Fact Sheet

The U.S. Environmental Protection Agency (EPA) Re-Proposes to Issue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to the:

United States Fish and Wildlife Service
Leavenworth National Fish Hatchery

Public Comment Start Date:
Public Comment Expiration Date:

Technical Contact: Jill Nogi
(206) 553-1841
800-424-4372, ext. 1841 (within Alaska, Idaho, Oregon and Washington)
nogi.jill@epa.gov

The EPA Re-Proposes to Issue NPDES Permit
In order to ensure protection of water quality and human health, the EPA re-proposes to issue the NPDES Permit for the facility referenced above. When issued, the NPDES Permit will place conditions on the discharge of pollutants from the Leavenworth National Fish Hatchery (LNFH) to Icicle Creek, a water of the United States (U.S.), pursuant to provisions of the Clean Water Act (CWA), 33 U.S.C. § 1251 *et seq*. In order to ensure the protection of water quality and human health, the Draft Permit includes limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures;
- the proposed effluent limitations and other conditions on the discharge from the facility;
- maps and descriptions of the discharge locations; and,
- technical material supporting the conditions in the Permit

State Certification
The EPA has requested that the Washington Department of Ecology (Ecology) provide preliminary certification of the NPDES Permit for this facility, under Section 401 of the Clean Water Act (CWA). This Draft Permit incudes any additional requirements provided by Ecology in the preliminary 401 certification. *See* CWA Section 401(d), 33 U.S.C. § 1341(d). Ecology will provide a final CWA 401 certification for the Proposed Final Permit. Comments regarding the preliminary CWA 401 certification should be directed to:

Water Quality Section
Washington Department of Ecology
Central Regional Office
1250 West Alder Street
Union Gap, Washington 98903-0009

Public Comment
Persons wishing to comment on, or request a Public Hearing for the Draft Permit may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address, and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's Regional Director for the Office of Water and Watersheds will make a final decision regarding Permit issuance. If no substantive comments are received, the tentative conditions in the Draft Permit will become final, and the Permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the Permit. The Permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days, pursuant to 40 CFR 124.19.

Documents are Available for Review
The Draft Permit and related documents can be reviewed or obtained by visiting or contacting the EPA Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The Draft Permit, Fact Sheet, and other information can also be found by visiting the Region 10 NPDES website at http://EPA.gov/r10earth/waterpermits.htm.

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-191
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The documents are also available from the EPA Region 10 Washington Operations Office and Ecology:

EPA Region 10 – Washington Operations Office
300 Desmond Dr. SE, Suite #102
Lacey, WA 98503
(360) 753-9437

Washington Department of Ecology - Central Regional Office
1250 West Alder Street
Union Gap, Washington 98903-0009
(509) 575-2490

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Acronyms

1Q10	1 day, 10 year low flow
7-DADM	7-day average of the daily maximum temperature
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
AKART	All Known, Available, and Reasonable Treatment
AML	Average Monthly Limit
AWL	Average Weekly Limit
BAT	Best Available Technology
BCT	Best (Conventional Pollutant) Control Technology
BE	Biological Evaluation
BMP	Best Management Practice
BOR	United States Department of the Interior – Bureau of Reclamation
BPA	Bonneville Power Administration
BPJ	Best Professional Judgment
BPT	Best Practicable (Control) Technology
°C	Degrees Celsius
CAAP	Concentrated Aquatic Animal Production
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
COIC	Cascade Orchard Irrigation Company
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
Ecology	Washington Department of Ecology
EFH	Essential Fish Habitat
ELG	Effluent Limitation Guidelines
EPA	U.S. Environmental Protection Agency

ESA	Endangered Species Act
FDA	U.S. Food and Drug Administration
FFDCA	Federal Food, Drug, and Cosmetic Act
FR	Federal Register
FRO	U.S. Fish and Wildlife Service Mid-Columbia River Fisheries Resource Office
ft	Feet
GPD	Gallons per day
HUC	Hydrologic Unit Code
ICIS	Integrated Compliance Information System
INAD	Investigational New Animal Drug
kg/day	Kilograms per day
LA	Load Allocation
lbs/day	Pounds per day
LNFH	Leavenworth National Fish Hatchery
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
MGD	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NTU	Nepholometric Turbidity Unit (Measure of turbidity)
OLSB	Offline Settling Basin
O&M	Operations and Maintenance
PCHB	State of Washington Pollution Control Hearings Board
POTW	Publicly Owned Treatment Works (Wastewater Treatment Plant)

QAP	Quality Assurance Plan
rm	River Mile
RP	Reasonable Potential
RPA	Reasonable Potential Analysis
SCS	Spring Chinook Salmon
SS	Suspended Solids
s.u.	Standard Units
TBEL	Technology-Based Effluent Limit
TMDL	Total Maximum Daily Load
TP	Total Phosphorus
TRC	Total Residual Chlorine
TSCA	Toxics Substances Control Act
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total Suspended Solids
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
US	United States
WAC	Washington State Administrative Code (state laws)
WDFW	Washington State Department of Fish and Wildlife
WLA	Wasteload Allocation
WQBEL	Water Quality-Based Effluent Limit
WQS	Water Quality Standards
WRIA	Water Resource Inventory Area (Washington WQS)

I. Applicant

A. General Information

This Fact Sheet provides information on the Draft Permit for the following entity:

United States Fish and Wildlife Service (USFWS)
Leavenworth National Fish Hatchery
12790 Fish Hatchery Road
Leavenworth, Washington 98826

Contacts:
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(509) 548-2916

Ms. Malenna Cappellini, Permit Compliance Biologist
(509) 548-2928

B. Facility Information

Facility History
The Leavenworth National Fish Hatchery (LNFH) is part of a complex of three (3) national fish hatcheries called the Leavenworth National Fish Hatchery Complex. The other two (2) hatcheries that comprise the Hatchery Complex are the Entiat National Fish Hatchery and the Winthrop National Fish Hatchery https://www.fws.gov/leavenworthfisheriescomplex/index.cfm. The Entiat National Fish Hatchery and the Winthrop National Fish Hatchery are currently authorized to discharge under the EPA's NPDES General Permit (Permit Number WAG130000) for Federal Aquaculture Facilities and Aquaculture Facilities Located in Indian Country within the Boundaries of the State of Washington (EPA Washington Hatchery GP).

The hatcheries that comprise the Leavenworth National Fish Hatchery Complex were constructed by the Bureau of Reclamation (BOR) as fish mitigation facilities for the Grand Coulee Dam, Columbia Basin Project, and authorized by the Grand Coulee Fish Maintenance Project on April 3, 1937. The LNFH was re-authorized by the Mitchell Act (52 Stat. 345) on May 11, 1938. Although re-authorized by the Mitchell Act, funding was provided through a transfer of funds from the BOR to the USFWS until 1945, when the USFWS assumed full responsibility for funding, operations, and maintenance of these facilities. The BOR reassumed funding responsibility for the LNFH on October 1, 1993; however, the USFWS continues to manage, operate, and maintain the LNFH.

In addition to the initial authorizations mentioned above, the LNFH operations are authorized, sanctioned, and influenced by the following treaties, judicial decisions, and legislation:

- Treaty with the Walla Walla, Cayuse, Umatilla Tribes, 06/09/1855
- Treaty with the Yakama, 06/09/1855

- Treaty with the Nez Perce, 06/25/1855
- Treaty with the Tribes of Middle Oregon, 06/25/1855
- Executive Order (Treaty with Bands of Colville), 04/08/1872
- *Sohappy v. Smith,* 302 F. Supp. 899 (D. Or. 1969)
- *United States v. Oregon,* (302 F. Supp. 899) The 2008-2017 *United States v. Oregon Management Agreement* provides the current framework for managing fisheries and hatchery programs in much of the Columbia River Basin
- Endangered Species Act of 1973, 87 Stat. 884, 12/28/1973
- Salmon and Steelhead Conservation and Enhancement Act, 94 Stat. 3299, 12/22/1980
- Pacific Salmon Treaty Act of 1985 (U.S./Canada Pacific Salmon Treaty), Public Law 99-5, 16 U.S.C. 3631, 3/15/1985
- *United States v. Confederated Tribes of the Colville Indian Reservation,* Civ. No. 3:68-cv-00513-KI (D. Or., August 13, 2008), aff'd 606 F. 3d 698 (9th Cir. 2010)(No. 08-35961, D.C. No.) May 27, 2010 (reaffirmation of the Wenatchi's Icicle Creek fishing rights)

The LNFH is located three (3) miles south of the City of Leavenworth, Washington, near the mouth of Icicle Creek (where Icicle Creek joins the Wenatchee River).

Species Raised

Construction of the LNFH occurred from 1938-1940. Spring Chinook salmon (SCS) and steelhead trout were identified as the primary mitigation species to be reared and released. The initial operating plan called for adult SCS and summer steelhead trout to be trapped at Rock Island Dam and hauled to the LNFH for holding and spawning. From the early 1940's, fish reared and released from the LNFH included rainbow trout, steelhead trout, and Sockeye, Coho, and Chinook salmon. Since 1974, the SCS has been the priority species and the success of the program has allowed for both sport and a tribal fisheries in most years. The SCS released from the LNFH head west to the Pacific Ocean. The migration corridor for LNFH-produced smolts and returning adult fish includes approximately 498 river miles, including seven (7) Columbia River Dams, and the Pacific Ocean, in order to return to the LNFH to spawn. Enough adults return annually to meet production targets, and the hatchery has not imported eggs or fry for release into Icicle Creek for more than 20 years.

The LNFH currently targets a release of 1.2 million SCS smolts into Icicle Creek at approximately river mile (rm) 2.7 during mid-April. Production goals at the LNFH are set by the Columbia River Fish Management Plan under *U.S. v. Oregon.* Initially, this plan set a production goal of 2.2 million SCS smolts annually, but this was renegotiated in 1991 to 1.625 million (for release years 1993-2008), and to 1.2 million starting in release year 2009, to be reassessed in 2018. This reduction to 1.2 million SCS smolts was part of the 2008-2017 Management Plan Agreement to improve fish health and water quality in Icicle Creek.

In addition to the SCS released each Spring by the USFWS, the Yakama Nation runs Coho Salmon Reintroduction Project, funded by the Bonneville Power Administration (BPA) and managed by the Yakama Nation at the LNFH. The project encompasses both adult Coho spawning between mid-September and mid-November and juvenile Coho rearing between February and April each year. Approximately 450,000-550,000 juvenile Coho salmon (around 27,000 pounds) are released from the LNFH each April; however, the salmon enter the

Yakama Nation project at around 20,000 – 22,000 pounds and the tribe project managers finish off juvenile growth by adding 5000 -6000 pounds to the cohort prior to the April release.

The adult Coho spawning project catches fish from downstream of the LNFH after spawning and they are fed in the Adult Holding Ponds at the Hatchery. Around 800 -1000 Adults are brought in each year, and spawning at the Hatchery occurs between mid-October and mid-November. The Coho eggs are shipped offsite in January and February to be raised at other federal and state hatcheries.

Water Sources

The water supply for the LNFH is obtained from three (3) sources: (1) Icicle Creek water, (2) water from Upper and Lower Snow and Nada Lakes, and (3) seven groundwater wells. The LNFH shares a point of diversion in Icicle Creek at rm 4.5 with the Cascade Orchard Irrigation Company (COIC). The LNFH maintains and operates the creek water delivery structure as part of a 1939 contract between the U.S. and the COIC.

The water delivery system for the facility includes the intake structure on Icicle Creek, which diverts surface water to a concrete water conveyance channel over a coarse rack, to a small building which includes a fine rack, an overflow spill section, and a sediment sluicing section. The coarse and fine racks serve to limit the size of objects that enter the LNFH pipeline. A 31-inch in diameter (buried) pipeline transports this water approximately 5200 ft to the Hatchery sand-settling basin.

From the sand-settling basin, water is transported to an outside and an inside screen chamber used to filter fish and debris from the Hatchery's water supply. Both screen chambers meet NOAA Fisheries 2011 criteria for fish screening. Screened Icicle Creek water exiting the two (2) chambers is used in the Hatchery rearing units. Then it is either discharged from one of the outfalls or is re-used within the Hatchery before entering the discharge system.

Prior to the construction of the Hatchery, it was recognized that the stream flow and ambient water temperatures in Icicle Creek might, at times, be insufficient to meet fish production demands. A supplementary water supply project for water from Snow and Nada Lakes, located approximately seven (7) miles upstream of the Hatchery and one (1) mile above it in elevation, was developed. The Hatchery holds a water right for 16,000 acre-feet per year. Water drains from Snow Lake to Nada Lake and into Snow Creek, a tributary of Icicle Creek that enters at rm 5.7, about one (1) mile above the LNFH surface water intake system on the creek. There is a control valve on the Snow Lake to help manage the flow. The LNFH supplements with lake water between late July and early October. This helps with raising the SCS in cooler temperature water, and benefits Icicle Creek by increasing flow levels and reducing ambient water temperatures when stream flow is withdrawn upstream for irrigation. In a typical year, around 7,000 acre feet is released from the lakes to the Hatchery, with an estimated 60% probability that inflows to upper Snow Lake will meet or exceed the volume released.

Groundwater provides the third major component of the LNFH water delivery system. The Hatchery operates seven (7) wells that help to produce the temperature and quality of water

needed to sustain its fish production program. Wells 1-4 and Well 7 draw water from a shallow aquifer. Well 5 pumps water from a deep aquifer and Well 6 has the capacity to pump from both aquifers. Water pumped from wells 4-6 passes through an aeration chamber before entering the Hatchery's pipeline water delivery system. Water pumped from Wells 1-3 and 7 enters a series of aeration screens prior to entering the Hatchery's pipeline system at the inside screen chamber. The groundwater is used to supplement the Icicle Creek surface water entering the Hatchery, and to reduce temperatures as necessary to meet fish production targets.

Hatchery production is sustained year-round by the combination of surface water, groundwater, and water re-use (circulating water through the raceways more than once).

II. Description of Facility Operations and Associated Discharges

A. Raceway and Adult Pond Discharges (Outfall 001)

During normal operations, the majority of Icicle Creek flow and groundwater used for hatchery operations is discharged to Icicle Creek near the base of the adult return ladder at Outfall 001, except during rearing unit cleaning and maintenance activities. The discharge enters Icicle Creek at rm 2.8.

The raceway and adult pond wastewater discharge contains some organic solid waste that consists of fish food and fecal material. The quantity of this solid waste in the discharge depends on the volume of fish food being used, the pounds of fish being reared at the time, pond design, cleaning techniques, and the amount of waste that settles out of the effluent prior to discharge. The fish are hand-fed at LNFH using broadcast feeding techniques.

As of the most recent NPDES Permit Application submitted to the EPA on October 28, 2011, with supplemental information provided on April 20, 2012, the fish rearing and holding units currently in operation at the LNFH include:

- Two (2) - 15 feet x 150 feet (ft) concrete bottom adult holding raceways
- 45 - 8 ft x 80 ft concrete bottom raceways
- 14 – 10 ft x 100 ft concrete bottom covered raceways
- 122 fiberglass tanks
- 16 of 40 small Foster- Lucas rearing units
- Two (2) of 22 large Foster -Lucas rearing units

The EPA analyzed effluent flow data provided by the USFWS Water Resources Office in Portland, Oregon; received by the EPA on May 26, 2016. Effluent flow measurements were recorded by the USFWS at Outfall 001 between October 1, 2010 and June 30, 2015, in 15-minute increments. There were over 160,000 entries of continuously monitored flow data on Outfall 001, recorded in gallons per minute (gpm) by the data logger. Similar to the USGS system of providing the quality of the data point, the USFWS provided qualifiers such as "Good", "Poor", "Unknown", "Missing", and "Erroneous" on the flow data measurements.

Effluent flow at Outfall 001, according to estimates in the 2011 NPDES Permit Application, is 32.8 MGD in the maximum month of flow. However, the EPA determined that the 95th

percentile of the best quality (i.e. "Good") data points taken on flow measurement was the most representative statistical flow to use in calculations deriving the proposed mass loading effluent limits, where necessary and appropriate for Outfall 001, in the Draft Permit. The flow used in calculations for Outfall 001 is 25 MGD.

Table 1. Summary Statistics on Flow Measurements Taken at Outfall 001 from 2010-2015

Statistic	gpm	cfs	mgd
Average	17780	39	21
Minimum	5868	0.0	8.3
Maximum	22781	51	27
Count	1374	1411	1352
Std Dev	1895.8	7.6	2.2
CV	0.1	0.2	0.1
95th Percentile	**20636**	**46**	**25**
5th Percentile	14382	30	18

B. Offline Settling Basin Discharges (Outfall 002)

During cleaning and maintenance, all water is routed through the two offline settling basins (OLSBs – or pollution abatement ponds) and discharged to Icicle Creek via Outfall 002 at rm 2.7. The second OLSB was installed in 2011.

The purpose of the OLSBs is to allow solid waste to settle out of the wastewater effluent stream prior to discharge into Icicle Creek. The OLSB wastewater contains re-suspended organic solids when the bottom of the basins are cleaned (sweeping/vacuuming solids and using a bottom drain system). As noted above, solids are typically uneaten fish food, fecal material and other debris from the influent water that settles out. Most of the time, water is held in the OLSBs and it evaporates. However, wastewater effluent is also discharged from the OLSBs at Outfall 002. The flow at Outfall 002, according to estimates in the 2011 Permit Application, is 8.64 MGD in the maximum month of flow.

However, the USFWS measured flow at Outfall 002 between July 21, 2010 and June 30, 2015 in 15-minute increments. There were over 138,000 entries of flow data on Outfall 002, recorded in cfs by the data logger. The EPA used the 95th percentile of the continuous flow monitoring dataset collected at Outfall 002 between 2010-2015 in calculating proposed mass loading limits, where necessary and appropriate. The flow used in calculations for Outfall 002 is 4.6 MGD, lower than previously estimated in the Permit Application.

Table 2. Summary Statistics on Flow Measurements Taken at Outfall 002 from 2010-2015

Statistics	cfs	mgd
Average	2.5	1.6
Minimum	0.0	0.0
Maximum	12	8.0
Count	1441	1441
Std Dev	2.3	1.5
CV	0.9	0.9
95th Percentile	**7.1**	**4.6**
5th Percentile	0.3	0.2

C. Overflow Canal from the Screen Chambers (Outfall 003)

Currently, Outfall 003 at rm 3.8 is not used as a discharge point by the Hatchery. In the past, Outfall 003 was operated intermittently as a fish return bypass for the water delivery system, meaning that fish in Icicle Creek screened from entering the LNFH water supply pipeline were held and returned to Icicle Creek through Outfall 003. The most recent LNFH NPDES Permit Application information from 2012 states that there is no flow through Outfall 003; however, the LNFH requested NPDES authorization for this outfall for potential future use. The maximum monthly flow rate of this outfall when it was in use was estimated by USFWS to be similar to the flow estimated for Outfall 004, at 5.7 MGD. No fish food or cleaning wastes are added to this return bypass water.

D. Top of Fish Ladder (Outfall 004)

In the past, Outfall 004 was used for one (1) to two (2) weeks each year in late April to release the Hatchery pre-smolts into Icicle Creek at rm 2.8, approximately. Currently, the pre-smolts are pumped from rearing units through an above ground pipeline into Icicle Creek at rm 2.75 (Outfall 005). The most recent NPDES Permit Application from the LNFH requested NPDES authorization for discharge at Outfall 004 for potential emergency releases and/or future use. The maximum month of discharge flow estimated in the NPDES Permit Application for Outfall 004 is 5.7 MGD. When in use, Outfall 004 would discharge water and fish from the holding ponds adjacent to Outfall 001. At that time, the discharge amount from Outfall 001 would be reduced by the amount of effluent released at Outfall 004.

E. Pumped/Piped Fish Release (Outfall 005)

Outfall 005 is currently used for one (1) to two (2) weeks each year in late April in order to release the Hatchery pre-smolts from the rearing units through an above ground pipe into Icicle Creek at rm 2.75. When in operation, the discharge from Outfall 001 is reduced by the amount released at Outfall 005. The maximum month flow rate from Outfall 005 was estimated in the Permit Application to be 72,000 gallons per day (gpd), when in use.

F. Pumped Discharge to the Hatchery Channel (Outfall 006)

Outfall 006 is located at rm 3.3, in the Hatchery Channel section (rm 2.8 to rm 3.8) of Icicle Creek, upstream of Outfall 001. The EPA was notified about Outfall 006 with the supplemental application information in 2012. This Outfall is used when necessary to keep flow in the Hatchery Channel and recharge the LNFH groundwater wells. When in operation, the discharge from Outfall 001 is reduced by the amount of effluent released at Outfall 006. The flow rate from Outfall 006 is estimated to be around 25 MGD, similar to the flow at Outfall 001.

Some pictures describing the Hatchery Operations, as well as maps showing the locations of the LNFH and its discharges, are included in Appendix A of this Fact Sheet.

III. Permit History

A. Point Source Demonstration

40 CFR 122.24 defines concentrated aquatic animal production (CAAP) facilities as point sources if a facility contains, grows or holds cold water fish species in ponds, raceways or similar structures which discharge at least 30 days a year and meet the following conditions: (1) produce more than 20,000 pounds of aquatic animals per year and (2) feed more than 5,000 pounds of food during the calendar month of maximum feeding.

The LNFH produces and releases more than 20,000 pounds of cold water fish per year. In addition, the range of food pounds fed during the maximum month of feeding was between 9,643 pounds in 2015 to 13,528 pounds of food in 2011(USFWS, 2016 email). Therefore, the LNFH is a CAAP facility for which an NPDES permit is required.

B. EPA as the Permitting Authority

Although the EPA has delegated the authority to administer the NPDES Program to the State of Washington Department of Ecology (Ecology), the EPA retains the authority to administer the NPDES Program for federal and tribal facilities within the State of Washington, which includes the LNFH.

C. Previous Permit and Permit History

The most recent NPDES Permit for the LNFH was issued on August 31, 1974 and expired on August 31, 1979. The EPA received an application for reissuance of the Permit on November 12, 1980, after the expiration date; however, the USFWS has been discharging wastewater from the LNFH under the terms and conditions of the expired Permit.

In July 2005, Washington Trout, a non-profit environmental organization that has since changed its name to the Wild Fish Conservancy, filed a lawsuit against the EPA and USFWS over the delayed reissuance of the NPDES permit for the LNFH. In a settlement agreement with the Wild Fish Conservancy, the EPA agreed to develop a draft NPDES permit for public notice by June 30, 2006.The EPA received an updated NPDES Permit Application on November 16, 2005.

On June 29, 2006, the EPA issued a draft NPDES permit for public comment. During the public comment period, which closed on July 31, 2006, the EPA received comments from Wild Fish, the LNFH, and the Washington Department of Ecology (Ecology). On October 30, 2006, the EPA requested final CWA Section 401 certification from Ecology. Additionally, the EPA approved Ecology's *Wenatchee River Watershed Temperature TMDL* (Wenatchee Temperature TMDL) in August 2007, and it included a wasteload allocation (WLA) for the temperature of the effluent discharged by the LNFH. In 2009, the EPA approved Ecology's *Wenatchee River Watershed Dissolved Oxygen and pH Total Maximum Daily Load Water Quality Improvement Report* (Wenatchee DO and pH TMDL) which set a WLA for the amount of total phosphorus that could be discharged by the LNFH. The phosphorus and temperature WLAs needed to be incorporated into the proposed NPDES Permit for the LNFH, and as a result, the EPA issued a new draft for public comment on December 22, 2010.

Back on January 11, 2010, the EPA received the final 401 Certification that was requested in 2006 from Ecology for the LNFH. The EPA attached the final 401 Certification to the Draft Permit. The comment period on that Draft Permit closed on February 7, 2011. The same interested parties submitted comments at that time. After the 2011 public comment period, the addition of another outfall prompted the LNFH to provide updated information in a revised Permit Application. The additional application information was received by the EPA in October 2011 and supplemented further in April of 2012. The EPA is now re-proposing to issue a NPDES Permit to the LNFH.

D. Relevant Fish Hatchery General Permits for Facilities Located in the State of Washington and in Indian Country

EPA General Permit for Federal Aquaculture Facilities and Aquaculture Facilities Located in Indian Country

The current EPA Washington Hatchery General Permit went into effect on August 1, 2016 and expires on July 31, 2021. The EPA is not authorizing the discharges from the LNFH under the Washington Hatchery GP because the LNFH Permit needs to implement the individual WLA for total phosphorus from the Wenatchee DO and pH TMDL, as well as implement the 2011 supplemental spawning temperature criteria in the Washington Administrative Code (WAC) water quality standards (Chapter 173-201A of the WAC and https://fortress.wa.gov/ecy/publications/documents/0610038.pdf). The supplemental spawning temperature criteria supersede the 2007 WLA for temperature for the LNFH.

However, in order to ensure consistent requirements among the federal and tribal aquaculture facilities in Washington, the EPA has incorporated the relevant applicable terms and conditions from the General Permit into this Draft Permit for the LNFH.

Ecology Upland Finfish Hatching and Rearing General Permit

The EPA has also considered relevant and appropriate terms and conditions included in Ecology's Upland Finfish Hatching and Rearing NPDES General Permit (Ecology General Permit), covering non-federal and non-tribal hatcheries operating within the State of Washington, in order ensure consistent requirements among aquaculture facilities in Washington. The current Ecology General Permit was issued on December 16, 2015; became effective on April 1, 2016 and expires on March 31, 2021.

IV. Effluent Characterization

Aquaculture facilities may discharge a variety of pollutants attributed to: (1) feeds, directly or indirectly (i.e., fish feces), (2) residuals of drugs used for maintenance or restoration of fish health, and (3) residuals of chemicals used for cleaning equipment or for maintaining or enhancing water quality conditions.

Aquaculture facilities may generate and/or contribute significant amounts of nutrients (nitrogen and phosphorus) and solids to receiving waters. These pollutants have the potential to contribute to a number of negative water quality impacts related to eutrophication - algal blooms, increased turbidity, low dissolved oxygen and associated stresses to stream biota, increased water treatment requirements for users downstream, changes in benthic fauna, and stimulation of harmful microbial activity. In addition, the potential discharge of chemical and drug residuals compels a determination of any potential deleterious effects on biota, subsequent human consumers of the fish, or the surface water receiving the facility discharge.

