 15 of the following year. As per NPDES permit requirements, the annual summary describes the quantity (monthly and yearly totals) of chemicals and paints used, their application rates, where they were used, the reason for use, and dates of use.

The annual report also requires including the yearly total biomass that the facility produced during the previous calendar year. The NPDES permit for Leaburg Hatchery has a maximum yearly biomass production limit of 285,000 pounds or 129,545 kilograms fish. In 2019, however, the facility produced and reported to DEQ an approximate production of 130,863 pounds of fish.

## 2.4 Groundwater Issues

Since there is no known pathway between the hatchery operations covered under this permit and groundwater, DEQ does not expect any of the facility operations associated with this permit to negatively affect groundwater quality.

## 2.5 Stormwater

DEQ does not require this type of facility to have an industrial stormwater permit.

## 2.6 Outfalls

The facility currently has three outfalls, designated as Outfall 001, Outfall 002, and Outfall 003 (see Figure 2).

Outfall 001 is at approximate river mile (RM) 33.87 (Latitude/Longitude: 44.135512/-122.610247). The outfall meets with the McKenzie River along a path of boulders and occasionally has no flow during the months of May, June, and July.

Outfall 002 is at approximate river mile (RM) 33.82 (Latitude/Longitude: 44.134634/-122.609817). The outfall meets with the McKenzie River via a drainage ditch and flows year-round. This outfall is used for draining two-thirds of all the rearing pens.

Outfall 003 is at approximate river mile (RM) 33.77 (Latitude/Longitude: 44.133918/-122.609556). The outfall drains the pollution abatement settling ponds and meets with the McKenzie River via a concrete drainage ditch.



**Figure 2: Facility Outfalls**

## **2.7 Solids Management**

Facility personnel measure settling pond solid wastes to determine the ponds' remaining water holding capacity. In June 2018, facility personnel drained the ponds, dried the sediments, and removed them. Facility personnel last measured the ponds' solid wastes on December 27, 2018. The measurements showed the water holding capacity of the east pond and west pond were 98.6% and 98.4%, respectively, well within the permit limits of 25% of normal operational pond capacity.

## **2.8 Flow Measurement**

Two gate valves at the Leaburg Lake intake structure regulate the supply water. Facility personnel can open and close the gate valves to adjust incoming water flow. The gate valves' open height determines the water flow. A water master from the Oregon Department of Water Resources took measurements here and made a table that compares inches of gate valve openness against water flow in cfs.

A set number of ponds serve Outfalls 001 and 002. Facility personnel divide the total incoming water by the total number of active ponds to get flow per pond. Then they multiply the flow per pond by the number of ponds being discharged by each of the two "Normal" outfalls (001 and 002). Outfall 003 is the outfall for the settling ponds, and facility personnel estimate flow by taking the flow per pond and multiplying by one (the least number of ponds cleaned during Cleaning Operations) to find the minimum, and multiplying by four (the highest number of ponds cleaned during Cleaning Operations) to find the maximum. The average value recorded on quarterly discharge monitoring reports is an average between the minimum and maximum.

There is no precise way to measure Outfall 003 discharge during Cleaning Operations because the water discharge varies significantly during the cleaning event as staff start and end cleaning individual ponds on different timelines throughout the day (some employees work faster than others). Although not listed on the permit, Outfall 003 has the potential to discharge during Normal Operations; however, facility personnel have not done so during the current permit cycle.

## **3.0 Permit History**

DEQ issued the previous permit on Aug. 10, 2000, with an expiration date of July 31, 2005. DEQ issued the current permit on May 22, 2007, with an expiration date of Apr. 30, 2012. The permittee submitted a renewal application in a timely manner. Therefore, DEQ has administratively extended the current permit until DEQ issues the renewal permit.

### **3.1 Compliance History**

On Dec. 18, 2015, the permittee informed DEQ of an upset that occurred, starting on Dec. 17, 2015. This upset was due to heavy rainfall that resulted in very turbid source water entering the facility. The facility planned to settle the sediment-laden water in their pollution abatement settling ponds, before releasing any water into the river. DEQ took no enforcement action resulting from this upset.

On Sept. 5, 2017, the permittee notified DEQ about another upset. This was due to ash from firefighting activities on the Rebel and Horse Creek Complex fires burning upriver from the hatchery intake. DEQ took no enforcement action resulting from this event.

## 4.0 Receiving Water

The facility treats hatchery wastewater and discharges it into the McKenzie River at River through Outfalls 001, 002, and 003. The discharge is within the Willamette Basin and Upper Willamette Sub-Basin. The outfalls are located just downstream of the Leaburg Dam, which the Army Corps of Engineers regulates. Designated beneficial uses for the McKenzie River include the following:

- public and private domestic water supply
- industrial water supply
- irrigation
- livestock watering
- fish and aquatic life (including Core Cold-Water Habitat and Salmon and Steelhead Spawning Use)
- wildlife and hunting
- fishing
- boating
- water contact recreation
- aesthetic quality
- hydropower

DEQ developed water quality standards for the Willamette Basin to protect these beneficial uses (OAR 340-041).

### 4.1 Receiving Stream Water Quality

DEQ's 2018-2020 Integrated Report shows that the McKenzie River, in the vicinity of the facility's outfall, is in assessment unit OR\_SR\_1709000407\_02\_103884. The report lists the following Category 5 parameters in the AU:

- Temperature (Year-round)
- Temperature (Spawning)
- Dissolved Oxygen (Spawning)

### 4.2 Mixing Zone Analysis

The proposed permit contains a mixing zone and zone of initial dilution for each outfall, as OAR 340-041-0053 allows. Outfalls 001, 002, and 003 have the same mixing zone description and are described as follows:

*The allowable mixing zone consists of 25 percent of the McKenzie River flow. The Zone of Immediate Dilution (ZID) consists of 10 percent of the McKenzie River flow.*

DEQ conducted a mixing zone analysis using effluent flow reported by the facility and critical low stream flows. An April 2020, memo provides the detailed analysis. Table 2 below shows the dilutions at the edge of the zone of initial dilution and mixing zone for each outfall.

