

**FACT SHEET FOR
TROUT SPRINGS CANYON FALLS HATCHERY
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
(NPDES) PERMIT WA0039268
2020 Issuance**

Purpose of this Fact Sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the Trout Springs Canyon Falls Hatchery.

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least 30 days before issuing the final permit. Copies of the fact sheet and draft permit for the Trout Springs Canyon Falls Hatchery, NPDES permit WA0039268, are available for public review and comment. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

The Trout Springs Canyon Falls Hatchery reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, discharges, or receiving water prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix D - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology generally will not revise the rest of the fact sheet. The full document will become part of the legal history contained in the facility's permit file.

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	BACKGROUND INFORMATION	2
A.	FACILITY DESCRIPTION	3
	History	3
	Cooling Water Intakes	3
	Industrial Processes.....	4
	Wastewater Treatment processes	4
	Solid wastes	7
	Discharge outfall.....	7
B.	DESCRIPTION OF THE RECEIVING WATER	7
C.	WASTEWATER CHARACTERIZATION	7
D.	SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED	8
E.	STATE ENVIRONMENTAL POLICY ACT (SEPA) COMPLIANCE.....	9
III.	PROPOSED PERMIT LIMITS	9
A.	TECHNOLOGY-BASED EFFLUENT LIMITS.....	9
B.	SURFACE WATER QUALITY-BASED EFFLUENT LIMITS	10
	Numerical criteria for the protection of aquatic life and recreation.....	10
	Numerical criteria for the protection of human health.....	11
	Narrative criteria	11
	Antidegradation	11
	Mixing zones.....	12
C.	DESIGNATED USES AND SURFACE WATER QUALITY CRITERIA.....	14
D.	WATER QUALITY IMPAIRMENTS	15
E.	EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NARRATIVE CRITERIA	15
F.	EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA.....	15
G.	HUMAN HEALTH	18
H.	SEDIMENT QUALITY	18
I.	GROUNDWATER QUALITY LIMITS	18
J.	WHOLE EFFLUENT TOXICITY	18
K.	COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT ISSUED ON JULY 22, 2010.....	19
IV.	MONITORING REQUIREMENTS	19
A.	WASTEWATER MONITORING.....	19
B.	LAB ACCREDITATION	19
V.	OTHER PERMIT CONDITIONS	19

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

A.	REPORTING AND RECORD KEEPING	19
B.	FACILITY SAMPLING PLAN	19
C.	OPERATIONAL LOG	20
D.	SOLID WASTE CONTROL PLAN.....	20
E.	SPILL PLAN	20
F.	POLLUTION PREVENTION PLAN.....	21
H.	GENERAL CONDITIONS	21
VI.	PERMIT ISSUANCE PROCEDURES.....	21
A.	PERMIT MODIFICATIONS	21
B.	PROPOSED PERMIT ISSUANCE.....	21
VII.	REFERENCES FOR TEXT AND APPENDICES	21
	APPENDIX A--PUBLIC INVOLVEMENT INFORMATION	23
	APPENDIX B--YOUR RIGHT TO APPEAL.....	24
	APPENDIX C--GLOSSARY	25
	APPENDIX D--RESPONSE TO COMMENTS.....	32
	 Table 1 General Facility Information.....	 2
	Table 2 Wastewater Characterization.	8
	Table 3 Freshwater Aquatic Life Uses and Associated Criteria	14
	Table 4 Recreational Uses and Associated Criteria	14
	 Figure 1. Facility Location Map (Microsoft, 2019).	 2
	Figure 2. Trout Springs Canyon Falls Creek Hatchery Site Plan.....	5
	Figure 3. Trout Springs Canyon Falls Hatchery Schematic Flow Diagram.....	6

I. INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The Legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations apply to industrial NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

These rules require any industrial facility owner/operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for performance requirements imposed by the permit.

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See **Appendix A-Public Involvement Information** for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix D**.

II. BACKGROUND INFORMATION

Table 1 General Facility Information

Facility Information	
Applicant Name and Address	Troutlodge, Inc. PO Box 1290 Sumner, WA 98390
Facility Name and Address	Trout Springs Canyon Falls Hatchery 12000 McCutcheon Rd Bonney Lake, WA 98391
Industry Type	Upland Fin-Fish Hatching and Rearing
SIC Codes	0273 – Animal Aquaculture 0921 – Fish Hatcheries and Preserves
Type of Treatment	Settling and Abatement Pond
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Outfalls No. 1 and No. 2 Canyon Falls Creek Latitude: 47.14306° N Longitude: -122.21722° W
Permit Status	
Issuance Date of Previous Permit	July 22, 2010
Application for Permit Renewal Submittal Date	April 29, 2015
Date of Ecology Acceptance of Application	May 12, 2015
Inspection Status	
Date of Last Compliance Inspection Date	December 6, 2017