The U.S. Food and Drug Administration (FDA) Center for Veterinary Medicine regulates animal drugs under the Federal Food, Drug, and Cosmetic Act (FFDCA). Extensive toxicity studies are required prior to drug approval from the FDA; however, limited data on potential environmental effects is available for some medications that are currently authorized for investigational use; and limited or no data is available characterizing the ecological significance of releases of drugs and chemicals at aquaculture facilities in the U.S. The EPA recognizes the general concerns with residual antibiotics and pesticides in the environment. Such residual materials may pollute receiving waters and immunize the organisms they are designed to control. These effects can be distributed well outside of the original areas of application. However, aquaculture facilities are not considered to be significant sources of pathogens that affect human health.

In order to determine the potential pollutants of concern that are present in the facility's effluent, the EPA evaluated the effluent water quality data collected by the LNFH from 2006-2011, the LNFH discharge monitoring reports (DMRs) submitted to the EPA from 2010-2015, the most recent NPDES Application information, and the nature of the discharge. The effluent water quality data evaluated by the EPA is presented as part of Appendix A of this Fact Sheet. The DMR data from the Hatchery can be found in Appendix B.

Based on all the above information, the complete list of potential pollutants of concern evaluated for this Permit includes:

- Total Suspended Solids (TSS)
- Settleable Solids (SS)
- Total Residual Chlorine (TRC)
- pH
- Dissolved Oxygen (DO)
- Turbidity
- Temperature
- Total Phosphorus (TP)
- Total Ammonia as N

- Drugs used by the LNFH: Formalin, erythromycin, hydrogen peroxide, medicated feed treatments

V. Receiving Water

The LNFH discharges (or may discharge in the future) hatchery effluent from Outfalls 001, 002, 003, 004, 005, and 006 to Icicle Creek at rm 2.8. Icicle Creek is a tributary to the Wenatchee River at rm 48.

A. Water Quality Standards

Overview
Section 301(b)(1)(C) of the CWA requires the development of effluent limitations in NPDES Permits that are determined to be necessary in order to meet state and tribal WQS for surface waters that are promulgated into state law and approved by the EPA. Federal regulations found at 40 CFR 122.4(d) require that the effluent limitations and other conditions included in NPDES Permits ensure compliance with the WQS of the receiving water, and waters downstream of the receiving water. A state or tribe's WQS for surface water are composed of designated use classifications, numeric and/or narrative water quality criteria set at levels to protect those designated uses and an antidegradation policy with implementation procedures, in order to protect the water quality into the future [40 CFR 131.10, 131.11, and 131.12].

The use classification system designates the beneficial uses of each water body over which the state or tribe has jurisdiction. Uses can be designated for drinking water supply, contact recreation, and aquatic life protection, among others. Narrative provisions are developed and numeric water quality criteria are derived by the state or tribe to ensure that the beneficial uses of each water body are attained and maintained. The antidegradation policy represents a three-tiered approach to protecting and maintaining current water quality and uses into the future.

Designated Uses
The Washington State WQS establish designated uses that apply to the LNFH discharges in Chapter 173-201A-600 of the Washington Administrative Code (WAC), Table 602, Use Designations for Fresh Waters by Water Resource Inventory Area (WRIA), WRIA 45 - Wenatchee [Water Quality Standards for Surface Waters of the State of Washington]. The designated uses for the relevant segment of Icicle Creek, "from the mouth to the National Forest Boundary", include the Aquatic Life Use of Core Summer Salmonid Habitat, Primary Contact Recreation, Domestic Water, Industrial Water, Agricultural Water, Stock Water, Wildlife Habitat, Harvesting, Commerce/Navigation, Boating, and Aesthetics.

The aquatic life designated use is defined on page 9 of the WAC at 173-201A-200: "Core summer salmonid habitat key identifying characteristics include salmonid spawning or emergence, or adult holding between June 15 – September 15; use as summer rearing habitat by one or more salmonids; or foraging by adult and subadult native char. Other common characteristic aquatic life uses for waters in this category include spawning outside of the summer season, rearing, and migration by salmonids."

Surface Water Quality Criteria

The receiving water quality criteria established in state law to protect these designated uses of Icicle Creek are contained in the WAC 173-201A-200, 240, 250; EPA's Toxics Rule, 40 CFR Part 131 (57 FR 60848 December 22, 1992); the EPA Quality Criteria for Water 1986 (the Gold Book) as amended; and/or other criteria published by the EPA. This is also in accordance with WAC 173-201A-240-5 which specifies that "Concentrations of toxic, and other substances with toxic propensities not listed in subsection (3) of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate. Human-health based water quality criteria used by the state are contained in 40 CFR 131.36 (known as the National Toxics Rule)."

The Washington State water quality criteria for the protection of aquatic life, primary contact recreation, and human health uses of the segment of Icicle Creek receiving the discharges from the LNFH include:

WAC 173-201A-200 Freshwater Designated Uses and Criteria

1. Aquatic life uses …

(b) General Criteria that apply to all aquatic life fresh water uses are described in WAC 173-201A-260 (2) (a) and (b), and are for:

(i) Toxic, radioactive, and deleterious materials; and

(ii) Aesthetic values.

(c) Temperature. The applicable temperature criteria to protect core summer salmonid habitat in the relevant segment of Icicle Creek include:

(1) The 7-day average of the daily maximum temperature (7-DADM) is **16º C** from July 15 – August 15 **[for one (1) month** out of the year].

(2) Supplemental Spawning and Incubation Protection for Salmonid Species (Ecology Publication Number 06-10-038, Revised January 2011) includes geographic information system (GIS) maps of each WRIA in Washington State identifying waterbodies, or portions thereof, which require special protection for spawning and incubation. The map for WRIA 45 – Wenatchee sets a 7-DADM of **13 °C** for the relevant segment of Icicle Creek, applicable from August 15 to July 15 at the initiation of spawning for salmon and at fry emergence for salmon and trout **[for 11 months** out of the year]. The maps provided by Ecology describe where and when additional temperature criteria are required to ensure the protection for the incubation of salmon, trout, and char. This information should be used in conjunction with other aquatic life use information provided in the surface WQS.

(3) Temperatures are not to exceed the criteria at a probability frequency of more than once every ten (10) years on average.

(d) Dissolved oxygen (DO). To protect core summer salmonid habitat, **the 1-day minimum dissolved oxygen criterion is 9.5 mg/L.** Concentrations of DO are not to fall below the criterion at a probability frequency of more than once every ten (10) years on average.

(e) Turbidity. To protect core summer salmonid habitat, the **maximum turbidity shall not exceed 5 nephelometric turbidity units (NTUs) over background when the background is 50 NTU or less; or a 10 percent increase in turbidity when the background turbidity is more the 50 NTU.**

(f) Total Dissolved Gas (TDG). TDG is measured in percent saturation. The maximum TDG criterion for core summer salmonid habitat is that **TDG shall not exceed 110 percent of saturation at any point of sample collection.**

(g) pH. Measurement of pH is expressed as the negative logarithm of the hydrogen ion concentration in standard units (s.u.). To protect core summer salmonid habitat, pH shall be within the **range of 6.5 to 8.5 s.u.** with a human-caused variation within the above range of less than 0.2 units.

1. Recreational uses.

(a) General Criteria that apply to all aquatic life fresh water uses are described in WAC 173-201A-260 (2) (a) and (b), and are for:

(i) Toxic, radioactive, and deleterious materials; and

(ii) Aesthetic values.

2. Toxic substances.

Total residual chlorine. To protect aquatic life, total residual chlorine must not exceed **19 µg/L as a 1-hour average concentration** not to be exceeded more than once every three (3) years on the average, nor **11 µg/L as a 4-day average concentration** not to be exceeded more than once every three (3) years on the average.

Ammonia. To protect aquatic life, total ammonia concentrations allowable for surface waters where salmonids are present are based on an equation incorporating the temperature and pH of the surface water and expressed as mg/L.

Polychlorinated Biphenyls (PCBs). To protect aquatic life, PCB concentrations in surface water **must not exceed 2.0 µg/L as an acute criterion over a 24-hour average, nor 0.014 µg/L as a chronic criterion over a 24-hour average**.

Drugs, Disinfectants and Other Chemicals. Washington State has not promulgated numeric water quality criteria for the residuals of drugs for animal health, disinfectants and other chemicals, except chlorine, which is discussed above. However, the state does have narrative criteria for toxics and aesthetics which apply to all existing and designated uses for fresh water:

(1) Toxic, radioactive, or deleterious material concentrations must be below those which have the potential, either singularly or cumulatively, to adversely affect characteristic water uses, cause acute or chronic conditions to the most sensitive biota dependent upon those waters, or adversely affect public health.

(2) Aesthetic values must not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste.

Antidegradation

The antidegradation policy of a state's WQS represents a three-tiered approach to protecting and maintaining current water quality and uses into the future [40 CFR 131.12]. Tier I of antidegradation protection applies to all water bodies under the CWA and ensures that existing in-stream water uses and the water quality necessary to protect those uses will be maintained and protected. Tier II protection applies to any water bodies considered to be high quality waters (where the water quality exceeds levels necessary to support propagation of fish, shellfish, wildlife, and recreation in and on the water) and provides that water quality will be maintained and protected unless allowing for lower water quality is deemed by the state as necessary to accommodate important economic or social development in the area. In allowing any lowering of water quality, the state must ensure adequate water quality to fully protect existing uses, as well as designated uses. Tier III protection applies to water bodies that have been designated by the state as outstanding national resource waters and provides that water quality is to be maintained and protected.

For this permitting action, the EPA understands that the antidegradation analysis will be done by Ecology in order to ensure that the issuance of this NPDES Permit does not impair existing in-stream uses and water quality, and the results will be discussed as part of the state's CWA 401 Certification of the Draft Permit. There will be a second antidegradation analysis done by Ecology on the Proposed Final Permit, and discussed in the state's Final 401 Certification.

B. Receiving Water Low Flow Conditions

The low flow conditions of the water body receiving the point source discharge are used to assess the need for and develop any required water quality-based effluent limitations on the discharge. The EPA *Technical Support Document for Water Quality-Based Toxics Control* (TSD) (EPA, 1991) recommends certain receiving water flow conditions for use in calculating WQBELs in NPDES Permits using steady-state modeling. The definition of 1Q10 flow is the single lowest flow day in a 10-year period, the definition of 7Q10 is the lowest week of flow (seven (7) consecutive days) in a 10-year period, and the definition of 30B3/30Q5 flow is a biologically-based flow intended to ensure an excursion frequency of the ammonia criteria applicable to the receiving surface water of less than once every three/five years, for a 30-day average flow.

The EPA reviewed information on Icicle Creek flows from the USGS gaging Station 12458000 (Icicle Creek Above Snow Creek, Near Leavenworth), which is located upstream of the LNFH. That selected stream flow field measurement data can be found at http://nwis.waterdata.usgs.gov/wa/nwis/measurements/?site_no=12458000&agency_cd=USGS

The EPA accessed this website on May 18, 2016 and derived critical low flows for Icicle Creek upstream of the Hatchery using the stream flow data downloaded from the USGS website. The USGS labels the data that is posted online as "Good", "Fair", "Poor" or "Unspecified". The EPA took the subset of the flow data labeled "Good" and used it to calculate the critical low flows on Icicle Creek upstream of the LNFH. Critical flows can be calculated according to the EPA TSD, and are shown in the table, below.

The EPA also reviewed Icicle Creek flow information downstream of the Hatchery at the Ecology Gaging Station 45B070. Those stream flow measurements can be found at https://fortress.wa.gov/ecy/eap/flows/station.asp?sta=45B070#block2
The data is from flow measurements taken from 2007 -2015 at Ecology's monitoring station in 15 minute increments. The EPA accessed this website on May 18, 2016. The table below shows the calculated critical flow rates for Icicle Creek downstream of the Hatchery, using the low-flow calculations based on the EPA TSD.

Table 3. Low Flow Data for Icicle Creek at USGS Gaging Station 12458000 Upstream of LNFH

Flow	cfs
1Q10	56
7Q10	73
30Q5	103
Harmonic Mean	369

Table 4. Low Flow Data for Icicle Creek at Ecology Monitoring Station 45B070 Downstream of LNFH

Flow	cfs
1Q10	64
7Q10	83
30Q5	116
Harmonic Mean	298

The data analyzed shows that the 1Q10, 7Q10, and 30Q5flows in Icicle Creek **are higher downstream of the LNFH than upstream**. The facility helps to augment Icicle Creek flows with its discharge, as previously noted, groundwater and supplemental water from Snow and Nada Lakes is pulled in to the Hatchery as influent, along with the water diverted from Icicle Creek and run through the facility.

When developing NPDES Permit effluent limits and conditions, the EPA performs a reasonable potential analysis of a pollutant in the facility's effluent to cause or contribute to an excursion of the water quality criterion for that pollutant, and factors in the receiving water flows as part of the analysis and limit calculations. When calculating limits, the critical receiving water flows correspond to acute and chronic water quality criterion values for any parameters of concern. Dilution and or mixing zone allowances can sometimes be factored in to setting effluent limitations based on the results of the reasonable potential analysis. Mixing zone allowances are authorized by the state. The EPA is presenting the flow data reviewed and analyzed here in order to highlight the point that the facility adds flow to Icicle Creek. However, the effluent limitations proposed in this Draft Permit are all "end of pipe" limits,

without any mixing zone allowance, due to the nature of the water quality impairments on Icicle Creek. Because the Creek is impaired for temperature and phosphorus, those water-quality based effluent limitations on the Hatchery are set by the EPA-approved state WQS, and the Total Maximum Daily Load (TMDL) wasteload allocation (WLA) for the LNFH, respectively. More on TMDLs follows below.

C. Water Quality Limited Waters

Any waterbody for which the water quality does not, and/or is not expected to, meet the applicable WQS is defined as a "water quality limited segment." Section 303(d) of the CWA requires states to develop a TMDL pollutant management plan for water bodies determined to be water quality limited segments. The assimilative capacity of a water body is the amount of loading of a pollutant that the water body can absorb without causing or contributing to a violation of WQS. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among all the point and non-point pollutant sources in the area, taking into account natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs) and typically involve the implementation of best management practices (BMPs) for pollution source control. The allocations for point sources, known as "wasteload allocations" (WLAs), are implemented through effluent limitations in NPDES Permits. Effluent limitations for point sources must be consistent with the applicable TMDL WLAs.

The State of Washington's 2012 EPA-approved Clean Water Act Section 305b report and 303d list has been put into a geographic mapping tool. The Sub-watershed hydrologic code (HUC) for this part of Icicle Creek is 170200110406 - Lower Icicle Creek. The Sediment Quarter Grid where these stream reaches are located are: 47120F6E9_NE - and 47120F6G6_SW – (Icicle Creek). The reach of Icicle Creek just upstream of the LNFH is listed as being impaired for temperature. That reach is identified as 17020011008095 on the Ecology mapping tool found at https://fortress.wa.gov/ecy/wqamapviewer/default.aspx?res=1280x1024&lstid=42828&CATEGORY=4A The reach of Icicle Creek just downstream of the LNFH has the reach identifier code of 17020011008147, and is listed as being impaired for DO and pH, with ammonia as a parameter of concern [The notes say that one sample in 2002 exceeded the chronic criterion for ammonia].

Temperature

In 2007, Ecology developed a Temperature TMDL for the Wenatchee River Watershed (Ecology, 2007), which set a maximum allowable effluent temperature WLA for LNFH of 18º C. This TMDL was approved by the EPA on August 3, 2007. However, as discussed earlier, the revised Washington WQS set a more stringent temperature criterion for Icicle Creek to protect salmonid spawning and egg incubation. The January 2011 Supplemental Spawning and Incubation Protection for Salmonid Species (Ecology Publication Number 06-10-038, Revised January 2011) includes geographic information system (GIS) maps of each WRIA in Washington State identifying waterbodies, or portions thereof, which require special protection for spawning and incubation. The revised standards set the temperature criterion at 13°C from August 15 – July 15 and 16°C from July 15-August 15. These standards are more stringent than the Temperature TMDL for the Wenatchee River Watershed and the proposed

limits in the Draft Permit are based on the revised WQS for temperature that were approved by the EPA.

Dissolved Oxygen, pH, and Total Phosphorus
In 2009, Ecology completed a TMDL for the Wenatchee River watershed, including Icicle Creek, for DO and pH, which was approved by the EPA on August 25, 2009. To achieve the goal of this TMDL to meet WQS in the Wenatchee River watershed for DO and pH by the year 2018, both point and nonpoint sources of phosphorus loading must make large reductions in their discharges of phosphorus to the Wenatchee River and Icicle Creek. The TMDL allocates 5.7 µg/L (maximum daily total phosphorus concentration) and 0.52 kg/day of total phosphorus (TP) maximum daily mass loading during the critical periods of March through May and July through October to the LNFH (Ecology, 2009).

Polychlorinated biphenyls (PCBs)
In 1997, Ecology found that PCBs were present in the tissue of anadromous fish from the Wenatchee River and Icicle Creek. The USFWS conducted a PCB evaluation at the LNFH in 2005 in order to determine if there were PCB sources within the LNFH that were adding PCBs to Icicle Creek (USFWS, 2005). This 2005 evaluation determined that there was no statistical difference between PCB concentrations in stream sediment upstream and downstream of the LNFH discharge.

In general, the PCBs found in fish tissue in Icicle Creek in 1997 were not attributed to the LNFH; and Ecology did not assign a WLA for PCBs to the LNFH in any TMDLs under development. Since 2005, the LNFH has regularly cleaned the sediment from the pollution abatement pond, added a second pollution abatement pond, and properly disposed of all removed solids through land application. The Hatchery has also replaced the old interior painted raceways with newer fiberglass raceways, in order to remove the potential for PCB in paint to be an issue. (personal communication with Malenna Cappellini, USFWS, on site visit – March 9, 2016)

In addition, during 2014-2015, Ecology sampled surface waters around the Wenatchee River Watershed, in order to characterize the potential sources of PCBs and DDT within the watershed. On May 9, 2016, the EPA spoke with the study project manager at Ecology Headquarters in Lacey, Washington. The Ecology project manager stated that, based on the water sampling results, there is no obvious source of PCBs in Icicle Creek. Also, after two (2) years of sampling the sediments and periphyton near the Hatchery, there is no evidence that the Hatchery is contributing significant amounts of PCBs to the creek. The Ecology Wenatchee River Watershed Source Assessment for PCBs and DDT was published in July 2016. https://fortress.wa.gov/ecy/publications/documents/1603029.pdf In the Source Assessment Report, Ecology notes that the study "has eliminated a number of potential PCB sources that have either been previously investigated or speculated upon, including: the Leavenworth National Fish Hatchery." The Report also states that "Spatially, it appears that greater bioaccumulation of PCBs in the Wenatchee food web is occurring downstream of Cashmere. This is contradictory to the 303(d) listing of Icicle Creek and the Wenatchee River near Peshastin based on fish tissue concentrations of PCBs, as presented in the work of Era-Miller (2004) and Seiders et al. (2007). It appears that contaminated fish caught in the Leavenworth area are migrating and feeding downstream. Therefore, listing Icicle Creek and

the Leavenworth reaches of the Wenatchee River for PCBs under the 303(d) list seems inappropriate."

Knowing that PCBs are present in fish food and fecal matter, and that they accumulate in fish tissue, the EPA is proposing to include narrative best management practice (BMP) provisions for minimizing PCBs discharged from the LNFH, similar to the provisions for managing PCBs in the EPA Washington Hatchery General Permit.

D. Tribal Concerns

The area just below the fish ladder and outfall of LNFH is a usual and accustomed fishing area for both the Wenatchi Band of the Colville Tribes and the Yakama Indian Nation. A ruling of the Ninth Circuit Court of Appeals [*U.S. v. Colville Indian Reservation*, 606 F.3d 698, (9th Cir. 2010)] affirmed the fishing rights of both tribes in Icicle Creek. In accordance with the EPA Region 10 tribal consultation policy, the Agency has offered government-to-government consultation to both tribes, to address any concerns they may have about the Draft Permit, before proposing to issue it for public comment. Tribal coordination and consultation is ongoing, and the EPA will continue to keep both tribes informed as Permit development progresses. Meetings and consultation will be held as requested.

VI. Effluent Limitations

A. General Approach to Determining Effluent Limitations

Sections 101, 301, 304, 308, 401, 402, and 403 of the Clean Water Act (CWA) form the basis for effluent limitations and other conditions in the draft permit. The EPA has evaluated the discharge of the LNFH with respect to these sections of the CWA and relevant NPDES implementing regulations to determine what conditions and requirements to include in the Draft Permit.

Pursuant to these statutory provisions, NPDES permits must include effluent limitations that require the discharger to (1) meet standards reflecting levels of technological capability, (2) comply with EPA-approved State water quality standards, (3) comply with other State requirements adopted pursuant to Clean Water Act Section 510, 33 U.S.C. § 1370, and (4) cause no unreasonable degradation to the territorial seas, contiguous zone, or oceans. The basis for the technology-based and water quality-based effluent limits in the Draft Permit are described in more detail below.

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or water quality-based effluent limits (WQBELs). TBELs are set nationally according to the level of treatment that is technologically and economically achievable at a national scale. A WQBEL is designed to ensure that the state adopted, EPA-approved WQS applicable to the receiving water body can be met, including the discharge from the LNFH, and they may be more stringent than the TBELs.

B. Technology-Based Effluent Limits

Section 301(b) of the CWA requires industrial dischargers to meet technology-based effluent limitation guidelines (ELGs) established by the EPA, which are enforceable through their incorporation into NPDES Permits. The 1972 amendments to the CWA established a two-step approach for imposing technology-based controls. In the first phase, industrial dischargers were required to meet a level of pollutant control based on the best practicable control technology currently available (BPT). The second level of pollutant control was based on the best available technology economically achievable (BAT).

In 1977, the enactment of Section 301(b)(2)(E) of the CWA allowed for the application of best conventional pollutant control technology (BCT), to supplement BPT standards for conventional pollutants, with cost effectiveness constraints on incremental technology requirements that exceed BPT. The BPT/BAT/BCT system of technology-based standards does not apply to a *new source*, defined by the EPA as a source *whose construction commenced after publication of proposed effluent guidelines prescribing a standard of performance for a specific category of dischargers, which will be applicable to the source*. Direct dischargers that qualify as "new sources" must meet new source performance standards (NSPS), which are based on the best available demonstrated control technology.

The EPA ELGs distinguish, as necessary, whether the promulgated standards for the industry are under BPT, BAT, BCT, or NSPS. To the extent that the EPA-promulgated ELGs are not applicable to an industrial discharger, the CWA and NPDES regulations at 40 CFR 125.3(c) require that the permit writer establish BPT, BCT, or BAT technology-based effluent limits (TBELs) on a case-by-case basis, based on the Best Professional Judgment (BPJ) of the permit writer.

In developing this Draft Permit for the LNFH, the EPA considered whether or not the Hatchery was a "new source" under the NPDES regulations, and whether or not a National Environmental Policy Act (NEPA) analysis was needed in order to determine the impacts of the Hatchery, and of the NPDES Permitting Action, on the quality of Icicle Creek. Based on the definition of new source, the EPA determined that the LNFH is **not a new source,** as the fish production system was constructed in the late 1930s, prior to the 2004 promulgation of the CAAP ELGs/NSPS. The USFWS has upgraded the facility minimally since 2004, but nothing has been done to change the primary fish production system. Therefore, the EPA is not proceeding with a NEPA analysis of the impacts of this NPDES Permitting Action, as it is not required by NPDES regulations.

In evaluating the appropriate TBELs for this Draft Permit, the EPA considered the following:

- The 2010 Draft Permit for the LNFH,
- The EPA promulgated ELGs for CAAP facilities,
- The precedent set by the Upland Fin-fish Hatching and Rearing NPDES General Permit issued by Ecology (see the most recent permit at http://www.ecy.wa.gov/programs/wq/permits/fin_fish/index.html) and Ecology's technology-based, minimum discharge standards for upland and marine finfish facilities at WAC 173-221A-100 and WAC 173-221A-110.
- Promoting consistency, where appropriate, with the EPA's Washington Hatchery General Permit for Federal Facilities and Indian Country

Concentrated Aquatic Animal Production (CAAP) Effluent Limitation Guidelines (ELGs) promulgated by the EPA on September 23, 2004 and found at 40 CFR 451

EPA promulgated ELGs for categories of industrial dischargers can include numeric and narrative limitations, including best management practices (BMPs), in order to control the discharge of pollutants. The ELGs are based on the degree of control that can be achieved using various levels of pollution control technology.

Facilities subject to the CAAP ELGs are defined at 40 CFR 122. CAAP facilities may discharge higher concentrations of suspended solids and nutrients, higher BOD and lower DO. Organic matter is discharged from uneaten food and feces; and some drugs and pesticides may be present in the wastewater from the aquatic animal production process.

The CAAP ELGs establish narrative effluent limitations requiring the implementation of effective operational measures to achieve reduced discharges of solids and other pollutants potentially present in wastewater. However, the permitting authority may also establish additional numeric effluent limits on the discharge of TSS, and any other pollutants where appropriate, in order to protect water quality.

In the final CAAP ELG promulgation (EPA, 2004), the EPA did not include specific numerical limitations in the ELGs for any pollutants; concluding that BMPs, particularly to control the discharge of solids, would provide acceptable control of other potential pollutants. The EPA also allowed Permitting authorities to apply TBELs, and water-quality based numeric effluent limits (WQBELs) for pollutants considered in the ELGs, in order to comply with applicable state WQS.

The CAAP ELGs also require reporting on the use of drugs, disinfectants, and other chemicals in NPDES authorized discharges. There are no applicable TBELs or ELGs in place for most drugs, disinfectants, and other chemicals used within the aquaculture industry. The Ecology Upland Finfish Rearing GP and the EPA Washington Hatchery GP therefore include narrative criteria prohibiting levels of toxic substances in concentrations that impair beneficial uses of the receiving water. The Draft Permit for the LNFH does the same.