**Table 1: Dilution Values for Leaburg Fish Hatchery Outfalls**

Critical Flow	Stream Flow (cfs)	Outfall 001		Outfall 002		Outfall 003	
		Effluent Flow (cfs)	Dilution	Effluent Flow (cfs)	Dilution	Effluent Flow (cfs)	Dilution
1Q10	752	33.2	3	60.4	2	6	14
7Q10	781	23.0	10	60.1	4	4	50
30Q5	918	23.0	11	60.1	5	4	58
Harmonic Mean	1600	23.0	18	60.1	8	4	101

## 5.0 Permit Limits

There are two categories of effluent limits for NPDES permits: (1) Technology-based effluent limits (TBELs), and (2) Water quality-based effluent limits (WQBELs).

Technology-based effluent limits define a minimum level of treatment using readily available technology. EPA establishes technology-based effluent limits through Effluent Limitation Guidelines (ELGs) specific to industrial categories. If there are no applicable ELGs, the permit writer may use best professional judgment.

By contrast, DEQ develops water quality-based effluent limits independent of the available treatment technology, and instead, takes into account the receiving stream’s water quality and quantity. Water quality-based effluent limits are typically more stringent than technology-based permit limits when the receiving stream is small, is water quality-limited, or shows other evidence of impairment.

When renewing/reissuing a permit, a permit writer typically evaluates the existing limits in the permit against changes to technology-based standards and water quality standards that may have occurred during the permit term. With some exceptions, the antibacksliding provisions (described in CFR 122.44(l)) do not allow relaxing effluent limits in renewed/reissued permits. The permit writer must include the more stringent of the existing or new limits in the new permit.

### 5.1 Existing Permit Limits

The current permit contains the following limits:

Treated Effluent Outfalls 001-003

- a. Outfalls 001 and 002 (Fish Rearing Pens and the Hatchery Building)

Parameter	Monthly Average	Daily Maximum
Total Suspended Solids (TSS)	5 mg/l	10 mg/l
Settleable Solids (SS)	0.1 ml/l	N/A
pH	Within the range 6.0 - 9.0 SU	

b. Outfall 003 (from Pollution Abatement/Settling Ponds)

Parameter	Cleaning Daily Maximum
Total Suspended Solids (TSS)	15 mg/l
Settleable Solids (SS)	0.2 ml/l
pH	Within the range 6.0 - 9.0 SU

c. Outfalls 001, 002, and 003

Parameter	Limitation
Excess Thermal Load	No heat (0 kcal/day)

In addition to these limits, the following requirements are included in Schedule A of the current permit:

1. No wastes may be discharged or activities conducted that cause or contribute to a violation of water quality standards in OAR 340-041 applicable to the Willamette Basin except as provided for in OAR 340-45-0080 and the following regulatory mixing zone which applies to each of the three Outfalls 001, 002, and 003:

*The allowable mixing zone is that portion of the McKenzie River that shall not extend downstream beyond thirty feet from the point of discharge and shall not exceed ¼ of the width of the receiving stream at 7Q10 low flow conditions. The Zone of Immediate Dilution (ZID) is defined as that portion of the allowable mixing zone that is within ten feet of the point of discharge.*

2. All water that has been affected by chemical application or usage must be directed to the settling pond for discharge through Outfall 003. Chemical residuals from the treatment of fish disease or parasites are permitted provided that the chemicals are applied in accordance with USEPA labeling requirements. If it is necessary to discharge water that has been affected by chemical application or usage through Outfalls 001 or 002, monitoring for those chemical parameters is required during those times. Unless approved in writing by the Department, permittee must use chemicals approved or allowed for hatchery use by the USFDA or USEPA.
3. Off-site discharge of water associated with the release of fish into waters of the state is permitted.
4. Unless otherwise approved in writing by the Department, the maximum yearly biomass production permitted for this facility is 285,000 pounds or 129,545 kilograms.
5. No activities will be conducted that could cause an adverse impact on existing or potential beneficial uses of groundwater. All wastewater and process related residuals must be managed and disposed of in a manner that will prevent a violation of the Groundwater Quality Protection Rules (OAR 340-040).

## 5.2 Technology-Based Effluent Limits

The Leaburg facility produces 100,000 pounds or more of fish annually. Therefore, the permittee must follow the federal effluent limitation guidelines, found in 40 CFR, Part 451. These guidelines apply to flow-through systems (40 CFR, Part 451, Subpart A), and net pen systems (40 CFR, Part 451, Subpart B), for concentrated aquatic animal production point sources. The Leaburg facility is a flow-through system. Therefore 40 CFR, part 451, Subpart A applies. The permittee has the choice of using Best Practical Control Technology (BPT), Best Available Technology (BAT), or Best Conventional Technology (BCT) to meet the ELG requirements. If the permittee chooses either BAT or BCT, it must meet the requirements of BPT, found in 40 CFR, Part 451. 11, and reproduced below:

a) Solids control

The permittee must:

1. Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the U.S.
2. In order to minimize the discharge of accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading and harvesting aquatic animals in the production system.
3. Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the U.S., except in cases where the permitting authority authorizes such discharge in order to benefit the aquatic environment.

b) Materials storage

The permittee must:

1. Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides, or feed to waters of the U.S.
2. Implement procedures for properly containing, cleaning, and disposing of any spilled material.

c) Structural maintenance

The permittee must:

1. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.
2. Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

d) Recordkeeping

The permittee must:

1. In order to calculate representative feed conversion ratios, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the numbers and weight of aquatic animals.
2. Keep records documenting the frequency of cleaning, inspections, maintenance, and repairs.

e) Training

The permittee must:

1. In order to ensure the proper clean-up and disposal of spilled material adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.
2. Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

## 5.3 Water Quality-Based Effluent Limits

DEQ designs water quality based effluent limits (WQBELs) to protect the beneficial uses of the receiving water and are independent of the available treatment technology. The process DEQ uses to establish appropriate WQBELs involves developing a list of pollutants of concern. DEQ then evaluates each of these pollutants to determine whether the amount of the pollutant in the discharge represents a “reasonable potential to exceed” water quality standards in the receiving stream (the McKenzie River). If the discharge amount of a particular pollutant has a reasonable potential to exceed water quality standards, then DEQ establishes WQBELs for that pollutant.