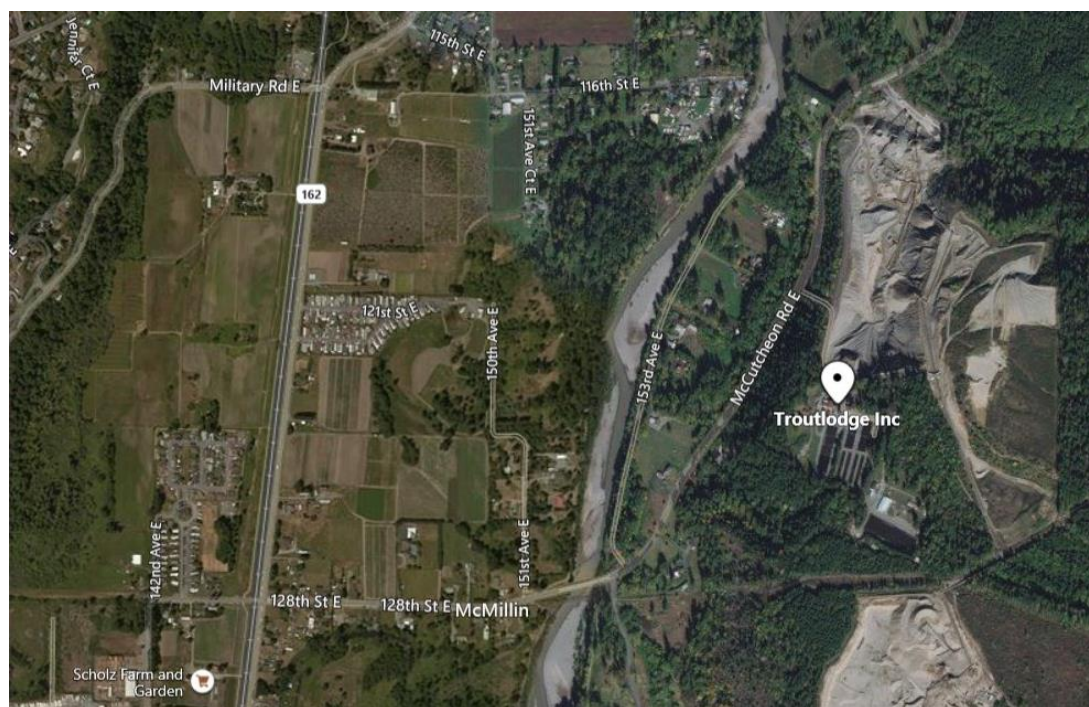


Figure 1. Facility Location Map (Microsoft, 2019).

A. FACILITY DESCRIPTION

History

Troutlodge, Inc. was founded in 1945 by Ed McLeary and Ken Drew. The company's first fish farm site was near Soap Lake, Washington. When the company was first established, trout was raised and sold to restaurants and grocery markets. Soon after, a broodstock program was developed to produce high quality trout eggs for sale to other trout farms. In the following years, Troutlodge continued to expand their operations with the development of trout egg sales to federal and state agencies, as well as, private commercial trout farms. As the business grew, Troutlodge purchased the TroutCo Clear Creek Hatchery (near Tacoma) and the Troutsprings Canyon Falls Creek Hatchery (near Bonney Lake) to provide better access to SeaTac International Airport for export.

Troutlodge continued to expand in the 1970s and 1980s with the acquisition of four other hatchery sites: in Ephrata, Hoodport, Carbon River, and Hood River (in Oregon). In an agreement with the Washington State Game Department, Troutlodge supplies the state with 200,000 fish annually in exchange for the right to continue to commercially operate the hatchery near Soap Lake.

Troutlodge has begun experimental work with Atlantic Salmon in 1982. In May 1988, Troutlodge was awarded the Governor's Export Award in the category of Agriculture for their contribution to export expansion for Washington State. Troutlodge now air ships more than 500 million trout eggs throughout the United States as well as over 60 foreign countries. Troutlodge currently employs approximately 45-50 people and have a separate laboratory for fish pathology and genetics. Troutlodge continues to improve their business through selective breeding and female egg selection. Troutlodge was purchased by Hendrix Genetics in 2015.

The Trout Springs Canyon Falls facility's location is shown in Figure 1. This facility was originally built during the 1940's and was purchased and operated by Troutlodge in the 1960's. This facility serves as the brood stock farm and egg shipment point for the company. It also supplies fish for private and public stockings.

The facility was originally issued an Upland Fin-Fish Hatching and Rearing NPDES General Permit in 1990. The general permit was most recently re-issued on December 16, 2015. However, in order to implement the recommendations for wasteload allocations contained in the approved **Puyallup River Total Maximum Daily Load for Biochemical Oxygen Demand, Ammonia, and Residual Chlorine (ecy pub. no. 96-326, as addended July 24, 1994)**, Ecology has decided to continue regulating this facility's discharge under an individual NPDES permit instead of the general aquaculture permit.

Note: In order to maintain certification from US Department of Agriculture for disease control, a minimum of 72 hours prior notice has been agreed to be provided by the Department of Ecology before Ecology can gain access to the facility site for inspections. This is to allow Troutlodge sufficient time to prepare decontamination systems for inspectors.

Cooling Water Intakes

CWA § 316(b) requires the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. Since July 2013, Ecology has required a supplemental application for all applicants using EPA Form 2-C.

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

The Trout Springs Canyon Falls Hatchery selected “No” on this form when asked if a cooling water intake is associated with the facility.

Industrial Processes

The Trout Springs Canyon Falls Hatchery is comprised of 86 raceways (arranged in 11 series), a settling pond, and an offline abatement pond. The source of water for this hatchery is Canyon Falls Creek which is spring fed to the facility. There is an elevation drop in between each series to promote oxygen recharge. The facility is designed to hold broodstock rainbow trout (*Oncorhynchus mykiss*). The broodstock flow is channeled through an in-line settling basin at the bottom of the facility prior to discharge. The incubation hatchery and wet lab are channeled through a secondary effluent line prior to discharge. Fecal material is siphoned monthly and directed to the offline abatement pond.

The settling pond is vacuumed no less than once per month, depending upon operations, and the offline abatement pond is maintained approximately once every five years (as needed). All flow is discharged into Canyon Falls Creek through Outfalls #001 and 002. Figure 2 provides a Site Plan of the facility. Figure 3 provides a Schematic Flow Diagram of the facility.

The facility’s intake and flow through the hatchery has a long-term average of approximately 4.1 million gallons per day, 3.6 million gallons per day on a maximum monthly average, and a maximum daily flow of 3.6 million gallons per day.

The facility produces a maximum of 750,000 pounds/year of *Oncorhynchus mykiss* (Rainbow Trout) with an average total yearly production of 750,000 pounds/year.