Although the NPDES Program applies to all wastewater discharges from CAAP facilities, as defined at 40 CFR 122.24, only those facilities that produce, hold, or contain 100,000 pounds or more of fish during any twelve month period are subject to the ELGs. There were some years, in the last 10 years of production data reviewed by the EPA, where the LNFH produced more than 100,000 pounds of fish per year. Given this past history, the EPA is using BPJ and including the ELG language in this Draft Permit due to the potential to produce more than 100,000 pounds of fish per year.

Table 5. Fish released from the LNFH Between 2006 and 2015 (SCS is the LNFH Program; Coho is the Yakama Nation Program hosted at the LNFH)

Year	Number of SCS	Pounds of SCS	Number of YN Coho	Pounds of YN Coho	Total Number of fish released	Total Pounds of Fish released

2006	1,005,005	52,259	737,995	42,270	1,743,000	94,529
2007	1,177,568	56,513	594,111	32,069	1,771,679	88,582
2008	1,539,668	83,777	534,388	31,314	2,074,056	115,091
2009	1,689,038	92,403	535,717	32,134	2,224,755	124,537
2010	1,248,653	79,890	567,425	33,775	1,816,078	113,665
2011	1,189,442	66,154	470,419	21,982	1,659,861	88,136
2012	1,186,622	66,664	530,141	25,125	1,716,763	91,789
2013	1,289,293	75,841	509,246	28,609	1,798,539	104,450
2014	1,239,025	68,835	616,961	29,950	1,855,986	98,785
2015	1,139,567	64,748	243,935	12,639	1,383,502	77,387

State of Washington, Wastewater Discharge Standards and Effluent Limitations for Upland Finfish Facilities, Washington Administrative Code (WAC) 173-221A-100

The State of Washington requires wastes to be provided with all known, available, and reasonable treatment (AKART) methods prior to discharge or entry into waters of the State, regardless of the quality of water to which wastes are discharged or proposed for discharge, and regardless of the minimum water quality standards established for those waters (Wash. Rev. Code § 90.52.040). To implement this requirement, the Washington Department of Ecology established TBELs for the upland finfish industry (WAC 173-221A-100) and for marine finfish rearing facilities (WAC 173-221A-110).

The TBELs for settable solids (SS) and total suspended solids (TSS), included in the Washington State/EPA Hatchery General Permits, are listed in the tables below. The limits in Table 6 apply to the total facility excluding OLSB discharges, the limits in Table 7 apply to the separate discharge from OLSBs and/or raceways or pond systems during harvest or drawdown for fish release.

Table 6. Ecology Upland Finfish Rearing/EPA Hatchery General Permit Technology Based Effluent Limitations for Hatcheries – Except for those Discharges with Limits in Tables 7

Pollutant	Units	Average Monthly Limit	Maximum Daily Limit	Instantaneous Maximum Limit
Net Suspended Solids	mg/L	5.0	--	15.0
Net Settleable Solids	ml/L	0.1 ml/L	--	--

Table 7. Ecology/EPA Hatchery General Permit Effluent Limits for Discharges from Off-line Settling Basins[1] and for Raceways or Rearing Pond Discharges during Harvest or Drawdown for Fish Release

Pollutant	Instantaneous Maximum
Net Suspended Solids	100 mg/L
Net Settleable Solids	1.0 ml/L

[1]These limits apply to only those OLSB effluents that discharge directly to waters of the United States.

Since the General Permit issued by Ecology implements the state's technology-based requirements for the upland finfish industry, it includes the same numeric limitations for SS and TSS as established in the regulations at WAC 173-221A-100. In addition, Ecology's General Permit prohibits the discharge of Atlantic salmon into surface waters without written permission from the WDFW. In developing its General Permit, Ecology determined that limits on SS and TSS would also effectively control BOD_5 and nutrients in discharges from finfish facilities. Ecology also prohibited the discharge of disease control chemicals and drugs in concentrations that exceeded federal or State WQS, and found that BMPs to minimize the concentrations of these chemicals in discharges would provide effective control.

The EPA considered the Ecology Upland Finfish General Permit, and determined what applied to comparable facilities covered by the EPA's Washington Hatchery General Permit. The EPA determined that these two (2) General Permits identify effluent limitations and BMPs that could also apply to some pollutants that are likely to be present in the LNFH discharge. Therefore, based on BPJ, the EPA has included similar TBELs and conditions in this Draft Permit for the LNFH. Certain prohibitions which apply to all facilities covered under the EPA Washington Hatchery and the Ecology Finfish General Permits are also included in this Draft Permit.

Proposed TBELs in the Draft Permit for the LNFH

The tables below show the technology-based numeric effluent limitations proposed in this Draft Permit for all outfalls during normal operations (Outfall 002 is separated from the other outfalls) and for times of Drawdown for Fish Release.

Table 8. Technology Based Numeric Limits for Rearing Ponds and Raceways except During Drawdown for Fish Release (All Outfalls Except Outfall 002)

Parameter	Units	Average Monthly Limit	Maximum Daily Limit	Instantaneous Maximum Limit
Net Settleable Solids	ml/L	0.1	--	--
Net Total Suspended Solids (TSS)	mg/L	5	--	15
	kg/day	474	--	1421
Interim Temperature	°C	17°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures [Year Round]		

Parameter	Units	Average Monthly Limit	Maximum Daily Limit	Instantaneous Maximum Limit
Interim Total Phosphorus	µg/L	15[1]	17[1]	--
	kg/day	1.4 kg/day[1]	1.6 kg/day[1]	--

Notes:

1. The interim limits apply during the critical periods of March 1 – May 31 and July 1-October 31, until the facility is able to comply with the final limit, but no later than the final limit compliance date set in the Final Permit. The mass limits apply to the combined discharge of Outfall 001, and any other outfalls in use, other than Outfall 002.

Table 9. Technology Based Limits for Raceways and Adult Ponds during Drawdown for Fish Release (All Outfalls Except Outfall 002)

Parameter	Units	Average Monthly Limit	Maximum Daily Limit	Instantaneous Maximum
Settleable Solids	ml/L	--	--	1.0[1]
Total Suspended Solids	mg/L	--	--	100 mg/L[2]
	kg/day	--	--	9475 kg/day[2]
Interim Temperature	°C	17°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures [Year Round]		
Interim Total Phosphorus	µg/L	15[3]	17[3]	--
	kg/day	1.4[3]	1.6[3]	--

Notes:

1. The Instantaneous Maximum SS concentration limit is a gross limit; influent concentration may not be subtracted from the measured result.
2. The Instantaneous Maximum TSS concentration and mass-loading limits are gross limits
3. The interim limits apply during the critical periods of March 1 – May 31 and July 1-October 31, until the facility is able to comply with the final limit, but no later than the final limit compliance date set in the Final Permit. The mass limits apply to the combined discharge of Outfall 001, and any other outfalls in use, other than Outfall 002.

Table 10. Technology Based Limits for the Pollution Abatement Ponds (Outfall 002 Only)

Parameter	Units	Average Monthly Limit	Maximum Daily Limit	Daily Instantaneous Maximum
Settleable Solids	ml/L	--	--	1.0
Net Total Suspended Solids	mg/L	--	--	100
	kg/day	--	--	1743
Interim Temperature	°C	17°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures [Year Round]		
Interim Total Phosphorus	µg/L	97[1]	108[1]	--
	kg/day	1.7[1] kg/day	1.9[1] kg/day	--

Notes:
1. The interim limits apply during the critical periods of March 1 – May 31 and July 1-October 31, until the facility is able to comply with the final limit, but no later than the final limit compliance date set in the Final Permit.

The tables above show the TBELs applicable to the LNFH. However, if there are more stringent WQBELs for these parameters that apply based on state WQS, the more stringent limits have been proposed in the Draft Permit, superseding the technology based limits mentioned here.

Mass-Based Limits
40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The mass based limits are expressed in pounds per day and are calculated as follows:

Mass based limit (kg/day) = concentration limit (mg or µg/L) × flow (mgd) × 3.79

3.79 is the calculated conversion factor starting from the pounds per day conversion factor (8.34) divided by 2.2 pounds in a kilogram (8.34/2.2 = 3.79). The mass-based loading limits on TSS and the interim mass-based limits on TP were calculated using the concentration limit, the 95th percentile of the measured effluent flow at Outfalls 001 and 002, and the 3.79 conversion factor.

C. Water Quality-Based Effluent Limits

Statutory and Regulatory Basis
Section 301(b)(1)(C) of the CWA requires the development of limitations in Permits necessary to meet state or tribal WQS. Point source discharges to state or tribal waters must also comply with limitations imposed by the state or tribe as part of its certification of each NPDES Permit developed under section 401 of the CWA. 40 CFR 122.4(d) prohibits the

issuance of an NPDES Permit that does not ensure compliance with the WQS of all affected states (i.e., the WQS of the receiving water body and downstream waters).

The NPDES regulations require that Permits include limits for all pollutants or parameters which are or may be discharged in an amount which will cause, have the reasonable potential (RP) to cause, or to contribute to an excursion of any EPA-approved state or tribal-promulgated WQS, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources must be derived from, and comply with, all applicable state or tribal WQS [40 CFR 122.44(d)(1)].

40 CFR 122.44(d)(1) requires the permitting authority to make a RP evaluation (called a "reasonable potential analysis or RPA") using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The Permit limits must be stringent enough to ensure that state or tribal WQS are met, and must be consistent with any available WLA provided by an EPA-approved TMDL assessment, if applicable. In the case of an available TMDL, the WLA provided by the TMDL for a particular pollutant will override the mass-based (TBEL) calculations, when it is the more stringent of the two options.

RPA

The EPA projects the downstream receiving water concentration for each pollutant of concern when evaluating the RP to cause or contribute to an excursion above any State/Tribal water quality criterion. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the RP to cause or contribute to an excursion above the applicable WQS, and a WQBEL is required.

As discussed earlier, it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent concentration of a particular pollutant. These areas are called mixing zones. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State in the 401 certification. For the LNFH Permit, the receiving water, Icicle Creek, is known to be impaired for temperature and total phosphorus. Those two parameters are limited in the effluent by this Permit, and because there is no assimilative capacity in the receiving water to take more, the Permit incorporated end-of-pipe limits, with no mixing zone authorized.

Pollutants Present with Reasonable Potential to Exceed Washington Water Quality Standards

- Temperature
- Total Phosphorus

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a WQBEL is to develop a WLA for the pollutant. A WLA is the concentration or loading of a pollutant that the Permittee may discharge without causing or contributing to an exceedance of WQS in the receiving water. WLAs are determined in one of the following ways:

1. TMDL-Based WLA

The 2009 Wenatchee River TMDL for DO and pH established a WLA for the LNFH for total phosphorus during the two (2) critical periods established in the TMDL. The critical periods occur during March –May prior to snowmelt runoff, and July – October after snowmelt runoff. Under existing conditions, the LNFH has a WLA not to exceed a total LNFH load contribution of 0.52 kilograms (kg) per day during those 2 critical periods of the year.

The TMDL WLA is the basis for the final total phosphorus limits in the Draft LNFH Permit.

2. Mixing zone based WLA

No mixing zones are authorized in this Draft Permit, due to the fact that the receiving water is impaired for pollutants present in the discharge, meaning that there is no assimilative capacity in Icicle Creek for more loading of total phosphorus (and due to the need to protect for salmon and trout spawning and incubation, temperatures need to be at 13°C for most of the year), or increased temperature discharges. Therefore, none of the WLAs used in the derivation of WQBELs in this Draft Permit were derived in this way.

3. Criterion as the WLA

In some cases a mixing zone cannot be authorized, either because the receiving water is at, or exceeds, the criterion; the receiving water flow is too low to provide dilution; or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the WLA. Establishing the criterion as the WLA ensures that the effluent discharge will not contribute to an exceedance of the criteria. That is the basis for the final temperature limits in the Draft LNFH Permit.

Once the WLA has been developed, the EPA may apply the statistical Permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as the TSD) if necessary, in order to obtain average monthly, average weekly, and/or maximum daily Permit limits. This approach takes into account effluent variability, sampling frequency, and Washington's WQS.

D. Facility Specific Limits

The final effluent limits for each parameter in NPDES Permits are the more stringent of technology treatment requirements or WQBELs. See the table of proposed limits in Section IV.G of this Fact Sheet, below. The discussion below details each parameter in the table.

Narrative Effluent Limitations: There is a proposed requirement in the Draft Permit to conduct a weekly visual observation of the receiving water at each outfall, to ensure compliance with the narrative criteria that apply to all existing and designated uses for fresh and marine water in the State of Washington. See page 21.

Numeric Effluent Limitations

Temperature

The USFWS Mid-Columbia River Fisheries Resource Office (FRO) has been taking temperature measurements along Icicle Creek since 2005, in order to evaluate the impact of the LNFH operations on Icicle Creek temperatures. Annual temperature monitoring reports are posted online. The link to the 2015 Summary of Icicle Creek Temperature Monitoring is included here:
https://www.fws.gov/LeavenworthFisheriesComplex/MidColumbiaRiverFRO/pdf/2015%20Fraser%20Icicle%20Creek%20Temperature%20Report.pdf

Figure 2 from the 2015 FRO report is re-printed below, to show the locations of the temperature monitoring stations along Icicle Creek relative to the LNFH. The USFWS FRO shared the last five (5) years of their continuous temperature monitoring data with the EPA during the development of this Draft Permit. The daily minimum temperature measurements, daily maximum temperature measurements, daily mean temperature measurements and the 7-day average of the daily maximum temperature measurements from 2010-2015 were reviewed.

The FRO 2015 Summary of Icicle Creek Temperature Monitoring stated that, in general, during the warm summer months Icicle Creek water warms as it moves downstream, with two exceptions; the Snow Creek confluence and the LNFH spillway pool (i.e. around Outfall 001). The FRO data taken at station #5 at the LNFH intake on Icicle Creek (downstream from the Snow Lake/Snow Creek confluence) has recorded summer temperatures where the 7DADM ranges from 16°C - 20°C. This means that the influent water from the creek into the Hatchery is warmer than the effluent being discharged at LNFH Outfalls.

Snow Creek receives water from a diversion that withdraws water from the bottom of Snow Lake during the summer months and water in Snow Creek had a 7DADMax **1.1°C cooler** than the water temperatures recorded 0.1 km upstream in Icicle Creek prior to supplementation of Hatchery Operations. However, immediately after supplementation began, water temperatures in Snow Creek dropped. Snow Creek water temperatures continued to drop throughout the period of supplementation. The largest water temperature difference between Snow Creek and Icicle Creek, 0.1 km downstream, was 6.1°C and occurred on August 1, 2015. The spillway pool at the LNFH receives hatchery effluent river water mixed with groundwater pumped from both shallow and deep production wells, making an off-channel pool with a high 7DADMax that was **2.2°C cooler** than in Icicle Creek directly upstream of the Leavenworth NFH. At both of these locations, it is clear that Icicle Creek water temperatures were reduced due to LNFH operations.

Because much of the water in Icicle Creek above the LNFH is diverted into the Hatchery during the critical warm summer months, the discharge from the LNFH constitutes a large proportion of the stream flow below the discharge point. Personal communications with

Gregory Fraser, USFWS FRO (April 14, 2016) helped clarify Figures 4 and 5 in the 2015 Temperature Report. Figure 4 shows the downstream cooling effects of the Snow Lake supplementation efforts of the LNFH on Icicle Creek. Figure 5 shows the downstream cooling effects of the Hatchery effluent on Icicle Creek.

Figure 1. USFWS FRO 2015 Temperature Report on Icicle Creek Figure 4: High 7DADMax daily water temperature of Snow Creek (IC2), Icicle Creek upstream (IC1) and downstream (IC3 and IC5) of Snow Creek May 1–October 15, 2015 demonstrating the cooling effects of supplementation water from Snow Lakes. IC3 data were not available 7/4–8/9

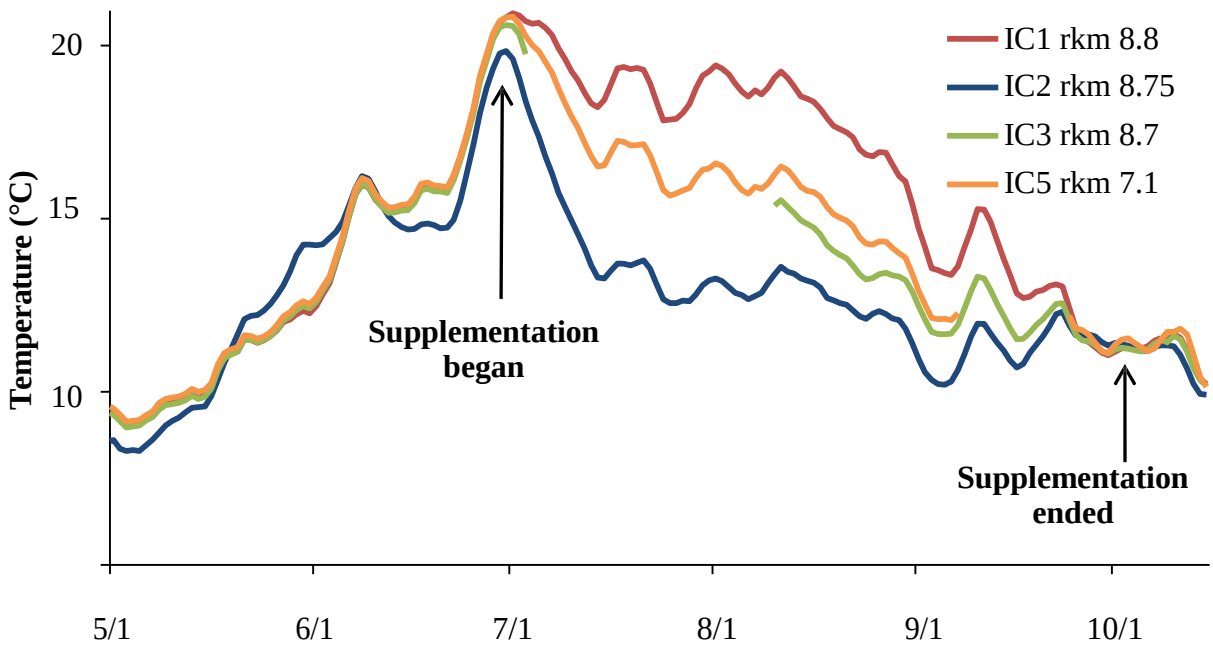

Figure 2. USFWS FRO 2015 Temperature Report on Icicle Creek Figure 5: High 7DADMax daily water temperatures in Icicle Creek upstream (IC7), downstream (IC8) and in the Leavenworth NFH spillway pool (IC10 and IC11) May 1–October 15, 2015 demonstrating the cooling effects of Leavenworth NFH operations. Data for IC7, IC10 and IC11 were not available 8/17– 9/2.

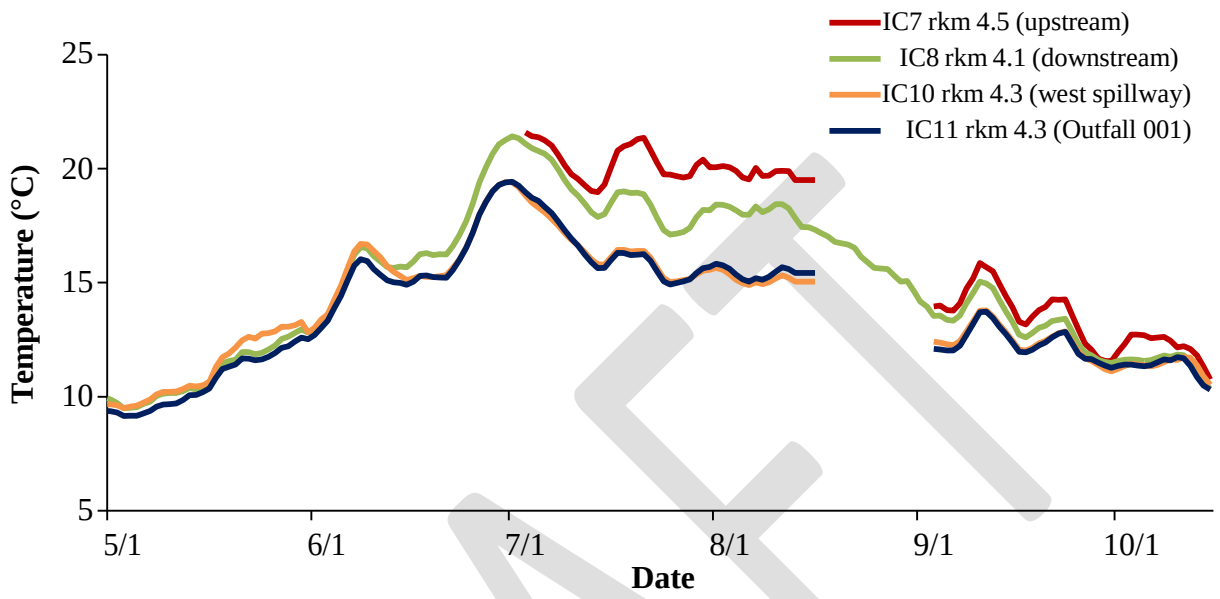

Figure 3. Map of Icicle Creek temperature monitoring stations discussed in USFWS FRO 2015 Temperature Report on Icicle Creek. EPA analyzed 2010-2015 temperature data from locations IC1, IC5, IC11, IC13, IC23, and IC24 when developing this Draft Permit

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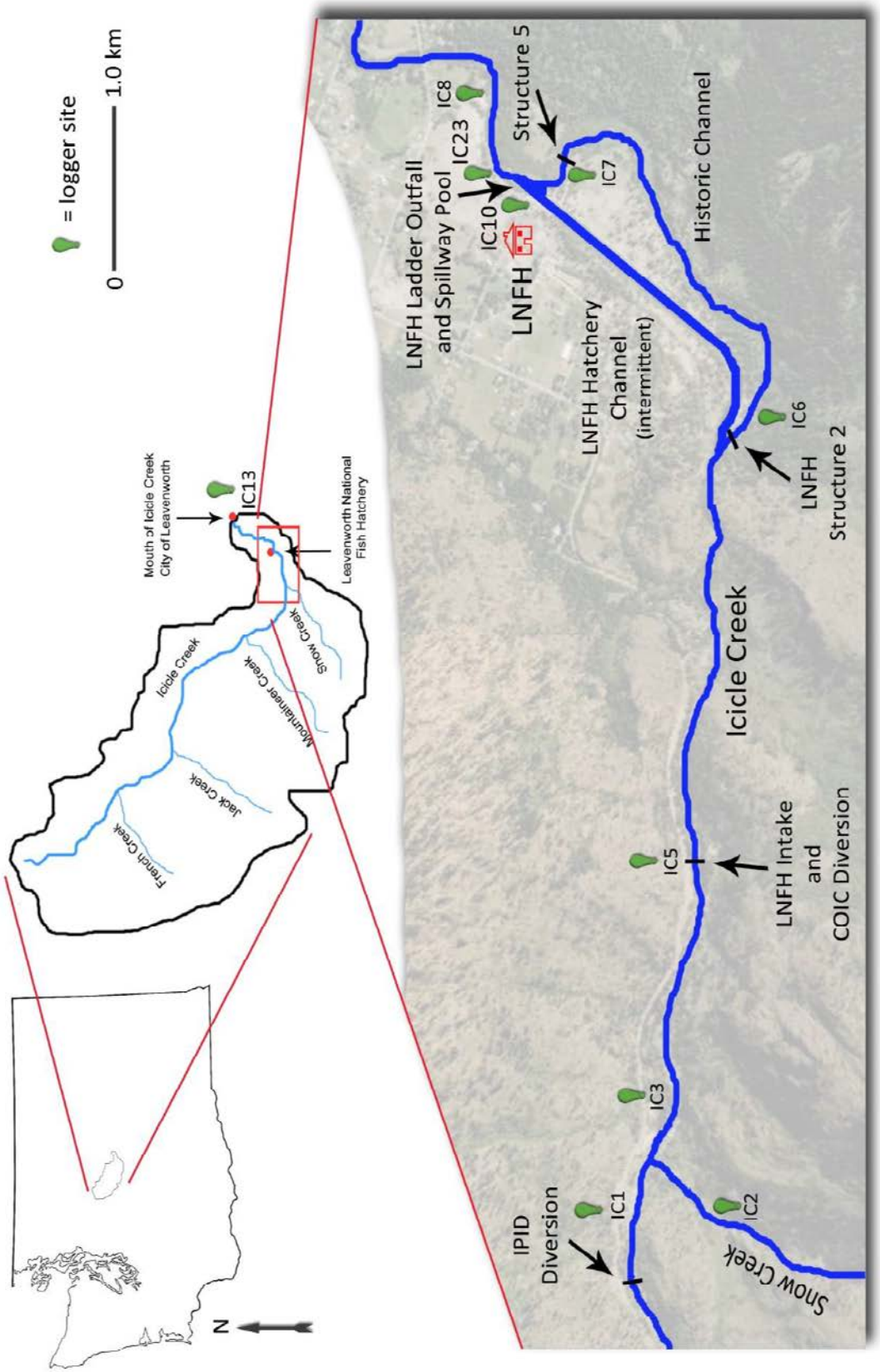

= logger site
0
1.0 km
N
Mouth of Icicle Creek
City of Leavenworth
IC13
Leavenworth National
Fish Hatchery
Icicle Creek
Mountaineer Creek
Snow Creek
Jack Creek
French Creek
IC8
IC23
IC10
IC7
IC6
IC5
IC3
IC1
IC2
Structure 5
LNFH Ladder Outfall
and Spillway Pool
LNFH
LNFH Hatchery
Channel
(intermittent)
Historic Channel
LNFH
Structure 2
Icicle Creek
LNFH Intake
and
COIC Diversion
IPID
Diversion
Snow Creek

Comparing the 2010-2015 temperature data measured by the FRO at the LNFH outfall locations to the 13°C water quality criterion applicable 11 months out of the year from August 15 – July 15, it appears as though the effluent can be warmer than 13°C from mid-August through September and again between June and July.

