Fact Sheet

December 20, 2010

The U.S. Environmental Protection Agency (EPA) Reproposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to:

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

NPDES Permit Number: **WA-000190-2**

Public Notice Start Date: **December 22, 2010**
Public Notice Expiration Date: **February 7, 2011**

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EPA Reproposes NPDES Permit Reissuance

In order to ensure protection of water quality and human health, EPA reproposes to reissue a National Pollutant Discharge Elimination System (NPDES) permit to establish conditions and limitations for the discharge of pollutants from the Leavenworth National Fish Hatchery (LNFH) to Icicle Creek, a water of the U.S., pursuant to the provisions of the Clean Water Act (CWA), 33 U.S.C. § 1251 *et seq.* LNFH, located near Leavenworth, Washington, is owned and operated by the United States Fish and Wildlife Service (USFWS).

On June 29, 2006, EPA issued a draft NPDES permit for public comment. Because of new Total Maximum Daily Loads (TMDLs) for Dissolved Oxygen, pH, and temperature, revised water quality standards, and extensive additional requirements in the January 2010 State Certification under Section 401 of the Clean Water Act, 33 U.S.C. § 1341, EPA added numerous requirements

to the Permit. As a result, EPA determined that the permit should be published for an additional public comment period.

This Fact Sheet includes:

- information on public comment, public hearing and appeal procedures;
- the description of current discharges;
- a description of proposed permit conditions; and
- detailed technical material supporting the conditions in the draft permit.

State Certification.

Section 401 of the Clean Water Act (CWA), 33 U.S.C. § 1341, requires that EPA-issued draft permits be reviewed by the State and affected tribes that have been approved by EPA for Treatment as a State under Section 518 of the CWA, 33 U.S.C. § 1377. On January 7, 2010, the Washington State Department of Ecology (Ecology) issued Order No. 7192 to the USFWS (Ecology, 2010a) granting a Section 401 Water Quality Certification. Ecology set forth certain water quality conditions in the Section 401 Certification to ensure that the permit complies with the Clean Water Act and other appropriate requirements of State law. Pursuant to CWA Section 401, EPA is required to include those conditions in the permit. 33 U.S.C. § 1341(d).

On February 5, 2010, Wild Fish Conservancy and the Center for Environmental Law and Policy appealed Ecology's Section 401 Certification; however, the Section 401 Certification remains final and in effect. Pursuant to 40 CFR § 124.55(b), if the State of Washington Pollution Control Hearings Board (PCHB) issues a decision that stays, vacates or remands the Section 401 Certification, Ecology may issue a modified certification or notice of waiver. If a modified certification is received prior to issuance of the permit, EPA will ensure that the permit is consistent with any more stringent conditions in the modified certification. If a modified certification is received after EPA issues the permit, EPA may modify the permit on request of LNFH to the extent necessary to delete any conditions based on a condition in a certification that has been invalidated by the PCHB.

Public Comment

EPA Invites Public Comment

If you wish to comment on the proposed requirements in the draft permit, you must do so before the end of the public comment period at the top of this notice. Comments will be most effective if they address specific permit requirements and include the justification for your recommendation.

Comments should include a name, address, phone number, and a concise statement of the basis of the comment, as well as relevant facts upon which the comment is based. All written comments should be addressed to the Director of the Office of Water and Watersheds and can be

submitted by mail to U.S. EPA, Region 10, 1200 Sixth Avenue, Suite 900, OWW-130, Seattle, WA 98101-3140; alternatively, comments can also be submitted by facsimile at (206) 553-0165; or submitted via e-mail to wilson.sharon@epa.gov .

Requesting a Public Hearing

Written comments receive as much consideration as oral comments at a public hearing. Persons wishing to request a public hearing must do so, in writing, by the January 21, 2011. A request for a public hearing must state the nature of the issues to be raised as they relate to the permit, as well as the requester's name, address, and telephone number. Based on the requirements of 40 CFR § 124.12, EPA will hold a public hearing if there is a significant degree of public interest in the proposed permit. All comments and requests for public hearing must be submitted to EPA as described in the "Public Comments" section of the attached public notice.

After the Public Comment Period

After the public comment period expires and all significant comments have been considered, EPA's Director of the Office of Water and Watersheds will make a final decision regarding permit issuance. Since comments were submitted in the 2006 public comment period, EPA will prepare a response to comments that addresses those and any comments submitted during the current comment period. In addition, we may make changes to the draft permit based on the comments. After making any necessary changes, EPA will issue the permit with the response to comments, unless issuance of a new draft permit is warranted pursuant to 40 CFR § 124.14. The permit will become effective thirty-three (33) days after the issuance date, unless the permit is appealed to the Environmental Appeals Board within 30 days of issuance of the permit pursuant to 40 CFR § 124.19.

Documents Are Available for Review

The draft NPDES permit and related documents can be reviewed or obtained by contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday (see address below). The draft permit, fact sheet and public notice can also be found at the Region 10 website at http://yosemite.epa.gov/r10/water.nsf/NPDES+Permits/DraftPermitsORWA. Reference materials cited in the fact sheet are available in electronic format or in hard copy. To request copies and other information, please contact the NPDES Permits Unit at:

United States Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900
OWW-130
Seattle, Washington 98101
(206) 553-0523 or
1-800-484-4372, x0523 (within Alaska, Idaho, Oregon and Washington)
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For technical questions regarding the permit or fact sheet, contact Sharon Wilson at the phone number or e-mail address at the top of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 and ask to be connected to the appropriate phone

number. Additional services can be made available to a person with disabilities by contacting Audrey Washington at 206-553-0523 or by e-mail at washington.audrey@epa.gov.

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I. APPLICANT

United States Fish and Wildlife Service (USFWS)
Leavenworth National Fish Hatchery
NPDES Permit No.: WA-000190-2
Contact Person: Steve Croci, Deputy Complex Manager

Facility Address:

12790 Fish Hatchery Road
Leavenworth, Washington 98826

II. FACILITY INFORMATION

A. Facility History

According to the U.S. Fish and Wildlife Service (USFWS) website (http://www.fws.gov/leavenworth/), the Leavenworth National Fish Hatchery Complex (LNFH), which also includes Entiat National Fish Hatchery and Winthrop National Fish Hatchery, was authorized by the Grand Coulee Fish Maintenance Project on April 3, 1937, and re-authorized by the Mitchell Act (52 Stat. 345) on May 11, 1938. LNFH consists of the three mid-Columbia River anadromous fish hatcheries constructed by the Bureau of Reclamation as fish mitigation facilities for the construction of Grand Coulee Dam (Columbia Basin Project). Although re-authorized by the Mitchell Act, funding was provided through a transfer of funds from the Bureau of Reclamation to the USFWS until 1945, when the USFWS assumed full responsibility for funding, operations and maintenance of these facilities. The Bureau of Reclamation reassumed funding in 1994; however, the USFWS continues to operate and maintain LNFH.

B. Species raised

Construction of LNFH occurred between 1938 and 1940. Spring Chinook salmon and steelhead trout were identified as the primary mitigation species. The initial operating plan for LNFH called for adult spring Chinook salmon and summer steelhead to be trapped at Rock Island Dam and transported to LNFH for spawning. From the early 1940's, fish reared and released from LNFH included rainbow trout, steelhead trout, sockeye salmon, coho and Chinook salmon. Of these species, the spring Chinook salmon have traditionally made the greatest contribution to the Columbia Basin and ocean fisheries. The spring Chinook, the species currently reared at LNFH, must travel 498 miles and negotiate seven Columbia River dams to return to the hatchery from the Pacific Ocean. LNFH has the capacity to incubate 2.1 million salmon eggs and rears 1.625 million smolts in 61 rearing ponds.

Adult spring Chinook salmon start migrating up the Columbia River in March, arriving into Icicle Creek in May through June. Spawning begins about the second week in August. About 375 females are needed to produce 1.2 million eggs--LNFH's annual production goal. The fish are reared for sixteen months to be released (at 66,000 pounds total) in April from LNFH into Icicle Creek, a tributary of the Wenatchee River. From this point, the fish travel

500 miles down the Columbia River system past seven dams and numerous obstacles until they reach the Pacific Ocean.

In addition, 500,000 Coho are raised from February to April each year for the Yakama Indian Nation; these fish, about 27,000 pounds, are released largely in the upper streams of nearby watersheds.

C. Water Sources

The water supply for LNFH is obtained from three sources. A diversion in Icicle Creek one and one half miles upstream of LNFH routes most of the stream flow to LNFH through an underground pipe. Seven cubic feet per second (cfs) of this diverted water is provided to the Cascade Irrigation District (Irrigation District) to satisfy a senior water right before the water reaches LNFH. During the warm, low-flow summer and fall months the amount of water available from Icicle Creek is insufficient for LNFH and Irrigation District needs. During these times when the Snow Creek outlet from Snow Lake is dry, additional water is obtained from a pipeline plumbed into the bottom of Snow Lake which routes cold water into Snow Creek above its discharge into Icicle Creek upstream of the LNFH/Irrigation District diversion. LNFH also has seven wells from which groundwater may be pumped to augment the amount of water from Icicle Creek. Water pumped from the wells and the water routed by pipe from Snow Lake is much cooler than the upstream waters of Icicle Creek during the warm, low-flow months of summer.

D. Description of Facility Operation and Associated Discharges

1. Raceway and Adult Pond Discharges (Outfalls 001 and 004)

During normal operation, water flowing through the 88 raceways at LNFH is discharged directly into Icicle Creek at RM 2.8 via outfall 001. The average flow rate of the total discharge is approximately 26 million gallons per day (MGD). The maximum daily flow rate is 32.8 MGD.

When fish are ready for release in April, they are moved from the raceways into two adult holding ponds, in which they are held for about two weeks. About 5.8 million gallons/day of the raceway water is diverted to the adult ponds. A pipe (outfall 004) from the adult holding ponds discharges this water to Icicle Creek adjacent to outfall 001.

The adult pond and raceway wastewater contains some organic solid wastes that consist of uneaten food and fecal material. The quantity of these wastes in the discharge depends upon the volume of fish food being fed, the pounds of fish, pond design, cleaning techniques, and the amount of waste that settles out of the water prior to its discharge. Fish are hand fed at LNFH.

2. Pollution Abatement Ponds (Outfall 002)

Water flowing through raceways during cleaning operations is routed to a pollution abatement pond, an offline settling basin. Overflow from the pollution abatement pond is discharged into Icicle Creek adjacent to LNFH via outfall 002. The purpose of the pollution abatement pond is to allow solid particles (e.g., fish wastes) to settle prior to

discharge into Icicle Creek. The pollution abatement pond wastewater contains re-suspended organic solids created when the bottom of the rearing ponds are cleaned by sweeping to a bottom drain system. Cleaning of the adult holding ponds is typically accomplished by vacuuming. The organic solids consist of fish food, fecal material, and other debris from incoming water which settles out. The average discharge flow rate from the pollution abatement ponds is 288,000 gallons per day. The maximum discharge flow rate is about 8.6 million gallons per day.

LNFH began construction of a second pollution abatement pond of similar size in July 2010; according to Steve Croci, Deputy Complex Manager, LNFH expects to complete construction in November 2010 and begin operating the pond in late 2010 or early 2011. It will provide back-up capacity and operational flexibility (e-mail communication from Steve Croci to Sharon Wilson, EPA; November 2, 2010). It will discharge through the same outfall as the first pollution abatement pond.

3. Fish Screen Return Water (Outfall 003)

Outfall 003 is used to return fish screened from entering LNFH water supply back to Icicle Creek. The maximum flow rate of this discharge is 288,000 gallons per day; the average flow rate is 144,000 gallons per day. No fish food or cleaning wastes are added to this return water.

E. Characterization of Discharges

Aquaculture facilities may discharge a variety of pollutants attributed to: (1) feeds, directly or indirectly (*e.g.,* feces), (2) residuals of drugs used for maintenance or restoration of animal 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 raises concerns for deleterious effects on biota and on subsequent human consumers of fish or water.

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 United States. EPA recognizes, however, 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.

Aquaculture facilities are not considered to be significant sources of pathogens that affect

human health.

III. PERMIT HISTORY

A. Point Source Demonstration

In 40 CFR § 122.24 and Appendix C of 40 CFR Part 122, EPA has defined a hatchery, fish farm or other facility as a *concentrated aquatic animal production* (CAAP) facility if it contains, grows, or holds more than 20,000 pounds of aquatic animals in ponds, raceways, or other similar structures which discharge at least 30 days per year and feeds more than 5,000 pounds of feed in the maximum month of feeding. About 90,300 pounds of fish are produced at LNFH each year with an additional 46,700 pounds of fish held for acclimation during the months of March and April; additionally, LNFH feeds 21,700 pounds of food in the maximum month of feeding (USFWS, 2005a). Therefore, LNFH is a CAAP facility for which an NPDES permit is necessary to authorize discharges of wastewater.