Feeding follows established commercial feed charts based upon recognized industry standards for feeding rates. Fish are either hand fed or fed through demand feeders in special occasions. During hand feeding, visual observations of satiation is used to prevent overfeeding. Demand feeders are routinely adjusted monthly to assure correct operation to prevent over feeding. The facility’s highest demand for amount of feed required for sustenance is during the month of January where approximately 20,000 pounds of feed are consumed.

Troutlodge operates all facilities under a Veterinary Health & Welfare Plan (VHWP). Typically, the facility uses Terramycin (4.0 gm/lb of feed), Formalin (37 percent Formaldehyde), buffered Iodophore (1percent) which are used for disease control; and MS-222 which is used as an anesthetic. All disease treatment chemicals are stored in labeled containers in designated areas.

Incubation Hatchery

Water to the incubation hatchery flows through two screen drum filters in the screen room. The incubation hatchery has a recirculating water sterilization and chilling system. Water flows through a Pentair UV sterilization unit. This kills waterborne pathogens. The water is then pumped through a degassing tower. Water is then split and routed one of two chillers. Overflow from the incubation system is routed back to a single drumfilter and UV sterilization unit.

Wastewater Treatment processes

Wastewater treatment is accomplished by removing solids by a water vacuum system and sending the wastewater to an offline abatement pond for settling and removal. The abatement pond is scheduled to be cleaned once per year (as needed).

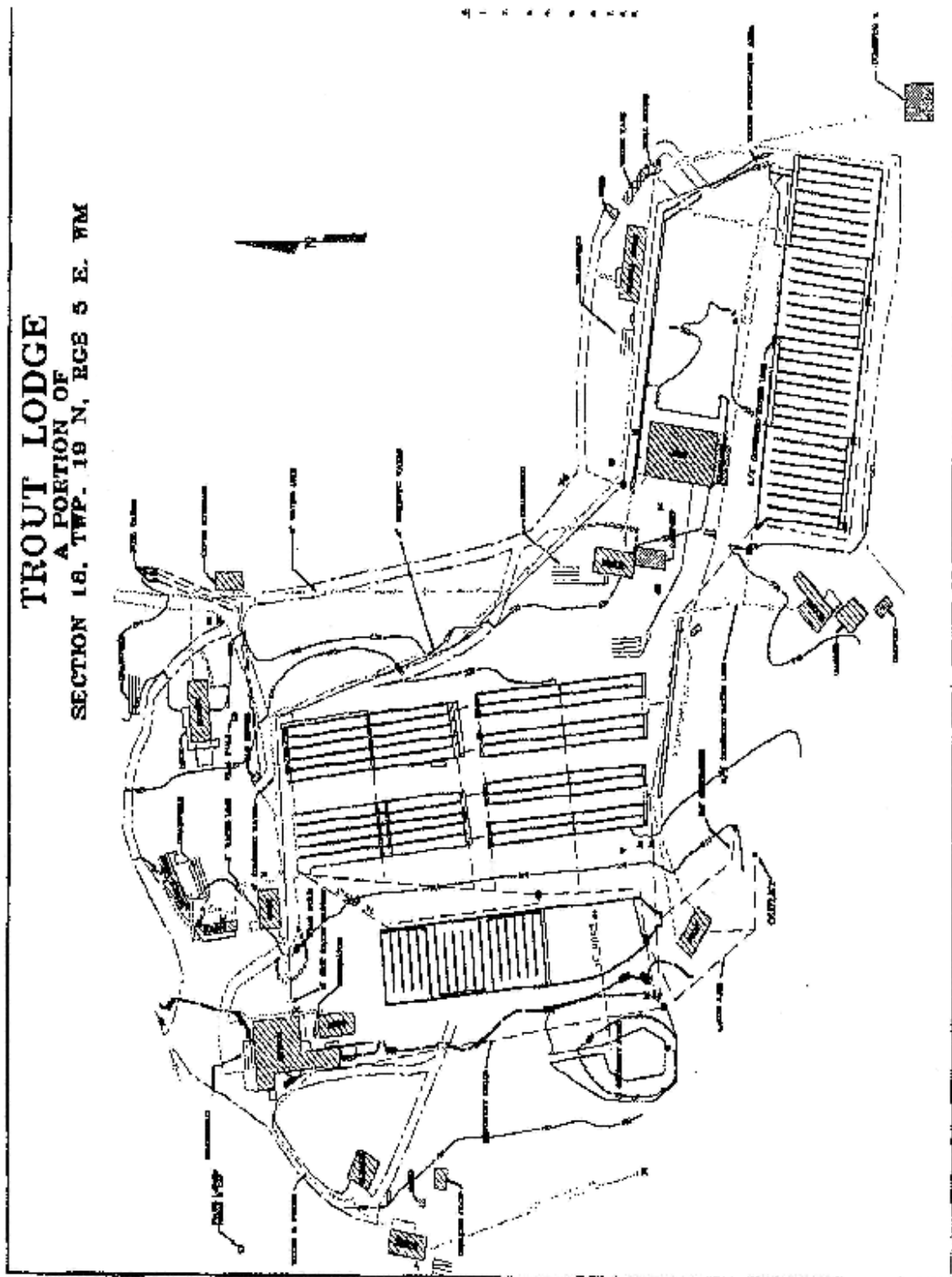


Figure 2. Trout Springs Canyon Falls Creek Hatchery Site Plan.