Comparing the 2010-2015 temperature data measured at the LNFH outfall locations to the 16°C water quality criterion applicable one (1) month out of the year from July 15-August 15, it appears as though the effluent can be warmer than 16°C for a week or two during that timeframe.

The EPA recognizes that the LNFH cannot comply with the new effluent temperature limits immediately upon the effective date of the Final Permit. The EPA and Washington Department of Ecology developed a ten (10) year compliance schedule for meeting the final effluent temperature limits at all outfalls at the facility. The EPA believes that this time is necessary to do facility planning, secure funding, design changes to the facility, construct as necessary, and other steps involved that will enable the LNFH to adjust operations as necessary during the warmer summer months (June, July, August, and September) in order to achieve the final temperature effluent limits of 13°C from August 15 – July 15 and 16°C from July 16 – August 14, by the end of the compliance schedule. This 10 year compliance timeframe is consistent with the assumptions of the Wenatchee pH and DO TMDL, as the TMDL gave a ten year target for meeting the WLAs, and ten years is consistent with the timeframe for compliance with necessary total phosphorus reductions for the publicly owned treatment works (POTWs) with WLAs in the TMDL. Ten years also is the maximum allowable time for compliance schedules set by the WA State WQS.

The interim effluent temperature limit that must be met year round by the LNFH at all outfalls is 17°C, which is the 95th percentile of the 7DADMs in the dataset of five (5) years of continuous monitoring data at Outfall 001 and Outfall 002 (using the data on Abatement Pond 1). There was one (1) year of monitoring data taken by the FRO on Abatement Pond #2, but the EPA did not factor that data into the interim limit calculations as there was 5 years of data for Abatement Pond #1.

Total Phosphorus

The final mass-loading effluent limit on total phosphorus, on all Outfalls at the LNFH, comes directly from the wasteload allocation (WLA) assigned to the LNFH in the 2009 Wenatchee TMDL for pH and DO. 0.52 kg/day is the final total phosphorus limit that applies March 1-May 31 and July 1- October 31 each year.

The interim concentration limits on total phosphorus for Outfall 001 and Outfall 002 were derived from the 95th percentile of the total phosphorus monitoring sample data taken between 2006-2011 and provided to the EPA from the USFWS during the development of this Draft Permit. The 95th percentile of the dataset on total phosphorus concentrations from Outfall 001 was 15 µg/L. That performance-based number becomes the Average Monthly Interim Limit (AML) for total phosphorus for Outfall 001. Using TSD procedures to convert from the Interim AML to the Interim MDL, the multiplier used was 1.12 and the Interim MDL for Outfall 001 is 17 µg/L.

Table 11. Multiplier for Calculating Maximum Daily Interim TP Limits for Outfall 001

Multiplier to Calculate Maximum Daily Limit from Average Monthly Limit - Outfall 001											
Number of Samples per Month Set (n)			4	Reference: TSD Page 106							
Coefficient of Variation (CV) = Std. Dev./Mean			0.08								
σ = std deviation	$\sigma^2=\ln(CV^2+1)$		0.080								
Average Monthly Limit (AML),	$\exp(z\sigma_n-0.5z\sigma_n^2)$; where % probability basis =	95%	1.07								
Maximum Daily Limit (MDL),	$\exp(z\sigma-0.5z\sigma^2)$; where % probability basis=	99%	1.20		Calculation:	AML	x	Multiplier		= MDL	
Ratio MDL/AML			1.12		MDL = AML x Multiplier	15	x	1.12	=	16.8728	
										17	

Next, the EPA converted the concentration based interim limits for total phosphorus to mass-loading limits using the concentration, flow at the outfall, and the kg/day conversion factor discussed previously. The AML mass loading limit for total phosphorus for Outfall 001 is 0.015 mg/L (15 µg/L) x 25 MGD flow at Outfall 001 x 3.79. That equation equals 1.4 kg/day as the Interim AML for mass loading of total phosphorus. The Interim MDL mass loading limit is 1.6 kg/day, using 0.017 mg/L, 25 MGD, and 3.79 as the conversion factor.

At Outfall 002, the 95th percentile of the dataset on total phosphorus monitoring sample data is 97 µg/L. That performance based number becomes the Interim AML for total phosphorus for Outfall 002. Using TSD procedures to convert from the Interim AML to the Interim MDL, the multiplier used was 1.11 and the Interim MDL for Outfall 002 is 108 µg/L.

Table 12. Multiplier for Calculating Maximum Daily Interim TP Limits for Outfall 002

Multiplier to Calculate Maximum Daily Limit from Average Monthly Limit - Outfall 002											
Number of Samples per Month Set (n)			4	Reference: TSD Page 106							
Coefficient of Variation (CV) = Std. Dev./Mean			0.07								
σ = std deviation	$\sigma^2=\ln(CV^2+1)$		0.070								
Average Monthly Limit (AML),	$\exp(z\sigma_n-0.5z\sigma_n^2)$; where % probability basis =	95%	1.06								
Maximum Daily Limit (MDL),	$\exp(z\sigma-0.5z\sigma^2)$; where % probability basis=	99%	1.17		Calculation:	AML	x	Multiplier		= MDL	
Ratio MDL/AML			1.11		MDL = AML x Multiplier	97	x	1.11	=	107.5518	
										108	

Next, the EPA converted the concentration based interim limits for total phosphorus to mass-loading limits using the concentration, flow at the outfall, and the kg/day conversion factor. The Interim AML mass loading limit for total phosphorus for Outfall 002 is 0.097 mg/L x 4.6 MGD flow at Outfall 002 x 3.79. That equation equals 1.7 kg/day as the Interim AML for mass loading of total phosphorus at Outfall 002. The Interim MDL mass loading limit is 1.9 kg/day, using 0.108 mg/L, 4.6 MGD flow, and 3.79 as the conversion factor.

Settleable Solids (SS)

This parameter was discussed above in the technology based limits section. The proposed effluent limits for SS and TSS are net limits, as stated in the WAC for upland finfish facilities [WAC 173-221A-100(4)(a)(iv)]. The provision at (4) (a) (iv) states that "effluent limitations shall apply as net values provided the criteria contained in 40 CFR 122.45 are met." This Draft Permit for the LNFH requires that gross influent and effluent values be reported on the DMR along with the calculated net values. The EPA may require additional sampling to prove substantial similarity between influent and effluent solids, where it determines that

additional sampling is necessary. In such cases, the Permittee may continue to report net values on the DMR until the comparability tests are completed.

The Settleable Solids limit applicable to Outfall 002 was retained from the Previous Permit, and is discussed in more detail below in the Antibacksliding Section of this Fact Sheet.

Total Suspended Solids (TSS)
This parameter was discussed above in the technology based limits section. Federal regulations at 40 CFR 122.45(f)(1) require that all limits be expressed in terms of mass, except pH, temperature, and other pollutants that cannot be expressed in terms of mass, or when standards are expressed in terms other than mass. Concentration limits may be applied in addition to mass limits.

For TSS mass-loading limits applicable to Outfall 001 (and all other outfalls except for 002), the flow used in the calculations was 25 MGD.

Mass-based limit (kg/day) = concentration limit (mg/L) x flow (MGD) x 3.79 conversion factor:

TSS Average Monthly Limit = 5 mg/L x 25 MGD x 3.79 = 474 kg/day TSS
TSS Instantaneous Maximum Limit = 15 mg/L X 25 MGD x 3.79 = 1421 kg/day TSS

For the TSS mass-loading limit applicable to Outfall 001, and all other outfalls except for 002 **during drawdown for fish release**, the flow used in the calculations was 25 MGD.

TSS Instantaneous Maximum Limit =100 mg/L x 25 MGD x 3.79 = 9475 kg/day TSS

For TSS mass-loading limit applicable to Outfall 002 (the Pollution Abatement Ponds), the flow used in the calculations was 4.6 MGD.

TSS Instantaneous Maximum Limit = 15 mg/L x 4.6 MGD x 3.79 = 262 kg/day TSS from the Pollution Abatement Ponds

pH
The Washington State WQS, at Chapter 173-201A WAC, requires pH values in the river to be within the range of 6.5 to 8.5 s.u. at all times, for the protection of aquatic life. The Draft Permit proposes the pH limit range of 6.5 to 8.5 s.u on the effluent at all times.

E. Schedules of Compliance for Temperature and Total Phosphorus

Schedules of compliance are authorized at 40 CFR 122.47 and by Section 400.03 of the Idaho WQS. The Idaho WQS allow for compliance schedules “when new limitations are in the permit for the first time.” Federal regulations allow for compliance schedules “when appropriate,” and mandate that the schedules require permit compliance as soon as possible. If a permit establishes a compliance schedule that exceeds 1 year from the date of final

permit issuance, NPDES regulations require that the schedule set forth interim requirements and deliverable dates.

The time between the interim requirement dates must not exceed 1 year, and when the time necessary to complete any interim requirement is more than 1 year (such as the construction of an upgraded facility), the schedule must require reports on progress toward completion, including a projected completion date, with specified dates for the submission of progress reports. Federal regulations require that the Permittee must notify EPA in writing of compliance or non-compliance with the interim or final effluent limitations, or submit the progress reports 14 days following each interim and final date of compliance. The regulations also require that interim effluent limits be at least as stringent as the final limits in the previous permit, if applicable [40 CFR 122.44(l)(1)].

EPA policy states that, in order to grant a compliance schedule, a permitting authority must make a reasonable finding that the Permittee cannot comply with the effluent limit immediately upon the effective date of the final permit (see the U.S. EPA NPDES Permit Writers' Manual, Section 9.1.3 http://cfpub.epa.gov/npdes/writermanual.cfm?program_id=45)

The proposed effluent limits for temperature and total phosphorus are new limits for the LNFH. EPA evaluated the LNFH effluent data in order to determine whether the facility could consistently comply with the new limits in the Draft Permit. The table below summarizes this evaluation:

Table 13. Immediate Achievability of New Water Quality-based Effluent Limitations

Parameter	Season	Achievable Immediately?
Temperature Final Limit of 13°C	August 15 – July 15	No
Temperature Final Limit of 16°C	July 16 – August 14	No
Total Phosphorus (TP) Final Limit of 0.52 kg/day	March 1 – May 31 and July 1 – October 31	No

The EPA has determined that the LNFH cannot comply with the final WQBELs for temperature or total phosphorus immediately upon the effective date of the final Permit. Therefore, the Draft Permit outlines a schedule of compliance for meeting the new limits after significantly upgrading the facility to reduce temperature and total phosphorus being discharged in the effluent.

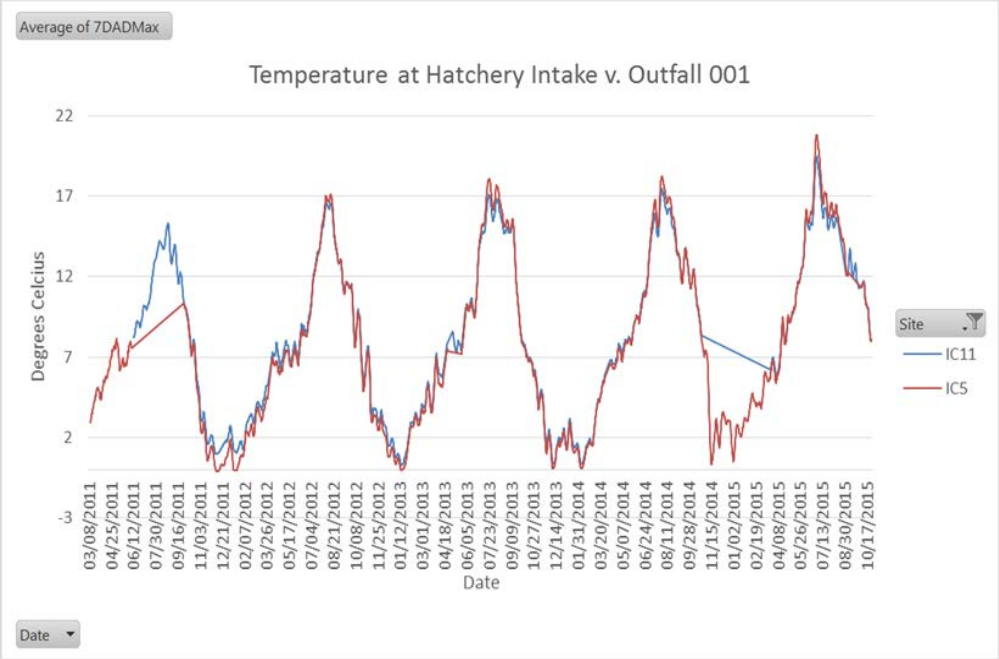
The proposed compliance schedule allows the Permittee nine (9) years 11 months after the effective date of the final Permit to meet the final temperature and total phosphorus effluent limitations. These schedules are set in order for the Permittee to plan, fund, design, and construct the necessary upgrades to the facility that will be required in order to meet the final limitations in the Permit.

Temperature

The Draft Permit proposes a final temperature limit from August 15 – July 15 each year to be 13°C, in accordance with the State of Washington WQS. The Draft Permit also proposes a final temperature limit from July 16 – August 14 each year to be 16°C, in accordance with the State of Washington WQS. The temperature data provided by the facility

The EPA analyzed continuous temperature monitoring data collected by the USFWS Mid-Columbia Basin Fisheries Resources Office (FRO) between 2010 -2015. A figure showing the relationship between the water temperature at the intake and the water temperature at Outfall 001 is below. Data from site IC5 was taken at the intake; data from site IC11 was taken at Outfall 001:

Figure 4. Intake and Effluent Temperatures at the LNFH 2011-2015



The continuous monitoring data shows that temperatures at Outfall 001 can be higher than 13°C during the summer months, without any changes being made to facility operations. Temperatures can also be higher than 16°C. Therefore, the LNFH cannot comply with the limits immediately, and Ecology and the EPA agreed that the facility qualifies for a compliance schedule. Ecology certified compliance schedule language with interim effluent limitations on temperature at 17°C, year round, while the USFWS works on meeting the interim milestones that are necessary in order to comply with the final temperature limitations by the end of the compliance schedule.

Total Phosphorus

The draft Permit proposes a final effluent limitation for total phosphorus of 0.52 kg/day, which is the wasteload allocation (WLA) for the LNFH included in the Wenatchee River

TMDL for pH and DO, from which a concentration target was back calculated to be 5.7 µg/L. The USFWS must make modifications to its hatchery operations in order to meet the water quality target for reducing total phosphorus as discussed in the TMDL.

The data provided by the facility and evaluated by the EPA shows that the average total phosphorus concentration measured at Outfall 001 from 2006-2011 was 6.2 µg/L (0.0062 mg/L) with a minimum concentration during that time period of 0.5 µg/L (0.0005 mg/L) and a maximum concentration of 17 µg/L (0.017 mg/L). The 95th percentile of the dataset of total phosphorus concentrations at Outfall 001 measured during this time period is 14.75 µg/L.

The total phosphorus concentrations measured at the intake to the LNFH for this time period averaged 3.9 µg/L, with a minimum concentration at the intake of 0.5 µg/L and a maximum of 18.2 µg/L. The 95th percentile of the dataset of total phosphorus concentrations at the intake is 12.35 µg/L, which is greater than the TMDL concentration target.

The total phosphorus concentrations measured at Outfall 002 from this same period between 2006-2001 averaged 45.8 µg/L, with a minimum concentration of 2.7 µg/L to 120 µg/L. The 95th percentile of the dataset of total phosphorus concentrations at Outfall 002 is 94 µg/L. The concentrations of total phosphorus in the LNFH discharge from Outfall 002 must be significantly reduced.

Table 14. Statistics on the Measured Total Phosphorus Concentrations at the LNFH from 2006-2011

Total Phosphorus Concentrations (µg/L)	Outfall 001	Outfall 002	Intake
Average	6.2	45.8	3.9
Minimum	0.5	2.7	0.5
Maximum	17.0	120.0	18.2
Count	31	32	32
Standard Deviation	4.92	30.02	4.50
CV	0.79	0.65	1.15
5th Percentile	0.50	5.17	0.50
95th Percentile	14.75	93.99	12.35

The LNFH cannot be in compliance with the total phosphorus final effluent limitation of 0.52 kg/day upon the effective date of the Permit; and therefore a compliance schedule is appropriate.

Here are two graphical depictions of the measured total phosphorus concentrations at the intake and both Outfall 001 and 002:

Figure 5. Total Phosphorus Trends at the Intake and Outfall 001 (2006 -2011)

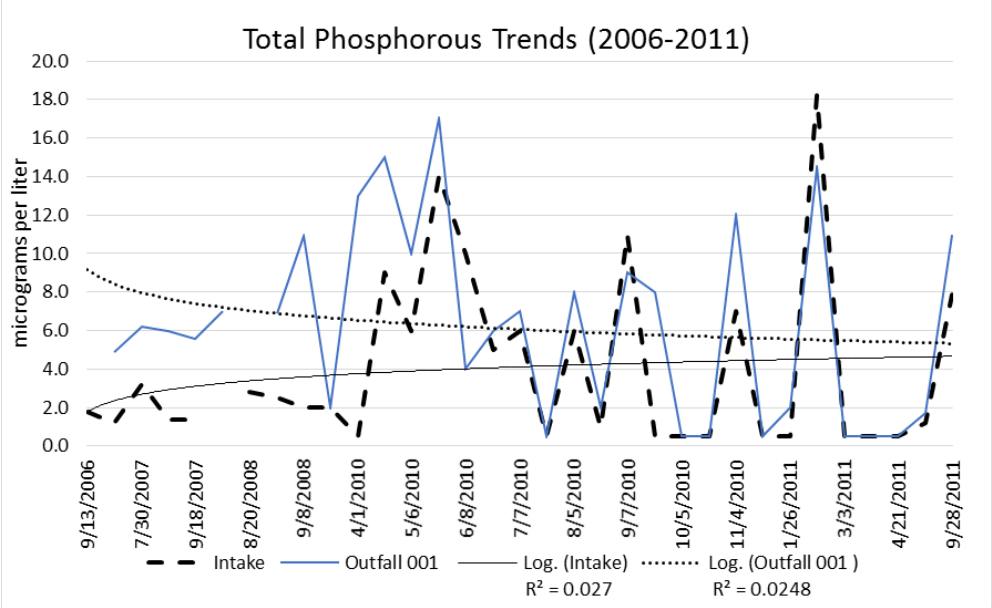
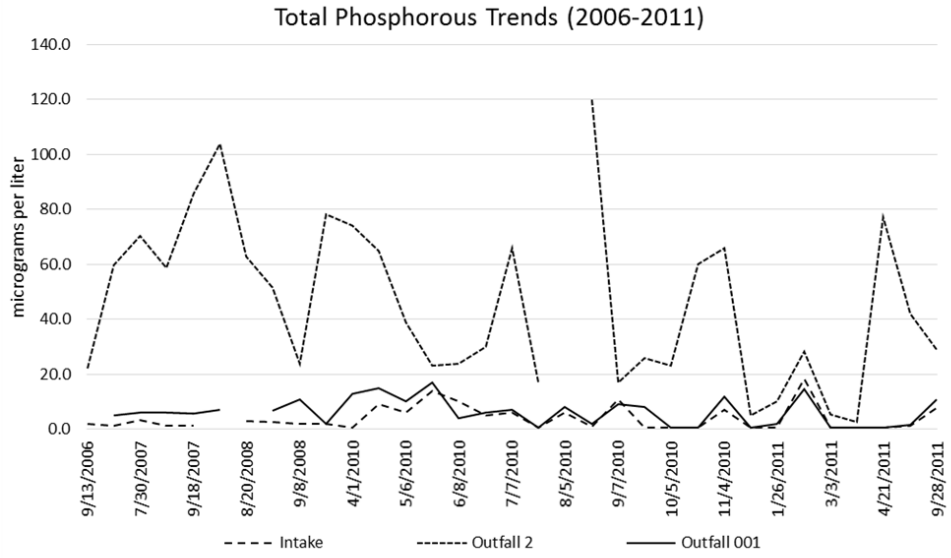


Figure 6. Total Phosphorus Trends (2006-2011) Including Outfall 002



EPA calculated interim total phosphorus limitations based on the dataset discussed above. The interim limits for Outfall 001 and Outfall 002 are discussed in this fact sheet on pages 38-39, above. These interim limits must be met by the facility until the end of the compliance schedule, at which time the final limits must be met.

Ecology and the EPA worked together to develop the interim requirements and deliverable dates with which the LNFH must comply over the ten (10) year compliance schedule to meet the final limits for temperature and total phosphorus. Ecology provided language to the EPA in the Preliminary CWA 401 certification of the Draft Permit prior to the Draft Permit being

released for public notice and comment. See the Draft Permit Part I.E. The Permittee must achieve compliance with the final temperature and total phosphorus effluent limitations as soon as possible, but not later than nine (9) years and eleven (11) months after the effective date of this Permit.

While the schedules of compliance are in effect, the Permittee must comply with the interim limitations, monitoring, and reporting requirements; and provide the deliverables on schedule to both the EPA and Ecology.

F. Anti-backsliding Provisions

Section 402(o) of the CWA and 40 CFR 122.44(l) generally prohibit the renewal, reissuance, or modification of an existing NPDES Permit that contains effluent limits, Permit conditions, or standards that are less stringent than those established in the Previous Permit (i.e., anti-backsliding) with limited exceptions. Section 7.2 of the EPA NPDES Permit Writers' Manual (EPA-833-K-10-001) provides a detailed explanation of how the anti-backsliding statutory and regulatory provisions should be applied.

The Previous Permit from 1974 included technology based effluent limits on SS and TSS based on the maximum mass of fish produced in the facility. Those limits are shown below.

Table 15. 1974 NPDES Permit Technology Based Limitations

Pollutant	Average Daily Limit	Maximum Daily Limit[11]	Instantaneous Maximum Limit
Total Discharge			
Suspended Solids	704 kg/day (1551 lbs/day)	921 kg/day (2045 lbs/day)	15 mg/L (net)[1]
Settleable Solids	0.1 ml/L	--	--
Cleaning Effluent			
Suspended Solids	--	--	15 mg/L (net)[1]
Settleable solids	--	--	0.2 ml/L
Notes: Net addition= effluent concentration – influent concentration			

Comparison between Previous and Proposed Limits

Under the antibacksliding requirements of Section 402(o) of the CWA, in general, the limits applied in subsequent permits must be at least as stringent as the limits set in the 1974

Permit. Only SS and TSS were limited in the Previous Permit. Therefore, antibacksliding does not apply to the temperature or total phosphorus limits in this Draft Permit.

For limits applicable to Outfall 001, and all other outfalls that pull from Outfall 001, the Settleable Solids limit from 1974 was retained in this Draft Permit. The TSS Instantaneous Maximum concentration limit of 15 mg/L was retained; and in addition, an Average Monthly concentration limit of 5 mg/L was included, in order to be consistent with the more recent EPA Washington Hatchery and the Ecology Upland Finfish Rearing General Permits. The TSS mass loading limits were recalculated; using the concentrations, effluent flow of 25 mgd, and the density of water (3.79 kg/gallon). Note that there is a detailed discussion of comparing TSS limits proposed here with what was in the 1974 Permit on pages 45-46 of this Fact Sheet.

For the limits applicable to Outfall 002, the Settleable Solids limit from 1974 was retained in this Draft Permit, and the TSS Instantaneous Maximum concentration limit was also retained. The TSS mass loading limit was recalculated, using the concentration, effluent flow of 4.6 mgd, and the density of water (3.79 kg/gallon). The calculated 262 kg/day TSS is more stringent than what was in the 1974 Permit, and is therefore being proposed in this Draft Permit.

Table 16. Comparison of Previous Permit Limits and Proposed Permit Limits on Outfall 001, and all other Outfalls except Outfall 002

	Previous 1974 Permit			Current Draft Permit TBELs		Proposed Limits in the Draft Permit		
Parameter	**Average Daily Limit**	**Max. Daily Limit**	**Instant. Max. Limit**	**Average Monthly Limit**	**Instant. Max. Limit**	**Average Monthly Limit**	**Max. Daily Limit**	**Instant. Max. Limit**
Settleable Solids	0.1 ml/L	--	--	0.1 mL[1]	--	**0.1 ml/L**	**--**	**--**
(Total) Suspended Solids (TSS)	704 kg/day	921 kg/day	--	474 kg/day[1]	1421[1] kg/day[1]	**474 kg/day[1]**	**866 kg/day**	**--**
	--	--	15 mg/L[2]	5 mg/L[2]	15 mg/L[2]	**5 mg/L[1`]**	**--**	**15 mg/L[2]**

Notes:
1. As discussed below on pages 45-46, the 1421 kg/day Instantaneous Maximum Limit calculated TBEL is equivalent to 866 kg/day Maximum Daily Limit – which is the limit averaging period that is required by the CWA NPDES regulations (promulgated after the Previous Permit was issued in 1974).
2. The TSS Average Monthly and Instantaneous Maximum limits proposed are net limits: Net discharge = effluent concentration (or loading) – influent concentration (or loading).

Table 17. Comparison of Previous Permit Limits and Proposed Permit Limits for Outfall 002

Parameter	Previous 1974 Permit			Current Draft Permit TBELs		Selected Limits		
	Average Daily Limit	**Max. Daily Limit**	**Instant. Max. Limit**	**Average Monthly Limit**	**Instant. Max. Limit**	**Average Monthly Limit**	**Max. Daily Limit**	**Instant. Max. Limit**
Settleable Solids	--	--	0.2 ml/L	--	1.0 ml/L		**--**	**0.2 ml/L**
(Total) Suspended Solids (TSS)	704 kg/day	921 kg/day	--		262 kg/day[1]			**262 kg/day[1]**
	--	--	15 mg/L[1]		100 mg/L[1]		**--**	**15 mg/L[1]**

Notes:
1. These TSS Instantaneous Maximum limits are net limits: Net discharge = effluent concentration (or loading) – influent concentration (or loading)

Averaging Periods of the Limits

a. Daily Average Limit

It should be noted that the 1974 Permit applied daily average limits in the total facility discharge, whereas the current Draft Permit applies monthly average limits. This is required by the regulations at 40 CFR 122.45(d), which require that "all Permit effluent limitations, standards and prohibitions . . . shall unless impracticable be stated as maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works . . ." This regulation was promulgated in 1983, after the issuance of the Previous Permit.