B. EPA as Permit Authority

Although EPA has delegated to the State of Washington Department of Ecology (Ecology) the authority to issue most NPDES permits in the state, EPA retains authority to regulate and issue NPDES permits for discharges from federal and tribal facilities in Washington, including LNFH.

1. Previous permit

EPA issued an NPDES permit to the USFWS for discharges of wastewater from LNFH on August 31, 1974; the permit expired on August 31, 1979. EPA received an application for reissuance of the permit on November 12, 1980. USFWS has continued to discharge wastewater from LNFH under the terms and conditions of the expired permit.

2. Current permit cycle

In July 2005, Washington Trout, a non-profit environmental organization that has since changed its name to Wild Fish Conservancy, filed a lawsuit against EPA concerning the delayed reissuance of the NPDES permit for LNFH. In a settlement agreement with Washington Trout, EPA agreed to develop a draft NPDES permit for public notice by June 30, 2006.

LNFH submitted an updated permit application which EPA received in November 2005 (USFWS, 2005a). On June 29, 2006, EPA issued a draft NPDES permit for public comment. During the public comment period, which closed on July 31, 2006, EPA received comments from Washington Trout, LNFH, and the Washington Department of Ecology.

On October 30, 2006, EPA requested final CWA Section 401 certification from Ecology. On October 25, 2007, EPA withdrew its request while Ecology conducted an anti-degradation analysis to meet the new water quality standards recently approved by EPA.

On January 11, 2010, EPA received a copy of the Final 401 Certification (dated January 7, 2010) for the Leavenworth National Fish Hatchery, Order No. 7192, addressed to Al Jensen at LNFH. On February 5, 2010, Wild Fish Conservancy and the Center for Environmental Law and Policy appealed Ecology's Section 401 Certification; however, the Section 401 Certification remains final and in effect. The appeal of the Section 401 Certification is ongoing. Pursuant to 40 CFR § 124.55(b), if the State of Washington Pollution Control Hearings Board (PCHB) issues a decision that stays, vacates or remands the Section 401 Certification, Ecology may issue a modified certification or notice of waiver. If a modified certification is received prior to issuance of the permit, EPA will ensure that the permit is consistent with any more stringent conditions in the modified certification. If a modified certification is received after EPA issues the permit, EPA may modify the permit on request of LNFH to the extent necessary to delete any conditions based on a condition in a certification that has been invalidated by the PCHB.

C. Hatchery General Permits

1. EPA.

On July 1, 2009, EPA published the General Permit for Federal Aquaculture Facilities and Aquaculture Facilities located in Indian Country within the State of Washington (Washington Hatchery Permit). The Washington Hatchery Permit went into effect on August 1, 2009 and expires on July 31, 2014 (USEPA, 2009). Because of policy considerations, including the location of LNFH on an impaired waterbody EPA decided to reissue an individual permit rather than cover it under the Washington Hatchery Permit. However, to ensure consistent requirements among the federal and tribal aquaculture facilities in Washington, EPA has incorporated some of the conditions in the Washington Hatchery Permit.

2. Ecology.

We have also considered conditions included by Ecology in its Upland Finfish Hatching and Rearing NPDES General Permit (Ecology General Permit) to ensure consistent requirements among hatcheries in the State of Washington. The current Ecology General Permit was issued in June 2010 (Ecology, 2010b).

IV. RECEIVING WATER

LNFH discharges effluent from outfalls 001, 002, 003, and 004 to Icicle Creek at River Mile (RM) 2.8, a tributary to the Wenatchee River at RM 48.

A. Washington State Water Quality Standards

1. Designated Uses

Designated uses that apply in the vicinity of LNFH discharge are established in Chapter 173-201A WAC, Water Quality Standards for Surface Waters (WQS) of the State of Washington. They include: core summer salmonid habitat, primary contact recreation, domestic water, industrial water, agricultural water, stock water, wildlife habitat, harvesting, commerce/navigation, boating and aesthetics.

2. Criteria

Receiving water quality criteria to protect these uses are contained in WAC 173-201A-030(2), 040, 050, and 130(21); EPA's Toxics Rule, 40 CFR Part 131 (57 FR 60848 December 22, 1992); EPA Quality Criteria for Water 1986 (the Gold Book) as amended; and/or other criteria published by EPA. This is also in accordance with WAC 173-201A-040(5) which specifies that "Concentrations of toxic, and other substances with toxic propensities not listed in subsection (1) of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate." Receiving water quality criteria for protection of human health are also contained in the Toxics Rule. The applicable criteria are:

a. Temperature. The applicable temperature criteria to protect core summer salmonid habitat are:

(1) The 7-day average of the daily maximum temperatures (7-DADMax) is 16° C. When natural conditions exceed 16°C and that condition is due to natural conditions, human actions considered cumulatively may not cause the 7-DADMax of the water body to increase more than 0.3° C.

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

b. pH. To protect core summer salmonid habitat, pH shall be within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.2 units.

c. Dissolved oxygen. To protect core summer salmonid habitat, the 1 day minimum dissolved oxygen criterion is 9.5 mg/L.

d. 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.

e. 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 years on the average nor 11 μg/L as a 4-day average concentration not to be exceeded more than once every three years on the average.

f. Drugs, Disinfectants and Other Chemicals

Washington State does not have numeric water quality criteria for residuals of drugs, disinfectants and other chemicals, except chlorine, which is discussed above. However, it does have a narrative criteria which are discussed in §IV.A.2.g, below.

g. Narrative criteria. To protect all the designated uses, the following narrative criteria apply:

(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.

3. Antidegradation

a. Washington State Antidegradation Policy.

To prevent degradation of water quality, under the authority of 40 CFR §131.12, EPA requires states and eligible Indian Tribes to adopt and implement antidegradation policies. Washington State's antidegradation program establishes three formal tiers of protection:

(1) *Tier I* is used to ensure existing and designated uses are maintained and protected and applies to all waters and all sources of pollution. Tier I is focused on applying the water quality criteria assigned to each waterbody in the state.

(2) *Tier II* is used to ensure that waters of higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. All three of the following conditions must be met before an activity would be required to go through a Tier II analysis:

(a) it must be a new or expanded action,

(b) it must be an action that is regulated by Ecology, and

(c) the action must have the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

(3) *Tier III* is used to prevent the degradation of waters formally listed as outstanding resource waters and applies to all sources of pollution. Tier III consists of two levels of protection.

(a) Tier III(A) prohibits any lowering of water quality to designated waters.

(b) Tier III(B) prohibits any lowering of water quality that would create a cumulative measurable level of degradation.

b. USFWS Antidegradation Analysis

After discussions with Ecology and pursuant to Washington's antidegradation policy, USFWS conducted a Tier II antidegradation analysis in 2008 (USFWS, 2008). It found that LNFH " . . . operations are expected to change the flow balance in lower Icicle Creek, particularly due to the managed addition of 50 cfs to Icicle Creek from Snow Creek. While improvements in water temperature and dissolved oxygen are expected from the Leavenworth NFH operations, model simulations predict there will be greater than a 0.1 unit change in pH due to the Leavenworth NFH operations. Available data from 2002 synoptic surveys did not show any downstream increase in fecal coliform bacteria or turbidity due to the Leavenworth NFH operations." It also found that LNFH "is not adversely impacting the PCB or pesticide concentrations in Icicle Creek below the Hatchery (Tables 4 and 5 from USFWS, 2005b) and Hatchery fish are not accumulating PCB or pesticides to levels of concern (Tables 6 and 7 from

USFWS, 2005b)." It concluded with an extensive showing of the public interest that is met by the operation of LNFH.

Ecology used the Tier II analysis to inform provisions in the 401 certification to LNFH.

B. Icicle Creek Impairment

1. Temperature

a. TMDL

In 2005, Ecology conducted an evaluation of temperature in streams within the watershed (Ecology, 2005), which determined (page 73 of the study) that LNFH discharge water is colder than the stream above the LNFH intake during the critical period. This is due in part to using cooler groundwater as part of the inflow to LNFH. Because much of the water in Icicle Creek above LNFH is diverted into LNFH during the critical warm summer months, outflow from LNFH constitutes a large proportion of the stream flow below the discharge point.

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 18° C. This TMDL was approved by EPA on August 3, 2007. This was based on Class A listing for Icicle Creek at the location of the LNFH outfalls; the temperature criterion for Class A waters was 18° C.

b. Revised water quality standards

With the promulgation of Ecology's revised water quality standards in November 2006, the class designations were discontinued. In the new standards, which were approved by EPA on February 11, 2008, the designated uses for Icicle Creek include core summer salmonid habitat, for which the protective criterion is 16° C. This revised water quality standard is more stringent than the wasteload allocation set forth for LNFH in the Temperature TMDL.

2. Dissolved Oxygen, pH, and Phosphorus

a. 2006 TMDL monitoring and modeling study

In its 2006 TMDL monitoring and modeling study of dissolved oxygen, pH and phosphorus of the Wenatchee River watershed including Icicle Creek (Ecology, 2006), Ecology found that pH at the mouth of Icicle Creek was outside the criteria range for Class A waters (above 8.5) and that dissolved oxygen and pH exceedances in the lower Wenatchee River and Icicle Creek (Class A reaches) were caused by excessive periphyton (attached algae) growth. Discussion and conclusions of this study that are relevant to this permit reissuance include:

(1) Nitrogen and phosphorus are essential nutrients for plant growth and aquatic community health. However, when there is an overabundance of nutrients, aquatic plant growth can become overstimulated, a process called eutrophication. If natural reaeration processes cannot compensate for plant respiration and

production in areas affected by eutrophication, dissolved oxygen becomes under-saturated at night and over-saturated during the day, and hydrogen ion (pH) concentrations become over-saturated at night and under-saturated during the day. These diel (i.e., day to night) swings can be harmful to macroinvertebrates and fish.

(2) The Wenatchee River and Icicle Creek are very sensitive to the addition of nutrients. Although inorganic phosphorus levels are relatively low (less than 20 µg/L) compared to other Washington State streams, they are currently too high in the lower reaches to support compliance with the pH water quality standards.

(3) Large reductions of phosphorus are needed from both point and nonpoint sources in the lower Wenatchee River and Icicle Creek.

(4) During the warm, low-flow period of the year (critical period) that typically occurs in late summer, most of Icicle Creek flow originates from LNFH outflow. Most of the LNFH outflow is water from its upstream Icicle Creek diversion; however, LNFH augments the Icicle Creek water diversion with groundwater from a well-field to provide adequate flow for the facility, as well as water from higher elevation lakes nearby. The ability to augment flow presumably creates consistent year-to-year flow conditions at the mouth of Icicle Creek.

(5) The September 2002 flow was assumed to represent 7Q10 conditions. Meteorological conditions from September 2002 were used in the model. The meteorology for 2002 was close to a median year representation.

(6) The September 2002 loads from LNFH main outflow and abatement pond discharge, as well as the calculated diffuse loads in lower Icicle Creek, were used in the model. They represent the best available data for these sources.

Historical data indicate that the season of concern for pH and dissolved oxygen includes the whole periphyton growing season from March through October, when biomass and growth are greatest, interrupted from May through July, due to spring runoff.

b. 2008 Water Quality Assessment

In its 2008 Water Quality Assessment 305(b) report and 303(d) list, which was approved by the EPA on January 29, 2009, Ecology identified various portions of Icicle Creek as not meeting water quality standards for dissolved oxygen and pH (Ecology, 2008).

c. 2009 Wenatchee River Total Maximum Daily Load for pH and Dissolved Oxygen

In 2009, Ecology completed a TMDL for the Wenatchee River watershed, including Icicle Creek, for pH and dissolved oxygen (DO), which was approved by EPA on August 25, 2009 (Ecology, 2009). To achieve the goal of this TMDL to meet water quality standards 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 to LNFH 5.7 µg/L (maximum daily concentration) and 0.52 kg/day of total phosphorus during the critical periods of March through May and July through October (Ecology, 2009).