FACT SHEET FOR
 TROUT SPRINGS CANYON FALLS CREEK HATCHERY
 NPDES PERMIT WA0039268

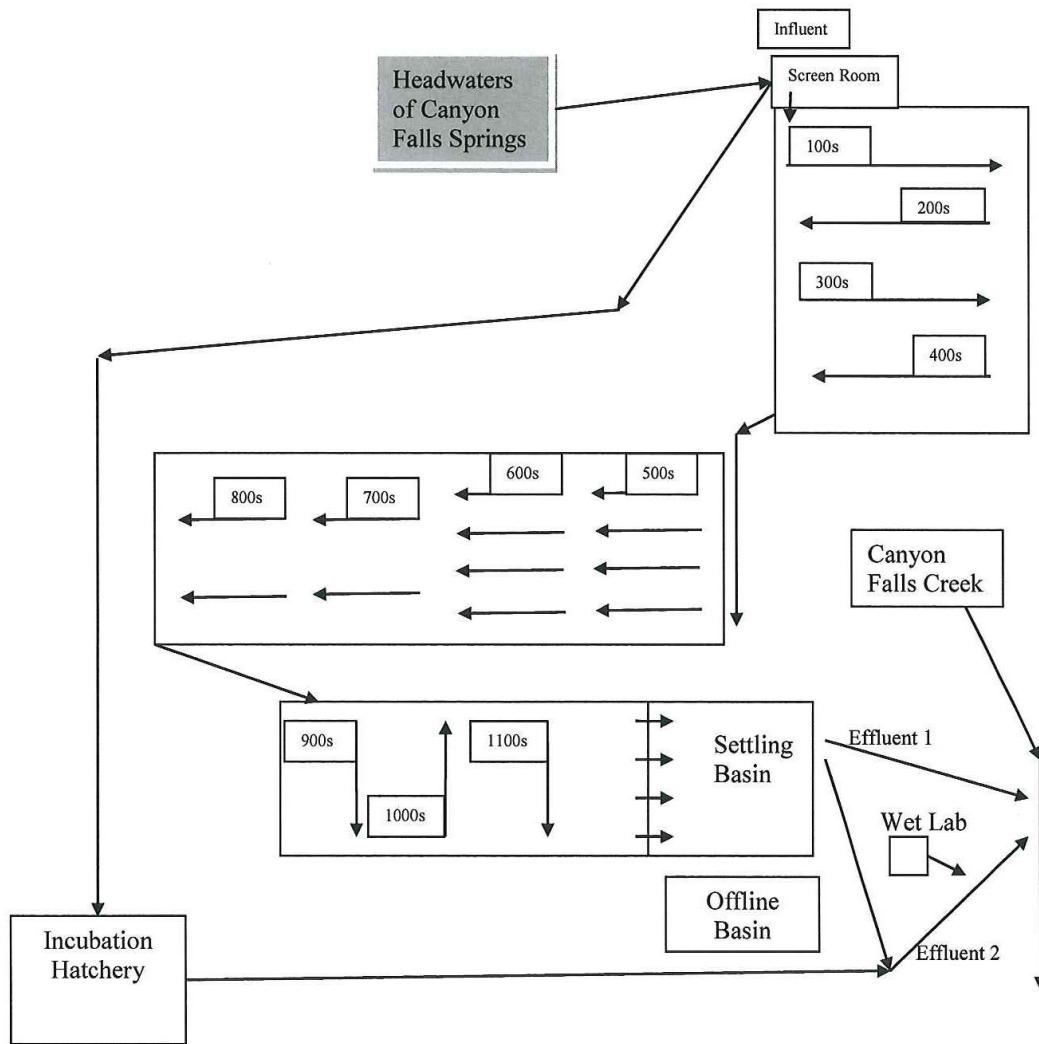


Figure 3. Trout Springs Canyon Falls Hatchery Schematic Flow Diagram.

Solid wastes

Raceway and flume sections are vacuumed at least once per month, and more frequently if solids built up is noted or if fish transfer areas accumulate a substantial amount of solids. Removal is through the use of either gravity suction or mechanical pumping to the offline settling basin. Total suspended solids is removed by the settling basin. Solids built up in the settling basin is transferred to the offline abatement pond once per month (as needed). Material from the offline abatement pond is removed once every five years (as needed). The removal is done by a Contractor and sold to an appropriate fertilizer, compost, or by-product company.

Fish mortalities and unacceptable eggs are collected on a daily basis. Carcasses are also collected for spawning or inventory control on a weekly basis. All morts and are placed into designated bins. The sealed bins are picked up weekly by “Northwest Fish By-Products.” The carcasses are delivered to a recycling company to transform the by-product to hydrolysate. Blood from spawning operations is contained in designated areas and treated in a septic field.

Discharge outfall

There are two outfalls (001 and 002) located approximately 50 meters apart. Outfall 001 is a 24-inch corrugated aluminum pipe which discharges approximately 65 percent of the flow. Outfall 002 is a 15-inch reinforced concrete pipe which discharges approximately 35 percent of the flow. Both outfalls discharge into Canyon Falls Creek.

B. DESCRIPTION OF THE RECEIVING WATER

The Trout Springs Canyon Falls Hatchery discharges to Canyon Falls Creek. The hatchery is fed by natural springs that upwells and is screened at the influent of the facility. The captured water flows through the hatchery and is returned back to the creek (at discharge points Outfall 001 and 002). Canyon Falls Creek is a tributary to the Puyallup River. The Puyallup River discharges into Commencement Bay. The river is listed as impaired for dissolved oxygen and fecal coliform.

A fall run of chinook salmon occurs on the Puyallup River. Coho, chum, and pink salmon are also found in the river, along with steelhead, sea-run coastal cutthroat trout, and bull trout (a threatened species). Sockeye salmon are considered indigenous to the basin, but are rarely seen today.

C. WASTEWATER CHARACTERIZATION

The Trout Springs Canyon Falls Hatchery reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from October 2010 through September 2019. The wastewater effluent is characterized in Table 2.

FACT SHEET FOR
 TROUT SPRINGS CANYON FALLS CREEK HATCHERY
 NPDES PERMIT WA0039268

Table 2 Wastewater Characterization.