Also, in Washington State, the technology-based limitations for SS and TSS from the total facility, incorporated into state regulations at WAC 173-221A-100, are set as "average concentration limits", which have been applied in EPA's Washington Hatchery General Permit and in the State's General NPDES Permit for Upland Finfish Hatching and Rearing Facilities as an AML for TSS, as well as an instantaneous maximum limit (IML). Therefore, using BPJ, the average concentration limit required in State regulations is applied here as a TSS AML and an IML, for all outfalls other than Outfall 002, to be consistent with limits applied at other hatcheries in Washington and to comply with federal regulations.

Furthermore, in considering the definition of *daily average* in the 1974 Permit ("the addition of the measured daily discharges divided by the number of days during the calendar month when the measurements were made"), we find that it is essentially the same as an *average monthly discharge limitation* as defined in 40 CFR 122.2 ("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"). Therefore, the EPA has determined that the 1974 *Average Daily Limit* is the same as, and is directly comparable with, the *Average Monthly Limit* proposed in this Draft Permit.

b. Daily Maximum Limit

TSS Limits Applicable to Outfall 001

In the 1974 Permit, it was suspended solids that were limited; currently, it is total suspended solids (TSS) that are limited in NPDES Permits and that are specified in the limits in the Washington regulations. The EPA has compared the 1974 TSS limits directly with the TSS limits in this Draft Permit, assuming that the suspended solids were, in fact, total suspended solids.

In comparing the 1974 mass loading limits, which were limits on the *gross* discharge, with the proposed limits in this Draft Permit, which are on the *net* discharge, we found that the proposed calculated mass loading AML of 474 kg/day (net) is more stringent than the Average Daily (equivalent to Average Monthly) limit in the 1974 Permit of 704 kg/day (gross). Since the influent water to LNFH is either surface water from mountain streams without significant human sources of pollution upstream or is groundwater, which is usually low in solids, we have assumed that the influent levels of TSS are likely to be very low and therefore that the difference between net and gross values measured on this effluent will be very small. Therefore, we believe that the calculated 474 kg/day (net) value discussed in the Facility Specific Limits section above is the more stringent limit, and applying this proposed limit will comply with NPDES regulations.

In addition to evaluating the Average Monthly limits, the EPA also compared the Maximum Daily Limits (MDL). The MDL in the 1974 permit was defined as "the total discharge [limit] by weight, measured by composite sampling, in any day." Composite sampling required at least four grab samples. This was a gross limit.

The Maximum Daily concentration Instantaneous Maximum Limit (IML) was established consistent with the state regulations and with the EPA's recently issued Washington Hatchery General Permit, and the mass-loading Maximum Daily Limit (MDL) was calculated based on the IML. Compliance with mass loading TSS limits must be measured using a composite of six (6) representative samples for Outfall 001 and a grab sample for Outfall 002.

In order to compare the two limits, we used Table 5-3 of the TSD (EPA 1991) to look at the expected relationship between the maximum daily and instantaneous maximum limits. Because we are considering two very short-term limits (a 1-day average limit and an instantaneous limit), using BPJ, we have used the 99th percentile (the TSD's recommendation for the MDL) for both limits. Using the TSD's default coefficient of variation of 0.6, the 99th percentile, and 4 sampling events a month (i.e. once a week); Table 5-3 yields a ratio between an "instantaneous" limit measured by one sample and a "maximum daily" limit measured by a composite of six samples is 1.64:1. Therefore, an instantaneous maximum TSS mass loading limit, calculated for the LNFH using 15 mg/L x 25 MGD x 3.79 to equal 1421 kg/day is roughly equivalent to a maximum daily limit of

866 kg/day (1421/1.64 = 866). When comparing the 921 kg/day TSS Maximum Daily Limit from 1974 to the 866 kg/day TSS Maximum Daily Limit derived using the TSD ratios explained above, the 866 kg/day is more stringent. Therefore, that is the TSS mass loading Maximum Daily Limit proposed in this Draft Permit, and the EPA believes that this more stringent limit meets antibacksliding requirements.

TSS and SS Limits for the Pollution Abatement Ponds Discharge at Outfall 002
In the 1974 permit, Instantaneous Maximum Limits were applied for net suspended solids (aka TSS) and for gross Settleable Solids in the cleaning effluent. Since the Pollution Abatement Ponds receive and discharge the cleaning effluent from the raceways, we assumed that the cleaning effluent from the 1974 Permit refers to, or is comparable to, the pollution abatement pond effluent. Therefore, for purposes of antibacksliding considerations, those limits were compared directly. The previous limits on TSS and SS from 1974 are more stringent than the more current technology-based effluent limits for TSS and SS in OLSBs in the WA Upland Finfish General Permit and the EPA WA Hatchery General Permit (TSS at 100 mg/L and SS at 1.0 ml/L). The 1974 limits on the Pollution Abatement Pond effluent (Outfall 002) are therefore more stringent and are being retained in this Draft Permit, in order to comply with the antibacksliding requirements.

Also, in compliance with the antibacksliding requirements, the EPA has retained the previous SS limit on Outfall 001 of 0.1 ml/L as a **gross** limit on the total discharge, though we are renaming it an *Average Monthly Limit*, as discussed above.

G. Antidegradation

The proposed issuance of a NPDES Permit triggers the need to ensure that the conditions in the Permit meet the State's antidegradation policy. Ecology has completed an antidegradation review, which is included in the draft CWA 401 water quality certification for this Draft Permit. Refer to Appendix D for the State's draft 401 certification. Comments on the 401 certification, including the antidegradation review, can be submitted to the Ecology Central Regional Office as stated above on Page 1 of this Fact Sheet (see State Certification). This Draft Permit includes any Permit requirements provided by IDEQ as a part of their antidegradation analysis or 401 certification.

H. Proposed Effluent Limitations

Numeric Limitations
The tables below present the proposed numeric effluent limits for LNFH Outfalls:

Table 18. Proposed Effluent Limits for the Leavenworth National Fish Hatchery at Outfall 001/Other Outfalls in Use (Excluding Outfall 002) Except During Drawdown for Fish Release

Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Basis for Limit
Narrative Criteria	Visual Observation	See Part I.D.4 of the Permit				Washington WQS
Total Suspended Solids (TSS)	mg/L	5.0[1]	--	--	15.0[1]	1974 LNFH Permit, WA State Upland Finfish GP, EPA WA Hatchery GP
	kg/day	474	--	866[2]	--	
Settable Solids (SS)	ml/L	0.1[3]	--	--	--	1974 LNFH Permit, WA State Upland Finfish GP, EPA WA Hatchery GP
Interim Temperature Limit [Year Round]	°C	17°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				95th percentile of the dataset on effluent temperature 2010-2015
Final Temperature Limit [August 15 –July 15, inclusive]	°C	13°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				Washington WQS
Final Temperature Limit [July 16 –August 14]	°C	16°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				Washington WQS
Interim Total Phosphorus Limits [March 1 –May 31 and July 1 – October 31]	µg/L	15[4]	--	17[4]	--	95th percentile of the dataset on Total Phosphorus concentrations 2006-2011
	kg/day	1.4[4]	--	1.6[4]	--	
Final Total Phosphorus Limit [March 1 – May 31]	µg/L	--	--	--	--	TMDL WLA
	kg/day	--	--	0.52	--	
pH	s.u.	pH must not be less than 6.5 standard units nor greater than 8.5 standard units at all times				Washington WQS

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Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Basis for Limit

Notes:

1. The monthly average and instantaneous maximum concentration limits for TSS are net limits; influent concentrations may be subtracted from the gross measurement when determining compliance. Gross influent and effluent values must be reported on the DMR form along with the calculated net values.
2. The maximum daily mass loading TSS limit is a gross limit; influent concentration may not be subtracted from the measured result.
3. The average monthly concentration limit for SS is a net limit; influent concentration may be subtracted from the gross measurement when determining compliance. Gross influent and effluent values must be reported on the DMR form along with the calculated net values.
4. The interim limits for total phosphorus apply during the critical periods of March 1 – May 31 and July 1 – October 31 until the facility is able to comply with the final total phosphorus limit, no later than [final compliance date]. The mass loading limits for total phosphorus are total limits that apply to the combined discharge of Outfall 001, and any other Outfalls in use, excluding Outfall 002.
5. The final limit for total phosphorus is a maximum daily limit that applies to the **total combined hatchery discharge from the raceways, adult ponds, and pollution abatement ponds** during the critical periods of March 1 - May 31 and July 1 - October 31 of each year; as soon as the facility is able to comply with the final limit, but not later than the final compliance date of **[insert date]**.

Table 19. Proposed Effluent Limits for Outfall 001/Other Outfalls in Use (Excluding Outfall 002) During Drawdown for Fish Release

Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Basis for Limit
Narrative Criteria	Visual Observation	See Parts I.D.4 of the Permit				Washington WQS
Total Suspended Solids (TSS)	mg/L	--	--	--	100[1]	WA State Upland Finfish GP, EPA WA Hatchery GP
	kg/day	--	--	--	9475[2]	
Settable Solids (SS)	ml/L	--	--	--	1.0[3]	WA State Upland Finfish GP, EPA WA Hatchery GP
Interim Temperature Limit [Year Round]	°C	17°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				95th percentile of the dataset on effluent temperature 2010-2015
Final Temperature Limit [August 15 –July 15, inclusive]	°C	13°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				Washington WQS
Final Temperature Limit [July 16 –August 14]	°C	16°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				Washington WQS

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Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Basis for Limit
Interim Total Phosphorus Limits [March 1 –May 31 and July 1-October 31]	µg/L	15[4]	--	17[4]	--	95th percentile of the dataset on Total Phosphorus concentrations 2006-2011
	kg/day	1.4[4]	--	1.6[4]	--	
Total Phosphorus Final Limits [March 1 – May 31 and July 1 – October 31]	µg/L	--	--	--		TMDL WLA
	kg/day	--	--	0.52[5]	--	

Notes:

1. The instantaneous maximum TSS concentration limit is a gross limit; influent concentration may not be subtracted from the measured result.
2. The instantaneous maximum TSS mass loading limit is a gross limit.
3. The instantaneous maximum SS concentration limit is a gross limit.
4. The interim limits for total phosphorus apply during the critical periods of March 1 – May 31 and July 1 – October 31 until the facility is able to comply with the final total phosphorus limit, no later than [final compliance date]. The mass loading limits for total phosphorus are total limits that apply to the combined discharge of Outfall 001, and any other Outfalls in use, excluding Outfall 002.
5. The final limit for total phosphorus is a maximum daily limit that applies to the **total combined hatchery discharge from the raceways, adult ponds, and pollution abatement ponds** during the critical periods of March 1 - May 31 and July 1 - October 31 of each year; as soon as the facility is able to comply with the final limit, but not later than the final compliance date of **[insert date]**.

Table 20. Proposed Effluent Limits at Outfall 002 (Pollution Abatement Ponds)

Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Basis for Limit
Narrative Criteria	Visual Observation	See Parts I.D.4 of the Permit				Washington WQS
Total Suspended Solids (TSS)	mg/L	--	--	--	15[1]	1974 LNFH Permit
	kg/day	--	--	--	262[2]	
Settable Solids (SS)	ml/L	--	--	--	0.2[3]	1974 LNFH Permit
Interim Temperature Limit [Year Round]	°C	17°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				95th percentile of the dataset on effluent temperature 2010-2015
Final Temperature Limit [August 15 –July 15, inclusive]	°C	13°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				Washington WQS

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Parameter	Units	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Instantaneous Maximum Limit	Basis for Limit
Final Temperature Limit [July 16 –August 14]	°C	16°C as the 7-Day Average of the Daily Maximum (7DADM) Recorded Temperatures				Washington WQS
Interim Total Phosphorus Limits [March 1 –May 31 and July 1 – October 31]	µg/L	97[4]	--	108[4]	--	95th percentile of the dataset on Total Phosphorus concentrations 2006-2011
	kg/day	1.7[4]	--	1.9[4]	--	
Total Phosphorus Final Limits [March 1 – May 31 and July 1 – October 31]	µg/L	--	--	--	--	TMDL WLA
	kg/day	--	--	0.52[5]	--	

Notes:

1. The Instantaneous Maximum TSS concentration limit is a net limit; influent concentrations may be subtracted from the gross measurement when determining compliance. Gross influent and effluent values must be reported on the DMR form along with the calculated net values.
2. The Instantaneous Maximum TSS mass loading limit is a net limit; influent concentrations may be subtracted from the gross measurement when determining compliance. Gross influent and effluent values must be reported on the DMR form along with the calculated net values.
3. The Instantaneous Maximum SS concentration limit is a gross limit; influent concentration may not be subtracted from the measurable result.
4. The interim limits for total phosphorus apply during the critical periods of March 1 – May 31 and July 1 – October 31 until the facility is able to comply with the final total phosphorus limit, no later than [final compliance date]. The mass loading limits for total phosphorus are total limits that apply to the combined discharge of Outfall 001, and any other Outfalls in use, excluding Outfall 002.
5. The final limits for total phosphorus are daily maximum limits that apply to the **total combined hatchery discharge from the raceways, adult ponds, and pollution abatement ponds** during the critical periods of March 1 through May 31 and July 1 through October 31 of each year; they are effective as soon as possible, but no later than ***[insert date 5 years from effective date]***.

VII. Monitoring Requirements

A. Basis for Influent, Effluent and Surface Water Monitoring

Section 308 of the CWA and 40 CFR 122.44(i) require monitoring in Permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The Permittee is responsible for conducting the monitoring and for reporting results on DMRs, annual reports, or on the application for renewal, as appropriate, to the EPA. Permittees must analyze water samples using a sufficiently sensitive EPA-approved analytical method.

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B. Influent and Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required by the Permit. These samples must be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) or as specified in the Permit.

Routine effluent monitoring is required, and the table below presents the proposed effluent monitoring requirements. The influent sampling location must be prior to the first treatment unit. The effluent sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Continuous Temperature Monitoring
Continuous temperature monitoring is proposed in the Draft Permit as the receiving water, Icicle Creek, is impaired for temperature, and the facility has interim and final effluent temperature limitations to achieve. The collection of continuous temperature monitoring data will ensure that the LNFH and the EPA can assess compliance with the applicable effluent temperature limits in the Permit. The temperature monitoring must begin immediately upon the effective date of the Final Permit. Continuous monitoring of the effluent from Outfalls 001 and 002, as well as continuous monitoring of the influent, will allow the LNFH and the EPA the opportunity to discuss any adaptive management changes in Hatchery operations necessary in the future, in order to meet the final effluent temperature limits by the end of the compliance schedule.

The temperature monitoring values for influent and effluent monitoring should be generated from a recording device with a minimum of 24 evenly spaced measurements in a 24-hour period (i.e., every hour). The temperature monitoring results must be reported monthly with the DMR to the EPA.

Reporting of the instantaneous maximum and the maximum daily average temperatures recorded at both the influent and the effluent continuous recording devices is required. The Permittee must submit an electronic ASCII text file to the EPA and Ecology annually, so that both agencies can receive all recorded data.

Total Residual Chlorine (TRC) Monitoring
Chlorine may be used for the disinfection and cleaning of equipment, and it may be used at concentrations above the water quality criteria that apply to waters of Washington State. However, the Hatchery has said in personal communications that chlorine is rarely used, and the EPA is not certain that when used, that TRC is discharged in detectable concentrations in the effluent. The EPA analyzed the water quality data available on the effluent and received no data from the LNFH on chlorine use or chlorine concentrations, including when Chloramine-T is used for fish health. Therefore, there is no basis from which to derive any proposed effluent limits on total residual chlorine (TRC). This Draft Permit proposes that the

LNFH must monitor the chlorine concentration once each day when used (including use of Chloramine-T) and provide that concentration data to the EPA in order to establish a dataset for review during the next Permit issuance. If chlorine is allowed to dry completely at the time of use, then no monitoring of the effluent is required, as there will not be any TRC in the discharge. That provision is consistent with language in the EPA Washington Hatchery General Permit.

The EPA is also including a provision in the BMP Plan Requirements to address the discharge of disinfectants. The LNFH must dispose of excess/unused disinfectants in a way that does not allow them to enter waters of the U.S. The EPA included similar language in the Washington Hatchery General Permit, and believes that this approach is protective of water quality.

Dissolved Oxygen (DO)
DO is to be monitored from Outfall 001 once a day, from Outfall 002 once a day when discharging, and reported to the EPA on the DMR forms each month. Washington State has water quality criteria for DO in surface waters, and Icicle Creek is known to be impaired for DO. This monitoring by the LNFH will help to ensure that the EPA and Ecology have access to data on the DO concentrations in the LNFH discharge. The effluent monitoring, complemented by surface water monitoring for DO, which is discussed in the next section, is necessary to determine any impacts to Icicle Creek.

Turbidity
Turbidity is a monitoring requirement from the Raceways and Rearing Ponds (Outfall 001), the Pollution Abatement Ponds (Outfall 002), and from Icicle Creek during cleaning events throughout the year, so that the Hatchery can determine if it is meeting the WQS for turbidity, and if not, can think about changes that need to made to the management of the pollution abatement ponds so that the WQS for turbidity are met consistently by the facility.

Total Ammonia
Total ammonia is to be monitored from all outfalls once each month, and reported to the EPA on the DMR forms each month.

Drugs, Disinfectants, and Other Chemicals
There are no WQBELs included here in this Draft Permit for drugs, disinfectants, and other chemicals that are potentially applied within the facility, similar to the EPA Washington Hatchery General Permit. In most cases, the EPA believes that when these chemicals are used in compliance with FDA requirements and the BMPs required in this Draft Permit, that these drugs, disinfectants and other chemicals pose no reasonable potential to violate applicable WQS. The requirements in this Permit for submittal of Annual Report of Operations, which includes reporting on the use of drugs, disinfectants and other chemicals, as well as reports to be submitted to the EPA on the use of INADs and extralabel drug use, will enable the EPA to reassess the reasonable potential of these parameters to exceed WA WQS in the future.

The tables below show the proposed influent and effluent monitoring requirements in the Draft Permit.

Table 21. Proposed Influent and Effluent Monitoring Requirements for Outfall 001 and all Other Outfalls in Use, (Except for Outfall 002) for Discharges from Raceways and Adult Ponds Except During Drawdown for Fish Release

Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Influent & Effluent[1]	Continuous	Meter or Other Approved Method[2]
Narrative Criteria	--	Where Effluent Meets Receiving Water	1/week	Visual Observation
Net SS	ml/L	Influent & Effluent	1/week	Grab[3]
Net TSS	mg/L	Influent & Effluent[4]	1/week	Composite[5]
	kg/day	Influent & Effluent	1/week	Calculation[6]
Temperature	°C	Influent & Effluent	Continuous	Meter
DO			1/day	Grab
pH	standard units (s.u.)	Effluent	3/week	Grab
Total Residual Chlorine [including when Chloramine-T is in use]	µg/L	Effluent	1/day when in use[7]	Grab
	kg/day	Effluent	1/day when in use	Calculation
Total Ammonia (as N)	mg/L	Effluent	1/month	Grab
Total Phosphorus (as P)	mg/L	Effluent	1/week during period when limits apply	Composite[4]
	kg/day	Effluent	1/week during period when limits apply	Calculation

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Parameter	Units	Sample Location	Sample Frequency	Sample Type

Notes:

1. Influent is the Hatchery or Rearing Facility influent; Effluent is the Hatchery effluent prior to mixing with the receiving water (Icicle Creek) or any other flow.
2. Appropriate flow measurement devices and methods consistent with accepted aquaculture practice must be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows.
3. Effluent samples of SS and TSS must be taken during rearing pond or raceway cleaning. If the frequency of cleaning is less than the sampling frequency, the sample may be collected immediately following fish feeding.
4. For reporting net values, take both influent and effluent samples on the same day and report results of analysis of each sample.
5. Composite samples must be a combination of at least 6 representative grab samples collected throughout the day. At least one sample must be collected while the fish are being fed and at least one sample must be collected during rearing pond or raceway cleaning. Equal volumes of 6 or more grab samples must be combined to constitute the total composite sample to be analyzed by a certified laboratory.
6. Loading (in kg/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in MGD) and a conversion factor of 3.79. For more information on calculating, averaging, and reporting loads and concentrations, see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
7. Chlorine monitoring is not required if chlorine is allowed to dry completely when/where used.

Table 22. Proposed Influent and Effluent Monitoring Requirements for Outfall 001 and all Other Outfalls in Use, (Except for Outfall 002) for Discharges from Raceways and Adult Ponds <u>During Drawdown for Fish Release</u>

Parameter	Units	Sample Location	Sample Frequency[1]	Sample Type[2]
Narrative Criteria	--	Where Effluent Meets Receiving Water	1/week	Visual Observation
Flow	mgd	Effluent[3]	Continuous	Meter or Other Approved Method[4]
SS	ml/L	Effluent	1/drawdown	Grab
TSS	mg/L	Effluent	1/drawdown	Grab
	kg/day	Influent & Effluent[5]	1/week	Calculation[6]
Temperature	°C	Influent & Effluent	Continuous	Meter

Parameter	Units	Sample Location	Sample Frequency[1]	Sample Type[2]
Total Phosphorus (as P)	mg/L	Effluent	1/week during drawdown; during period when limits apply	Composite[7]
	kg/day	Effluent	1/week during period when limits apply	Calculation

Notes:

1. Samples of the discharge during drawdowns of raceways or rearing ponds for fish release must be collected during the last quarter of the volume of the drawdown for release event.
2. If multiple raceways or rearing ponds are being drawn down for fish release at the same time, grab samples from individual discharges may be combined into a flow-proportional composite sample for analysis.
3. Effluent is the Hatchery effluent prior to mixing with the receiving water (Icicle Creek) or any other flow.
4. Appropriate flow measurement devices and methods consistent with accepted aquaculture practice must be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows.
5. For reporting net values, take both influent and effluent samples on the same day and report results of analysis of each sample.
6. Loading (in kg/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in MGD) and a conversion factor of 3.79. For more information on calculating, averaging, and reporting loads and concentrations, see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
7. Composite samples must be a combination of at least 6 representative grab samples collected throughout the day. At least one sample must be collected while the fish are being fed and at least one sample must be collected during rearing pond or raceway cleaning. Equal volumes of 6 or more grab samples must be combined to constitute the total composite sample to be analyzed by a certified laboratory.

Table 23. Proposed Influent and Effluent Monitoring Requirements for Outfall 002

Parameter	Units	Sample Location	Sample Frequency[1]	Sample Type[2]
Flow	mgd	Effluent[3] – prior to mixing with any other hatchery flows or receiving water	Continuous[4]	Meter or Other Approved Method[5]
Narrative Criteria	--	Where Effluent Meets Receiving Water	1/week	Visual Observation

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Parameter	Units	Sample Location	Sample Frequency[1]	Sample Type[2]
SS	ml/L	Effluent	1/week	Grab
Net TSS	mg/L	Influent & Effluent	1/week	Grab
	kg/day	Influent & Effluent	1/week	Calculation[6]
Temperature	°C	Effluent	Continuous	Meter
DO			1/day	Grab
pH	standard units (s.u.)	Effluent	1/month[7]	Grab
Total Residual Chlorine [including when Chloramine-T is in use]	µg/L	Effluent	1/day when in use[8]	Grab
	kg/day	Effluent	1/day when in use	Calculation
Total Ammonia (as N)	mg/L	Effluent	1/month	Grab
Total Phosphorus (as P)	mg/L	Effluent	1/week when discharging during period when limits apply	Grab
	kg/day	Effluent	1/week when discharging during period when limits apply	Calculation

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Parameter	Units	Sample Location	Sample Frequency[1]	Sample Type[2]

Notes:

1. Pollution Abatement Pond discharges must be monitored for all parameters 12 months out of the year if there is a discharge, except for TP, regardless of pounds of fish present; TP must be monitored during the months specified.
2. Pollution Abatement Ponds effluent samples must be collected during the last quarter of the volume of a rearing pond or raceway cleaning event.
3. "Effluent" in this table means sample taken prior to mixing with any other hatchery or rearing flows or receiving waters.
4. If the Pollution Abatement Ponds discharge less frequently than the required sampling frequency, the testing frequency must be the discharge frequency of Outfall 002. Testing of the discharge is unnecessary if the ponds do not discharge during the reporting period. "No Discharge" must be noted for Outfall 002 on the DMR form when that is the case.
5. Appropriate flow measurement devices and methods consistent with accepted aquaculture practice must be selected and used to ensure the accuracy and reliability of measurements of the quantity of monitored flows.
6. Loading (in kg/day) is calculated by multiplying the concentration (in mg/L) by the corresponding flow (in MGD) and a conversion factor of 3.79. For more information on calculating, averaging, and reporting loads and concentrations, see the NPDES Self-Monitoring System User Guide (EPA 833-B-85-100, March 1985).
7. pH monitoring sample must be taken at the same time as the grab sample for ammonia monitoring – the samples must be analyzed separately.
8. Chlorine monitoring is not required if chlorine is allowed to dry completely where/when used.

C. Surface Water Monitoring

In general, surface water monitoring may be required for pollutants of concern to assess the assimilative capacity of the receiving water for the pollutant. In addition, surface water monitoring may be required for pollutants upon which the water quality criteria are dependent and to collect data for TMDL development if the facility discharges to an impaired water body.

The table below presents the surface water monitoring requirements in the Draft Permit. The LNFH should work with Ecology to agrees on particular surface water monitoring locations, if any are necessary in addition to any previously agreed upon locations. Surface water monitoring results must be submitted to the EPA and Ecology with the DMR. There was no surface water monitoring in the Previous Permit, so all proposed surface water monitoring requirements in this Draft Permit are new.

The EPA has proposed quarterly monitoring for Total Ammonia, pH, and temperature immediately upstream of Outfall 002, outside of the influence of the discharge from the

OLSBs. This data will help assess the potential of the discharge from Outfall 002 to cause or contribute to exceedances of the WQS for ammonia in the next Permit.