3. Polychlorinated biphenyls (PCBs)

In 1997, Ecology found PCBs present in the tissue of anadromous fish from the Wenatchee River and Icicle Creek. The USFWS subsequently conducted an evaluation (USFWS, 2005) to determine if there were PCB sources within LNFH that were being discharged in LNFH effluent. This evaluation determined there was no statistical difference between PCB concentrations in stream sediment upstream and downstream of LNFH discharge. Elevated levels were found in sediment of the pollution abatement pond. The study found that "[t]he source of PCB in LNFH settling pond is likely from hatchery fish food since most fish food contains ocean by-catch fish as a protein source in the food (Meador, 2000). Paint used in raceways at LNFH contained Aroclor 1254 (David Schneider letter and analysis report to Dan Davies, December 10, 2004), but the only detected Aroclors in Hatchery settling pond sediment were Aroclor 1242 and 1260. The source of PCB contamination in LNFH settling pond is not likely from PCB-contaminated paint. The level of PCB contamination in fish food appears to be declining over the past two decades (Meador, 2000), and Ecology did not find detectable PCB in the batch of fish food analyzed in its investigation (David Schneider letter and analysis report to Dan Davies, December 10, 2004). The low level of PCB contamination in the settling pond is consistent with recent observations of PCB contamination in fish food (Meador, 2000; David Schneider letter and analysis report to Dan Davies, December 10, 2004)."

LNFH has since cleaned sediment from the pollution abatement pond and properly disposed of removed solids through land application. (Telephone conversation between Steve Croci, Deputy Complex Manager, and Sharon Wilson, EPA Permit Writer, August 18, 2010).

In the 2009 Wenatchee River TMDL (Ecology, 2009), Ecology listed PCBs based in three tissue samples in 1997 from anadromous or nonresident fish. Since no evidence was available to connect the source of the pollutant to this stream segment, Icicle Creek has been placed in the Waters of Concern Category for PCBs. No wasteload allocation for PCBs was developed for LNFH or any other point source. Because there was no evidence that PCBs are in the effluent from LNFH and thus no evidence that the discharge causes or contributes to an exceedance of the Washington State water quality standards for PCBs, no effluent limit was developed for this parameter in the permit.

C. 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 recent ruling of the Ninth Circuit Court of Appeals (US v. Colville Indian Reservation, 606 F.3d 698, (9th Cir. 2010)) affirmed the fishing rights in Icicle Creek of both tribes. In accordance with EPA Region 10 NPDES Permits Unit policy on tribal consultation, EPA will

consult with both tribes to address any concerns they may have about the effect of this permit on their fishing rights in the area.

V. 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. EPA has evaluated the discharge of 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 derivation of technology based and water quality based effluent limits for the proposed permit is described in detail in Appendix A of this Fact Sheet.

B. Technology-based Effluent Limitations

Section 301(b) of the CWA requires industrial dischargers to meet technology-based effluent guidelines, established by 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). And in 1977, enactment of Section 301(b)(2)(E) of the CWA allowed 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 standards does not apply to a *new source*, defined by 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 are *new sources* must meet new source performance standards (NSPS), which are based on the best available demonstrated control technology. To the extent that EPA-promulgated effluent guidelines are not applicable, the Clean Water Act and NPDES regulations at 40 CFR § 125.3(c) require the permit writer to establish BPT, BCT, or BAT effluent limits on a case-by-case basis based on Best Professional Judgment (BPJ).

1. Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (40 CFR Part 451).

On August 23, 2004, EPA published in the *Federal Register* technology-based Effluent Limitations Guidelines for the Concentrated Aquatic Animal Production (CAAP) Point Source Category (ELGs) (EPA, 2004a). These regulations, codified at 40 CFR Part 451, became effective on September 23, 2004.

In the process of developing the CAAP ELGs, EPA identified an extensive list of pollutants of concern in discharges from the aquaculture industry, including several metals, nutrients, solids, BOD_5, bacteria, drugs, and residuals of federally registered pesticides. In the preamble to its draft regulation (EPA, 2002), EPA found that control of total suspended solids (TSS) at 50 mg/L (maximum daily limit) and 30 mg/L (average monthly limit) would reduce the discharge of biochemical oxygen demand (BOD_5) and nutrients by at least 8.7 million pounds per year because these other pollutants are either bound to the solids or are incorporated into them. In its final rule (EPA, 2004a), EPA did not include specific numerical limitations in the ELGs for any pollutants, concluding that best management practices, particularly to control discharge of solids, would provide acceptable control of these pollutants.

EPA also concluded that, although certain bacteria are found at high levels in effluents from settling basins, disinfection is not economically achievable. EPA also allowed permitting authorities to apply technology-based limits for other pollutants and water quality based numeric effluent limits for pollutants considered in the ELG in order to comply with applicable water quality standards.

Although the NPDES permit program applies to all discharges from concentrated aquatic animal production 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. Even though LNFH produces less than 100,000 pounds of fish per year, EPA is using its best professional judgment by using the ELGs to establish some of the technology-based limitations of the draft permit. EPA has determined that implementation of the ELGs for LNFH provides an important level of protection for Icicle Creek and provides for consistency with other the federal and tribal hatcheries in Washington State. The following are narrative requirements from the ELGs that are included in the permit:

a. Dischargers must report the following events to the permitting authority (EPA):

(1) *The use of an investigational new animal drug (INAD) or any extra-label drug, which may lead to the discharge of the drug to Waters of the United States. This reporting is not required for an INAD or an extra-label drug that has been previously approved by the Food and Drug Administration (FDA) for a different species or disease, if it is used at or below the previously approved dose rate and involves similar conditions of use.[40 C.F.R. §451.3(a)]*

(2) *Failure of or damage to a containment system that results in unanticipated discharges of pollutants to waters of the U.S. [40 C.F.R. §451.3(b)]*

(3) *Spills of drugs, pesticides, or feed that result in discharges to waters of the U.S. [40 C.F.R. §451.3(c)]*

b. Dischargers must develop and maintain a Best Management Practices (BMP) Plan, which addresses the following activities at the facility.

(1) *Materials storage. The discharger must properly store drugs, pesticides, and feed in a manner to prevent spills, and implement procedures for containing, cleaning, and disposing of any spilled material. [40 C.F.R. §451.11(b)]*

(2) *Structural maintenance. The discharger must inspect, conduct regular maintenance of, and repair the production and wastewater treatment systems on a routine basis. [40 C.F.R. §451.11(c)]*

(3) *Recordkeeping. The discharger must document feed amounts and numbers and weights of aquatic animals to calculate feed conversion ratios, and document the frequency of cleanings, inspections, maintenance, and repairs. [40 C.F.R. §451.11(d)]*

(4) *Training. The discharger must train personnel in spill prevention and response and on the proper operation and cleaning of production and wastewater treatment systems. [40 C.F.R. §451.11(e)]*

2. Washington Hatchery General Permit and Ecology General Permit

EPA has considered the precedents set by the Ecology General Permit issued by Ecology in 2010 (Ecology, 2010), which incorporates Ecology's technology-based, minimum discharge standards for upland and marine finfish facilities at WAC 173-221A-100, and EPA's Washington Hatchery Permit (EPA, 2009). EPA has determined that its Washington Hatchery Permit and the Ecology General Permit identify some effluent limitations and best management practices (BMPs) that are representative of BPT, BCT and BAT for pollutants that are likely to be contained in this discharge. Therefore, based on BPJ, EPA has included similar effluent limits and conditions in this draft permit. Certain prohibitions which apply to all facilities covered under the Washington Hatchery Permit and the Ecology General Permit are also included in this draft permit. These permits conditions are discussed below.

3. Proposed Technology-based Limits

The technology-based effluent limitations EPA is proposing are consistent with those included in the Washington Hatchery Permit issued by EPA in 2009 for federal and tribal hatcheries operating in Washington as well as with those in the Ecology General Permit.

In drafting the Ecology General Permit, Ecology assessed compliance with the previous general permit based on review of the Discharge Monitoring Reports (DMRs) received and on the results of site inspections. Most facilities complied with their permit conditions. The most common permit violations by the hatching and rearing facilities were total suspended solids limit exceedances from the off-line settling basin. During extremely high water events, facilities exceeded effluent solids permit limits usually because high flow volumes flushed influent solids through the system without allowing them to settle. Because the numeric technology-based effluent limits established in the

Ecology General Permit have been found to be generally achievable, EPA has determined that they should be applied in this permit as performance-based technology-based limits.

The numeric technology-based effluent limitations established for LNFH discharges are identified below in Tables 1, 2, and 3.

Table 1: Technology-based Limits for Rearing Ponds and Raceways except during Drawdown for Fish Release

Parameter	Monthly Average	Daily Maximum	Instantaneous Maximum
Settleable Solids	0.1 mL/L	--	--
Total Suspended Solids (TSS)	5.0 mg/L (net)	--	15.0 mg/L (net)
	622 kg/day (net)	921 kg/day	--
Total Phosphorus	0.02 mg/L (interim limit)[1]	0.04 mg/L (interim limit)[1]	--
	2.5 kg/day (interim)[8]	4.7 kg/day (interim)[8]	--

[1] The interim total phosphorus limits apply during the critical periods of March 1 through May 31 and July 1 through October 31 until the facility is able to comply with the final limits, but no later than the final compliance date of *[insert final compliance date]*.

Table 2: Technology-based Limits for Raceways and Adult Ponds during Drawdown for Fish Release

Parameter	Monthly Average	Daily Maximum	Instantaneous Maximum
Settleable Solids	--	--	1.0 mL/L
Total Suspended Solids	--	--	100 mg/L
	--	--	12,431.2 kg/day
Total Phosphorus	0.02 mg/L (interim limit)[2]	0.04 mg/L (interim limit)[2]	--
	2.5 kg/day (interim limit)[2]	5.0 kg/day (interim limit)[2]	--

[2] The interim total phosphorus limits apply during the critical periods of March 1 through May 31 and July 1 through October 31 until the facility is able to comply with the final limits, but no later than the final compliance date of *[insert final compliance date]*.

Table 3: Technology-based Limits for the Pollution Abatement Ponds			
Parameter	**Monthly Average**	**Daily Maximum**	**Instantaneous Maximum**
Settleable Solids	--	--	1.0 mL/L
Total Suspended Solids	--	--	100 mg/L
	--	--	3274.6 kg/day
Total Phosphorus	0.10 mg/L (interim limit)[3]	0.16 mg/L (interim limit)[3]	--
	3.3 kg/day (interim limit)[3]	5.2 kg/day (interim limit)[3]	--

[3] The interim total phosphorus limits apply during the critical periods of March 1 through May 31 and July 1 through October 31 until the facility is able to comply with the final limits, but no later than the final compliance date of *[insert final compliance date]*.

In addition, as discussed above, EPA has also included additional narrative technology-based requirements based on the ELG. Specifically, as discussed above, the proposed permit limits the use of drugs, disinfectants, and other chemicals to those approved for hatchery use by the United States Food and Drug Administration (FDA) or EPA. It also requires that the permittee record and report the use of drugs, disinfectants, or chemicals orally or in writing. In addition, it requires the development of a BMP plan that addresses material storage, structural maintenance, recordkeeping, and training.

C. Water Quality-Based Effluent Limitations and Permit Requirements

1. Phosphorus Limits

a. Basis for Interim Limits

Under the provisions of BPJ, EPA has applied interim performance-based (technology-based) limits derived from past effluent levels from the facility. This will ensure that the effluent quality does not deteriorate during the period before final compliance is achieved The total phosphorus limits will apply seasonally from March 1 through May 31 and July 1 through October 31 of each year; this is the critical period established in the TMDL when phosphorus in the LNFH discharge has a reasonable potential to contribute to periphyton growth in the receiving waters to the extent that pH and DO standards may be exceeded.

b. Basis for Final Limit

Pursuant to 40 CFR §122.44(d)(1)(vii), EPA is required to develop water quality-based effluent limitations that are consistent with the requirements of any WLA in an EPA-approved TMDL. The Wenatchee River Dissolved Oxygen and pH TMDL established a total phosphorus WLA for LNFH of 5.7 µg/L (maximum daily concentration) and 0.52 kg/day (maximum daily mass) during the critical periods of March through May and July through October (Ecology, 2009). Ecology has provided a 401 certification with a maximum daily phosphorus mass limit equal to the wasteload allocation in the TMDL, for which it grants a schedule of five years from the date of permit issuance to come into compliance (Ecology, 2010a). Pursuant to CWA Section 401(d), EPA is required to include conditions set forth in a CWA Section 401 Certification. EPA has included both the maximum daily effluent limit of 0.52 kg/day based upon the TMDL and Ecology's CWA Section 401 Certification. In addition, based on the TMDL, EPA has included the daily maximum concentration limit of 5.7 µg/L. We are specifically inviting comment on whether both limits are necessary.