Parameter	Average	Maximum Daily
Influent (CSP 005)		
Flowrate (MGD)	6.9	7.1
NH3 (mg/L)	2.2	46.7
Total Suspended Solids (mg/L)	1.0	2.0
Settleable Solids (ml/L)	0.0	0.1
Temperature (deg. C)	9.6	10.9
pH (s.u.)	Min.: 6.8, Avg.: 7.7, Max.: 9.2	
Rearing Pond or Raceway Effluent Discharge (Outfalls 001 and 002)		
BOD ₅ (mg/L), (lbs/day)	3.1 (167 lbs/day)	6.0 (375 lbs/day)
NH ₃ (mg/L), (lbs/day)	1.0 (14.3lb/day)	1.3 (67.4 lbs/day)
Net Settleable Solids (ml/L)	0.0	0.1
Net Total Suspended Solids (mg/L)	1.1	3.0
Temperature (deg. C)	9.8	13.4
pH (s.u.)	Min.: 6.5, Max.: 9.2	
Offline Settling Basin (CSP 003)		
Flowrate (gpd)	No Discharge	
Settleable Solids (ml/L)	No Discharge	
Total Suspended Solids (mg/L)	No Discharge	
Rearing Pond or Raceway Drawdown (CSP 004)		
Settleable Solids (ml/L)	No Discharge	
Total Suspended Solids (mg/L)	No Discharge	

D. SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED

The previous permit placed effluent limits on: Total BOD₅ (lbs/day), Total ammonia (lbs/day), Settleable Solids (net ml/L), TSS (net mg/L), and pH (s.u.) for Outfalls #001 and #002. Compliance Sampling Points #003 and #004 have limits for settleable solids (ml/L), and TSS (mg/L).

The Trout Springs Canyon Falls Hatchery has complied, for the most part, with the effluent limits and permit conditions throughout the duration from the effective date (October 1, 2010) of the previous permit through September 30, 2019. Ecology has assessed compliance based on its review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), discharge monitoring reports (DMRs) and on inspections.

- The maximum pH limitation was exceeded on November 2013 for Outfall 001 (9.21 s.u. was measured).
- The maximum pH limitation was exceeded on February 2017 for Outfall 002 (9.21 s.u. was measured).

- Seven DMRs were submitted late (February 2012; January, February, and March of 2013; and July, August, and September of 2016).

E. STATE ENVIRONMENTAL POLICY ACT (SEPA) COMPLIANCE

State law exempts the issuance, reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions that are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. PROPOSED PERMIT LIMITS

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the National Toxics Rule (40 CFR 131.36).
- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. TECHNOLOGY-BASED EFFLUENT LIMITS

The Technology-based effluent limitations are dictated by federal law (Title 40 CFR Part 451 – Concentrated Aquatic Animal Production Point Source Category) and by State law (requirements to meet AKART in WAC173-201A). 40 CFR Part 451 requires that investigational new animal drugs (INADs) be reported and a best management practices (BMPs) plan be developed and maintained on site. There are also a few requirements which need to be met in order to meet the EPA's definition for best practicable control technology currently available (BPT), best available technology economically achievable (BAT), and best conventional technology (BCT). These elements are listed as follows:

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

- Solids Control
- Material Storage
- Structural Maintenance
- Recordkeeping
- Training

These elements have been addressed in the previous Upland Fin-Fish Hatching and Rearing NPDES Waste Discharge General Permit and these relevant permit requirements have been retained in this permit.

Technology-based effluent limitations have also been established for this industry through the adoption of Chapter 173-221A WAC. This regulation contains both wastewater discharge standards and design criteria for wastewater treatment systems. This permit contains the same effluent limitations which have been adopted for this industry (Chapter 173-221A WAC).

The accompanying permit requires the Permittee to review their pollution prevention plan by May 31, 2018 and update the plan whenever necessary. The review, implementation, and updating of the pollution prevention plan will provide further reductions in the amount of solids discharged, prevent spills, and have procedures developed for responding to a spill.

This permit includes a prohibition on the discharge of Atlantic salmon into freshwater surface waters of the State. This prohibition was based in part on the May 1997 Pollution Control Hearings Board ruling that Atlantic salmon are a biological pollutant. Additionally, it is known that juvenile Atlantic salmon have been trapped by the Department of Fish and Wildlife in both Scatter Creek and the Chehalis River downstream of permitted upland fin-fish hatching and rearing facilities raising Atlantic salmon. The Department of Fish and Wildlife has expressed concerns to the Department of Ecology that Atlantic salmon fry and juvenile fish may cause ecological disruption if released to freshwater. The technology available to eliminate the inadvertent release of Atlantic salmon is screening the facility effluent. Screening is relatively inexpensive and commercially available. The Department believes that a precautionary stance in regards to the inadvertent release of Atlantic salmon is a reasonable step to prevent the establishment of this exotic species in our State waters. This new requirement imposed upon the industry only impacts a few permitted facilities statewide. It should be noted that WAC 232-12-271 also prohibits the release of exotic species into the State without a permit from the Director of the Washington State Department of Fish and Wildlife.

B. SURFACE WATER QUALITY-BASED EFFLUENT LIMITS

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters. Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Numerical criteria for the protection of aquatic life and recreation

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical criteria for the protection of human health

In 1992, U.S. EPA published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State in its National Toxics Rule (40 CFR (EPA, 1992). Ecology submitted a standards revision for 192 new human health criteria for 97 pollutants to EPA on August 1, 2016. In accordance with requirements of CWA section 303(c)(2)(B), EPA finalized 143 new and revised Washington specific human health criteria for priority pollutants, to apply to waters under Washington's jurisdiction. EPA approved 45 human health criteria as submitted by Washington. The EPA took no action on Ecology submitted criteria for arsenic, dioxin, and thallium. The existing criteria for these three pollutants as adopted in the National Toxics Rule (40 CFR 131.36) remain in effect.