To complement the continuous temperature monitoring of both influent and effluent flows, the EPA believes that it is also necessary to collect continuous monitoring data and report to the EPA on the temperature of Icicle Creek both upstream and downstream of the LNFH discharge at Outfall 001, to help ensure compliance with the interim and final limits.

TP monitoring on Icicle Creek is proposed both upstream and downstream of the LNFH discharge, once a week, to help ensure compliance with the interim and final limits. Turbidity monitoring is proposed during cleaning events, with the results to be included in the required Annual Report of Operations to the EPA.

DO monitoring on Icicle Creek is proposed for downstream of the discharge, taking a grab sample once a day, to collect data on potential impacts to Icicle Creek.

Table 24. Proposed Surface Water Monitoring Requirements for the LNFH

Parameter	Units of Measurement	Frequency	Location	Type of Sample
Temperature	ºC	Continuous	Upstream[1] and downstream[2]	Recorded
		Quarterly[3]	Upstream of Outfall 002	Grab[4]
Total Phosphorus	µg/L	Weekly	Upstream and downstream[2]	Grab
pH	s.u.	Quarterly[3]	Upstream of Outfall 002	Grab[4]
Ammonia Nitrogen as N	mg/L	Quarterly[3]	Upstream of Outfall 002	Grab[4]
Turbidity	NTU	During cleaning event[5]	At the outfall and upstream of the outfall	Turbidity meter[6]
DO	mg/L	Daily	Downstream	Grab

Notes:
1. At a location on the creek upstream, above the intake for the Hatchery.
2. At a location on the creek downstream, where the Hatchery effluent can be reasonably believed to have achieved complete mixing with the receiving water.
3. Quarterly monitoring must begin in the first full calendar quarter of Permit coverage, and quarterly samples for these parameters should be taken on the creek, above Outfall 002.
4. Quarterly surface water samples for temperature, pH, and ammonia must be collected concurrently with the required effluent sampling of the discharge from Outfall 002 for these parameters.
5. Cleaning events include those of the sand settling basin, the conveyance channel, behind the fish screens, and the pollution abatement ponds.
6. Turbidity analysis must be performed with a calibrated turbidity meter, either on-site or at an accredited lab; results must be recorded in a site log book in Nephelometric Turbidity Units (NTUs) and submitted to the EPA with the Surface Water Monitoring Results Annual Report.

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D. Electronic Submission of Discharge Monitoring Reports

The LNFH is required to submit DMRs to the EPA and Ecology electronically, using NetDMR, as specified in the Draft Permit. NetDMR is a national web-based tool that accepts electronic DMR data via a secure Internet application. NetDMR allows Permittees to discontinue mailing in paper DMR forms under 40 CFR 122.41 and 403.12. With NetDMR, all reports required by this Permit are submitted to the EPA as an electronic attachment to the DMR submittal. Once a Permittee begins submitting the required information to the EPA using NetDMR, it is no longer required to submit paper copies of DMRs or other reports to the EPA.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contact information, is provided at http://www.epa.gov/netdmr

The specific requirements regarding the submittal of data and reports in paper form and the use of NetDMR are included in the LNFH Permit Part V.B.

E. Additional Required Submittals

In addition to discharge monitoring reporting, the LNFH is required to submit an Annual Report of Operations that describes the previous year's production, feed rates, use of aquaculture drugs and chemicals, and the facility's efforts to adhere to the required operating practices. The LNFH is also required to report certain events to the EPA before, or when, they occur; including the use of an Investigational New Animal Drug (INAD) or the extra-label use of an aquaculture drug, failures in containment systems that result in the unanticipated release of pollutants, and spills of drugs or pesticides that results in their release to receiving waters. This Annual Report information sheet is included as an Appendix to the Permit.

There is also a new information to be submitted to the EPA as supplemental reporting along with the next NPDES Permit Application. It is also included as an Appendix to the Permit.

These reporting requirements are consistent with those applied to other federal and tribal hatcheries in the State of Washington under the EPA's Hatchery General Permit. There's also the certification of completion of a Quality Assurance Plan (QAP) and Best Management Practices (BMP) Plan, attached as an Appendix to the Permit.

VIII. Other Permit Conditions

A. Quality Assurance Plan (QAP)

In order to ensure compliance with the federal regulation at 40 CFR 122.41(e) that requires Permittees to properly operate and maintain their facilities, including "adequate laboratory controls and appropriate quality assurance procedures", the Draft Permit requires the Permittee to develop or update any existing Quality Assurance Plan (QAP) that will ensure

that the monitoring data submitted to the EPA are complete, accurate, and representative of the environmental or effluent conditions, and to explain data anomalies if they occur.

The LNFH is required to meet the QAP requirements of this Draft Permit within 90 days of the effective date of the final Permit. The QAP must include the standard operating procedures the Permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The QAP must be retained on site and be made available to the EPA and Ecology upon request.

B. Best Management Practices (BMP) Plan

The Clean Water Act (CWA) authorizes, and the EPA regulations at 40 CFR 122.44(k) provide for the requirements to implement best management practices (BMPs) in NPDES Permits to control or abate the discharge of pollutants whenever necessary to achieve effluent limitations and standards, or to carry out the purposes and intent of the CWA. BMPs are important tools for waste minimization and pollution prevention

The Draft Permit requires the LNFH to adhere to specific operating practices, limitations, and BMPs, as well as requiring the Hatchery to develop and implement a BMP Plan within 90 days of the effective date of the Final Permit. The Permittee must identify and assess potential impacts of pollutant discharges and identify specific management practices and operating procedures to prevent or minimize the generation and discharge of pollutants. These include the specific operating limitations and BMPs listed in the Permit.

The BMP Plan is an enforceable condition of the Permit and must be amended whenever there is a change to the facility, or its operation, which materially increases the potential for discharges of pollutants.

Record Keeping. The EPA proposes to include a BMP requirement that the LNFH maintain records of all drug and chemical usage at the facility. These records should include the information required in Part IV of the Permit (Aquaculture Specific Requirements) and in the Aquaculture Drugs and Chemicals section of the Annual Report of Operations – Appendix E of the Permit). Records must provide detailed descriptions justifying the information provided in the Annual Report. Maintaining accurate records of drug and chemical use has always been necessary to accurately fulfill the annual reporting requirements in the EPA Hatchery GP, and it is now being carried over as a requirement for the LNFH as well. The BMP provision makes this reporting more explicit.

The EPA proposes to include an additional record keeping requirement in order to ensure that the LNFH can accurately calculate maximum peak effluent concentrations after drug or chemical applications. In order to show how the maximum concentration was derived, the LNFH must maintain records by outfall of the approach/analyses used to determine the elapsed time from the drug or chemical application to the maximum (peak) effluent concentration. The Permittee must provide this information in the Annual Report for either a water-borne chemical treatment or for a reasonable worst case/maximum concentration

scenario. This information includes the necessary data inputs for calculating water-borne treatment concentrations for static bath and for flow-through treatments.

Disinfectants and Anti-Fouling Agents. The EPA proposed to include a BMP provision that facilities must dispose of excess/unused disinfectants in a way that does not allow them to enter waters of the U.S. See Part III.B of the Permit.

Polychlorinated Biphenyls (PCBs). PCBs belong to a broad family of man-made organic chemicals known as chlorinated hydrocarbons. PCBs were domestically manufactured from 1929 until their manufacture was banned in 1979. Although no longer commercially produced in the United States, PCBs may be present in products and materials produced before the 1979 PCB ban. Products that may contain PCBs include caulking and oil-based paint. PCBs can be taken up into the bodies of small organisms and fish. As a result, people who ingest fish may be exposed to PCBs that have bioaccumulated in the fish they are ingesting. See http://www.epa.gov/epawaste/hazard/tsd/pcbs/about.htm for more information.

The EPA has included a provision in the BMP Plan requirements section of this Permit that requires the LNFH to implement procedures to eliminate the release of PCBs from any known sources in the facility- including paint, caulk, or feed. PCBs are inadvertently generated during pigment production, and yellow pigment contains PCB-11. The EPA's Persistence, Bioaccumulation and Toxicity Profiler defines the bioconcentration factor (BCF) for PCB-11 as 5,400 which exceeds the bioaccumulation criteria of 1,000 under Washington State's PBT Rule (WAC 173-333). Therefore, yellow paint or caulk should not be used in areas that will come into contact with water that will be discharged or come into contact with fish.

For facilities with pre-1979 paint or caulk that comes into contact with water that is discharged to waters of the US or water in which fish are present, as per 40 CFR 761.358, facilities should determine the PCB concentration of paint or caulk. Facilities should use either Method 3500B/3540C or Method 3500B/3550B from the EPA's SW-846, Test Methods for Evaluating Solid Waste, or a method validated under Subpart Q of this Part of the CFR, for chemical extraction of PCBs from individual and composite samples of PCB bulk product waste. Use Method 8082 from SW-846, or a method validated under Subpart Q of this Part, to analyze these extracts for PCBs.

Facilities must remove any paint or caulk with PCB concentrations that exceed 50 ppm PCB (the allowable TSCA level). Paint or caulk with PCB concentrations of more than 50 ppm is considered a PCB bulk product, and is unauthorized for use. PCB bulk products and any PCB remediation waste must be removed and disposed of according to the regulations at 40 CFR Part 761. Care must be taken to minimize releases to the environment. Any release to the environment is an unauthorized disposal, enforceable under TSCA. The regulations further stipulate proper storage and record keeping requirements. If removing paint or caulk that was applied prior to 1980, refer to the EPA guidance (abatement steps 1-4) at http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/guide/guide-sect4a.htm

Pre-1979 paint or caulk with a PCB concentration of less than 50 ppm is not considered a PCB bulk product under TSCA. However, facilities are strongly encouraged to remove it, given the proximity to fish and the risks associated with PCB consumption by the fish. Follow the EPA guidance to ensure safe removal; see http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/caulk/guide/index.htm
Please contact your EPA Region 10 PCB Coordinator for more information (see http://www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/coordin.htm for a list of PCB Coordinators).

Fish Feed
Like other persistent organic pollutants found in fish tissue, PCBs are ubiquitous environmental contaminants and may be found globally through atmospheric deposition, historical releases, or food-web cycling. More specifically, PCBs can be an issue in feeds used in aquaculture facilities (Hites, et al. 2004). For example, in a 2006 study of persistent organic pollutants in feed and rainbow trout, Ecology found that most feed and fish tissue samples contained measurable concentrations of PCBs. Aroclor-1254 was the most commonly detected, followed by 1260, 1242, and 1248; none of the other Aroclors were detected (Ecology, 2006).

The USFWS and the USGS have also been investigating PCBs and other contaminants in fish feed. Over the past several decades it has become increasingly evident that feeds used in aquaculture worldwide contain significant concentrations of contaminants (Mac et al. 1979; Hilton et al. 1983; Rappe et al. 1998; Hites et al. 2004; Maule et al. 2007). Contaminants can enter fish feeds from a variety of sources, but generally reflect global contaminant inputs into oceans and eventually into marine food webs, which are the main sources of fish oil and fish meal used in fish feed (Horst et al. 1998). Organisms at higher trophic levels typically have higher levels of organochlorines (OCs) [e.g., polychlorinated biphenyl (PCBs), dioxins and furans, and many pesticides] due to biomagnification through the food web (Muir et al. 1992; Gobas et al. 1999). Diets that contain a high percentage of pelagic ocean fish meal and oil will likely contain higher amounts of contaminants of global concern, such as PCB congeners. Hatchery-reared fish consuming feeds made from oils and meals derived from marine fish may accumulate these contaminants, thus placing some hatchery-reared fish at a higher trophic level than their wild counterparts that are consuming a natural diet.

In a recent study (Maule et al. 2007), [USFWS and USGS] found that all of the feed samples (collected from October 2001 to October 2003) at 11 cold-water U.S. Fish and Wildlife Service National Fish Hatcheries (NFH) across four regions in the United States contained measurable concentrations of at least one dioxin, furan, PCB congener, or DDT metabolite, and most contained more than one. The most commonly detected contaminants were PCBs (Maule et al. 2007)." In general, contaminant levels in feed have been dropping- possibly because suppliers are screening ingredients or being more careful with source selection (Maule, et al., 2007).

Results from a study of contaminant concentrations in juvenile fall Chinook salmon from Columbia River hatcheries suggest that the river is a more important source of contamination than are hatcheries (Johnson, et al., 2010).

At this time, the EPA is not aware of a feasible way to reduce PCBs in salmonid feed. However, the EPA has included a BMP requirement that facilities must implement procedures to eliminate the release of PCBs from any known sources in the facility-including feed. Thus, if a reduced PCB feed formulation becomes available during this next permit cycle, the EPA encourages the LNFH hatchery managers to take all reasonable steps to reduce PCB exposure via feed.

C. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." The EPA strives to enhance the ability of overburdened communities to participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, the EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities. For more information, please visit http://www.epa.gov/compliance/ej/plan-ej/.

As part of the Permit development process, the EPA conducted a screening analysis to determine whether this Permit action could affect overburdened communities. The EPA used a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify Permits for which enhanced outreach may be warranted.

The EJ Screen score for the facility was at the 56th percentile (56%ile), and this is below the 80%ile cut-off for engaging in enhanced outreach around the availability of the Draft Permit for review and comment. Therefore, the LNFH is not considered to be discharging in an EJ community and no enhanced outreach is necessary.

Figure 7. EJ Screen GIS Map of the LNFH

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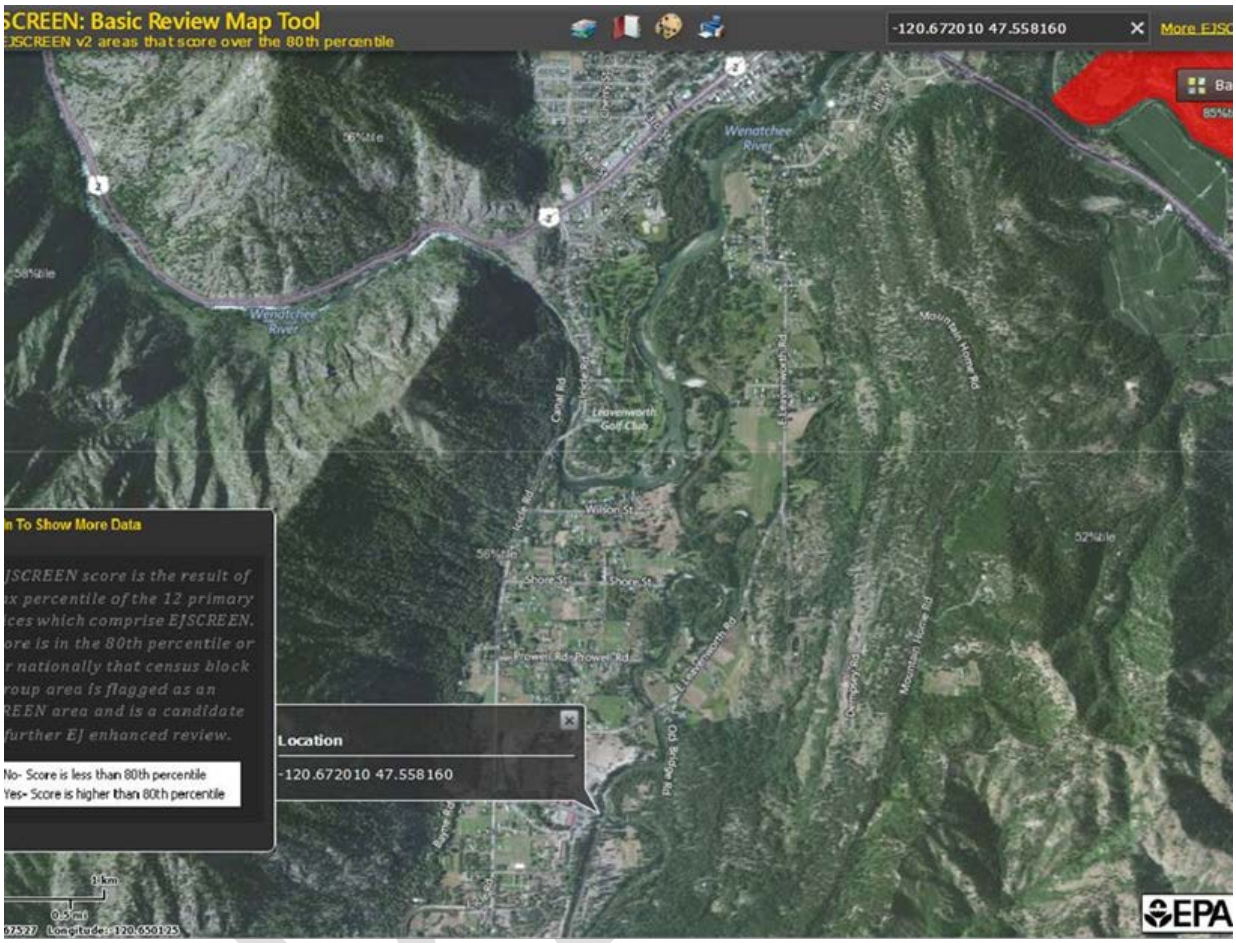

However, regardless of whether or not a WWTP is located near a potentially overburdened community, the EPA encourages Permittees to review (and to consider adopting, where appropriate) the *Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities* (see https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104).

Examples of promising practices include: thinking ahead about community's characteristics and the effects of the Permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, and following up with the community.

D. Standard Permit Provisions

Sections V, VI, and VII of the Draft Permit contain standard regulatory language that must be included in all NPDES Permits. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

IX. Tribal Consultation and Coordination (placeholder for now)

X. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act, at 16 U.S.C. § 1536, requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. The consultation is meant to ensure that this NPDES Permitting Action will not jeopardize the continued existence of any endangered or threatened species, any species proposed to be listed as endangered or threatened, nor result in the destruction or adverse modification of critical habitat for such species.

For the purposes of this ESA consultation, the EPA reviewed the lists of threatened and endangered species in Chelan County, Washington, accessed from the US Fish and Wildlife Service website at https://ecos.fws.gov/ecp0/reports/species-by-current-range-county?fips=53007 on September 9, 2016 and from NOAA Fisheries website on September 14, 2016. http://www.westcoast.fisheries.noaa.gov/publications/gis_maps/maps/salmon_steelhead/critical_habitat/wcr_salmonid_ch_esa_july2016.pdf

To address the requirements of the Endangered Species Act, and the impacts of hatcheries in Washington State on listed species, the EPA prepared a Biological Evaluation (BE) of hatchery discharges, when developing the Washington Hatchery General Permit. That BE that was reviewed by NOAA Fisheries and the USFWS for concurrence with the EPA's effects determinations mentioned above. NOAA Fisheries and the USFWS have concurred with EPA's determinations that permitting of the discharges from tribal and federal hatcheries in Washington State under the Clean Water Act is not likely to adversely affect listed species. The BE encompassed a number of hatcheries around Washington, including a number of USFWS facilities that raise similar species and have similar fish production operations to the LNFH. The chemicals assessed are the same as the ones in use at the LNFH, and the species of concern that were evaluated for effects from permitted facilities are the same, as the BE evaluated the listed species as being present statewide. The EPA believes that the LNFH discharge is similar to the hatcheries evaluated in that BE and is **not likely to adversely affect listed species**. The same BE for the Washington Hatchery General Permit was shared with the Services for consultation on the LNFH Draft Permit, along with a Forward to the BE that includes information specific to the LNFH. The Washington Hatchery General Permit BE is available on the EPA website at https://www3.epa.gov/region10/pdf/permits/npdes/wa/WA_Hatchery_GP_WAG130000_BE.pdf The Forward to the BE will be posted on the EPA website at the conclusion of this Permit issuance process.

In developing the BE for the Washington Hatchery General Permit, the EPA conducted a risk assessment for seven (7) aquaculture chemicals: Chlorine, Chloramine-T, Formalin, Hydrogen Peroxide, Potassium Permanganate, and Povidone-Iodine For each chemical, the

EPA compared the estimated environmental concentration (i.e., the calculated concentration of a chemical in a receiving body of water after its release from a hatchery) with either the measured or calculated chronic (long-term) no effect concentration (NOEC) for a threatened or endangered species. In general, the chemicals released to surface waters by Washington hatcheries are disinfectants with short residence times in the environment, and are unlikely to bioaccumulate into aquatic species serving as prey for any avian or mammalian species. Two (2) of the 7 risk assessments in the BE are included below. The end result of the Washington Hatchery General Permit ESA consultation was that NOAA Fisheries and the USFWS concurred with the EPA's determination that discharges from fish hatcheries authorized by the Washington Hatchery General Permit are not likely to adversely affect ESA listed species or their critical habitat. The EPA is working with the Services on a similar ESA consultation and concurrence for permitting the discharges from the LNFH.

Formalin Assessment

Formalin is a generic term that describes a solution of 37% formaldehyde gas dissolved in water. The Parasite-S formulation is administered in a bath treatment to control for external protozoa (*Chilodonella spp., Costia spp., Epistylis spp., Ichthyophthirius spp., Scyphidia spp. and Trichodina spp.*), and the monogenetic trematode parasites *(Cleidodiscus spp., Dactylogyrus spp., and Gyrodactylus spp.*) on all finfish. It is also used for the control of fungi of the family *Saprolegniaceae* on all finfish eggs (Western Chemical Label, no date)[1].

Formalin is administered to salmon and trout as a bath treatment for prolonged or short periods of time. The standard dosage recommended in the INAD #9013 Protocol to prevent or control fungus on fish and eggs is to administer formalin as a static-bath or flow-through treatment at 15 - 2000 µL/L (ppm) active drug. Eggs are treated daily or every other day until hatch. Fish are treated daily to every other day at the LNFH[2] for 30 to 60 minutes, and then transferred to clean water. The formalin concentration is water temperature dependent and 50^0F is the cutoff for the two treatment concentrations. Salmon and trout are treated up to 170 µL/L at water temperatures above 50^0F and 250 µL/L at temperatures below 50^0F. All other finfish are treated up to 250 µL/L regardless of temperature. Treatment is not recommended to exceed 1.0 hour.

The FDA requires a 10-fold dilution of finfish treatment water and a 100-fold dilution of finfish egg treatment water, which should lead to a discharge concentration of no more than 25 ppm (equivalent to 25 µL/L). [3] The FDA contended that additional in-stream dilution, infrequent use, and rapid degradation would render the discharged formalin below a level that causes significant environmental effects on aquatic animals (formaldehyde, the active ingredient in formalin, is oxidized in the aquatic environment into formic acid and ultimately into carbon dioxide and water; the estimated half-life of formaldehyde in water is

[1] http://www.wchemical.com/products/fish-egg-treatments/parasite-s-formalin/parasite-s.html
[2] www.fws.gov/Pacific/fisheries/hatcheryreview/documents/documents/MC-023LeavenworthComplexBriefingDocDraft9_ Accessed September 27, 2016
[3] http://water.epa.gov/scitech/wastetech/guide/aquaculture/upload/2005_09_01_guide_aquaculture_EEBA_EEBA-Chapter-7.pdf Accessed September 27, 2016

approximately 36 hours). Directions for dilution of treatment water and additional environmental precautions are described on the labeling of the product. See http://www.wchemical.com/downloads/dl/file/id/45/parasite_s_package_insert.pdf for the product label.

In developing the BE, the EPA performed a risk assessment to determine whether formalin use at tribal and federal hatcheries located within Washington State have the potential to affect threatened or listed species or their critical habitat. The EPA's risk assessment likely resulted in unrealistically conservative assumptions, and did not account for in-stream dilution. Based on the available toxicological data for threatened and endangered salmonids, the EPA believes that the FDA's dilution requirement will be protective of aquatic life in Washington waters.

The EPA proposes that the LNFH maintain detailed records of their formalin treatments, including how they calculate the maximum effluent concentration for formalin, as reported in their Annual Reports (see Appendix E of the Permit for the Annual Report).

Field Study: Formalin in Aquaculture Effluent

Calculating the maximum concentration of water-borne treatments in hatchery effluent can be challenging. Formalin presents a particularly complicated case because many facilities send their formalin-treated water to a holding tank, from which it is slowly metered out and mixed with hatchery water that does not contain formaldehyde. The EPA does not currently have the data inputs to calculate the formalin concentration in the effluent for individual facilities because we do not have information on holding tank size, flow and internal dilution rates, facility retention times, etc. for each treatment.

In partnership with Ecology, the EPA has undertaken a study to ascertain the concentration of formaldehyde in Pacific Northwest aquaculture effluent. End of pipe samples will be collected from CAAP facilities in Washington and Idaho. This study will include the LNFH, as well as facilities with NPDES permit coverage under the EPA's aquaculture General Permits for Washington and Idaho, and Ecology's General Permit for Upland Finfish Hatcheries. The EPA will work with facilities to predict maximum effluent concentrations of the chemical, given individual facility retention times, and samples will capture peak formaldehyde concentrations. The EPA plans to conduct effluent sampling to account for the three formalin use scenarios: egg stacks/hatch houses, juveniles, and returning adults. Sampling will be conducted during the summer and fall of 2016. The EPA Region 10 Laboratory will analyze the samples.

Based on many discussions with Washington Hatchery GP Permittees, the LNFH, the USFWS, Ecology, the USGS, and the Northwest Indian Fisheries Commission, the EPA expects that this formalin study will confirm that formalin use in Northwest aquaculture facilities does not present ecological risk to listed species or the aquatic environment. If, however, the study results suggest that formaldehyde estimated environmental concentrations are unacceptably high, the EPA will take steps to work with the LNFH to adjust their formalin use, if possible (e.g., treat a smaller subset of the hatchery at a time, provide more

internal dilution prior to discharge, route formalin-treated water to an offline settling basin, or hold treated water for a longer period of time to allow for degradation). 10 ppm is the U.S. Food and Drug Administration's (FDA) Acceptable Formaldehyde Discharge Concentration, and the concentrations of formalin in the LNFH discharge were much lower. The study, having gathered empirical data in addition to the analysis done during the EPA's development of the Washington Hatchery General Permit BE, confirms the EPA determination that issuing a Permit to the LNFH is not likely to adversely affect listed salmonids due to formalin. More information about the formalin sampling at the LNFH can be found in the Forward to the BE submitted to the Services for ESA consultation.