In addition, EPA has included a 5 year compliance schedule in the permit which was a condition of Ecology's Section 401 Certification.

2. Temperature

The LNFH discharge constitutes a larger proportion of Icicle Creek during the low streamflow summer months than it does the rest of the year. The temperature of LNFH discharge is cooler than the natural stream temperatures measured in Icicle Creek above the location on Icicle Creek that receives the piped water from the bottom of Snow Lake during the critical summer period.

In a 2005 study by USFWS, results of monitoring of Icicle Creek and LNFH discharges were reported and discussed (USFWS, 2006). This monitoring documents that the water temperature of Icicle Creek downstream of LNFH discharge is cooler during the critical summer period than that upstream of inflow from Snow Creek.

As detailed in § IV.B.1, above, the TMDL for temperature provides a WLA of 18° C for the LNFH discharge. Subsequently, EPA approved revised water quality standards, which apply a standard of 16° C to Icicle Creek. In the Temperature TMDL, Ecology assigned a WLA for LNFH that was equivalent to the water quality standard at that time (18° C). Since the applicable water quality standard of 16° C is more stringent than the WLA in the TMDL, EPA has included a temperature effluent limit of 16° C. This ensures that the permit meets the current water quality standard. In addition, by including this effluent limit, EPA is ensuring that the WLA in the TMDL is also met.

3. Proposed water-quality-based limits

The following limits are applied to protect water quality standards in the receiving stream.

Table 4: Water quality based Limits for Rearing Ponds and Raceways except during Drawdown for Fish Release		
Parameter	**Monthly Average**	**Daily Maximum**
Temperature	--	16 ° C[4]
Total Residual Chlorine	0.009 mg/L	0.018 mg/L[5,6]
	1.1 kg/day	2.2 kg/day
Total Phosphorus	--	5.7 µg/L (final limit)[7]
	--	0.52 kg/day (final limit)[7]

[4] The limit is on the 7-day average of daily maximum temperatures.

[5] The maximum daily limit for total residual chlorine is an instantaneous maximum limit.

[6] The permittee must report to EPA and Ecology within 24 hours of an instantaneous maximum limit violation for total residual chlorine. See Part VII.G.

[7] 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].*

Table 5: Water quality based Limits for Raceways and Adult Ponds during Drawdown for Fish Release	
Parameter	**Instantaneous Maximum**
Temperature	16° C[8]
Total Phosphorus	5.7 µg/L (final limit)[9]
	0.52 kg/day (final limit)[9]

[8] The limit is on the 7-day average of daily maximum temperatures.

[9] The final limitations for total phosphorus are daily maximum limits that apply to the total **combined hatchery discharge from the raceways, adult ponds, and pollution abatement pond** 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].*

Table 6: Water quality based Limits for the Pollution Abatement Ponds	
Parameter	**Daily Maximum**
Temperature	16° C[10]
Total Phosphorus	5.7 µg/L (final limit)[11]
	0.52 kg/day (final limit)[11]

[10] The limit is on the 7-day average of daily maximum temperatures.

[11] The final limitations for total phosphorus are daily maximum limits that apply to the total **combined hatchery discharge from the raceways, adult ponds, and pollution abatement pond** 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]*.

D. Prohibited Discharges and Practices

Included in the proposed permit are narrative discharge and practice prohibitions derived from water quality standards for upland finfish facilities (WAC 173-221A-100(5); many are also practices required through inclusion in and implementation of the Best Management Practices plan (see §VII, below).

VI. MONITORING AND REPORTING REQUIREMENTS

In accordance with Section 308 of the CWA, 33 U.S.C. § 1318, and EPA regulations at 40 CFR §122.44(i), monitoring requirements are included in an NPDES permit to determine compliance with effluent limitations, to gather data to evaluate the need for future effluent limitations, and/or to monitor impacts on the receiving water. All analyses required by the permit must be conducted in accordance with methods and procedures established at 40 CFR Part 136.

A. Periodic Effluent Monitoring

Routine effluent monitoring, as presented in Table 5, is required. EPA has determined that the proposed monitoring frequencies and sample types represent the sampling frequency required to adequately characterize the effluent and to adequately monitor facility performance. Furthermore, phosphorus, temperature, and flow monitoring of the effluent has been included as conditions of Ecology's 401 certification of the permit as has sediment monitoring.

1. Raceway and Adult Pond Discharges (outfalls 001 and 004)

The permittee must monitor flow-through rearing pond, raceway discharges, and all other discharges except offline settling basin discharges and discharges from the adult ponds or raceways during drawdown for fish release as specified in Table 7. Since one of the TSS

limits is an instantaneous maximum limit, EPA has included a requirement to analyze a grab sample in addition to the required composite sampling for this parameter because a composite sample cannot give a result to which an instantaneous maximum limit can apply.

Notes continue on next page.

Table 7: Monitoring Requirements for Outfalls 001 and 004: Discharges from Raceways and Adult Ponds

Parameter	Sample Location	Sampling Frequency	Type of Samples
Flow (MGD)	I & E[12]	hourly	Meter or other approved method[13]
Settleable Solids (ml/L)	E	2/month	Grab[14]
Total Suspended Solids (mg/L)	I[15] & E	monthly	Grab[14] & Composite[16]
Total Phosphorus (mg/L)	E	2/month (3/1—5/31, 7/1—10/31)	Composite[16]
Temperature (° C)	I & E	hourly	meter
Total Residual Chlorine (mg/L)	E	Daily during periods of disinfectant use	Grab
Disinfectants other than chlorine (mg/L)	E	Daily during periods of disinfectant use	Grab

[12] "I" = Hatchery or rearing facility influent; E = Hatchery effluent prior to mixing with the receiving waters or any other flow.

[13] 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.

[14] For reporting net discharges, influent and effluent grab samples are to be taken on the same day. Effluent sample must be taken during rearing pond or raceway cleaning. If the frequency of rearing pond or raceway cleaning is less than twice per week, the sample may be collected immediately following fish feeding. The influent sample concentration must be considered to be zero if the sample was not collected and/or analyzed. Net values will be accepted if both influent and effluent sample values are reported on the DMR form.

[15] For reporting net values, the Permittee must report influent and effluent values on the DMR form. The collection of this measurement for solids analysis is optional if the Permittee chooses to represent the influent measurement as zero concentration. Influent and effluent solids must be characteristically similar to use net calculations. EPA may require further characterization of the influent and effluent solids to demonstrate comparability.

[16] The composite sample must be a combination of at least six representative grab samples collected throughout the normal working day. At least one sample must be collected while the fish are being fed and another during rearing

pond or raceway cleaning. Equal volumes of each of the six grab samples must be combined and must constitute the composite sample.

Because of emerging information about effects of hydrogen peroxide discharges, EPA has broadened the effluent monitoring to all disinfectants. This will allow EPA to gather information for future analyses of water quality effects.

2. Discharges from Raceways and Adult Ponds (Outfalls 001 and 004) during drawdowns for fish release

Samples must be collected during drawdowns for fish release regardless of pounds of fish on-hand as specified in Table 8.

Table 8: Monitoring Requirements for Outfalls 001 and 004: Discharges from Raceways and Adult Ponds during Drawdowns for Fish Release

Parameter	Sample Location	Sampling Frequency[17]	Type of Samples[18]
Flow (gpd)	E	Hourly	meter[19]
Settleable Solids (ml/L)	E[20]	1/drawdown	Grab
Total Suspended Solids (mg/L)	E	1/drawdown	Grab
Total Phosphorus (mg/L)	E	1/drawdown (3/1—5/31 and 7/1—10/31)	Grab
Temperature (° C)	E	Hourly	meter

[17] Samples of the discharge during drawdown of raceways or rearing pond for fish release sample(s) must be collected during the last quarter of the volume of the rearing pond or raceway drawdown for release event.

[18] 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.

[19] Appropriate flow measurements 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.

[20] "E" means "Effluent." Rearing pond or raceway effluent grab sample must be taken prior to mixing with receiving waters or any other flow.

3. Monitoring Discharges of Rearing Vessel Disinfection Water

Rearing vessel disinfection water that has been treated with chlorine or other disinfectants must be tested before it is allowed to be discharged to waters of the United States; see Table 9, below.

Table 9: Monitoring Requirement for Discharges of Rearing Vessel Disinfection Water

Parameter	Sample Point	Sampling Frequency	Type of Sample
Total residual chlorine or other disinfectants (mg/L)	effluent	1/discharge	grab

4. Pollution Abatement Ponds

a. Effluent (Outfall 002)

The pollution abatement pond discharge must be monitored at the sampling frequency specified in Table 10 during every month in which it discharges. Ammonia and pH monitoring are included to gather data to assess the reasonable potential of the discharge to cause or contribute to exceedances of the ammonia water quality standard in the next permit cycle.

See notes on next page.

Table 10: Monitoring Requirements for Outfall 002 Discharge from the Pollution Abatement Ponds

Parameter	Sample Location	Sampling Frequency[21]	Type of Samples[22]
Flow (GPD)	EW[23]	hourly[24]	Meter or other approved method[25]
Settleable Solids (ml/L)	EW	1/month[24]	Grab
Total Suspended Solids (mg/L)	IW[26] & EW	1/month[24]	Grab
Total Phosphorus (mg/L)	EW	2/month[24] (3/1—5/31 and 7/1—10/31)	Grab
Temperature (° C)	EW	Hourly	meter

Table 10: Monitoring Requirements for Outfall 002 Discharge from the Pollution Abatement Ponds			
Parameter	**Sample Location**	**Sampling Frequency[21]**	**Type of Samples[22]**
Ammonia (mg/L)	EW	quarterly[27]	Grab
pH (s.u.)[28]	EW	quarterly[27]	Grab

[21] Pollution abatement pond discharges must be monitored for all parameters except total phosphorus 12 months out of the year if there is a discharge, regardless of pounds of fish present; total phosphorus must be monitored in the months specified.

[22] Pollution abatement pond effluent samples must be collected during the last quarter of a rearing pond or raceway cleaning event.

[23] "EW" means offline settling basin effluent sample taken prior to mixing with any other hatchery or rearing flows or receiving waters.

[24] If the pollution abatement pond discharges less frequently than the required sampling frequency, the testing frequency must be the frequency of its discharge. Testing of the pollution abatement pond discharge is unnecessary if the pond does not discharge during a reporting period. "No Discharge" must be noted in the comments section on the DMR form.

[25] Appropriate flow measurements 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.

[26] "IW" means pollutions abatement pond influent. The collection of this measurement for TSS analysis is optional if the Permittee chooses to represent the influent measurement as zero concentration. Influent and effluent TSS must be characteristically similar to use net calculations.

[27] Quarterly monitoring must begin in the first full calendar quarter of permit coverage.

[28] pH monitoring must be taken concurrently with the grab sample for the ammonia sample.

b. Sediment

In accordance with requirements in Ecology's 401 certification and pursuant to CWA Section 401(d), 33 U.S.C. § 1341(d), the permit requires

1. sampling of the sediment in the pollution abatement ponds for total PCBs, hexacholorcyclohexanes, and endrin once each calendar year.

2. sampling and analysis of the sediment in the pollution abatement ponds, sediment above the hatchery intake, and sediment below the hatchery outfall for total PCBs, endrin, endosulfan II, and DDT at least once before January 7, 2015.

B. Surface Water Monitoring

1. Ammonia Monitoring

EPA has included quarterly monitoring for ammonia, pH, and temperature immediately upstream, outside the influence of the discharge from the pollution abatement ponds. This data is needed to assess the reasonable potential of the discharge to cause or contribute to exceedances of the water quality standard for ammonia in the next permit cycle; see Table 11.

2. Temperature Monitoring

To complement temperature monitoring required in Ecology's 401 certification of influent and effluent flows, EPA has determined that gathering data on the temperature of Icicle Creek both upstream and downstream of the LNFH discharge point would provide data to evaluate how much its discharge affects the temperature of the stream; see Table 11.

3. Turbidity Monitoring

In accordance with requirements in Ecology's 401 certification and pursuant to CWA Section 401(d), 33 U.S.C. § 1341(d), the permit requires turbidity monitoring at the outfall and upstream of the outfall during cleaning events to get background levels in Icicle Creek; see Table 11.

4. Phosphorus Monitoring

In accordance with requirements in Ecology's 401 certification and pursuant to CWA Section 401(d), the permit requires phosphorus monitoring upstream of the outfall to gather data on background levels in Icicle Creek; see Table 11.

See notes on next page.