These newly adopted criteria, located in WAC 173-201A-240, are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

Description--The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.

- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a 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. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

Facility Specific Requirements--This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.

Facility Specific Requirements--Ecology determined that this facility must also meet Tier II requirements. A Tier II analysis focuses on evaluating feasible alternatives that would eliminate or significantly reduce the level of degradation. The analysis also includes a review of the benefits and costs associated with the lowering of water quality. New discharges and facility expansions are prohibited from lowering water quality without providing overriding public benefits.

Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution. Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART). Mixing zones typically require compliance

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 4 means the effluent is 25% and the receiving water is 75% of the total volume of water at the boundary of the mixing zone. Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life *acute* criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life *chronic* criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two and four tenths (2.4) liters/day for drinking water (increased from two liters/day in the 2016 Water Quality Standards update).
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit does not authorize a mixing zone. The Permittee may submit a Mixing Zone Study, for Ecology's consideration, to evaluate whether or not a mixing zone is warranted for the discharge. If considering conducting and submitting a study the Permittee should discuss the applicable requirements with Ecology.

C. DESIGNATED USES AND SURFACE WATER QUALITY CRITERIA

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The table included below summarizes the criteria applicable to this facility's discharge.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species. The Aquatic Life Uses for this receiving water are identified below.

Table 3 Freshwater Aquatic Life Uses and Associated Criteria

Core Summer Salmonid Habitat	
Temperature Criteria – Highest 7-DAD MAX	16°C (60.8°F)
Dissolved Oxygen Criteria	9.5 mg/L
Turbidity Criteria	<ul style="list-style-type: none"> • 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5, with a human-caused variation within the above range of less than 0.2 units.

Salmon and Trout Spawning (Applies seasonally as described in Ecology Publication 06-10-038)	
Temperature Criteria – Highest 7-DAD MAX (from Sept 15 to July 1)	13°C (55.4°F)

- The *recreational uses* for this receiving water are identified below.

Table 4 Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	E. coli organism levels within an averaging period must not exceed a geometric mean value of 100 CFU or MPN per 100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained within the averaging period exceeding 320 CFU or MPN per 100 mL.
	(Fecal coliform expires 12/31/2020) Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL.

- The *water supply uses* are domestic, agricultural, industrial, and stock watering.
- The *miscellaneous freshwater uses* are wildlife habitat, harvesting, commerce and navigation, boating, and aesthetics.

D. WATER QUALITY IMPAIRMENTS

The Puyallup River has approved Total Maximum Daily Load (TMDL) studies for dissolved oxygen and fecal coliform. In order to implement the wasteload allocations from the approved TMDLs, the Upland Fin-fish Hatching and Rearing General Permit has been converted to an individual NPDES permit for this facility. Wasteload allocations for the Trout Springs Canyon Falls Hatchery are defined in: **Puyallup River Total Maximum Daily Load for Biochemical Oxygen Demand, Ammonia, and Residual Chlorine (ecy pub. no. 96-326, as addended July 24, 1994)**. The other TMDL Study: **Puyallup River Watershed Fecal Coliform Total Maximum Daily Load (ecy pub. no. 11-10-040, June 2011)** did not have a fecal coliform wasteload allocation for the Trout Springs Canyon Falls Hatchery.

E. EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NARRATIVE CRITERIA

Ecology must consider the narrative criteria described in WAC 173-201A-160 when it determines permit limits and conditions. Narrative water quality criteria limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge which have the potential to adversely affect designated uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health.

Ecology considers narrative criteria when it evaluates the characteristics of the wastewater and when it implements all known, available, and reasonable methods of treatment and prevention (AKART) as described above in the technology-based limits section. When Ecology determines if a facility is meeting AKART it considers the pollutants in the wastewater and the adequacy of the treatment to prevent the violation of narrative criteria.

In addition, Ecology considers the toxicity of the wastewater discharge by requiring whole effluent toxicity (WET) testing when there is a reasonable potential for the discharge to contain toxics. Ecology's analysis of the need for WET testing for this discharge is described later in the fact sheet.

F. EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA

Ecology has not authorized a mixing zone in the permit.

Ecology determined the impacts of dissolved oxygen deficiency, pH, chlorine, ammonia, and temperature as described below. The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water.

Dissolved Oxygen--BOD₅ and Ammonia Effects--Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone. The 5-day Biochemical Oxygen Demand (BOD₅) of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand in the receiving water.

Ecology has completed a dissolved oxygen TMDL, referenced above, and established effluent limits for biochemical oxygen demand (BOD₅) and ammonia (NH₃). The proposed permit includes effluent limits for BOD₅ and NH₃ derived from the completed TMDL.

pH--Ecology predicts no violation of the pH criteria under critical conditions. Therefore, the proposed permit includes technology-based effluent limits for pH. Generally in this case Ecology established a technology-based limit of a pH range of 6.0 to 9.0. The pH limits are unchanged from the previous permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

This facility rears trout and salmonids (after the upgrade), and does not contain toxic pollutants. If toxic pollutants are present, the hatchlings would not survive and would impact hatchery operations.

Total Ammonia

The **Puyallup River Total Maximum Daily Load for Biochemical Oxygen Demand, Ammonia, and Residual Chlorine (ecy pub. no. 96-326, as addended July 24, 1994)** provides the hatchery with a wasteload allocation for Total Ammonia. The total ammonia wasteload limit is implemented in the accompanying permit.

Total Residual Chlorine

The **Puyallup River Total Maximum Daily Load for Biochemical Oxygen Demand, Ammonia, and Residual Chlorine (ecy pub. no. 96-326, as addended July 24, 1994)** does not provide a wasteload allocation for Total Residual Chlorine to the hatchery. This facility has not been identified to discharge chlorine. As such, the hatchery is prohibited from discharging total residual chlorine into Clear Creek.