Hydrogen Peroxide Assessment

Hydrogen peroxide is classified as a low regulatory priority aquaculture drug by the FDA. It is used in hatcheries as a bath treatment to control fungal diseases in fish, as well as in fish eggs prior to hatch. The commercially available 35% hydrogen peroxide solution is diluted before use in disinfection. The diluted solution to which fish and fish eggs are exposed contains 50 – 1000 mg/L hydrogen peroxide. Exposure durations at hatcheries range between 15 – 60 minutes/day, with the higher concentrations used in conjunction with the shortest exposure durations. Depending on the specific fungal infection, treatments can be repeated on multiple days, or on alternating days up to a total of three treatments/fish.

In developing the BE for the EPA Washington Hatchery General Permit, the EPA performed a risk assessment for hydrogen peroxide. The estimated environmental concentrations of hydrogen peroxide were substantially lower than the lowest chronic NOEC levels for threatened and endangered species (see the Biological Evaluation for details), indicative of acceptable levels of ecological risk to the species under all hatchery discharge scenarios. The estimated environmental concentrations values are additionally conservative because they did not take into account the rapid degradation of environmental concentrations of hydrogen peroxide. Because the levels of hydrogen peroxide released by hatcheries are not chronically toxic, and because the chemical breaks down so quickly to innocuous components (i.e., water and oxygen), monitoring for hydrogen peroxide is not necessary.

A Leavenworth Hatchery-specific forward to the EPA Washington Hatchery BE was sent to the Services to request initiation of informal ESA consultation. The LNFH Draft Permit and Fact Sheet was also shared with the Services for their review and comment.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH). According to information obtained from the NOAA Fisheries website, there is no designated EFH in the vicinity of the LNFH discharge.
http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html

C. State Certification

Section 401 of the CWA requires the EPA to seek State certification before issuing a Final Permit. As a result of the certification, the State may require more stringent conditions or additional monitoring requirements to ensure that the Permit complies with WQS, or treatment standards established pursuant to any State law or regulation.

D. Permit Expiration

The Permit will expire five years from the effective date.

XI. References

Davis J. and A. Gannam. 2012. "WA – Investigation of Contaminants in Feeds and Fish at FWS Pacific Region National Fish Hatcheries and the Ramifications to Human and Ecological Health." USFWS Report. DEC Project ID: 200710002.3. FFS#: 1F52.

Fraser, G.S. 2015. Summary of Icicle Creek Temperature Monitoring, 2015. U.S. Fish and Wildlife Service, Leavenworth WA.

Hilton, J. W., P. V. Hodson, H. E. Braun, J. L. Leatherland and S. J. Slinger. 1983. Contaminant accumulation and physiological response in rainbow trout (Salmo gairdneri) reared on naturally contaminated diets. Can. J. Fish. Aquat. Sci. 40: 1987-1994.

Hites, R.A., J.A. Foran, D.O. Carpenter, M.C. Hamilton, B.A. Knuth, S.J. Schwager. 2004. "Global Assessment of Organic Contaminants in Farmed Salmon." Science. Vol. 303 no. 5655 pp 226-229.

Lyndal L. Johnson, Maryjean L. Willis, O. Paul Olson, Ronald W. Pearce, Catherine A. Sloan, and Gina M. Ylitalo. 2010. Contaminant Concentrations in Juvenile Fall Chinook Salmon from Columbia River Hatcheries. North American Journal of Aquaculture, 72:1, 73-92, DOI: 10.1577/A08-068.1.

Mac, M. J., L. W. Nicholson and C. A. McCauley. 1979. PCBs and DDE in commercial fish feeds. The Prog. Fish Cult. 4: 210-211.

Gobas, F.A.P.C., J.B. Wilcockson, R.W. Russell, and G.D. Haffner. 1999. Mechanism of biomagnification in fish under laboratory and field conditions. Environ. Sci. Technol. 33:133-141.

Maule, A.G., A.L. Gannam, and J.W. Davis. 2007. Chemical contaminants in fish feeds used in federal salmonid hatcheries in the USA. Chemosphere 67:1308-1315.

Muir, D.C.G., Wagemann, R., Hargrave, B.T., Thomas, D.J., Peakall, D.B., Norstrom, R.J., 1992. Arctic marine ecosystem contamination. Sci. Total Environ. 122: 75-134.

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Rappe, C., S. Bergek, H. Feidler and K. R. Cooper. 1998. PCDD and PCDF contamination in catfish feed from Arkansas, USA. Chemosphere 36: 2705-2720.

U.S. v. Colville Indian Reservation, 606 F.3d 698, (9th Cir. 2010)] https://leagle.com/decision/In%20Adv%20FCO%20100813-000079/U.S.%20v.%20CONFEDERATED%20TRIBES%20OF%20COLVILLE%20INDIAN

USEPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

USEPA. 1993. *Guidance Manual for Developing Best Management Practices*. US Environmental Protection Agency, Office of Water, EPA/833/B-93-004 (October 1993).

USEPA. 2004. *Final Rule, Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category*. 69 Fed. Reg. 51892 (August 23, 2004).

USEPA. 2010. *NPDES Permit Writers' Manual.* Environmental Protection Agency, Office of Wastewater Management, EPA-833-K-10-001. (September 2010).

USEPA Region 10. 2016. *NPDES General Permit for Federal Aquaculture Facilities and Aquaculture Facilities Located in Indian Country within the Boundaries of Washington State*. (June 2016).

USFWS. 2005. Leavenworth National Fish Hatchery PCB and Pesticide Investigation. Upper Columbia Fish and Wildlife Office, Spokane. November 22, 2005.

USFWS. 2008. Leavenworth National Fish Hatchery Tier II Water Quality Analysis. Leavenworth. April 30, 2008.

USFWS. 2011 NPDES Permit Application Forms 1 and 2B dated 10/24/2011

USFWS. 2012. NPDES Permit Application supplemental materials dated 04/17/2012

Washington State Department of Ecology 2006. "Persistent Organic Pollutants in Feed and Rainbow Trout from Selected Trout Hatcheries." https://fortress.wa.gov/ecy/publications/SummaryPages/0603017.html

Washington State Department of Ecology. 2006. Persistent Organic Pollutants in Feed and Rainbow Trout from Selected Trout Hatcheries. Pub. No. 06-03-017.

Washington State Department of Ecology. 2007. Wenatchee River Watershed Temperature Total Maximum Daily Load Water Quality Improvement Report. Pub. No. 07-10-045.

DRAFT

Washington State Department of Ecology. 2009. Wenatchee River Watershed Dissolved Oxygen and pH Total Maximum Daily Load Water Quality Improvement Report. Pub. No. 08-10-062.

Washington State Department of Ecology Surface Water Quality Standards

Washington State Department of Ecology 2015. *Upland Fin-fish Hatching and Rearing General Permit*. (April 2016).

Washington State Department of Ecology (Hobbs, W. and M. Friese). 2016. Wenatchee River PCB and DDT Source Assessment. Publication No. 16-03-029. https://fortress.wa.gov/ecy/publications/summarypages/1603029.html
Washington State Department of Ecology (Era-Miller, B.). 2004. Verification of 303(d)-listed Sites in Northwest, Central, and Eastern Regions of Washington State. Publication No. 04-03-035. https://fortress.wa.gov/ecy/publications/summarypages/0403035.html

Washington State Department of Ecology (Seiders, K., C. Deligeannis, and P. Sandvik). 2007. Washington State Toxics Monitoring Program: Contaminants in Fish Tissue from Freshwater Environments in 2004 and 2005. Publication No. 07-03-024. https://fortress.wa.gov/ecy/publications/summarypages/0703024.html

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Appendix A: Facility Information

General Information

NPDES ID Number: WA0001902

Mailing Address: United States Fish and Wildlife Service (USFWS)
Leavenworth National Fish Hatchery
12790 Fish Hatchery Road
Leavenworth, Washington 98826

Facility Information

Type of Facility: Federally owned and operated aquaculture facility (fish hatchery)

Treatment Train: Flow measurement and recording

- Solids Removal (screening)
- Best Management Practices (BMPs) regarding fish feed, treatment for fish health, and operation and maintenance of the facility
- Pollutant Abatement Ponds (diversion and settling)

Outfall Locations:	**Receiving Water**	**Latitude**	**Longitude**
001	Icicle Creek	N 47.55816	-120.67201
002	Icicle Creek	N 47.55960	-120.67167
003	Icicle Creek	N 47.55003	-120.67888
004	Icicle Creek	N 47.55787	-120.67217
005	Icicle Creek	N 47.55909	-120.67224
006	Icicle Creek	N 47.55735	-120.67267

Receiving Water Information

Receiving Water: Icicle Creek

Beneficial Uses: Aquatic life use: Core Summer Salmonid Habitat, Primary Contact Recreation, Domestic Water, Industrial Water, Agricultural Water, Stock Water, Wildlife Habitat, Harvesting, Commerce/Navigation, Boating, and Aesthetics

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Form 1: XI. map (1) LNFH

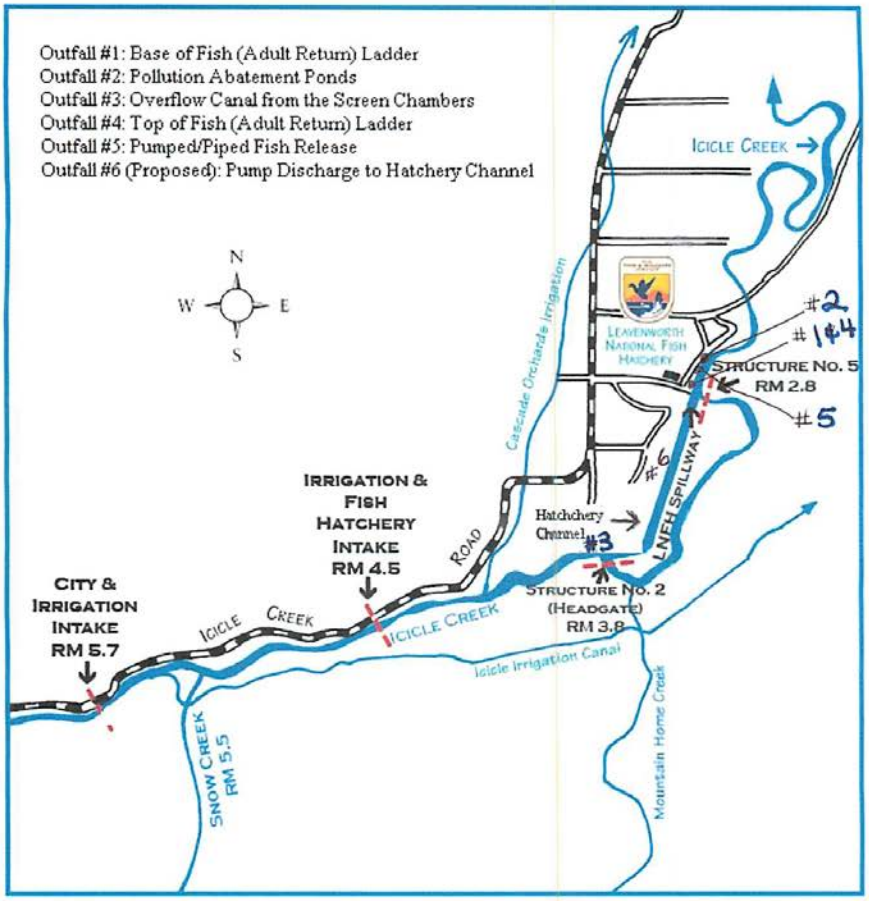
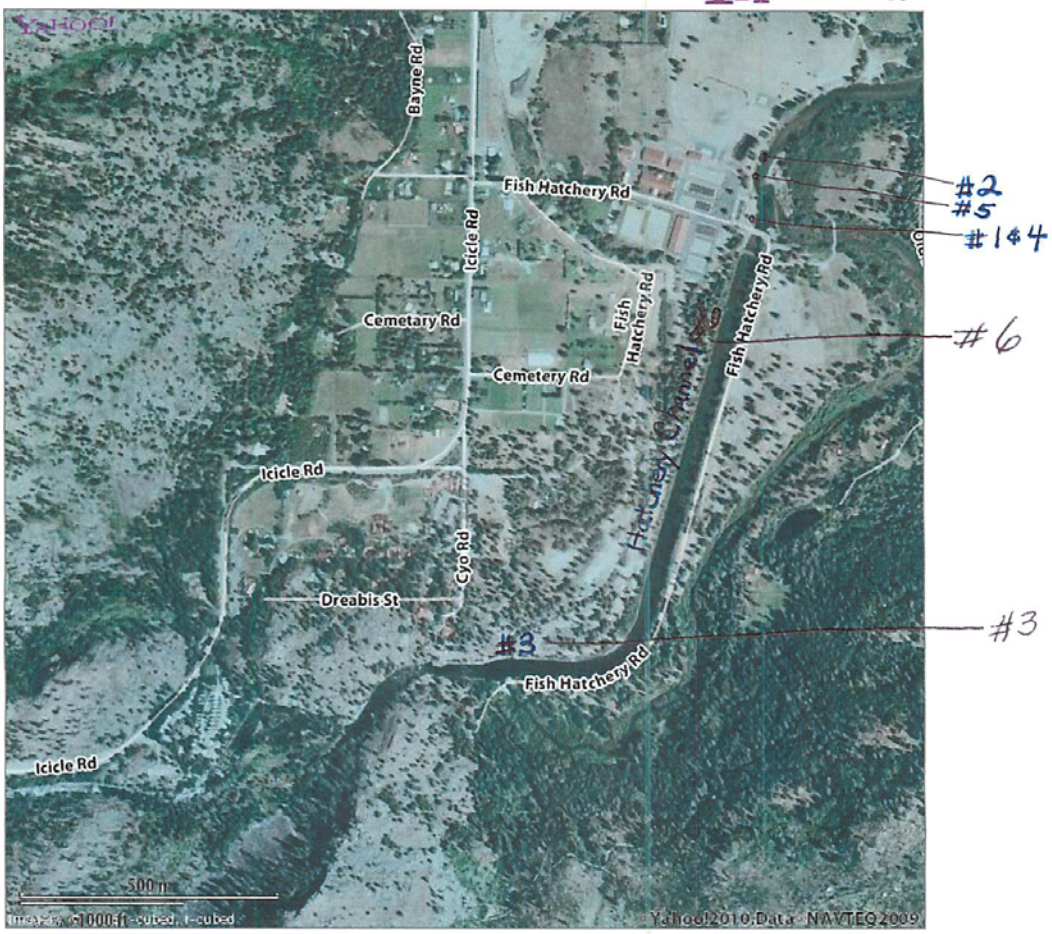


Figure 1. Leavenworth National Fish Hatchery and Vicinity

Form 1. XI. Map(2) L[illegible]H

Map of Leavenworth, WA

YAHOO!



When using any driving directions or map, it's a good idea to do a reality check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning.

LNFH Monitoring Data for DO, pH, TSS, and SS
Provided by the USFWS

Date	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002
	Dissolved Oxygen (mg/L)			pH (SU)			TSS (mg/L)			SS (mg/L)		
5/7/2008	13.1	12.8	12.4	7.8	7.5	7.4	NA	NA	NA	NA	NA	NA
5/20/2008	13.1	12.6	12.5	7.3	7.3	7.2	NA	NA	NA	NA	NA	NA
5/28/2008	13.1	12.7	12.5	7.1	7.1	6.9	NA	NA	NA	NA	NA	NA
6/3/2008	12.9	12.6	11.8	6.9	7.0	6.9	NA	NA	NA	NA	NA	NA
6/11/2008	12.8	12.2	10.8	6.9	6.8	7.0	NA	NA	NA	NA	NA	NA
6/17/2008	12.7	11.9	9.3	6.8	6.6	6.6	NA	NA	NA	NA	NA	NA
6/25/2008	12.5	11.5	10.9	7.0	6.9	6.8	NA	NA	NA	NA	NA	NA
7/2/2008	11.8	11.1	9.9	6.9	6.8	6.7	NA	NA	NA	NA	NA	NA
7/8/2008	11.3	11.2	10.1	6.8	6.6	6.5	NA	NA	NA	NA	NA	NA
7/15/2008	10.9	9.8	8.9	7.0	6.7	6.6	NA	NA	NA	NA	NA	NA
7/22/2008	10.7	10.6	8.4	6.8	7.0	6.7	NA	NA	NA	NA	NA	NA
7/30/2008	11.0	10.9	9.0	7.0	6.8	6.9	NA	NA	NA	NA	NA	NA
8/5/2008	10.8	10.8	8.2	7.4	7.3	6.9	NA	NA	NA	NA	NA	NA
8/13/2008	10.6	10.5	9.4	7.0	7.0	7.0	NA	NA	NA	NA	NA	NA
8/21/2008	10.9	11.3	7.9	6.9	7.0	7.0	NA	NA	NA	NA	NA	NA
8/27/2008	11.2	11.5	11.7	6.9	7.4	6.9	NA	NA	NA	NA	NA	NA
9/3/2008	11.7	11.6	10.8	6.9	7.2	7.1	NA	NA	NA	NA	NA	NA
9/8/2008	11.6	11.8	11.1	6.9	7.0	7.1	NA	NA	NA	NA	NA	NA
9/16/2008	11.5	11.8	10.7	6.7	6.5	6.9	NA	NA	NA	NA	NA	NA
9/23/2008	12.2	12.5	10.7	6.8	6.8	6.8	NA	NA	NA	NA	NA	NA
10/1/2008	11.3	11.7	10.9	6.8	6.9	6.7	NA	NA	NA	NA	NA	NA
10/9/2008	12.7	12.4	11.9	7.0	7.0	6.8	NA	NA	NA	NA	NA	NA
10/16/2008	12.7	12.3	11.7	7.2	7.0	8.2	NA	NA	NA	NA	NA	NA
10/21/2008	13.1	12.6	11.5	7.1	7.0	7.0	NA	NA	NA	NA	NA	NA
10/29/2008	13.3	12.9	12.0	7.0	7.1	7.3	NA	NA	NA	NA	NA	NA
11/6/2008	13.4	13.1	12.1	7.1	7.4	7.2	NA	NA	NA	NA	NA	NA
11/20/2008	13.3	13.2	12.8	7.3	7.2	7.0	NA	NA	NA	NA	NA	NA
11/25/2008	14.0	13.8	12.8	7.0	7.1	7.2	NA	NA	NA	NA	NA	NA
12/1/2008	13.4	13.5	12.6	6.9	7.3	7.1	NA	NA	NA	NA	NA	NA
12/9/2008	13.8	13.7	12.3	6.5	7.2	7.4	NA	NA	NA	NA	NA	NA
12/16/2008	14.8	14.0	21.9	7.2	7.2	7.0	NA	NA	NA	NA	NA	NA
12/30/2008	14.6	13.9	12.7	7.1	7.1	7.0	NA	NA	NA	NA	NA	NA
1/6/2009	14.4	14.1	13.3	7.2	7.2	7.3	NA	NA	NA	NA	NA	NA
1/13/2009	13.8	13.8	13.6	7.2	7.2	7.3	NA	NA	NA	NA	NA	NA
1/22/2009	14.5	14.6	14.5	7.0	7.1	7.2	NA	NA	NA	NA	NA	NA

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Date	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002
	Dissolved Oxygen (mg/L)			pH (SU)			TSS (mg/L)			SS (mg/L)		
1/29/2009	14.3	13.9	13.8	6.8	7.0	7.0	NA	NA	NA	NA	NA	NA
2/4/2009	15.2	15.3	14.9	7.1	7.2	7.0	NA	NA	NA	NA	NA	NA
2/9/2009	15.0	15.0	14.4	7.2	7.0	7.1	NA	NA	NA	NA	NA	NA
2/19/2009	15.1	14.9	14.7	7.6	7.0	7.3	NA	NA	NA	NA	NA	NA
2/26/2009	14.7	14.4	13.8	7.3	7.0	7.1	NA	NA	NA	NA	NA	NA
3/4/2009	14.3	14.2	13.8	7.1	7.1	7.2	NA	NA	NA	NA	NA	NA
3/12/2009	15.7	15.9	14.6	7.0	7.3	7.5	NA	NA	NA	NA	NA	NA
3/16/2009	15.0	14.6	14.0	7.1	6.9	7.1	NA	NA	NA	NA	NA	NA
3/25/2009	13.9	13.8	12.5	7.0	7.0	7.3	NA	NA	NA	NA	NA	NA
3/31/2009	14.0	13.7	12.9	7.0	7.2	7.2	NA	NA	NA	NA	NA	NA
4/8/2009	13.4	13.6	12.8	7.0	7.0	7.1	NA	NA	NA	NA	NA	NA
4/15/2009	14.5	14.0	12.9	7.2	6.9	7.1	NA	NA	NA	NA	NA	NA
4/22/2009	14.1	13.6	11.8	6.4	6.7	6.8	NA	NA	NA	NA	NA	NA
4/30/2009	14.2	14.1	13.5	7.2	6.9	7.0	NA	NA	NA	NA	NA	NA
5/5/2009	13.6	13.7	11.7	7.1	7.0	6.8	NA	NA	NA	NA	NA	NA
5/12/2009	13.8	13.7	12.9	5.0	7.1	7.1	NA	NA	NA	NA	NA	NA
5/28/2009	13.8	13.6	11.1	6.0	6.9	7.0	NA	NA	NA	NA	NA	NA
6/2/2009	13.7	13.3	10.9	6.9	6.7	6.7	NA	NA	NA	NA	NA	NA
6/17/2009	12.7	12.2	10.9	7.1	6.8	7.0	NA	NA	NA	NA	NA	NA
6/23/2009	13.3	13.0	11.9	7.1	6.7	6.8	NA	NA	NA	NA	NA	NA
7/1/2009	12.4	11.7	11.3	5.3	6.6	6.9	NA	NA	NA	NA	NA	NA
7/8/2009	12.2	11.8	10.0	6.7	6.7	6.7	NA	NA	NA	NA	NA	NA
7/15/2009	11.8	11.5	9.7	6.7	6.8	6.8	NA	NA	NA	NA	NA	NA
7/23/2009	10.7	10.9	7.6	7.1	7.0	6.9	NA	NA	NA	NA	NA	NA
7/30/2009	10.5	10.5	9.7	6.9	6.7	6.7	NA	NA	NA	NA	NA	NA
8/6/2009	11.0	10.7	8.9	6.9	7.1	6.6	NA	NA	NA	NA	NA	NA
8/13/2009	11.3	11.4	9.5	7.2	7.0	6.9	NA	NA	NA	NA	NA	NA
8/19/2009	11.0	11.1	8.8	6.9	7.1	6.9	NA	NA	NA	NA	NA	NA
8/26/2009	11.7	11.8	10.7	5.3	6.8	7.9	NA	NA	NA	NA	NA	NA
9/3/2009	11.0	11.2	10.6	6.0	7.3	6.3	NA	NA	NA	NA	NA	NA
9/9/2009	11.9	12.0	11.3	6.8	6.9	7.0	NA	NA	NA	NA	NA	NA
9/15/2009	11.7	11.8	9.4	6.9	6.6	6.6	NA	NA	NA	NA	NA	NA
9/22/2009	12.5	12.5	11.3	6.9	7.0	6.9	NA	NA	NA	NA	NA	NA
9/30/2009	12.8	12.6	11.3	6.9	7.0	6.5	NA	NA	NA	NA	NA	NA
10/7/2009	12.6	12.6	12.3	7.0	6.8	7.2	NA	NA	NA	NA	NA	NA
10/14/2009	14.3	14.4	13.8	7.5	7.5	7.4	NA	NA	NA	NA	NA	NA
10/21/2009	12.9	12.5	12.5	7.3	6.9	7.1	NA	NA	NA	NA	NA	NA
10/28/2009	14.6	14.2	13.8	7.1	7.0	6.5	NA	NA	NA	NA	NA	NA
11/3/2009	14.3	13.8	13.3	7.1	7.0	6.9	NA	NA	NA	NA	NA	NA