Table 11:
Surface Water Monitoring Requirements

Parameter	Frequency	Timing	Location	Type of Sample
Temperature, °C.	Weekly	March – May & July – October	Upstream[29] & downstream[30]	grab or continuous
	Quarterly	Throughout the year	Upstream[31]	grab[32]
Total Phosphorus, mg/L & kg/day	Weekly	March – May & July – October	Upstream[29] & downstream[30]	grab
pH, s.u.	Quarterly	Throughout the year	Upstream[31]	grab[32]

Table 11: Surface Water Monitoring Requirements				
Parameter	**Frequency**	**Timing**	**Location**	**Type of Sample**
Ammonia Nitrogen as N, mg/L	Quarterly	Throughout the year	Upstream[31]	grab[32]
Turbidity, NTU	During cleaning events[33]	Throughout the year	At the outfall and upstream of the outfall	Turbidity meter[34]

[29] Above the intake for the hatchery.

[30] At a location where the hatchery effluent has achieved complete mixing with receiving water, if any.

[31] Above the outfall for the pollution abatement pond.

[32] Quarterly samples for temperature, pH, and ammonia must be collected concurrently and close in time to the sampling of the discharge from the pollution abatement pond for these parameters.

[33] Cleaning events include those of the sand settling basin, the conveyance channel, behind the fish screens and the pollution abatement pond.

[34] 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).

C. Method Detection Limits

All samples must be analyzed to achieve method detection limits (MDLs) that are equivalent to or less than those listed in Table 12. These are levels that EPA has determined are achievable using EPA methods. If the results reported by the permittee have consistently been well above the required MDLs, it may request less stringent MDLs.

Table 12 Method Detection Limits	
Parameter	**Method Detection Limit (MDL)**
Total Phosphorus	10 µg/L
Ammonia Nitrogen as N	10 µg/L
pH	0.1 S.U.
Temperature	0.1°C
Turbidity	0 NTU

D. Reporting Requirements

Reporting requirements are included in the permit consistent with those applied to other federal and tribal hatcheries in EPA's general permit. Major requirements include monthly reporting of effluent monitoring and surface water monitoring, certification of completion of a Best Management Practices Plan and of a Quality Assurance Plan, annual reporting of compliance schedule progress, annual report of operations, and reporting of INAD and extra-label drug use, of spills, and of structural failures.

In addition, reporting requirements have been included to comply with Ecology's 401 certification of the permit. See §IX.D, below.

VII. BEST MANAGEMENT PRACTICES

The Clean Water Act authorizes and EPA regulations at 40 CFR §122.44 (k) provide for 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 LNFH to adhere to specific operating limitations and BMPs and requires it to develop and implement a BMP Plan within 90 days of the effective date of the 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 including the specific operating limitations and best management practices listed in the permit.

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

VIII. STANDARD PERMIT PROVISIONS

Sections V, VI, and VII of the draft permit contain standard regulatory language that is required in all NPDES permits. These permit provisions are based largely upon 40 CFR Part 122, Subpart C and include requirements pertaining to monitoring, recording, reporting, and compliance responsibilities. These sections will not be modified because of comments on this general permit, since the language is standard language based on the regulations.

- Representative Sampling from 40 CFR §122.41(j)(1)
- Monitoring Procedures from 40 CFR §122.41(j)(4)
- Duty to Comply from 40 CFR §122.41(a)
- Proper Operation and Maintenance from 40 CFR §122.41(e)
- Duty to Mitigate from 40 CFR §122.41(d)
- Toxic Pollutants from 40 CFR §§122.41(a)(1-2), 122.44(b, e), and 125.3
- Removed Substances from 40 CFR §122.41(a)(1) and (o) and CWA §405(A)
- Need to Halt or Reduce Activity not a Defense from 40 CFR §122.41(c)

- Bypass of Wastewater Treatment from 40 CFR §122.41(m)
- Upset Conditions from 40 CFR §122.41(n)
- Inspection and Entry from 40 CFR §122.41(i)
- Penalties for Violations of Permit Conditions from 40 CFR §122.41(a)(2-3)
- Duty to Provide Information from 40 CFR §122.41(h)
- Records Contents from 40 CFR §122.41(j)(3)
- Submittal of Reports from 40 CFR§122.41(h, j, and l)
- Retention of Records and Reports from 40 CFR §122.41(j)(2)
- On-Site Availability of Records and Reports from 40 CFR §122.41(i)(2)
- Availability of Reports for Public Review from 40 CFR §§122.1(e) and 122.7(1) and 40 CFR §2.101
- Planned Changes from 40 CFR §122.41(l)(1)
- Changes in the Discharge of Toxic Pollutants from 40 CFR §122.42(a)
- Anticipated Noncompliance from 40 CFR §122.41(l)(2)
- Reporting of Noncompliance from 40 CFR §§122.41(l)(6-7) and 122.44(g)
- Permit Actions from 40 CFR §122.44(c) and 40 CFR §§122.61 - 122.64
- Duty to Reapply from 40 CFR §122.41(b)
- Incorrect Information and Omissions from 40 CFR §122.41(l)(8)
- Signatory Requirements from 40 CFR §122.41(k)
- Property Rights from 40 CFR §122.41(g)
- Transfers from 40 CFR §122.41(l)(3)
- Oil and Hazardous Substance Liability from 40 CFR §125.3, 40 CFR Part 300, 33 CFR §153.10(e), and Section 311 of the CWA
- State Laws from 40 CFR §122.1(f) and Section 510 of the CWA, and Reopening of the Permit from 40 CFR §§122.41(f) and 122.44(c).

IX. OTHER REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act at 16 U.S.C. §1536 requires EPA to consult with National Oceanographic and Atmospheric Administration (NOAA) Fisheries and the U.S. Fish and Wildlife Service (USFWS) to insure that this NPDES permitting activity will not jeopardize the continued existence of any endangered or threatened species or of any species proposed to be listed as endangered or threatened nor result in the destruction or adverse modification of critical habitat for such species.

To address the requirements of the Endangered Species Act, EPA has prepared a biological evaluation, which will be reviewed by the NOAA Fisheries and the U.S. Fish and Wildlife Service for consistency with those programs established for the conservation of endangered and threatened species. A summary of the effects determination on listed species is found in Table 13, below.

Table 13

Summary of Effects on Threatened and Endangered Species

Species	Effects Determinations		
	NE[35]	NLAA[36]	LAA[37]
Fish			
Chinook Salmon -- Upper Columbia River Spring Run ESU		X	
Steelhead -- Upper Columbia River ESU		X	
Bull Trout – Columbia River Basin DPS		X	
Birds			
Northern Spotted Owl	X		
Marbled Murrelet	X		
Terrestrial Mammals			
Grizzly Bear	X		
Canada Lynx	X		
Gray Wolf	X		
Plants			
Showy stickseed	X		
Ute Ladies'-tresses	X		
Wenatchee Mountains checker-mallow	X		

[35] NE = No effect
[36] NLAA = May affect, but is not likely to adversely affect
[37] LAA = May affect, likely to adversely affect

EPA believes that discharges in compliance with the proposed effluent limitations and monitoring requirements will not cause any violation of water quality standards established for the protection of aquatic life nor affect any listed, threatened or endangered species. Nevertheless, EPA is providing copies of the proposed permit and fact sheet to these agencies for their review. Based on comments received from these agencies, EPA may engage in formal conference and consultation processes for ESA Section 7 considerations (per 50 CFR Part 402).

B. Magnuson - Stevens Fishery Conservation and Management Act

The mandate of the Magnuson-Stevens Act at 16 U.S.C. §1855 (b) (2) requires EPA to consult with the NOAA Fisheries to ensure that this NPDES permitting activity will not adversely affect essential fish habitat. To address the requirements of the Magnuson - Stevens Act, EPA has prepared a biological evaluation, which will be reviewed by the NOAA Fisheries for consistency with the objective of protection of essential fish habitat.

C. National Environmental Policy Act (NEPA)

NEPA requires federal agencies to conduct environmental review of their actions (including permitting activity) that may significantly affect the quality of the human environment (42 U.S.C. § 4322). EPA regulations which implement NEPA, at 40 CFR §122.29 (c), clarify

this requirement as it pertains to NPDES permitting actions as requiring NEPA environmental review for the issuance of an NPDES permit for new sources only.

A new source is defined at 40 CFR §122.2 as any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which commenced:

1. After promulgation of standards of performance under Section 306 of the CWA,. which are applicable to such source, or

2. After proposal of standards of performance in accordance with Section 306 of the CWA, which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

LNFH was constructed between 1938 and 1940. Since LNFH was constructed before the promulgation of new source performance standards, it is not a "new source." Therefore, NEPA review is not required for this permit.

D. State Certification

Section 401 of the CWA, 33 U.S.C. §1341, requires certification from Washington Department of Ecology that discharges authorized under the permit will comply with applicable provisions of the Act, including State water quality standards adopted pursuant to those applicable provisions. The permit cannot become effective until Ecology has waived or granted certification. On January 7, 2010, Ecology provided 401 Certification for the Leavenworth National Fish Hatchery in accordance with procedures established at 40 CFR §§124.53, 124.54, and 123.55. The requirements of that certification have been incorporated into the permit. The following requirements in the certification were incorporated directly into the body of the permit; the entire certification is incorporated into the permit as Appendix A.

1. Temperature and flow monitoring – hourly monitoring of influent and effluent flows. (§II.A.2.a, b, & d)

2. Annual summary of temperature and flow monitoring data – submitted to Ecology by December 31. (§IV.F)

3. Final total phosphorus daily maximum limit of 0.52 kg/day within five years of permit issuance. (§I.D.2, 3, & 4 and §I.E)

4. Monitoring of total phosphorus in the effluent and in Icicle Creek upstream of the hatchery and simultaneous flow monitoring. (§II.A.2.a, b, & d and §II.C)

5. Monitoring of sediment in the pollution abatement ponds for total PCBs, hexacholorcyclohexanes and endrin every twelve months. (§II.B)

6. Monitoring of sediment in the pollution abatement ponds, above the hatchery intake and below the hatchery outfall for total PCB, endrin, endosulfan II and DDT once during the five year term of the permit. (§II.B)

7. Turbidity monitoring of the effluent during specified cleaning events along with background samples (§II.C)

As previously explained, the 401 Certification has been appealed by Wild Fish Conservancy and the Center for Environmental Law and Policy. The appeal is ongoing. Pursuant to 40 CFR § 124.55(b), if the State of Washington Pollution Control Hearings Board (PCHB) issues a decision that stays, vacates or remands the Section 401 Certification, Ecology may issue a modified certification or notice of waiver. If a modified certification is received prior to issuance of the permit, EPA will ensure that the permit is consistent with any more stringent conditions in the modified certification. If a modified certification is received after EPA issues the permit, EPA may modify the permit on request of LNFH to the extent necessary to delete any conditions based on a condition in a certification that has been invalidated by the PCHB.

X. DEFINITIONS AND ACRONYMS

Aquaculture facility means a hatchery, fish farm, or other facility which contains, grows, or holds fish for later harvest (or process) and sale or for release.

Average monthly limit means the maximum allowable average of "daily discharges" over a monitoring month, calculated as the sum of all "daily discharges" measured during a monitoring month divided by the number of "daily discharges" measured during that month. It may also be referred to as the "monthly average discharge"(40 CFR §122.2).

BAT means best available technology economically achievable

BCT means best conventional pollutant control technology

BMPs (Best Management Practices) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States". BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage of raw material storage (40 CFR §122.2).

BOD_5 (Biochemical oxygen demand) means the measure of the oxygen required to break down organic materials in water. Higher organic loads require larger amounts of oxygen and may reduce the amount of oxygen available for fish and aquatic life below acceptable levels. Unless otherwise specified, this term means the 5-day BOD incubated at 20° C. (BOD_5)

BPJ means best professional judgment.

BPT means best practicable control technology currently available.

Beneficial use means a desirable use of a water resource, such as recreation (fishing, boating, swimming) and water supply.

Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

CAAP means concentrated aquatic animal production.

CFR means the Code of Federal Regulations.

cfs means cubic feet per second.

CWA means the Clean Water Act, 33 U.S.C. §1251 *et seq.*

Complex means the Leavenworth National Fish Hatchery Complex, which includes Leavenworth NFH, Entiat NFH, and Winthrop NFH.

Composite sample means a combination of at least 4 discrete sample aliquots, collected from the same location at intervals of at least 30 minutes between dawn and dusk, or four or more discrete samples taken over a 24-hour period. If there are multiple effluent discharge points and/or influent points, samples from all points proportionally to their respective flows.