### 5.3.1 Pollutants of Concern

The pollutants of concern for the facility include the following:

- Those included in the effluent limit guidelines (ELGs, explained above): The ELGs are primarily best management practices and prohibitions addressing solids, animal drugs, pesticides, and feed. Animal drugs, pesticides, and feed are addressed in Table 3 *Pollutants of Concern*, below, through the parameters BOD, ammonia, TKN and formalin (also see discussion “other pollutants...”, below). Total suspended solids (TSS) and settleable solids have no water quality criteria or guidance values (they are generally considered indicators of treatment performance), so no quantitative analysis is possible. However, the proposed permit regulates these pollutants under the technology-based limits described above.
- Those identified as being present in the effluent through monitoring: The pollutants identified under previous facility monitoring are the same ones that are included in the ELGs, so they are addressed above.
- Pollutants known to be in the discharge and for which the receiving stream is listed as water quality limited (see Section 4.1): The receiving stream is listed for temperature and dissolved oxygen (DO), so temperature and pollutants in the discharge contributing to the DO listing (ammonia, BOD, TKN) are also included.
- Pollutants with WQBELs in any existing permit: There were no WQBELs in the previous permit. However, pH was included as a TBEL and is included in the table.
- Other pollutants that are expected or known to be present: The other pollutants expected to be present in the discharge are specific animal drugs or pesticides: formalin, iodophor and antibiotics. While Oregon does not have an official water quality standard for formalin, DEQ has developed guidance values. DEQ has not developed standards or guidance values for iodophor or the antibiotics, so no quantitative analysis is possible. However, the proposed permit regulates using these chemicals under the technology-based limits described above.

The pollutants of concern are listed in the following table and the reasonable potential analysis for each pollutant is discussed below.

**Table 2: Pollutants of Concern**

Temperature	Dissolved Oxygen
pH	Formaldehyde

DEQ analyzed the potential for pollutants present in fish feed exceed water quality criteria in the final effluent. DEQ received independent laboratory analysis of the fish feed ODF&W uses at its hatchery. The fish feed analysis provided several results for a variety of pollutants, including heavy metals, PCBs, and dioxins. DEQ estimated concentrations of pollutants that had the potential to be in the final wastewater, using the fish feed analysis data. DEQ determined that all of the pollutants were well below water quality criteria and therefore are not pollutants of concern.

### 5.3.2 Reasonable Potential Analysis for pH

The pH of water measures how acidic or basic a solution is. DEQ considers a pH of 7.0 neutral. Most aquatic organisms can only tolerate a fairly narrow range around 7.0. The applicable water quality standard for the pH of the receiving stream, which is located in the Willamette Basin, is contained in OAR 340-041-0345(1)(a): 6.5 to 8.5. Facility personnel use Outfall 003 exclusively for discharging effluent under cleaning operations. DEQ and facility personnel consider effluent from this outfall has the greatest potential to adversely affect the water quality standards. DEQ ran a reasonable potential analysis of pH from this outfall, using facility discharge data, and ambient data from DEQ station 10662 (McKenzie River at Hendricks Bridge). The analysis indicates if the discharge's pH lies between 6.0 and 9.0, then the discharge will not have the potential to exceed the water quality criteria (see Appendix C). As a conservative measure, the renewal permit will require the other two outfalls to meet the same pH discharge limits.

### 5.3.3 Reasonable Potential Analysis for Formaldehyde

Facility personnel occasionally use *Parasite-S*, which is a brand name for formalin. This is a 37% solution of formaldehyde dissolved in water. *Parasite-S* is used to control external parasites on the hatchery fish and their eggs. Whenever facility personnel use *Parasite-S*, it is as part of cleaning operations. In particular, they use it in the rearing pens and starting troughs to reduce the growth of fungus on the fish due to handling the fish and abrasions against concrete pen walls.

In addition to FDA requirements, during the development of other hatchery NPDES permits, DEQ developed acute and chronic guidance criteria for formaldehyde. DEQ developed these guidance criteria to implement Oregon's narrative toxics substances standard (OAR 340.041-0033(1)). The guidance values are a chronic criterion of 1.6 mg/L and an acute criterion of 4.6 mg/L. DEQ performed a reasonable potential analysis for Outfall 003, using Oregon's standard procedures for toxics, to determine expected compliance with these values. This analysis, presented in spreadsheet form in Appendix D, indicates that there is no reasonable potential for the discharge to exceed the guidance values for formaldehyde.

### 5.3.4 Reasonable Potential Analysis for Temperature

Water temperatures affect the life cycles of aquatic species and are critical factors 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 anthropogenic warming. The thermal plume limitations (OAR 340-041-0053(2)(d)), which address thermal impacts in the immediate vicinity of discharges, supplement these criteria.

As with all pollutants in the permittee's discharge, the effluent temperature must be low enough to assure compliance with applicable water quality criteria. The water quality criteria pertaining to temperature in Oregon are primarily based on the most sensitive aquatic species and life stages present in the water body. The receiving stream (the McKenzie River) has a biologically-based numeric temperature criterion (BBNC) of 13°C as a 7-day average maximum, applicable September 1 through June 15. This criterion supports the fish use of salmonid and steelhead spawning and juvenile rearing, see OAR 340-041-0340, Figure 340B. The receiving stream also has a biologically-based numeric temperature criterion (BBNC) of 16°C as a 7-day average maximum, applicable June 16 through August 31. This criterion supports the fish use of core cold-water habitat, see OAR 340-041-0340, Figure 340A. The stream is included on Oregon's current (2012) list of impaired waters (303d list) as Category 4A (water quality-limited, TMDL approved) for non-attainment of these temperature criteria.

The flow limit included in this modified permit is not applicable when ODFW is meeting its excess thermal load limit by discharging at temperatures below the applicable standard. ODFW has communicated that it will operate Leaburg hatchery as follows. ODFW will measure inflow temperature commencing April 1, and when inflow temperature (daily max) reaches 0.5 degrees C below the applicable temperature criterion ODFW will take actions to eliminate Leaburg hatchery operations discharges for the remainder of the dry season (April 1 – October 31). In no event will discharges exceed the permit limits. In addition, ODFW has communicated that there will not be any hatchery operation discharges after June 10.

As part of the permit development, DEQ conducted a set of analyses to determine if temperature effluent limits need to be included in the permit. These analyses include the temperature TMDL analysis and the thermal plumes analysis. Summaries of each of these analyses are presented below.