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Date	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002
	Dissolved Oxygen (mg/L)			pH (SU)			TSS (mg/L)			SS (mg/L)		
11/12/2009	14.2	14.2	13.5	8.7	7.0	6.7	NA	NA	NA	NA	NA	NA
12/8/2009	15.7	15.6	15.5	6.9	6.8	6.6	NA	NA	NA	NA	NA	NA
12/22/2009	15.1	14.9	14.1	7.0	7.7	7.3	NA	NA	NA	NA	NA	NA
1/6/2010	15.4	15.4	14.4	7.3	7.2	7.2	<1	<1	NA	<0.1	NA	<0.1
1/12/2010	14.7	14.6	13.1	6.6	6.8	6.8	<1	NA	<1	<0.1	<0.1	<0.1
1/20/2010	14.1	14.2	12.6	7.8	7.5	7.5	<1	NA	<1	<0.1	NA	<0.1
1/26/2010	14.4	14.6	12.4	7.0	7.0	7.0	NA	NA	NA	<0.1	<0.1	<0.1
2/4/2010	13.8	13.5	12.4	7.6	7.1	7.1	<1	<1	NA	<0.1	NA	<0.1
2/9/2010	13.9	13.5	12.6	7.0	7.1	7.1	<1	NA	<1	<0.1	<0.1	<0.1
2/18/2010	14.3	14.4	13.7	6.8	6.8	6.8	<1	NA	<1	<0.1	<0.1	<0.1
2/23/2010	14.7	14.6	13.7	5.9	7.0	7.0	NA	NA	NA	<0.1	<0.1	<0.1
3/3/2010	13.3	13.3	12.7	6.6	6.7	6.7	1	1.8	NA	<0.1	NA	<0.1
3/9/2010	14.9	14.3	13.8	6.7	6.8	6.8	<1	NA	1.8	<0.1	<0.1	<0.1
3/17/2010	13.7	13.4	12.6	6.7	6.6	6.6	<1	NA	<1	<0.1	NA	<0.1
3/23/2010	13.8	13.5	12.6	6.8	7.0	7.0	NA	NA	NA	<0.1	<0.1	<0.1
4/1/2010	14.0	13.8	12.3	4.5	6.9	6.9	<1	1.2	NA	<0.1	NA	<0.1
4/7/2010	13.6	13.3	12.4	6.7	7.1	7.1	<1	NA	<1	<0.1	<0.1	<0.1
4/15/2010	13.3	13.1	11.7	6.3	7.1	7.1	<1	NA	<1	<0.1	NA	<0.1
4/21/2010	13.8	13.3	11.5	6.2	6.5	6.5	NA	NA	NA	0.1	<0.1	<0.1
4/27/2010	13.1	12.8	12.3	6.6	6.9	6.9	NA	NA	NA	<0.1	NA	<0.1
5/6/2010	13.4	13.6	12.7	6.6	6.6	6.6	<1	<1	NA	<0.1	NA	<0.1
5/10/2010	13.0	13.2	12.3	6.6	6.9	6.9	<1	NA	1.4	<0.1	<0.1	<0.1
5/20/2010	13.8	13.8	13.1	6.8	8.3	8.3	4.8	NA	1.8	<0.1	NA	<0.1
5/25/2010	13.3	13.2	12.3	6.9	6.6	6.6	NA	NA	NA	<0.1	<0.1	<0.1
6/3/2010	13.8	13.5	12.3	6.7	6.8	6.8	9	6	NA	<0.1	NA	<0.1
6/8/2010	13.5	13.3	11.9	6.7	6.8	6.9	2	NA	1	<0.1	<0.1	<0.1
6/16/2010	13.2	12.9	11.5	6.0	6.8	6.8	1.8	NA	1.2	<0.1	NA	<0.1
6/22/2010	13.1	12.9	11.0	6.4	6.4	6.4	NA	NA	NA	<0.1	<0.1	<0.1
6/30/2010	12.8	12.3	10.1	6.9	6.4	6.4	NA	NA	NA	<0.1	NA	<0.1
7/7/2010	12.1	11.8	10.0	6.2	7.2	7.2	<1	<1	NA	<0.1	NA	<0.1
7/13/2010	12.0	11.9	9.8	5.7	6.2	6.2	1.5	NA	3	<0.1	<0.1	<0.1
7/21/2010	11.4	11.0	9.2	7.1	6.9	6.9	<1	NA	1.4	<0.1	NA	<0.1
7/29/2010	10.8	10.5	8.5	6.8	7.1	7.1	NA	NA	NA	<0.1	NA	<0.1
8/5/2010	10.7	10.7	NA	6.9	6.3	6.3	<1	1.4	NA	<0.1	NA	NA
8/10/2010	11.1	11.2	10.5	6.5	6.8	6.8	<1	NA	6	<0.1	<0.1	<0.1
8/19/2010	11.0	10.8	8.4	7.1	6.5	6.5	1	NA	6.3	<0.1	NA	<0.1
8/25/2010	11.4	11.4	10.5	5.8	6.5	6.5	NA	NA	NA	<0.1	<0.1	<0.1
9/7/2010	11.5	11.4	11.3	6.9	6.9	6.9	1	<1	NA	<0.1	NA	<0.1
9/15/2010	11.6	11.6	11.5	7.0	6.6	6.6	<1	NA	2.4	<0.1	<0.1	<0.1

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Date	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002
	Dissolved Oxygen (mg/L)			pH (SU)			TSS (mg/L)			SS (mg/L)		
9/22/2010	12.3	12.3	11.4	6.9	6.5	6.5	<1	NA	5.4	<0.1	NA	<0.1
9/28/2010	11.4	11.6	11.5	6.9	6.4	6.4	NA	NA	NA	<0.1	<0.1	<0.1
10/5/2010	12.4	12.5	12.0	6.4	6.6	6.6	<1	<1	NA	<0.1	NA	<0.1
10/14/2010	13.0	13.2	11.5	6.5	6.7	6.7	<1	NA	2.2	<0.1	<0.1	<0.1
10/20/2010	13.0	13.1	12.8	6.9	7.1	7.1	<1	NA	1	<0.1	NA	<0.1
10/26/2010	13.1	13.3	12.1	7.1	6.2	6.2	NA	NA	NA	<0.1	<0.1	<0.1
11/4/2010	13.7	13.8	12.2	6.6	6.6	6.6	<1	1	NA	<0.1	NA	<0.1
11/9/2010	13.7	13.7	12.5	6.7	7.0	7.0	<1	NA	1.2	<0.1	<0.1	<0.1
11/16/2010	NA	NA	NA	NA	NA	NA	4	NA	<1	<0.1	NA	<0.1
11/30/2010	15.0	15.2	14.7	8.3	7.2	7.2	NA	NA	NA	<0.1	<0.1	<0.1
12/7/2010	14.5	14.5	14.1	7.0	7.4	7.4	<1	<1	NA	<0.1	NA	<0.1
12/14/2010	14.1	14.2	14.1	7.0	6.8	6.8	8	NA	2.2	<0.1	NA	<0.1
12/20/2010	14.3	14.1	13.9	7.0	7.1	7.1	<1	NA	<1	<0.1	<0.1	<0.1
12/28/2010	14.1	14.0	13.8	7.1	7.2	7.2	NA	NA	NA	<0.1	<0.1	<0.1
1/5/2011	15.0	15.1	14.7	7.4	6.6	6.6	<1	<1	NA	<0.1	NA	<0.1
1/11/2011	14.6	14.6	14.8	6.8	6.8	6.8	1	NA	<1	<0.1	<0.1	<0.1
1/20/2011	14.6	14.6	14.6	7.0	6.8	6.8	2	NA	<1	<0.1	NA	<0.1
1/26/2011	14.0	14.2	13.7	7.0	6.8	6.8	NA	NA	NA	<0.1	<0.1	<0.1
2/3/2011	15.2	15.0	14.9	6.6	6.8	6.8	<1	<1	NA	<0.1	NA	<0.1
2/8/2011	14.6	14.5	13.8	7.2	7.5	7.5	<1	NA	<1	<0.1	<0.1	<0.1
2/15/2011	13.8	14.0	13.2	6.8	6.9	6.9	1.8	NA	<1	<0.1	NA	<0.1
2/23/2011	14.7	14.6	13.8	7.3	7.0	7.0	NA	NA	NA	<0.1	<0.1	<0.1
3/3/2011	14.6	14.6	14.6	6.9	6.7	6.7	<1	<1	NA	<0.1	NA	<0.1
3/9/2011	14.3	14.3	14.1	6.9	6.6	6.6	<1	NA	<1	<0.1	<0.1	<0.1
3/15/2011	13.7	13.6	13.1	7.3	7.0	7.0	<1	NA	<1	<0.1	NA	<0.1
3/22/2011	13.8	13.5	13.1	6.1	7.1	7.1	NA	NA	NA	<0.1	<0.1	<0.1
4/5/2011	13.9	13.7	13.0	6.6	7.2	7.2	1.4	1.4	NA	<0.1	NA	<0.1
4/14/2011	13.7	12.9	12.7	5.8	6.8	6.8	<1	NA	1.6	<0.1	<0.1	<0.1
4/21/2011	13.6	13.1	13.5	6.3	7.4	7.4	<1	NA	<1	<0.1	NA	<0.1
4/27/2011	13.4	12.9	12.9	6.8	7.3	7.3	<1	NA	<1	<0.1	NA	<0.1
5/3/2011	13.4	13.3	12.9	6.3	7.6	7.6	<1	<1	NA	<0.1	<0.1	<0.1
5/11/2011	13.0	12.9	12.4	6.2	7.2	7.2	2.6	NA	1.6	<0.1	<0.1	<0.1
5/19/2011	13.6	13.5	12.9	6.8	6.8	6.8	3.4	NA	4.2	<0.1	NA	<0.1
5/26/2011	13.6	13.6	13.2	6.8	6.3	6.3	NA	NA	NA	<0.1	<0.1	<0.1
6/1/2011	13.5	13.3	13.1	6.6	6.4	6.4	1.3	1.7	NA	<0.1	NA	<0.1
6/8/2011	NA	NA	NA	NA	NA	NA	3.8	NA	NA	<0.1	<0.1	<0.1
6/15/2011	13.3	13.0	12.7	6.4	6.5	6.5	4.4	NA	4.2	<0.1	NA	<0.1
6/23/2011	13.0	12.6	12.3	6.4	6.4	6.4	NA	NA	NA	<0.1	<0.1	<0.1
6/29/2011	12.6	12.1	12.4	6.5	7.2	7.2	NA	NA	NA	NA	NA	NA

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Date	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002	Intake	Outfall 001	Outfall 002
	Dissolved Oxygen (mg/L)			pH (SU)			TSS (mg/L)			SS (mg/L)		
7/7/2011	12.4	12.1	10.7	6.4	6.3	6.3	1.2	2.6	NA	<0.1	NA	<0.1
7/14/2011	12.4	12.2	11.9	6.4	6.4	6.4	<1	NA	74	<0.1	<0.1	<0.1
7/19/2011	12.0	12.0	10.2	6.2	6.1	6.1	<1	NA	<1	<0.1	NA	<0.1
7/27/2011	12.0	11.9	11.7	6.4	6.7	6.7	NA	NA	NA	<0.1	<0.1	<0.1
8/3/2011	11.6	11.5	11.6	6.5	6.7	6.7	<1	<1	NA	<0.1	NA	<0.1
8/10/2011	11.5	11.4	11.1	6.7	6.1	6.1	<1	NA	4.1	<0.1	<0.1	<0.1
8/17/2011	11.8	11.7	10.6	6.7	6.8	6.8	<1	NA	4	<0.1	NA	<0.1
8/23/2011	10.9	11.0	10.6	6.4	6.1	6.1	NA	NA	NA	<0.1	<0.1	<0.1
9/1/2011	11.8	11.8	9.3	6.5	6.7	6.7	<1	<1	NA	<0.1	NA	<0.1
9/7/2011	11.5	11.6	9.8	6.5	6.5	6.5	<1	NA	4	<0.1	<0.1	<0.1
9/14/2011	11.3	11.3	9.9	6.4	6.9	6.9	<1	NA	<1	<0.1	NA	<0.1
9/22/2011	11.6	11.8	10.6	6.5	6.7	6.7	NA	NA	NA	<0.1	<0.1	<0.1
9/28/2011	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
10/4/2011	11.9	11.9	11.2	6.6	6.7	6.7	<1	<1	NA	<0.1	NA	<0.1
10/12/2011	12.8	12.6	11.3	6.5	6.6	6.6	4.5	NA	1	<0.1	<0.1	<0.1
10/20/2011	12.6	12.7	12.1	6.5	7.0	7.0	1.8	NA	1.2	<0.1	NA	<0.1
10/25/2011	13.0	12.8	12.5	6.7	6.9	6.9	NA	NA	NA	<0.1	<0.1	<0.1
11/1/2011	13.9	13.8	12.0	6.4	6.6	6.6	<1	<1	NA	<0.1	NA	<0.1
11/8/2011	14.4	14.1	13.2	6.2	6.4	6.4	<1	NA	<1	<0.1	<0.1	<0.1
11/15/2011	NA	NA	NA	NA	NA	NA	<1	NA	<1	<0.1	NA	<0.1
11/29/2011	14.7	14.2	14.2	6.3	6.3	6.3	NA	NA	NA	<0.1	<0.1	<0.1
12/14/2011	15.0	15.0	14.0	6.7	6.9	6.9	<1	<1	<1	<0.1	NA	<0.1
12/20/2011	14.7	14.9	14.8	6.5	6.7	6.7	<1	NA	<1	<0.1	<0.1	<0.1

Notes:

mg/L = milligrams per liter

NA = data not available

SS = suspended solids

SU = standard units

TSS = total suspended solids

< = less than method detection level

DRAFT

LNFH Monitoring for Total Phosphorus

Data Provided by USFWS

Date	Intake	Outfall 001	Outfall 002
	Total Phosphorous (µg/L)		
9/13/2006	1.8	NS	22
7/11/2007	1.2	4.9	60
7/30/2007	3.2	6.2	70
8/22/2007	1.4	6.0	59
9/18/2007	1.4	5.6	86
10/2/2007	NS	7.0	104
8/20/2008	2.8	NS	63
8/27/2008	2.5	6.9	52
9/8/2008	2.0	11	24
10/2/2008	2.0	2.0	78
4/1/2010	0.5	13	74
4/15/2010	9.0	15	65
5/6/2010	6.0	10	39
5/20/2010	14	17	23
6/8/2010	10	4.0	24
6/22/2010	5.0	6.0	30
7/7/2010	6.0	7.0	66
7/21/2010	0.5	0.5	17
8/5/2010	6.0	8.0	NS
8/19/2010	1.0	2.0	120
9/7/2010	11	9.0	17
9/22/2010	0.5	8.0	26
10/5/2010	0.5	0.5	23
10/20/2010	0.5	0.5	60
11/4/2010	7.0	12	66
1/11/2011	0.5	0.5	5.0
1/26/2011	0.5	2.0	10
2/8/2011	18	15	28
3/3/2011	0.5	0.5	5.3
3/15/2011	0.5	0.5	2.7
4/21/2011	0.5	0.5	77
6/29/2011	1.2	1.7	42
9/28/2011	7.9	11	29

Notes:
µg/L = micrograms per liter
NS = not sampled

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Appendix B: Facility Discharge Monitoring Report Data Analyzed During Permit Development

DRAFT

Parameter Desc		Flow		Susp Solids Non-Cleaning Total Discharge				Settleable Solids Non-Cleaning Total Discharge						Suspended Solids Cleaning Effluent						Settleable Solids Cleaning Effluent					
				Qty or Ldg				Qty or Cont						Qty or Cont						Qty or Cont					
		Avg	Max	Avg	Avg	Max	Max	Min	Min	Avg	Avg	Max	Max	Min	Min	Avg	Avg	Max	Max	Min	Min	Avg	Avg	Max	Max
Units		MGD	MGD	Note	Kg/Day	Note	Kg/Day	Note	ML/L	Note	ML/L	Note	ML/L	Note	MG/L	Note	MG/L	Note	MG/L	Note	ML/L	Note	ML/L	Note	ML/L
1974 Permit Limit		Outfall 001			704		921				0.1								15						0.2
1/1/2010	1/31/2010	29.8	30.0	<	113	<	113	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
2/1/2010	2/28/2010	30.1	30.4	<	115	<	115	<	0.1	<	0.1	<	0.1	<	1	<	1		1	<	0.1	<	0.1	<	0.1
3/1/2010	3/31/2010	29.1	31.0		89		89	<	0.1	<	0.1	<	0.1	<	1	<	1		1.8	<	0.1	<	0.1	<	0.1
4/1/2010	4/30/2010	23.9	28.9	<	131	<	131	<	0.1	<	0.1	<	0.1	<	1	<	1.5		2.8						0.2
5/1/2010	5/31/2010	14.0	19.0	<	34	<	34	<	0.1	<	0.1	<	0.1		1.4		1.6		1.8	<	0.1	<	0.1	<	0.1
6/1/2010	6/30/2010	18.4	18.6		0		0	<	0.1	<	0.1	<	0.1		1		1.5		2	<	0.1	<	0.1	<	0.1
7/1/2010	7/31/2010	19.6	19.6	<	74	<	74	<	0.1	<	0.1	<	0.1	<	1		1.7		3	<	0.1	<	0.1	<	0.1
8/1/2010	8/31/2010	24.2	26.7	<	104	<	104	<	0.1	<	0.1	<	0.1	<	1	<	3.5		6.3	<	0.1	<	0.1	<	0.1
9/1/2010	9/30/2010	25.3	25.3	<	96	<	96	<	0.1	<	0.1	<	0.1		2.4		3.9		5.4	<	0.1	<	0.1	<	0.1
10/1/2010	10/31/2010	25.5	26.2	<	96	<	96	<	0.1	<	0.1	<	0.1		1		1.6		2.2	<	0.1	<	0.1	<	0.1
11/1/2010	11/30/2010	29.4	29.4		111		111	<	0.1	<	0.1	<	0.1	<	1	<	1.2		1.2	<	0.1	<	0.1	<	0.1
12/1/2010	12/31/2010	26.0	28.0	<	96	<	96	<	0.1	<	0.1	<	0.1	<	1	<	2.2		2.2	<	0.1	<	0.1	<	0.1
1/1/2011	1/31/2011	28.6	28.6	<	108	<	108	<	0.1	<	0.1	<	0.1		1		1.5		2	<	0.1	<	0.1	<	0.1
2/1/2011	2/28/2011	29.0	29.4	<	108	<	108	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
3/1/2011	3/31/2011	29.2	29.4	<	111	<	111	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
4/1/2011	4/30/2011	18.3	29.7		112		112	<	0.1	<	0.1	<	0.1	<	1	<	1.6		1.6	<	0.1	<	0.1	<	0.1
5/1/2011	5/31/2011	17.0	22.7	<	34	<	34	<	0.1	<	0.1	<	0.1		1.6		2.9		4.2	<	0.1	<	0.1	<	0.1
6/1/2011	6/30/2011	18.0	18.0		28		28	<	0.1	<	0.1	<	0.1	<	1		3.1		4.4	<	0.1	<	0.1	<	0.1
7/1/2011	7/31/2011	24.0	26.0		96		96	<	0.1	<	0.1	<	0.1	<	1				74	<	0.1	<	0.1	<	0.1
8/1/2011	8/31/2011	28.0	28.0	<	104	<	104	<	0.1	<	0.1	<	0.1		4		4.2		4.4	<	0.1	<	0.1	<	0.1
9/1/2011	9/30/2011	26.3	26.3	<	100	<	100	<	0.1	<	0.1	<	0.1	<	1	<	4		4	<	0.1	<	0.1	<	0.1
10/1/2011	10/31/2011	26.3	26.3	<	100	<	100	<	0.1	<	0.1	<	0.1		1		1.1		1.2	<	0.1	<	0.1	<	0.1
11/1/2011	11/30/2011	26.3	26.3	<	100	<	100	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
12/1/2011	12/31/2011	29.0	29.0	<	110	<	110	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
1/1/2012	1/31/2012	29.0	29.0	<	110	<	110	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
2/1/2012	2/29/2012	26.0	26.0	<	110	<	110	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
3/1/2012	3/30/2012	28.0	28.0	<	104	<	104	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
4/1/2012	4/30/2012	27.0	27.0	<	103	<	103			<	0.1							<	1	<	0.1	<	0.1	<	0.1
5/1/2012	5/31/2012	18.7	18.7	<	71	<	71			<	0.1							<	1					<	0.1
6/1/2012	6/30/2012	18.7	18.7	<	71	<	71			<	0.1								1.1	<	0.1	<	0.1		0.1
7/1/2012	7/31/2012	29.0	29.0	NA		NA		<	0.1	<	0.1	<	0.1	<	1		1.6		2.2	<	0.1	<	0.1	<	0.1
8/1/2012	8/31/2012	26.6	26.6	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		1.35		1.7	<	0.1	<	0.1	<	0.1
9/1/2012	9/30/2012	26.8	26.8	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		1.4		2	<	0.1	<	0.1	<	0.1
10/1/2012	10/31/2012	26.8	26.8	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		2.2		3.4	<	0.1	<	0.1	<	0.1
11/1/2012	11/30/2012	25.4	26.9		31		31	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
12/1/2012	12/31/2012	20.8	20.8	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		1.45		1.9	<	0.1	<	0.1	<	0.1
1/1/2013	1/31/2013	23.2	23.2	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		1.2		2.1	<	0.1	<	0.1	<	0.1
2/1/2013	2/28/2013	25.0	25.0	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
3/1/2013	3/31/2013	25.0	25.0	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
4/1/2013	4/30/2013	29.3	25.5	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		1		1	<	0.1	<	0.1	<	0.1

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4/1/2013	**4/30/2013**	20.2	25.5	<	1	<	1	<	0.1	<	0.1	<	0.1	<	1		1		1	<	0.1	<	0.1	<	0.1
5/1/2013	**5/31/2013**	13.7	18.7	<	1	<	1	<	0.1	<	0.1	<	0.1		1.3		2		2.7	<	0.1	<	0.1	<	0.1
6/1/2013	**6/30/2013**	18.7	18.7		404		404	<	0.1	<	0.1	<	0.1	<	1		1.6		2.8	<	0.1	<	0.1	<	0.1
7/1/2013	**7/31/2013**	19.6	22.2	<	1	<	1	<	0.1	<	0.1	<	0.1		1.5		1.75		2	<	0.1	<	0.1	<	0.1
8/1/2013	**8/31/2013**	23.0	23.0		165		165	<	0.1	<	0.1	<	0.1	<	1	<	1		1.4	<	0.1	<	0.1	<	0.1
9/1/2013	**9/30/2013**	22.4	22.4		110		110	<	0.1	<	0.1	<	0.1		1.3		6.45		11.6	<	0.1	<	0.1	<	0.1
10/1/2013	**10/31/2013**	22.6	22.6		427		427	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
11/1/2013	**11/30/2013**	22.4	22.4		0		0	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
12/1/2013	**12/31/2013**	17.4	18.0		0		0	<	0.1	<	0.1	<	0.1	<	1		1.13		1.4	<	0.1	<	0.1	<	0.1
1/1/2014	**1/31/2014**	20.8	20.8		0		0	<	0.1	<	0.1	<	0.1	<	1		2.35		3.7	<	0.1	<	0.1	<	0.1
2/1/2014	**2/28/2014**	29.5	29.5		0		0	<	0.1	<	0.1	<	0.1	<	1		1.6		2.2	<	0.1	<	0.1	<	0.1
3/1/2014	**3/31/2014**	30.1	30.3		0		0	<	0.1	<	0.1	<	0.1	<	1		1		2	<	0.1	<	0.1	<	0.1
4/1/2014	**4/30/2014**	25.3	29.8		0		0	<	0.1	<	0.1	<	0.1	<	1		1.65		2.3	<	0.1	<	0.1	<	0.1
5/1/2014	**5/31/2014**	14.9	23.4		0		0	<	0.1	<	0.1	<	0.1	<	1		3.59		6.2	<	0.1	<	0.1	<	0.1
6/1/2014	**6/30/2014**	23.6	23.6		528		528	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
7/1/2014	**7/31/2014**	24.4	24.4		18		18	<	0.1	<	0.1	<	0.1		1.5		1.55		1.6	<	0.1	<	0.1	<	0.1
8/1/2014	**8/31/2014**	24.4	24.5	-	37	-	37	<	0.1	<	0.1	<	0.1		8		9.75		11.5	<	0.1	<	0.1	<	0.1
9/1/2014	**9/30/2014**	25.0	25.6		92		92	<	0.1	<	0.1	<	0.1		2.4		4.45		6.5	<	0.1	<	0.1	<	0.1
10/1/2014	**10/31/2014**	25.6	25.9		319		319	<	0.1	<	0.1	<	0.1		1		1.45		1.9	<	0.1	<	0.1	<	0.1
11/1/2014	**11/30/2014**	25.9	25.9		54		98	<	0.1	<	0.1	<	0.1	NA		NA		NA		<	0.1	<	0.1	<	0.1
12/1/2014	**12/31/2014**	26.4	27.8		0		0	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
1/1/2015	**1/31/2015**	28.4	29.1		0		0	<	0.1	<	0.1	<	0.1		1.2		1.75		2.3	<	0.1	<	0.1	<	0.1
2/1/2015	**2/28/2015**	28.7	29.1		165		165	<	0.1	<	0.1		0.1	<	1		1.75		2.5	<	0.1	<	0.1	<	0.1
3/1/2015	**3/31/2015**	27.6	27.6		0		0	<	0.1	<	0.1	<	0.1	<	1		1.4		1.8	<	0.1	<	0.1		0.1
4/1/2015	**4/30/2015**	17.9	27.6		0		0	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
5/1/2015	**5/31/2015**	16.3	21.1		8		8	<	0.1	<	0.1	<	0.1	<	1		1.8		2.6	<	0.1	<	0.1	<	0.1
6/1/2015	**6/30/2015**	22.5	23.0		17		17	<	0.1	<	0.1	<	0.1		3.6		4.65		5.7	<	0.1	<	0.1	<	0.1
7/1/2015	**7/31/2015**	24.9	24.9		0		0	<	0.1	<	0.1	<	0.1	<	1		1.35		2.6	<	0.1		0.17		0.5
8/1/2015	**8/31/2015**	24.8	26.2		0		0	<	0.1	<	0.1	<	0.1	<	1		1.3		1.7	<	0.1	<	0.1	<	0.1
9/1/2015	**9/30/2015**	23.3	24.9		0		0	<	0.1	<	0.1	<	0.1		1.2		1.4		1.6	<	0.1	<	0.1	<	0.1
10/1/2015	**10/31/2015**	27.4	27.4		31		31	<	0.1	<	0.1	<	0.1	<	1	<	1	<	1	<	0.1	<	0.1	<	0.1
11/1/2015	**11/30/2015**	27.4	27.4		435		435	<	0.1	<	0.1	<	0.1	<	1		2.7		4.4	<	0.1	<	0.1	<	0.1
12/1/2015	**12/30/2015**	30.0	31.6		0		0	<	0.1	<	0.1	<	0.1	<	1		4.55		8.2	<	0.1	<	0.1	<	0.1
	Average	24.3	25.5		79		79		0.1		0.1		0.1		1.3		1.9		3.6		0.1		0.1		0.1
	Minimum	13.7	18.0		0		0		0.1		0.1		0.1		1.0		1.0		1.0		0.1		0.1		0.1
	Maximum	30.1	31.6		528		528		0.1		0.1		0.1		8.0		9.8		74.0		0.1		0.2		0.5
	Count	72	72		71		71		69		72		69		68		67		71		70		70		72
	Standard Deviation	4.29	3.62		109		109		0.00		0.00		0.00		0.98		1.50		8.76		0.00		0.01		0.05
	CV	0.18	0.14		1		1		0.00		0.00		0.00		0.78		0.77		2.46		0.00		0.08		0.45
	5th Percentile	16.69	18.70		0		0		0.10		0.10		0.10		1.00		1.00		1.00		0.10		0.10		0.10
	95th Percentile	29.64	30.13		362		362		0.10		0.10		0.10		2.40		4.52		7.35		0.10		0.10		0.10

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Appendix C: Preliminary Clean Water Act Section 401 Certification from the Idaho Department of Environmental Quality

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