DMR means discharge monitoring report.

DO means dissolved oxygen.

Daily discharge means the "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limits expressed as mass "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day (40 CFR 122.2).

Daily maximum limit (or discharge limitation) means the highest allowable "daily discharge" (40 CFR §122.2).

Director means the Director of the EPA Region 10 Office of Water and Watersheds.

Discharge, when used without qualification, means the "discharge of a pollutant."

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or (b) Any addition of any pollutant or combination of

pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by humans; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger" (40 CFR §122.2).

Disinfectant means any chemical used to reduce pathogenic or objectionable organisms, including but not limited to algicides, fungicides, and pesticides.

Disinfection means any method of reducing the pathogenic or objectionable organisms by means of chemical application or other acceptable means.

Draft permit means a document prepared under 40 CFR §124.6 indicating the Director's tentative decision to issue, modify, reissue, or reissue a permit (40 CFR §122.2).

ELGs (effluent limitations guidelines) means regulations published by the Administrator under Section 304(b) of CWA to adopt or revise "effluent limitations." (40 CFR §122.2).

EPA means the United States Environmental Protection Agency.

Ecology means the Washington State Department of Ecology.

Ecology GP means the Upland Fin-Fish Hatching and Rearing General Permit issued by the Washington Department of Ecology.

Effluent means wastewater discharged from a point source, such as a pipe.

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean (40 CFR §122.2).

Extra-label Drug Use means a drug approved under the Federal Food, Drug, and Cosmetic Act that is not used in accordance with the approved label directions; see 21 CFR 530. [40 CFR §451.2(f)]

FDA means the United States Food and Drug Administration.

FFDCA means Federal Food, Drug and Cosmetic Act.

FR (or Fed. Reg.) means the Federal Register, the official daily publication for rules, proposed rules, and notices of Federal agencies and organizations, as well as executive orders and other presidential documents.

GP (general permit) means an NPDES permit issued under 40 CFR §122.28 authorizing a category of discharges under the CWA within a geographical area. (40 CFR §122.2)

Grab sample means a single sample or measurement taken at a specific time over a period of less than 15 minutes.

INAD means an investigational new animal drug for which there is a valid exemption in effect under Section 512(j) of the FFDCA to conduct experiments. (40 CFR §451.2(h))

Influent means the water entering a facility or part of a facility.

Instantaneous maximum limit means maximum allowable concentration of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.

LNFH means Leavenworth National Fish Hatchery.

MGD (or mgd) means million gallons per day.

mg/L means milligrams of solute per liter of solution, equivalent to parts per million, assuming unit density.

ml/L means milliliters per liter.

Maximum means the highest measured discharge or pollutant level in a waste stream during the time period of interest.

Monthly average means the average of "daily discharges" over a monitoring month, calculated as the sum of all "daily discharges" measured during a monitoring month divided by the number of "daily discharges" measured during that month (40 CFR §122.2).

NFH means National Fish Hatchery.

NOAA means National Oceanic and Atmospheric Administration.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of CWA (40 CFR §122.2).

NSPS means New Source Performance Standards.

NTU means nephelometric turbidity unit, a measure of turbidity in surface waters.

Net means the difference between effluent concentration and influent concentration (or loads).

Nutrients means any substance assimilated by living things that promotes growth. The term is generally applied to nitrogen and phosphorus in wastewater, but is also applied to other essential and trace elements.

OLSB (Off-line settling basin) means a constructed retention basin that receives wastewater from an aquaculture facility for the retention and treatment of wastewater through settling of solids and around which such wastewaters can be directed during periods of solids removal. At LNFH, this is the pollution abatement ponds.

PCB means polychlorinated biphenyl.

PCHB means the Washington State Pollution Control Hearings Board.

Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (40 CFR §122.2).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. 40 CFR §401.11(f).

Pollution means the man-made or man induced alteration of the chemical, physical, biological and radiological integrity of water. 40 CFR §401.11(g).

Production means the act of harvesting, processing or releasing fish in a hatchery or the harvest weight of fish contained, grown, or held in a CAAP facility in a year. 40 CFR §122 Appx.C

RM means River Mile, as measured from the mouth of the river or stream.

TMDL (total maximum daily load) means the sum of the individual wasteload allocations (WLAs) for point sources and land allocations (LAs) for nonpoint sources and natural background. (40 CFR 130.2(i)).

TSD means *Technical Support Document for Water Quality-Based Toxics Control* (EPA 1991).

TSS means total suspended solids, of which the concentration in water is measured in mg/L.

Technology-based effluent limits (or limitations) means wastewater treatment requirements applied under Section 301(b) of the Clean Water Act that represent the minimum level of control

that must be imposed in a permit issued under Section 402 of the Clean Water Act (40 CFR §125.3(a)).

Toxic pollutant means those pollutants, or combinations of pollutants, including disease-causing agents, which, after discharge and upon exposure, ingestion, inhalation or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will, on the basis of information available to the Administrator, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction) or physical deformation in such organisms or their offspring. (CWA §502(13))

Toxic substance means substances that, when discharged above natural background levels in waters of the state, have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the Department of Ecology.

U.S.C. means United States Code.

USEPA means the United States Environmental Protection Agency.

USFWS means the United States Fish and Wildlife Service.

Upland hatchery means a hatchery not located within the waters of the State (or, by extension, the U.S.) where fish are hatched, fed, nurtured, held, maintained, or reared to reach the size of release or for market sale. (WAC 173-221A-030)

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR §122.41 (n)(1)).

WAC means Washington Administrative Code.

WET (Whole effluent toxicity) means the aggregate toxic effect of an effluent measured directly by a toxicity test (40 CFR §122.2).

WLA means wasteload allocation, the amount of pollutant assigned to a specific discharger in a TMDL or, in the absence of a TMDL, calculated by the permitting authority to comply with water quality standards in the receiving water.

WQBEL (Water quality-based effluent limitation) means an effluent limitation that is applied to a discharger when technology-based limitations would cause violations of water quality standards.

Washington Hatchery Permit means the NPDES general permit for Federal Aquaculture Facilities and Aquaculture Facilities located in Indian Country within the boundaries of the State of Washington, which was issued by EPA Region 10 in June 2009.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

(1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition. (40 CFR §122.2).

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Appendix A -- Basis for Effluent Limitations

A. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the CWA provide the basis for effluent limitations and other conditions in the draft permit. EPA evaluates the discharges with respect to these sections of the CWA and relevant NPDES regulations to determine which conditions to include in the draft permit.

In general, EPA first determines which technology-based limits must be incorporated into the permit. EPA then evaluates the effluent quality expected to result from these controls to see if water quality standards for the receiving waters may still be exceeded. If exceedances could occur, EPA must include water quality based effluent limits (WQBELs) in the permit. The proposed permit limits will reflect whichever limits (technology-based or water quality-based) are more stringent.

B. Technology-Based Evaluation

Section 301(b) of the CWA requires industrial dischargers to meet technology based effluent limitations established by EPA. The CWA initially focused on the control of traditional pollutants (conventional pollutants and some metals) through the use of best practicable control technology currently available (BPT). Section 301(b)(1)(A) of the CWA required industries to meet this level of control by July 1, 1977. Section 301(b)(3) of the CWA allowed a deadline for achieving BPT of March 31, 1989 under certain circumstances, but that deadline has also passed. All permits issued after March 31, 1989 must include any conditions necessary to ensure that BPT is achieved.

Section 301(b)(2) of the CWA requires that all permits contain effluent limitations which: (1) control toxic pollutants and non-conventional pollutants through the use of best available technology economically achievable (BAT), and (2) represent best conventional pollutant control technology (BCT) for conventional pollutants by March 31, 1989. In no case may BCT or BAT be less stringent than BPT.

In many cases, BPT, BCT, and BAT limitations are based on effluent limitations guidelines (ELGs) developed by EPA for specific industries. Where EPA has not yet developed guidelines for a particular industry or a particular pollutant, technology-based effluent limits must be established using best professional judgment (BPJ) (40 CFR §§122.43, 122.44, and 125.3). The ELG for the Concentrated Aquatic Animal Production category, which became effective on September 22, 2004, applies management practices rather than numeric limits on discharges from facilities that produce more than 100,000 pounds annually. Since LNFH production is below this threshold at about 93,000 pounds annually, it is not subject to the ELG. Furthermore, the ELGs allow a permit writer to apply numeric limits under several circumstances. To quote from the preamble of the final regulation [69 FR 51899 (August 23, 2004)]: "In fact, one of the bases for EPA's decision not to establish uniform national TSS

limits is the recognition that a number of states, particularly those with significant numbers of CAAP facilities, already have general permits with numeric limits tailored to the specific production systems, species raised, and environmental conditions in the state and these permits seem to be working well to minimize discharges of suspended solids." EPA previously issued a permit with limits to LNFH and has used BPJ to develop the technology-based effluent limitations in the draft permit.

C. Water Quality-Based Evaluation

In addition to the technology-based limits discussed above, EPA evaluated the potential discharges to determine compliance with Section 301(b)(1)(C) of the CWA and its implementing regulations at 40 CFR §122.44(d), which require permits to include limits for all pollutants or parameters which are or may be discharged at a level which will cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality. The limits must be stringent enough to ensure that water quality standards are met and must be consistent with any available waste load allocation. For pollutants with technology-based limits, EPA must also determine if those limits are protective of the corresponding water quality criteria.

In addition to water quality based effluent limits (WQBELs) for pollutants that could cause or contribute to exceedances of standards, EPA must consider applicable antidegradation policies, which must be consistent with the guidelines expressed at 40 CFR §131.12. The draft permit will not result in the relaxation of effluent limits and has been written to maintain or improve the quality of effluent discharged from authorized aquaculture facilities; Ecology used conclusions from the antidegradation analysis conducted by LNFH in its certification to prevent degradation of water quality and give reasonable assurance the LNFH will not cause or contribute to a violation of water quality standards. See further discussion in §IV.A.3, above.

To determine a WQBEL, when necessary, EPA uses the following approach.

1. Determine Appropriate Water Quality Criteria

Receiving waters in the State of Washington must meet water quality criteria established by the State of Washington in Chapter 173-201A of the Washington Administrative Code.

2. Develop Wasteload Allocations (WLAs)

A WLA may be developed to establish the allowable loading of each pollutant that may be discharged without causing or contributing to exceedances of water quality standards in receiving waters. WLAs can be established in three ways - mixing zone-based WLAs, TMDL-based WLAs, and end-of-pipe WLAs.

a. Mixing Zone-Based WLA

When the State authorizes a mixing zone for a discharge, the WLA is calculated based on the available dilution at the edge of the mixing zone, background concentrations of pollutants, and the water quality criteria. The 401 Certification issued by Ecology did not authorize mixing zones for any parameters. Therefore, limitations of the permit do not allow for dilution and mixing zones, and therefore, mixing zone based WLAs are not appropriate.

b. TMDL-Based WLA

Where the receiving water quality does not meet applicable water quality standards, a WLA may be based on a total maximum daily load (TMDL) determination by the State authority. A TMDL is the determination of the maximum amount of a pollutant or pollutant property, from point, nonpoint, and background sources, including a margin of safety, that can be discharged to a receiving water without exceeding applicable water quality criteria. Section 303(d) of the CWA requires development of TMDLs for water bodies that will not meet water quality standards, after technology-based limitations are imposed, to ensure that these waters will come into compliance with water quality standards. Where there are discharges to receiving waters listed as impaired, pursuant to CWA Section 303(d), such discharges must be authorized by NPDES permits that apply the relevant WLAs included in the TMDL.

As described in §IV.B, above, Ecology has developed two relevant TMDLs for Icicle Creek. 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 18° C. This was based on Class A listing for Icicle Creek at the location of the LNFH outfalls; the temperature criterion for Class A waters was 18° C. This TMDL was approved by EPA on August 3, 2007.

In 2009, Ecology completed a TMDL for the Wenatchee River watershed, including Icicle Creek, for pH and dissolved oxygen (DO), which was approved by EPA on August 25, 2009 (Ecology, 2009). The TMDL allocates to LNFH daily maximum limits of 5.7 µg/L and 0.52 kg/day of total phosphorus during the critical periods of March through May and July through October (Ecology, 2009).

3. Derive Water Quality Based Permit Limitations

After WLAs have been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the Technical Support Document (TSD) for Water Quality-Based Toxics Control, USEPA Office of Water (1991) (EPA/505/2-90-001) to establish maximum daily effluent limitations (MDELs) and average monthly effluent limitations (AMELs). This approach takes into account effluent variability, sampling frequency, water quality standards, and the difference in time frames between the monthly average and the daily maximum limits.