#### McKenzie River Sub-basin Temperature TMDL

DEQ developed a total maximum daily load (TMDL) addressing each of the temperature criteria applicable to the receiving stream, and EPA approved it on Sept. 29, 2006. In Table 4.1 of the TMDL, DEQ allocated the EWEB Leaburg and WALTERVILLE Project reservoir operations all of the human use allowance (0.3°C) upstream of river mile 17.4. The two ODFW fish hatcheries, Leaburg and McKenzie, are upstream of river mile 17.4. Accordingly, DEQ did not provide a wasteload allocation for the hatcheries and there is no portion of the human use allowance that is available to the hatcheries. The TMDL wasteload allocations apply during the April 1 – October 31 period. During the last permit renewal, DEQ included an excess thermal loading limit of no heat (0 kcal/day) above the applicable criteria in the current permit. The proposed permit will retain this ETL limit, but, to be consistent with the TMDL, the limit applies April 1 – October 31 (the current permit's ETL limit erroneously applied year-round). Although antibacksliding provisions generally do not allow relaxation of effluent limits in renewal permits, section 303(d)(4)(A) of the Clean Water Act allows relaxation when the receiving water is not in attainment for the limiting or related pollutant, the effluent limit is based on a TMDL wasteload allocation, and it can be shown that relaxation is consistent with antidegradation requirements. As noted above, the receiving water is water quality limited and the new limit is based on a TMDL WLA. It also complies with the antidegradation requirement since TMDL wasteload allocation ensures the temperature increase is an insignificant increase according to the Antidegradation Rule, OAR 340-041-0004(3)(c). Therefore, the new thermal load limit based on the TMDL wasteload allocation is allowed and is included in the proposed permit.

~~The hatchery will not be able to meet this ETL limit upon renewal of the permit and will need to either perform facility modifications and/or conduct water quality trading in order to meet the limit. Typically, when a permittee is given an effluent limit that cannot be met immediately, a compliance schedule is included in the permit. However, this limit became effective under the previous permit, so a compliance schedule is not allowed pursuant to rule. A Mutual Agreement and Order (MAO) is an agency action that can be used to address this situation in lieu of a compliance schedule. As such, an MAO between DEQ~~

~~and ODFW to address past and anticipated future violations of this limit has been drafted (see Attachment E) and will be executed upon permit issuance.~~

### 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 that may result from thermal plumes. The criteria as they apply to the permittee's discharge are discussed below:

- *OAR 340-041-0053(2)(d)(A): Impairment of an active salmonid spawning area where spawning redds are located or likely to be located. This adverse effect is prevented or minimized by limiting potential fish exposure to temperatures of 13 degrees Celsius (55.4 Fahrenheit) or more for salmon and steelhead, and 9 degrees Celsius (48 degrees Fahrenheit) or more for bull trout.*

*Leaburg Fish Hatchery Discharge:* Based on Willamette Basin fish use and salmonid spawning use maps contained in OAR 340-041 Figure 340 B, the McKenzie River is designated as having Salmon and Steelhead spawning and rearing use from September 1 through June 15. Therefore, the steelhead spawning thermal plume criterion does apply to this facility.

As described above, the proposed permit includes effluent limits assuring that the discharge will have no impact above the 13°C salmonid temperature criterion during the spawning season.

- *OAR 340-041-0053(2)(d)(B): Acute impairment or instantaneous lethality is prevented or minimized by limiting potential fish exposure to temperatures of 32°C or more to less than 2 seconds.*

*Leaburg Fish Hatchery Discharge:* DEQ does not expect the discharge to reach temperatures at, or near, 32°C or greater, thereby preventing or minimizing acute impairment or instantaneous lethality.

- *OAR 340-041-0053(2)(d)(C): Thermal shock caused by a sudden increase in water temperature is prevented or minimized by limiting potential fish exposure to temperatures of 25°C or more to less than 5% of the cross-section of 100% of the 7Q10 low flow of the waterbody.*

*Leaburg Fish Hatchery Discharge:* DEQ does not expect the discharge to reach temperatures at, or near, 25°C or greater, thereby preventing or minimizing thermal shock.

- *OAR 340-041-0053(2)(d)(D): Unless ambient temperature is 21°C or greater, migration blockage is prevented or minimized by limiting potential fish exposure to temperatures of 21°C or more to less than 25% of the cross-section of 100% of the 7Q10 low flow of the waterbody.*

*Leaburg Fish Hatchery Discharge:* DEQ does not expect the discharge to reach temperatures at, or near, 21°C or greater, thereby preventing or minimizing migration blockage.

In summary, the thermal plume analysis indicates that the discharges from the Leaburg Fish Hatchery will meet the temperature thermal plume limits in OAR 340-041-0053(2)(d).

### **5.3.5 Reasonable Potential Analysis for Dissolved Oxygen**

The effluent has very low concentrations of oxygen demanding pollutants. Data from the permittee's discharge monitoring reports show that ammonia, which can lead to significant reductions in dissolved oxygen, has never been measured above 0.2 mg/L. This is equivalent to typical background ammonia levels in streams. Data from the permittee's discharge monitoring reports also show that effluent BOD is on the order of 4 mg/L, which is above typical background levels, but low enough that DEQ does not expect a measurable dissolved oxygen reduction in the McKenzie River.

The McKenzie River is relatively cold which will reduce impacts from BOD. The river should also be well aerated further up in the basin which will also reduce any impacts from BOD degradation.

DEQ has therefore determined the discharge does not have the potential to cause or contribute to low dissolved oxygen concentrations in the McKenzie River.

### **5.3.6 Reasonable Potential Analysis for Ammonia**

During the previous permit cycle, DEQ performed a reasonable potential analysis on the facility's discharge to see if ammonia in the discharge had the potential to adversely affect the receiving stream's water quality. The monitoring used to perform the ammonia RPA showed the sample concentrations were consistently low. The maximum concentration out of 24 samples was 0.2 mg/L. The RPA analysis showed no reasonable potential for ammonia to cause either acute or chronic toxicity within the receiving stream. As a result, DEQ no longer considered ammonia a contaminant of concern, and did not include any ammonia limits or ammonia monitoring requirements in the current permit. Therefore, there is no need to perform another ammonia RPA.

### **5.3.7 Permit Limit Derivation**

Based on the above analyses, DEQ has developed proposed permit limits based on the more stringent of the TBELs and QBELs. These include the numeric limits for total suspended solids (TSS), settleable solids, pH and temperature discussed above. In addition, the narrative limits discussed in Sections 5.1 and 5.2 are included. These limits are included in Section 6.2.