Temperature--The state temperature standards (WAC 173-201A-200-210 and 600-612) include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- Annual summer maximum and supplementary spawning/rearing criteria

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1)(c), 210(1)(c), and Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax). The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

At locations and times when a threshold criterion is being exceeded due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25% or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

- Protections for temperature acute effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

The Trout Springs Canyon Falls Hatchery hatches and rears fish to protect, and enhance native salmonids' habitat. Temperatures that harm fish in the stream would also harm the fish at the facility. Furthermore, Canyon Falls Creek is not listed on the 303(d) list as being impaired for temperature. As such, temperature is not a pollutant of concern for this facility at this time.

G. HUMAN HEALTH

Washington's water quality standards include numeric human health-based criteria for 97 priority pollutants that Ecology must consider when writing NPDES permits.

Ecology determined the applicant's discharge does not contain chemicals of concern based on existing effluent data or knowledge of discharges to the system. Ecology will reevaluate this discharge for impacts to human health at the next permit reissuance.

H. SEDIMENT QUALITY

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website.

<http://www.ecy.wa.gov/programs/tcp/smu/sediment.html>

Through a review of the discharger characteristics and of the effluent characteristics, Ecology determined that this discharge has no reasonable potential to violate the sediment management standards.

I. GROUNDWATER QUALITY LIMITS

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

The Trout Springs Canyon Falls Hatchery does not discharge wastewater to the ground. No permit limits are required to protect groundwater.

J. WHOLE EFFLUENT TOXICITY

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Using the screening criteria in chapter 173-205-040 WAC, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. Therefore, this permit does not require WET testing. Ecology may require WET testing in the future if it receives information indicating that toxicity may be present in this effluent.

K. COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT ISSUED ON JULY 22, 2010

The permit limits from the previous permit are also included in this permit. New limitations added include temperature spawning criteria for Outfalls 001, 002, 003, and 004; and pH limits were added for Outfalls 003, and 004.

IV. MONITORING REQUIREMENTS

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects. When a facility uses an alternative method as allowed by the permit, it must report the test method, detection level (DL), and quantitation level (QL) on the discharge monitoring report or in the required report.

A. WASTEWATER MONITORING

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

B. LAB ACCREDITATION

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters).

V. OTHER PERMIT CONDITIONS

A. REPORTING AND RECORD KEEPING

Ecology based Special Condition S3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. FACILITY SAMPLING PLAN

A Facility Sampling Plan is required under Condition S4.B to delineate the sampling locations and procedures for each facility. The facility must sample in accordance with this plan along with any revisions directed by Ecology. The Permittee must keep a copy of the Plan on site and available to staff and Ecology upon request..

C. OPERATIONAL LOG

The Permittee is required to keep records on disease control chemicals used at the facility, including who administered the chemicals, date of application, trade name, where used (specific pond, raceway, troughs, etc.), estimated concentration during application and at discharge, duration of use, reason for use, and disposal methods. WDFW developed a form during the last permit cycle that Ecology is incorporating into this permit (Chemical Operational Log – Appendix D). The purpose of the Operational Log is to verify chemical concentration calculations and amounts. The collection and recording of meaningful information to determine chemical concentration in the effluent is necessary to verify permit and water quality standards compliance.

The Operational Log must also include hatchery fish loadings and total amount of food fed for each calendar month. The log must be kept on-site and available to Ecology employees upon request.

D. SOLID WASTE CONTROL PLAN

Ecology has determined that these facilities can prevent groundwater contamination and minimize the release of pollutants through the development and use of a Solid Waste Management Plan. The plan must address floating, suspended, and settled solids and describe how it plans to remove collected solids. Facilities must operate in accordance with this plan along with any revisions directed by Ecology to prevent pollution.

The Permittee is required to prepare or update the Solid Waste Management Plan and submit to Ecology for review, and review and update the plan as necessary.

Carcass Placement: Carcasses are considered solid waste unless they are reintroduced into the ecosystem as replacement for marine-derived nutrients (MDN). Anadromous salmon carcasses contribute MDN to freshwater ecosystems in the Pacific Northwest (Naiman, 2001). These nutrients are no longer available in historic amounts because fewer adult fish are returning to inland systems (Hatchery Scientific Review Group, 2009; Kholer, et al., 2008). To compensate for reduced nutrient load mitigation efforts have focused on addition of nutrients to freshwater systems. Distributing spawned salmonid carcasses from fish hatcheries is one method of artificially enhancing nutrient loads in oligotrophic (nutrient poor) systems.

WDFW actively promotes nutrient enhancement efforts. At the time of this draft permit, Ecology is working on developing a Nutrient Enhancement Policy to ensure that carcass placement activities are done with the receiving waters in mind, with focus on oligotrophic systems and not exacerbating water quality problems.

Carcass placement and nutrient enhancement activities are not specifically regulated under this NPDES permit.

E. SPILL PLAN

Hatcheries store and use chemicals that have the potential to cause water pollution or groundwater contamination. Ecology can require a facility to develop Best Management Plans to prevent this accidental release (Section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080).

S3.G requires the Permittee to report spills of oil or hazardous materials in accordance with RCW 90.56.280 and Chapter 173-303-145 WAC. S7 requires the development of a Spill Prevention Plan, which can be combined with the Pollution Prevention Plan.

F. POLLUTION PREVENTION PLAN

Ecology has determined that fish hatching and rearing facilities can prevent or minimize the release of pollutants through the development and use of a Pollution Prevention Plan (S8). Facilities must operate in accordance with this plan along with any revisions directed by Ecology to prevent an accidental release of pollutants under the authority of 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080. Facilities must review the Pollution Prevention Plan each permit cycle and update it as necessary, and ensure that staff are aware of and trained in implementing the Plan.

The Permittee must include temperature reduction BMPs, disease control chemical BMPs, and spill prevention.