As described in §D, below, WQBELs for total phosphorus, temperature, and total residual chlorine are included in the proposed Permit.

D. Proposed Effluent Limitations

This discussion includes description of the basis for each of the technology-based or water quality-based effluent limitations in the proposed permit.

1. Transport Water

Fish hatcheries commonly transport fish in 500-1000 gallon, truck-mounted tanks for release to the wild. Because these fish, in theory, can be caught and eaten immediately following their release, the transport water cannot contain aquaculture drugs and/or chemicals, for which FDA requires a withdrawal period prior to human consumption. Such tanks are typically equipped only to provide life support (oxygen) to the fish while they are in transit. The only chemical routinely added to the transport water is salt, at 0.8 percent, to provide an isotonic transport medium, which is comfortable for the fish. The permit does not address the discharge of transport water because it is a separate discharge at a remote location.

2. Total Suspended and Settleable Solids Limits

The final ELGs for discharges from aquaculture facilities with greater than 100,000 pounds annual production were published in the Federal Register on August 23, 2004. They included no numeric effluent limitations for total suspended solids (TSS) and settleable solids. Further, as noted above, the ELGs do not apply to LNFH because its production levels are below the 100,000 pounds per year.

In Washington, technology-based limitations are incorporated into state regulations at WAC §173-221A-100; these have been applied in EPA's Washington Hatchery Permit and in the Ecology General Permit. These technology-based effluent limits are applied in this draft permit also.

The proposed effluent limits for total suspended solids and settleable solids are net limits. WAC 173-221A-100(4)(a)(iv) states "Effluent limitations shall apply as net values provided the criteria contained in 40 CFR 122.45 (net gross allowance) are met." This permit requires that gross influent and effluent values be reported on the DMR form along with the calculated net values. EPA may require additional sampling to prove substantial similarity between influent and effluent solids, where it determines that they are necessary. In such cases, the permittee may continue to report net values until the comparability tests are completed.

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.

The design flow for LNFH raceways (32.8 MGD) is used in the calculation for the mass limits.

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

TSS Instantaneous Maximum Limit:

15 mg/L × 32.8 mgd × 3.79 = **1864.7 kg/day**

TSS Average Monthly Limit:

5 mg/L × 32.8 mgd × 3.79 = **621.6 kg/day**

EPA has determined that converting the settleable solids limits to mass based limits is impossible since the units are volume/volume rather than mass/volume.

The effluent limitations listed in Table A-1 apply to raceways and adult ponds except during drawdowns for fish release, which are listed in Table A-2.

Table A-1
Solids Effluent Limitations for Raceways and Adult Ponds Except During Drawdown for Fish Release

Pollutant	Average Monthly Limit	Instantaneous Maximum Limit
Net[38] TSS	5 mg/L	15 mg/L
	621.6 kg/day	1864.7 kg/day
Net[38] Settleable Solids	0.1 ml/L	--

[38] Net results are determined by subtracting influent concentrations from effluent concentrations.

Table A-2 **Solids Discharge Limitations for Raceways and Adult Ponds during Drawdown for Fish Release**	
Parameter	**Instantaneous Maximum**
Settleable Solids	1.0 mL/L
Total Suspended Solids	100 mg/L
	12,431.2 kg/day

The design flow for LNFH pollution abatement ponds (8.64 MGD) is used in the calculation for the TSS mass limit.

Pollution Abatement Ponds

TSS Instantaneous Maximum Limit:

$$100 \text{ mg/L} \times 8.64 \text{ mgd} \times 3.79 = \mathbf{3274.6 \text{ kg/day}}$$

Table A-3, below, lists the effluent limitations for TSS and settleable solids in discharges from the pollution abatement ponds.

Table A-3 **Solids Effluent Limitations for Discharges from the Pollution Abatement Ponds**	
Pollutant	**Instantaneous Maximum Limit**
TSS	100 mg/L
	3274.6 kg/day
Settleable Solids	1.0 ml/L

3. Nutrients

In the ELGs, EPA did not propose numeric limits for nutrients because, as it reasoned in the background information in its proposal (67 FR 57891 (Sept. 12, 2002)), control of TSS also effectively controls such nutrients because other pollutants are either bound to the solids or are incorporated into them [67 FR 57872]. Although the ELGs are not applicable to this discharge, as explained above, EPA believes that implementation of BMPs to minimize the discharge of excess feed will serve to limit nutrient residuals in discharges. As such, these BMPs have been included as technology-based narrative effluent limitations in the Permit.

In its TMDL for DO and pH, Ecology set the wasteload allocations for total phosphorus at 0.0057 mg/L and 0.52 kg/day. In its 401 certification for LNFH, Ecology specified only the mass limit. In order to comply with both the TMDL and the State's certification, we are applying both the 0.52 kg/day limit and the 5.7 µg/L as final daily maximum limits for total phosphorus. Also, in conformance with the 401 certification, we are including a five year compliance schedule to come into compliance with the final limits.

In the interim, LNFH must meet interim limits as listed in Table A-4. See Appendix B for discussion of development of these limits.

Table A-4
Total Phosphorus Effluent Limitations

Pollutant	Monthly Average Limit	Daily Maximum Limit
Interim Limits[39] Raceways & Adult Ponds	0.020 mg/L	0.038 mg/L
	2.5 kg/day	4.7 kg/day
Pollution Abatement Ponds	0.10 mg/L	0.16 mg/L
	3.3 kg/day	5.2 kg/day
Final Limits[40] Total facility discharge	--	0.52 kg/day
	--	5.7 µg/L

[39] The interim total phosphorus limits apply during the critical periods of March 1 through May 31 and July 1 through October 31 until the facility is able to comply with the final limits, but no later than the final compliance date of *[insert final compliance date]*.

[40] 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 as soon as the facility is able to comply with the final limits, but no later than the final compliance date of *[insert final compliance date].*

4. Temperature

Although EPA considered temperature in its studies described in the Technical Development Document (EPA, 2004b) for the CAAP category, it determined that temperature was not a pollutant of concern that needed to be limited. Therefore, there is no technology-based effluent limit for temperature.

As detailed in § II.C.2, above, EPA has included a maximum daily temperature effluent limit of 16° C based on the current approved State water quality standard for Icicle Creek. This ensures that the permit meets not only the current water quality standard (16° C), but also the WLA in the TMDL (18° C).

5. Drugs, Disinfectants and Other Chemicals

There are no applicable technology based limitations or effluent guidelines in place for most drugs, disinfectants, and other chemicals used within the aquaculture industry. EPA has also noted that State water quality criteria do not specifically limit residuals of these materials in discharges from aquaculture facilities. They include narrative criteria, which prohibit levels of toxic substances in concentrations that impair beneficial uses of receiving waters.

a. Treatment in ELGs for the Confined Aquatic Animal Production (CAAP) Category

In the ELG for the CAAP industry at 40 CFR §451, EPA did not include limitations for drugs, disinfectants, and other chemicals, citing the relative absence of data on their use. The Effluent Limitations Guideline requires reporting on the use of drugs, disinfectants, and other chemicals in authorized discharges.

b. Treatment in EPA's Idaho Aquaculture Permits

In writing the general permits for Aquaculture Facilities in Idaho, EPA acknowledged that literature suggested some risks associated with the discharge of residual disease control drugs and other chemicals but concluded that such substances delivered to fish by ingestion do not pose a risk of harm or degradation to aquatic life or other beneficial uses. However, EPA concluded that such substances applied in solution for the immersive treatment of fish may present a risk of harm to aquatic life immediately downstream of a point of discharge. Because very little effluent data for these substances was available, because analytical methods for their detection and measurement were very difficult, and because normal operating procedures provided maximum dilution of immersive treatments in facility discharges, EPA did not

include specific effluent limitations for these substances in the general permits for Idaho aquaculture facilities. Like the ELG, the Idaho permits require reporting on the use of drugs, disinfectants, and other chemicals in authorized discharges.

c. Treatment in the Washington Hatchery Permit

In the Washington Hatchery Permit, EPA did not include WQBELs for drugs, disinfectants, and other chemicals that are potentially applied within the facility.

In most cases, EPA believes that when these chemicals are used in compliance with Food and Drug Administration requirements and the best management practices required in this permit, they pose no reasonable potential to violate applicable water quality standards. The requirements for submittal of Annual Reports, which include reporting the use of drugs, disinfectants, and other chemicals, as well as reports of use of investigational new animal drugs and extra-label drug use, will enable EPA to reassess the potential for harm attributable to these materials in the future.

d. Drug and Chemical Recordkeeping and Reporting Requirements applied in this permit

Recordkeeping and reporting requirements similar to those in EPA's Washington Hatchery Permit are included in this permit. These are derived from the ELGs and are applied in this case as technology-based narrative requirements based upon BPJ.

6. Total residual chlorine

For disinfection and cleaning of equipment, chlorine may be used at concentrations above the water quality criteria that apply in waters of the State of Washington.

a. Chlorine Standards

For the protection of aquatic life, the State of Washington has established the water quality criteria in Table A-5, below, for total residual chlorine.

Table A-5
Chlorine Water Quality Criteria

	Fresh Water	
	Acute	Chronic
Total residual chlorine	19 µg/L	11 µg/L

b. Chlorine Limits

EPA believes that there may be a reasonable potential for excursions above applicable numeric and narrative water quality for criteria for total residual chlorine in the receiving water. The permit applies the effluent limitations listed in Table A-6, below, for total residual chlorine. Appendix B of this Fact Sheet shows the derivation of the water quality based effluent limits for total residual chlorine that are presented below.

Table A-6
Total Residual Chlorine Effluent Limitations

	Monthly Average Limit	Instantaneous Maximum Limit
Concentration-based	**9 µg/L**	**18 µg/L**
Mass-based	**1.1 kg/day**	**2.2 kg/day**

7. pH

There are no applicable technology-based ELGs for pH from discharges from aquaculture facilities; however the most stringent criteria for pH in fresh waters from applicable state water quality standards is 6.5 - 8.5, with no variation attributable to discharges allowed greater than 0.2 pH units.

EPA has determined that receiving water pH will not be significantly impacted by discharges from LNFH and therefore, no discharge limitation for pH is being proposed by the Permit.

E. Anti-Backsliding Requirements

1. Limits applied in 1974 Permit

The TSS and settleable solids limits applied in the 1974 permit were technology-based limits based on the maximum mass of fish in the facility. These limits are listed below in Tables A-7 and A-8.

Table A-7 1974 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)[41]
Settleable solids	0.1 ml/L	--	--
Cleaning Effluent			
Suspended Solids	--	--	15 mg/L (net)[39]
Settleable solids	--	--	0.2 ml/L

[41] Net addition = effluent concentration – influent concentration

2. Comparison between Previous and Proposed Limits

Under the anti-backsliding requirements of Section 402(o) of the CWA, limits applied in subsequent permits must be at least as stringent as these limits in the 1974 permit, with limited exceptions. Only suspended solids and settleable solids were limited in the previous permit. No other parameters were limited in the 1974 permit, so anti-backsliding does not apply to phosphorus, temperature or chlorine. Therefore the following comparison and discussion only applies to the suspended solids and settleable solids limits.

a. Total Facility Discharges

Table A-8 compares the limits for the 1974 permit with those in the draft 2010 permit for the total facility effluent. Discussion of each comparison follows below the table.

Table A-8

Comparison of Previous Permit Limits and Proposed Permit Limits for the Total Discharge

Parameter	Previous Permit			Proposed Permit		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	0.1 ml/L	--	--	0.1 mL/L[42]	--	**0.1 ml/L**	--	--
(Total) Suspended Solids (TSS)	704 kg/day	921 kg/day	--	622 kg/day[42]	1865 kg/day[42]	**622 kg/day[42]**	**921 kg/day**	--
	--	--	15 mg/L[42]	5 mg/L[42]	15 mg/L[42]	**5 mg/L[42]**	--	**15 mg/L[42]**

[42] This is a "net" limit: Net discharge = effluent concentration (or loading) -- influent concentration (or loading)

(1) 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 proposed 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 settleable solids and total suspended solids from the total facility incorporated into state regulations at WAC §173-221A-100 are set as average limits, which has been applied in EPA's Washington Hatchery Permit (EPA 2009) and in the State's general NPDES permit for upland finfish hatching and rearing facilities (Ecology 2010b) as a monthly average limit. Therefore, under BPJ, the average limit required in State regulations is applied as a monthly average limit 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"), EPA has determined that the 1974 *daily average limit* is the same as and is directly comparable with the *average monthly limit* in the proposed permit.