## **5.4 Whole Effluent Toxicity**

Schedule D of the previous permit contained a Special Condition specifying the Bioassay - Whole Effluent Toxicity Testing method. In the re-opener clause in Schedule D, section 4 of the previous permit, the bioassay monitoring requirement was removed. DEQ issued a Permit Action Letter for this permit on September 26, 2000. ODFW stated that they no longer use copper paints during the applicant review period of the 2000 issued permit, and this PAL was a follow-up to the bioassay requirement (due to copper paint usage) being dropped from the permit. Conditions have not changed during the current permit cycle; therefore, WET testing requirements are unnecessary for this facility and are not included in the proposed permit.

## **5.5 Trading**

Water quality trading is an innovative approach aimed at achieving water quality goals more efficiently than traditional methods. The Clean Water Act authorizes EPA, states, and tribes to develop a variety of programs and activities to control pollution, such as water trading. In addition, Oregon Revised Statute (ORS) 468B.555 directs DEQ to develop and implement a pollutant reduction trading program to achieve water quality objectives and standards in Oregon complying with state and federal water quality regulations and promotes economic efficiency. These provisions are described in Section 6.4, below. If the facility uses trading under this permit, then DEQ will present the trading plan for public comment before implementing the plan.

## 5.6 Antidegradation

DEQ has performed an antidegradation review for this discharge. The proposed permit contains the same discharge loadings as the existing permit, with the exception of the temperature (thermal load) limits as discussed in Section 5.3.4, above. Under Oregon's Antidegradation Rule, discharges with insignificant temperature increases are not considered degradation (OAR 340-041-0004(3)(c)). Specifically, the rule states that insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality. Section 5.3.4 of this report, along with the analysis presented in the temperature TMDL, provides an analysis of the temperature impacts of this discharge, and determines appropriate effluent limits to ensure the discharge will result in temperature increases at or below those authorized under OAR 340-041-0028(11) and (12). Based on OAR 340-041-0004 and the Section 5.3.4 of this report, the discharge from the facility does not have the potential to reduce water quality as it pertains to temperature. 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 receiving stream's designated beneficial uses. DEQ is also not aware of any existing uses present within the water body 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. DEQ's antidegradation worksheet for this permit renewal is available upon request.

## 6.0 Permit Draft Discussion

### 6.1 Face Page

The face page provides information about the permittee, a wastewater description, outfall locations, receiving stream information, permit approval authority, and a description of permitted activities. DEQ authorizes the permittee to construct, install, modify, or operate a wastewater collection, treatment, control, and disposal system. The permit allows discharge to the McKenzie River within Schedule A limits 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.

### 6.2 Schedule A - Waste Discharge Limitations

The proposed effluent limits for the discharge are as follows:

#### 1. Treated Effluent Outfalls 001-003

- a. Outfalls 001 and 002 (Fish Rearing Pens and the Hatchery Building)

Parameter	Monthly Average	Daily Maximum
Total Suspended Solids (TSS)	5 mg/l	10 mg/l
Settleable Solids (SS)	0.1 ml/l	--
pH	Within the range 6.0 - 9.0 SU	

b. Outfall 003 (from Pollution Abatement/Settling Ponds)

Parameter	Cleaning Daily Maximum
Total Suspended Solids (TSS)	15 mg/l
Settleable Solids (SS) <sup>2</sup>	0.2 ml/l
pH	Within the range 6.0 - 9.0 SU

c. Outfalls 001, 002, and 003

Parameter	Limitation
Excess Thermal Load (April 1 – Oct. 31)	No heat (0 kcal/day)

In addition to these limits, Schedule A includes the following requirements:

**2. Operating Requirements**

The permittee must meet the requirements of Best Practicable Control Technology, found in 40 CFR, Part 451. 11, and reproduced below:

a. Solids control

The permittee must:

- (1) Employ efficient feed management and feeding strategies that limit feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth in order to minimize potential discharges of uneaten feed and waste products to waters of the U.S.
- (2) To minimize discharging accumulated solids from settling ponds and basins and production systems, identify and implement procedures for routine cleaning of rearing units and off-line settling basins, and procedures to minimize any discharge of accumulated solids during the inventorying, grading, and harvesting aquatic animals in the production system.
- (3) Remove and dispose of aquatic animal mortalities properly on a regular basis to prevent discharge to waters of the U.S., except in cases where the permitting authority authorizes such discharge in order to benefit the aquatic environment.

b. Materials storage

The permittee must:

- (1) Ensure proper storage of drugs, pesticides, and feed in a manner designed to prevent spills that may result in the discharge of drugs, pesticides or feed to waters of the U.S.
- (2) Implement procedures for properly containing, cleaning, and disposing of any spilled material.

c. Structural maintenance

The permittee must:

- (1) Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.
- (2) Conduct regular maintenance of the production system and the wastewater treatment system in order to ensure that they are properly functioning.

d. Recordkeeping

The permittee must:

- (1) In order to calculate representative feed conversion ratios, maintain records for aquatic animal rearing units documenting the feed amounts and estimates of the numbers and weight of aquatic animals.
- (2) Keep records documenting the frequency of cleaning, inspections, maintenance and repairs.

e. Training

The permittee must:

- (1) In order to ensure the proper clean-up and disposal of spilled material adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill.
- (2) Train staff on the proper operation and cleaning of production and wastewater treatment systems including training in feeding procedures and proper use of equipment.

### 3. Chemical Use

- a. Unless DEQ approves in writing before use, the permittee must use chemicals approved or allowed for hatchery use by the US Food and Drug Administration (USFDA) or the US Environmental Protection Agency (USEPA). USFDA-approved chemicals include the following:
  - i. Investigational New Animal Drugs (INADs), Low Regulatory Priority (LRP) listed drugs,
  - ii. Deferred Regulatory Status (DRS) drugs, and
  - iii. Veterinary Extra-labelled drugs.
- b. The permittee must follow the conditions detailed in a facility's INAD permit application, treatment restrictions for LRP and DRS drugs, product label instructions for environmental protection, and precautions on labels of chemicals that are Extra-labelled by prescription. INADs must be labelled correctly, used in accordance with established protocols, and must not violate FIFRA.
- c. The permittee must report all chemicals on the chemical use log, and retained onsite and made available to DEQ or EPA staff upon request. The permittee must document the disposal of all spent chemical dip treatment solutions according to the procedure described in the permittee's Spill/ Emergency Response Plan (See Schedule D, Condition 2).
- d. When seeking DEQ approval of drugs and chemicals not approved or allowed by USFDA or USEPA, the permittee must show all of the following:
  - i. The drug or disease control chemical used and/or method of its application could not have reasonably been anticipated;
  - ii. Written or facsimile notification is provided to the appropriate DEQ Regional Office 24 hours before administering the drug or disease control chemical and approval from DEQ is received; and
  - iii. Adequate precautions and procedures are followed and documented to assure that the quality of the receiving water is not impaired.