H. GENERAL CONDITIONS

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial NPDES permits issued by Ecology.

VI. PERMIT ISSUANCE PROCEDURES

A. PERMIT MODIFICATIONS

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for groundwaters, after obtaining new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. PROPOSED PERMIT ISSUANCE

This proposed permit includes all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of 5 years.

VII. REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.

1988. *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling*. USEPA Office of Water, Washington, D.C.

1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

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- Tsivoglou, E.C., and J.R. Wallace.
1972. *Characterization of Stream Reaeration Capacity*. EPA-R3-72-012. (Cited in EPA 1985 op.cit.) Washington State Department of Ecology.
1989. *Quality and Fate of Fish Hatchery Effluents During the Summer Low Flow Season*. Publication Number 89-17.
1993. *Puyallup River Total Maximum Daily Load for Biochemical Oxygen Demand, Ammonia, and Residual Chlorine*. Publication Number 96-326.
1994. *Addendum to the 1993 Puyallup River TMDL Report*. Memorandum from Greg Pelletier to Bill Backous dated July 22, 1994. Publication Number 94-e36.
2011. *Puyallup River Watershed: Fecal Coliform Total Maximum Daily Load - Water Quality Improvement Report and Implementation Plan*. Publication Number 11-10-040.
- February 2007. *Focus Sheet on Solid Waste Control Plan, Developing a Solid Waste Control Plan for Industrial Wastewater Discharge Permittees*, Publication Number 07-10-024.
<http://www.ecy.wa.gov/pubs/0710024.pdf>
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(<https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>)
- Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)
- Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/permits/guidance.html>)
- Wright, R.M., and A.J. McDonnell.
1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(E2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

Ecology proposes to reissue a permit to the Trout Springs Canyon Falls Hatchery. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on June 11, 2018; June 18, 2018; June 3, 2019; and June 10, 2019, in the *Tacoma News Tribune* to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft on December 2, 2019, in the *Tacoma News Tribune* to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

The notice:

- Tells where copies of the draft Permit and Fact Sheet are available for public evaluation (a local public library, the closest Regional or Field Office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting* which is available on our website at <https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html>.

You may obtain further information from Ecology by telephone, 360-407-6280, or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

The primary author of this permit and fact sheet is John Y. Diamant, P.E.

APPENDIX B--YOUR RIGHT TO APPEAL

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive Southeast Lacey, WA 98503	Department of Ecology Attn: Appeals Processing Desk P.O. Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Road Southwest, Suite 301 Tumwater, WA 98501	Pollution Control Hearings Board P.O. Box 40903 Olympia, WA 98504-0903

APPENDIX C--GLOSSARY

1-DMax or 1-day maximum temperature -- The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures -- The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute toxicity --The lethal effect of a compound on an organism that occurs in a short time period, usually 48 to 96 hours.

AKART -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate point of compliance -- An alternative location in the groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ambient water quality -- The existing environmental condition of the water in a receiving water body.

Ammonia -- Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual average design flow (AADF -- average of the daily flow volumes anticipated to occur over a calendar year.

Average monthly (intermittent) discharge limit-- The average of the measured values obtained over a calendar months time taking into account zero discharge days.

Average monthly discharge limit -- The average of the measured values obtained over a calendar month's time.

Background water quality -- The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)]. Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

Best management practices (BMPs) -- Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD5 -- Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD₅ is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass -- The intentional diversion of waste streams from any portion of a treatment facility.

Categorical pretreatment standards -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Chlorine -- A chemical used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic toxicity -- The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean water act (CWA) -- The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance inspection-without sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance inspection-with sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite sample -- A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction activity -- Clearing, grading, excavation, and any other activity, which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous monitoring -- Uninterrupted, unless otherwise noted in the permit.

Critical condition -- The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Date of receipt -- This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Detection limit -- The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Dilution factor (DF) -- A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Distribution uniformity -- The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Early warning value -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

Enforcement limit -- The concentration assigned to a contaminant in the groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater criterion will not be exceeded and that background water quality will be protected.

Engineering report -- A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal coliform bacteria -- Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of warm-blooded animal feces.

Grab sample -- A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Groundwater -- Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Industrial user -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater -- Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated stormwater and, also, leachate from solid waste facilities.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Major facility -- A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum daily discharge limit -- The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum day design flow (MDDF) -- The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum month design flow (MMDF) -- The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum week design flow (MWDF) -- The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method detection level (MDL) -- See Detection Limit.

Minor facility -- A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing zone -- An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

National pollutant discharge elimination system (NPDES) -- The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH -- The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Peak hour design flow (PHDF) -- The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak instantaneous design flow (PIDF) -- The maximum anticipated instantaneous flow.

Point of compliance -- The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential significant industrial user (PSIU) -- A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).
Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) -- Also known as Minimum Level of Quantitation (ML) -- The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to $(1, 2, \text{or } 5) \times 10^n$, where n is an integer. (64 FR 30417).

ALSO GIVEN AS:

The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

Reasonable potential -- A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer -- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Sample Maximum -- No sample may exceed this value.

Significant industrial user (SIU) --

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely

*FACT SHEET FOR
TROUT SPRINGS CANYON FALLS CREEK HATCHERY
NPDES PERMIT WA0039268*

affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil scientist -- An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

Solid waste -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

Soluble BOD₅ -- Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD₅ test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD₅ test is sufficient to remove the particulate organic fraction.

State waters -- Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a stormwater drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based effluent limit -- A permit limit based on the ability of a treatment method to reduce the pollutant.

Total coliform bacteria--A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total dissolved solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) --A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

Total suspended solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset -- An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits 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, lack of preventative maintenance, or careless or improper operation.

Water quality-based effluent limit -- A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

APPENDIX D--RESPONSE TO COMMENTS

No public comments were received.