(b) Daily Maximum Limit

The daily maximum limit 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 daily mass limit proposed for this permit is calculated from the instantaneous maximum concentration limit in the State regulations and is therefore itself an instantaneous maximum limit. Compliance with it must be measured by a single grab sample. It is a net limit.

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 (composite) and instantaneous maximum limits. Since the TSD assumes that effluent variability is random, the fact that the TSD speaks of an "average monthly limit" and a "maximum daily limit" is not limiting. The discussion applies equally well to any comparison between one limit, compliance with which is determined by averaging several samples, and another limit, compliance with which is determined by a single sample.

Because we are considering two very short-term limits (a 1-day average and an instantaneous limit), under BPJ we have determined that it is appropriate to use the 99th percentile for both limits.

Assuming the default coefficient of variation of 0.6 and the 99th percentile, Table 5-3 yields a ratio between an "instantaneous" limit measured by one sample and a "maximum daily" limit measured by an average of four samples is 1.64:1. Therefore, an instantaneous maximum limit of 1865 kg/day is roughly equivalent to a maximum daily limit (based on a composite of 4 grab samples) of 1137 kg/day (1864.7/1.64 = 1137). Remembering that this is a net limit rather than a gross limit, as the 1974 daily maximum limit was, it is clear that the 1974 limit of 921 kg/day (gross) is more stringent. Therefore, to meet anti-backsliding requirements, it is retained in this permit as a gross limit.

(2) Settleable Solids

In comparing the 1974 limit, which was a limit on the gross discharge, with the limits imposed in the EPA Washington Hatchery Permit and the State's general hatchery permit, which are net limits in compliance with the State regulation at

WAC §173-221A-100, we find that the 1974 limit is the more stringent of the two. Therefore, because of anti-backsliding requirements, we are retaining the previous limit of 0.1 ml/L as a limit on the total discharge, though we are renaming it an *average monthly limit*, as discussed above in §E.1.a(1).

(3) TSS Limits

In the 1974 permit, it was suspended solids that were limited; currently, it is total suspended solids that are limited in NPDES permits and that are specified in the limits in the Washington regulations. We have compared the 1974 suspended solids limits directly with the total suspended solids limits in the proposed permit, assuming that the suspended solids were, in fact, total suspended solids.

In comparing the 1974 mass limits, which were limits on the gross discharge, with the proposed limits, which are on the net discharge, we found that the proposed monthly average limit of 621.6 kg/day (net) is less than the daily average (equivalent to monthly average) 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 621.6 kg/day (net) value is the more stringent limit. Therefore, applying this proposed limit will comply with the anti-backsliding requirements.

b. Pollution Abatement Pond Discharge

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 assume that the cleaning effluent refers to or is comparable to the pollution abatement pond effluent. Therefore, for purposes of anti-backsliding considerations, those limits are compared directly. The previous limits are more protective and are therefore retained in the proposed permit.

Table A-9

Comparison of Previous Limits and Proposed Limits for the Pollution Abatement Ponds

Parameter	Previous Instantaneous Maximum Limit	Proposed Instantaneous Maximum Limit	Selected Instantaneous Maximum Limit
Settleable Solids	0.2 ml/L	1.0 ml/L	**0.2 ml/L**
Total Suspended Solids	15 mg/L (net)	100 mg/L (gross)	**15 mg/L (net)**

Appendix B — Derivation of Total Residual Chlorine and Total Phosphorus Limits

A. Method Of Calculating Water Quality-Based Effluent Limits

In developing water quality-based effluent limits (WQBELs), EPA Region 10 relies on methods from the Technical Support Document for Water Quality Based Toxics Control (TSD) [EPA/505/2-90-001] to determine specific limits. The TSD requires the following steps to determine specific limitations.

1. Deriving a Wasteload Allocation (WLA) from the applicable water quality criterion.

The WLA takes into account variability in effluent quality and is expressed as a single level of effluent water quality necessary to provide protection against acute or chronic adverse effects in the receiving water. When no credit for dilution is allowed, the WLA is set equal to the applicable water quality criterion. Such is the case in a general permit such as this one, where a limit is being developed that is applied to many dischargers in different locations that must be protective enough for all situations.

2. Calculating long-term average concentration needed to meet the water quality criteria.

The wasteload allocation (WLA) is set equal to the aquatic life criterion. The long-term average discharge concentration (LTA) necessary to protect the WLA is determined by multiplying the WLA by a factor (less than 1) to account for effluent variability. The LTA is a target level for treatment performance which provides a measure of safety that the criterion, or WLA, will be exceeded only infrequently (1% or 5% of the time, depending on the level chosen).

WLA multipliers are determined based on a coefficient of variation (CV) and on a specified probability of occurrence. The CV is a measure of the relative variability of a set of data; and in this case, because there is no data, the CV was set equal to 0.6 (the default value recommended by the TSD). From Table 5-1 of the TSD, at the 99th percentile probability basis, the acute WLA multiplier is 0.321 and the chronic WLA multiplier is 0.527.

3. Using the most limiting (the lowest) LTA, WQBELs are calculated.

Average monthly effluent limitations (AMELs) and maximum daily effluent limitations (MDELs) are calculated by multiplying the most limiting LTA times a multiplier that accounts for averaging periods and maximum exceedance frequencies of the effluent limitations, and the effluent monitoring frequency. The CV was set equal to 0.6 (CV = 0.6) and, in the case of the AMEL, the sampling frequency was set equal to 4 (n = 4).

Both of these values are those recommended as default values in the TSD for situations where facility specific data is not available. Following EPA Region 10 permitting policy, a 99th percentile occurrence probability was used to determine the MDEL multiplier and a 95th percentile occurrence probability was used to determine the AMEL multiplier. Given these assumptions and using Table 5-2 of the TSD, the MDEL multiplier is determined to be 3.11, and the AMEL multiplier is 1.55.

B. Specific Calculations

1. Total Residual Chlorine Limits

a. Deriving a Wasteload Allocation (WLA) from the applicable water quality criterion

The applicable water quality criteria for total residual chlorine in the fresh waters of the State of Washington are established by the Washington Department of Ecology at WAC 173-201A-240 for the protection of aquatic life. These criteria are presented in the following table:

Table B-1
Water Quality Criteria for
Total Residual Chlorine
for Protection of Aquatic Life

	Acute	Chronic
Total residual chlorine	19 µg/L	11 µg/L

b. Calculating long-term average concentration needed to meet the water quality criteria

Using factors set forth in § I.B, above, EPA determined the WLA multipliers and calculated the LTAs for total residual chlorine, which are summarized below.

Table B-2
Total Residual Chlorine Long Term Averages (LTAs)

	WLA(µg/L)	WLA Multiplier	LTA (µg/L)
Fresh Water -- Acute	19	0.321	6.10
Chronic	11	0.527	**5.80**

c. Calculating Water Quality based Effluent Limitations

(1) Concentration-based Limits

Using the most limiting LTA (chronic) from Table B-2, above, the limitations are calculated using multipliers discussed in §I.C, above.

Table B-3
Total Residual Chlorine Effluent Limitations

	Long-Term Average	Multiplier	Calculated Limit
Maximum Daily Limit	5.80 µg/L	3.11	**18 µg/L**
Average Monthly Limit	5.80 µg/L	1.55	**9 µg/L**

(2) Mass-based Limits

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.

The design flow for LNFH (32.8 MGD) is used in the calculation for the chlorine mass limits.

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

Chlorine Maximum Daily Limit:

0.018 mg/L × 32.8 mgd × 3.79 = **2.2 kg/day**

Chlorine Average Monthly Limit:

0.009 mg/L × 32.8 mgd × 3.79 = **1.1 kg/day**

2. Total Phosphorus Limits

In 2009, Ecology completed a TMDL for the Wenatchee River watershed, including Icicle Creek, for pH and dissolved oxygen (DO) which allocates to LNFH 5.7 µg/L (maximum daily concentration) and 0.52 kg/day of total phosphorus during the critical periods of March through May and July through October (Ecology, 2009). The goal is to meet the in-stream standards by 2018.

In January 2010, Ecology issued a Section 401 water quality certification order to LNFH, which requires that the Hatchery meet the 0.52 kg/day total phosphorus daily maximum limit within five years of permit issuance. In the draft permit, we are proposing both the mass limit and the concentration-based limit as final limits and including a five year compliance schedule.

In the interim period until LNFH brings its total phosphorus discharge into compliance with the final limits, EPA is proposing monthly average and daily maximum limitations based on past levels of total phosphorus measured in the effluent from the raceways and from the pollution abatement ponds to ensure that loading of phosphorus to Icicle Creek does not increase.

a. Calculating Interim Performance-based Limits

The interim limits are based on existing demonstrated performance using procedures in EPA's *Technical Support Document* (EPA 1991) and Washington's spreadsheet *tsdcalAug08*. The effluent data from the facility on which these calculations are based is included in Table B-4. The derivation of these interim limits is shown below in Tables B-4 and B-5.

Table B-4

Total Phosphorus Effluent Data at LNFH

Date	Pollution Abatement Ponds (mg/L)	L_n of Pollution Abatement Ponds	Raceways (mg/l)	L_n of Raceways
9/13/2006	0.0222	-3.8077	0.0049	-5.3185
7/11/2007	0.0596	-2.8201		
7/30/2007	0.0703	-2.6550	0.0062	-5.0832
8/22/2007	0.0588	-2.8336	0.006	-5.1160
9/11/2007	0.0497	-3.0018	0.0035	-5.6550
9/18/2007	0.0858	-2.4557	0.0056	-5.1850
10/2/2007	0.104	-2.2634	0.007	-4.9618
8/20/2008	0.0627	-2.7694	0.006	-5.1160
8/27/2008	0.0515	-2.9662	0.0069	-4.9762
9/8/2008	0.024	-3.7297	0.0109	-4.5190
10/2/2008	0.0781	-2.5498	0.002	-6.2146
7/15/2009	0.047	-3.0576	0.038	-3.2702
8/19/2009	0.084	-2.4769	0.019	-3.9633
9/15/2009	0.061	-2.7969	0.007	-4.9618
mean		**-2.8703**		**-4.9493**
variance		**0.1956**		**0.5285**

Table B-5 **Performance-based Effluent Limits for Raceways**		
Lognormal Transformed Mean =	-4.95	
Lognormal Transformed Variance =	0.5285	
Number Of Samples/Month For Compliance Monitoring =	2	
Autocorrelation Factor(Ne)(Use 0 If Unknown) =	0	
E(X) =	0.0092	
V(X) =	0.000	
VARn	0.2988	
MEANn=	-4.8341	
VAR(Xn)=	0.000	
Daily Maximum Effluent Limit =	**0.038**	
Monthly Average Effluent Limit =	**0.020**	

Table B-5 shows the derivation of the performance-based limits for the raceways, which are rounded to 0.04 mg/L daily maximum and 0.02 mg/L monthly average.

Table B-6 **Performance-based Effluent Limits for the Pollution Abatement Ponds**		
Lognormal Transformed Mean =	-2.87	
Lognormal Transformed Variance =	0.1955	
Number Of Samples/Month For Compliance Monitoring =	2	
Autocorrelation Factor(Ne)(Use 0 If Unknown) =	0	
E(X) =	0.0625	
V(X) =	0.001	
VARn	0.1025	
MEANn=	-2.835	
VAR(Xn)=	0.000	
Daily Maximum Effluent Limit =	**0.159**	
Monthly Average Effluent Limit =	**0.101**	

Table B-6 shows the derivation of the performance-based limits for the pollution abatement ponds, which are rounded to 0.16 mg/L daily maximum and 0.10 mg/L monthly average.

The daily maximum flow for LNFH (32.8 MGD) is used in the calculation for the phosphorus mass limits for the raceways and adult ponds.

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

Raceways:

Phosphorus Daily Maximum Limit:

0.038 mg/L × 32.8 mgd × 3.79 = **4.7 kg/day**

Phosphorus Monthly Average Limit:

0.020 mg/L × 32.8 mgd × 3.79 = **2.5 kg/day**

The daily maximum flow for the pollution abatement ponds (8.64 MGD) is used in the calculation for the phosphorus mass limits for the pollution abatement ponds.

Pollution Abatement Ponds:

Phosphorus Daily Maximum Limit:

0.159 mg/L × 8.64 mgd × 3.79 = **5.2 kg/day**

Phosphorus Monthly Average Limit:

0.101 mg/L × 8.64 mgd × 3.79 = **3.3 kg/day**