- e. The permittee must assure that any chemical used does not violate any applicable water quality standard within the receiving stream.

#### **4. Off-Site Discharge of Incidental Water**

This permit allows offsite discharge of water incidental to the release of healthy fish into waters of the State of Oregon.

#### **5. Regulatory Mixing Zones**

This permit contains a mixing zone and zone of initial dilution for each outfall as allowed per OAR 340-041-0053. Outfalls 001, 002, and 003 have the same mixing zone description and are described as follows:

*The allowable mixing zone consists of 25 percent of the McKenzie River. The Zone of Immediate Dilution (ZID) consists of 10 percent of the McKenzie River.*

### **6.3 Schedule B – Minimum Monitoring and Reporting Requirements**

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

This schedule has 8 tables, described below:

1. Table B1 of this schedule includes information on the reporting requirements and due dates. Section 2 of the schedule includes standard monitoring and reporting protocol requirements.
2. Table B2 includes monitoring requirements for outfalls 001 and 002 under normal operations.
3. Table B3 includes monitoring requirements for Outfall 003 under cleaning operations.
4. Table B4 includes effluent monitoring requirements for aggregate outfalls 1, 2, and 3.
5. Table B5 includes monitoring requirements for supply water.
6. Table B6 includes monitoring requirements for the pollution abatement settling ponds (percent pond capacity remaining).
7. Table B7 includes monitoring requirements for fish biomass production.

Table B8 includes solids removal requirements.

### **6.4 Schedule D - Special Conditions**

The Schedule D special conditions include the following:

- The requirement to develop, and update annually, an Emergency Response and Public Notification Plan.
- The requirement to develop and keep up-to-date a spill/emergency response plan. This plan must address measures and facilities to assure proper drug storage, pesticides and feed in a manner designed to prevent spills that may result in the discharge of these materials to waters of the state.
- A pollution prevention plan.
- Pollutant Abatement Ponds operations and maintenance procedures.
- Solids Management.
- Drugs.

- Discharges due to Structural Failure or Damage.
- Reporting.
- Best Management Practices.
- Guidelines for developing a water quality trading plan.
- ~~A Fish Food Operations Plan.~~

## 6.5 Schedule F - NPDES General Conditions

These conditions are standard to all industrial NPDES permits and include language regarding facility operation and maintenance, monitoring and record keeping, and reporting requirements. DEQ has revised the General Conditions since DEQ issued the last permit. 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 CFR.
- Overflow language has been eliminated.
- 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.

## 7.0 Next Steps

### 7.1 Public Comment Period

DEQ will make the proposed NPDES permit available for public comment for a minimum of 35 days. DEQ will post public notice and links to the proposed permit on DEQ's website and sent to subscribers to DEQ's pertinent public notice e-mail lists. DEQ will schedule a Public Hearing if 10 or more people request one, or if an authorized person representing an organization of at least 10 people requests one. If DEQ holds a public hearing, then DEQ would publish an additional public notice to advertise the public hearing.

### 7.2 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. After DEQ receives and evaluates comments, DEQ will decide whether to issue the permit as proposed, make changes to the permit, or deny the permit. DEQ will notify the permittee of DEQ's decision.

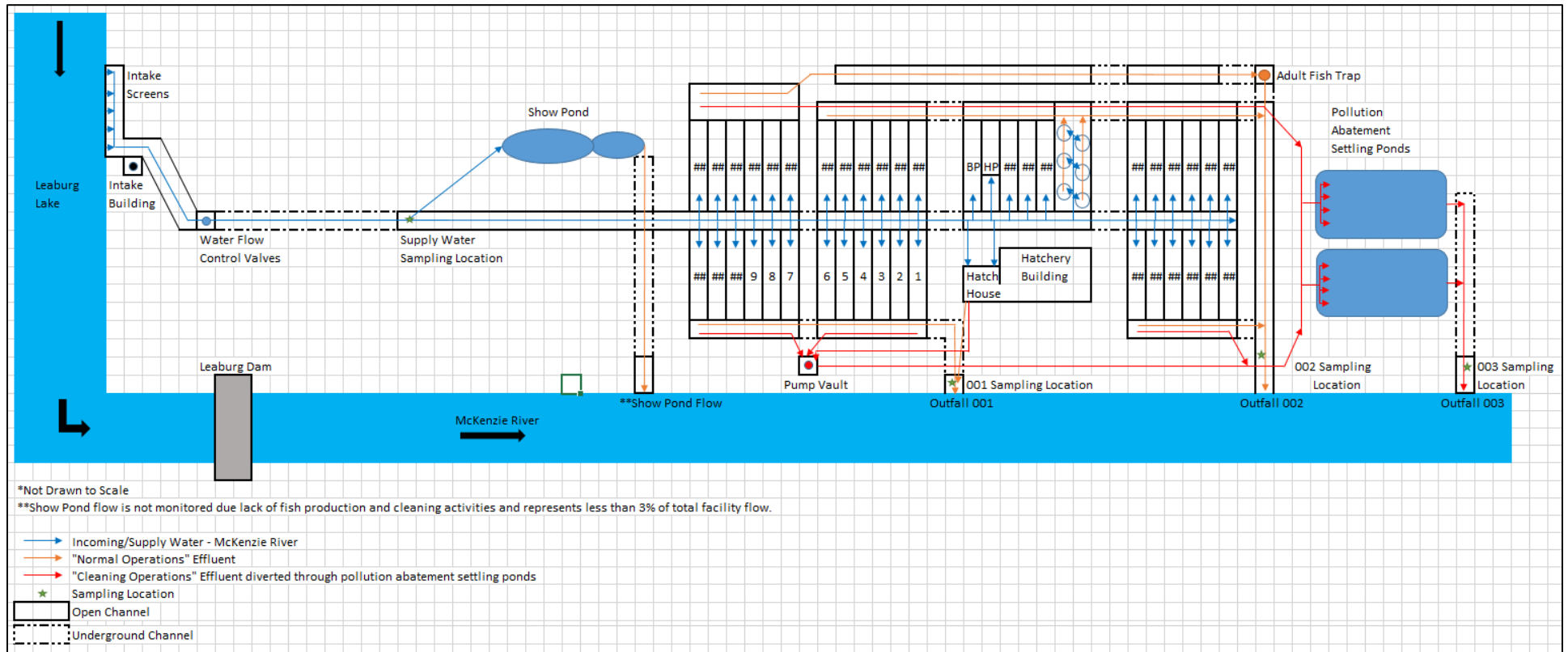
### 7.3 Modifications to Fact Sheet and Permit Evaluation Report

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 DEQ makes substantive changes to the permit, then an additional round of public comment may occur.

### 7.4 Issuance

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

# APPENDIX A: FACILITY WATER FLOW DIAGRAM



# APPENDIX B: LIST OF CHEMICALS APPROVED FOR FISH CULTURE (SEE NOTE 1)

Chemical	Purpose	Disposal Method	Regulator
<b>Formalin (aka, Formalin-F, Formacide-B, Parasite-S)</b>	Used to control fungi on eggs, adults, and to treat external protozoa and trematode parasites.	The New (2019) labeling for environmental precautions suggests, the acute benchmark value for 37% formaldehyde is 4.58 mg/L (12.4 mg formalin/L) for freshwater aquatic life. This benchmark concentration is not a discharge limit, but may be used by the NPDES authority to derive such limits for the permit.	DEQ, FDA
<b>35% Hydrogen Peroxide (Perox-Aid)</b>	Intended for use as an external microbicide for the control of mortality in freshwater-reared finfish eggs due to saprolegniasis, in freshwater-reared salmonids due to bacterial gill disease	Water level in treatment pond is reduced to minimize the quantity of chemical requirement. After the treatment period, a dam board is pulled and fresh flow is applied to eject the treated water to the hatchery effluent through abatement pond for additional dilution. The product label suggested an acute benchmark concentration is 0.7 ppm (one-half the Final Acute Value), and an effluent discharge limits may be needed from the NPDES permit authority.	DEQ, FDA
<b>Chloramine-T (Halamid-Aqua)</b>	It is used as an algaecide, bactericide, virucide, fungicide (including spores), and germicide. It is used effectively against bacterial gill outbreaks on fish.	Discharge should be less than 0.10 ppm. Treated waters are adequately diluted in abatement pond or mixing with fresh effluents from other raceways before discharging into state's waters.	DEQ, FDA
<b>Diquat (Reward)</b>	Reward is a liquid concentrate of Diquat dibromide that under the INAD provides use to control external bacteria. Containers with Diquat in them must be labeled correctly.	Diquat is diluted and discharged into abatement or mixing zone.	DEQ, FDA (INAD 10-969)
<b>Potassium permanganate</b>	Used to control external parasites	The NPDES permit recognized Potassium permanganate as a Low Regulatory Priority (LRP) listed drug and there are no DEQ discharge limits/requirements for potassium permanganate. FDA lists status as "not to be low regulatory priority but regulatory action deferred."	DEQ
<b>Salt (Sodium Chloride)</b>	Therapeutic use for fish transportation or as a stress reducer on fish, and control of parasites	Sodium chloride is a listed LRP drug. There are no DEQ discharge requirements for salt.	DEQ
<b>Epsom Salt (Magnesium sulfate)</b>	Epsom salt if mixed with feed acts as a laxative to control hexamita a gut parasite (endo-parasite).	NPDES permit-listed LRP drug. There are no DEQ discharge requirements for Epsom salt.	DEQ
<b>Tricaine Methanesulfonate (MS-222, Tricaine-S, Finquel)</b>	MS-222 is an anesthetic. It is intended for the temporary immobilization of fish during manual spawning, weighing, measuring, marking and transport.	The preferred method of disposal is to pour the solution in a bio swell (depression in the lawn) or evaporate on concrete or asphalt, not to be discharged near open waterways.	DEQ, FDA

<b>Aqui-S 20E</b>	Aqui-S is an anesthetic/sedative used to immobilization for the fish handling such as, spawning, weighing, measuring, marking and transporting fish	Method of disposal is to carefully pour the solution in a bio swell (depression in the lawn), pit, or allow to evaporate on concrete or asphalt. Not discharged into open waterways.	DEQ, FDA (INAD 11-741)
<b>Chemical</b>	<b>Purpose</b>	<b>Disposal Method</b>	<b>Regulator</b>
<b>Florfenicol (Aquaflor)</b>	Florfenicol medicated feed is administered to treat bacterial diseases	The level of discharge is 20.6 mg/l, and adequate dilution is made in abatement pond or with fresh waters/effluents from other raceways before discharge into streams.	DEQ, FDA
<b>Erythromycin (Aquamycin-100 feed or Erythromycin 200 injectable)</b>	Erythromycin is administered to treat bacterial pathogens (primarily BKD). Juvenile treatments are administered through mixture in the feed. Adults are treated with an injection.	Erythromycin is administered to fish via premix in feed or injection, is metabolized, then excreted in fish feces.	FDA (INAD 6013 (feed) or INAD 12-781 (Injection))
<b>Oxytetracycline (aka, Terramycin 200, TM-200, Oxy-Tet, OTC, Durimycin-injectable)</b>	Oxytetracycline is used to treat bacterial infections either mixed with fish feed or injected in adults.	Discharge method not applicable as it is either injected or fed with feed.	DEQ, FDA (if needed, INAD 9332)
<b>Vibrio vaccine</b>	vaccinate fish from Vibriosis bacterial disease	disposal in septic system	USDA Center for Veterinary Biologics
<b>ERM vaccine</b>	vaccinate fish from Enteric Redmouth Disease, bacterial	disposal in septic system	USDA Center for Veterinary Biologics
<b>Vida Life</b>	Stress reliever, protects slime layer on fish. Used in fish transportation tanks and in the anesthetic tank at the FAFF.	Diluted as it is discharged into effluent.	DEQ
<b>Poly Aqua</b>	Antifoaming agent, therapeutic use for fish transportation or as a stress reducer on fish that protects the natural slime of fish body.	Diluted as it is discharged into effluent.	DEQ
<b>Carbon dioxide</b>	Anesthetic for adult fish.	There are no DEQ discharge requirements for carbon dioxide. Preferred method is solution carefully poured into bio-swell.	DEQ, FDA
<b>Sodium bicarbonate</b>	Used to neutralize carbon dioxide and to buffer MS-222	There are no DEQ discharge requirements for sodium bicarbonate. Preferred method is solution carefully poured into bio-swell.	DEQ

Note 1: The permittee must not use this permit to authorize use of pesticides in a manner inconsistent with FIFRA labeling.

# APPENDIX C: REASONABLE POTENTIAL ANALYSIS FOR PH

pH RPA Analysis			
Facility Name: Leaburg Fish Hatchery	Run Notes: Eff. Alk. Collected 30 ft. D/S of Ou		
Permit Writer: David Cole			
5/12/2020			
Data Source, Effluent: Leaburg Fish Hatchery DMRs			
Data Source, Ambient: DEQ Sta. 10662 (McKenzie R. @ Hendricks			
<b>INPUT</b>	<b>RPA for pH</b>		<b>Med. pH Calc.</b>
	<b>Lower pH</b>	<b>Upper pH</b>	<b>Med. pH</b>
	<b>Criteria</b>	<b>Criteria</b>	<b>Criteria</b>
1. DILUTION FACTOR AT MZ BOUNDARY - (Qe+Qr)/Qe	50	50	50
2. UPSTREAM/BACKGROUND CHARACTERISTICS			
Temperature (deg C):	6.9	11.9	9.3
pH:	7.3	7.6	7.4
Alkalinity (mg CaCO3/L):	22.9	52.5	36.1
3. EFFLUENT CHARACTERISTICS			
Temperature (deg C):	7.8	12.6	10.1
pH (S.U.):	6.0	9.0	--
Alkalinity (mg CaCO3/L):	24.1	49.5	34.8
4. APPLICABLE PH CRITERIA	6.0	9.0	
<b>OUTPUT</b>			
1. IONIZATION CONSTANTS			
Upstream/Background pKa:	6.49	6.45	6.47
Effluent pKa:	6.49	6.44	6.46
2. IONIZATION FRACTIONS			
Upstream/Background Ionization Fraction:	0.86	0.93	0.89
Effluent Ionization Fraction:	0.25	1.00	0.00
3. TOTAL INORGANIC CARBON			
Upstream/Background Total Inorganic Carbon (mg CaCO3/L):	26.48	56.19	40.38
Effluent Total Inorganic Carbon (mg CaCO3/L):	97.75	49.64	101028193.66
4. CONDITIONS AT MIXING ZONE BOUNDARY			
Temperature (deg C):	6.92	11.87	9.30
Alkalinity (mg CaCO3/L):	22.92	52.44	36.10
Total Inorganic Carbon (mg CaCO3/L):	27.91	56.06	2020603.44
pKa:	6.49	6.45	6.47
<b>pH at Mixing Zone Boundary:</b>	<b>7.157</b>	<b>7.608</b>	<b>1.723</b>
<b>Is there Reasonable Potential?</b>	<b>No</b>	<b>No</b>	

# APPENDIX D: REASONABLE POTENTIAL ANALYSIS FOR FORMALDEHYDE

Formaldehyde RPA															
<b>RPA Run Information</b>				<b>Facility Information</b>											
Facility Name:	Leaburg Fish Hatchery			<b>1. Are there dilution #'s from mixing zone study? (Yes/No)</b>				yes							
DEQ File Number:	64490			<b>2. Is the receiving waterbody fresh water? (Yes/No)</b>				yes							
EPA Identification #:	OR0027642			<b>3. If Question 1 = "No", then fill in the following table</b>											
Permit Number:	101914			Eff. Flow Rate	MGD	N/A	Calculated dilution Factors								
Permit Writer Name:	David Cole			Stream Flow: 7Q10	CFS	N/A	Dilution @ ZID		N/A						
Preparation Date:	5/14/2020			Stream Flow: 1Q10	CFS	N/A	Dilution @ MZ		N/A						
Facility Flow Rate (MGD):	39.9			% dilution at ZID	%	10%									
Outfall Number:	"003"			% dilution at MZ	%	25%									
Determination Date:	5/14/20			<b>4. If answered "Yes" to Question #1, then fill in dilution values</b>				Dilution @ ZID (from study)		14					
RPA Run Notes:								Dilution @ MZ (from study)		50					
Color Key:				"*" = Enter data				<b>5. Enter Water Hardness. Ambient:</b>		Effluent		mg/L CaCO <sub>3</sub>		25	
Intermediate Calc.s				".. " = Will calculate				<b>7Q10. Effluent: default of 25mg/l.</b>		Up-stream		mg/L CaCO <sub>3</sub>		*	
Calculation Results								<b>Min/Max 25-400 mg/l CaCO<sub>3</sub></b>		ZID boundary		mg/L CaCO <sub>3</sub>		#VALUE!	
								<b>6. Please enter statistical Confidence and Probability values (note: defaults already entered)</b>		Confidence Level		%		99%	
										Probability Basis		%		95%	
<b>Identify Pollutants of Concern</b>															
Pollutant Parameter	Evaluation Required?	# of Sample	Highest Effluent Conc.	Coefficient of Variation	Est. Max Eff. Conc.	RP at end of pipe?	Determine In-Stream Conc.			Det. Reasonable Potential					
	(Yes/No)						(µg/l)	(µg/l)	(µg/l)	(µg/l)	(µg/l)	WQ Crit: 1 Hour (CMC)	WQ Crit: 4 Day (CCC)	Is there Reasonable Potential to Exceed? (Yes/No)	
Formaldehyde	yes	3	5300	0.6	20670	Yes	0	1476	413	4600	1600	NO	NO		
<b>Notes:</b> 1. Criteria included above are guidance criteria. 2. Sampling performed by EPA indicated no ambient concentrations of formaldehyde in waters upstream of fish hatcheries across the NW (Water Sampling and Testing for Formaldehyde at Northwest Fish Hatcheries, EPA Region 10, August 2017). 3. Formaldehyde is only expected to be discharged from Outfall 003. 4. Effluent data from facility monthly discharge monitoring reports, 1st qtr. 2017 through 1st qtr. 2020.															

# ~~APPENDIX E: MUTUAL AGREEMENT AND ORDER~~