FACT SHEET

Public Comment Period Start Date: May 7, 2012
Public Comment Expiration Date: June 6, 2012

The United States Environmental Protection Agency (EPA)
Plans To Reissue A National Pollutant Discharge Elimination System (NPDES) Permit

Swinomish Reservation Sewer District, Shelter Bay Community
Shelter Bay Community, Inc.
1000 Shoshone Drive
LaConner, WA 98257

Technical Contact:
Kai Shum
email: Shum.Kai@epa.gov
Phone: 206-553-0060

EPA Proposes To Reissue NPDES Permit

EPA proposes to reissue the NPDES permit to the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations, and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

Tribal Certification

EPA has requested certification from the Swinomish Indian Tribal Community that the NPDES permit for this facility complies with Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Swinomish Indian Tribal Community
11404 Moorage Way
LaConner, WA 98257

Public Comment

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

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

Documents are Available for Review.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or 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 other information can also be found by visiting the Region 10 website at "www.epa.gov/r10earth/water.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 900, OWW-130
Seattle, Washington 98101
(206) 553-2108 or
1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permit are also available at:

EPA Washington Operations Office
300 Desmond Drive SE
Lacey, Washington 98503
(360)-407-7564 or (800) 917-0043

TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS

AML	Average Monthly Limit
BOD_5	Biochemical oxygen demand, five-day
EC	Degrees Celsius
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
I/I	Inflow and Infiltration
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter
ml	milliliters
ML	Minimum Level
:g/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit
N	Nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TSD	Technical Support document (EPA, 1991)
TSS	Total suspended solids
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Services
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. APPLICANT

This fact sheet provides information on the draft NPDES permit for the following entity:

Swinomish Reservation Sewer District, Shelter Bay
Shelter Bay Community, Inc.

Mailing Address:
1000 Shoshone Drive
LaConner, WA 98257

Physical Address:
1000 C Samish Place
LaConner, WA 98257

Facility Contacts:

Judy Grosvenor
Community Manager
(360) 466-3805

Robert Connolly
Public Works Supervisor
Shelter Bay Community, Inc.
Email: sbcmd@frontier.com
Phone: (360) 202-2391

II. FACILITY INFORMATION

The Shelter Bay Community wastewater treatment plant is an NPDES minor facility treating domestic sewage from residences located within the Swinomish Reservation on land leased to residents of the Shelter Bay Community. No industrial waste water will be discharged to the sewage treatment plant under current zoning by the Swinomish Indian Tribal Community (SITC). The treatment plant provides secondary (biological) treatment of wastewater using oxidation ditch, settling basins, and chlorine disinfection. Effluent is discharged to the Swinomish Channel through a submerged diffuser. A location map of the facility is in Appendix A.

This wastewater treatment plant is located within the Swinomish Reservation, in Skagit County, Washington, and services a population of approximately 1,850, and has a design flow rate of 0.227 million gallons per day (mgd).

The Shelter Bay Community wastewater treatment plant (WWTP) was originally constructed in the early 1970's with a design flow of 60,000 gallons per day (gpd). The plant expanded to a design flow of 100,000 gpd (average daily flow for the maximum month) in 1984. The last expansion was undertaken in 1994 to increase the design flow to 227,000 gpd. The plant is designed to meet secondary biological treatment standards as required by federal regulations.

The service area for this WWTP is fixed to a maximum build out of 924 lots with a total of 932 service connections. The Shelter Bay Community operates on land leased to the year 2044 from the SITC, so the lease agreement fixes the size of the service area. The latest plant expansion was designed to provide adequate capacity to treat wastewater generated on the ultimate build out of the leased lands. The estimated build out population is 2,500 people. The plant receives no discharges from industrial sources and no industrial discharges are anticipated in the future because the SITC has not zoned any of the land in the service area for commercial or industrial use.

Treatment Process:
The facility provides secondary treatment of domestic wastewater (sewage). Influent wastewater from households enter the plant through a bar screen and flows to oxidation ditches. The resident contact time in the oxidation ditches is approximately 14 days. Contents in the oxidation ditches flow into a clarifier where solids and bacterial mass are settled. The settled wastewater then flows to a chlorine contact chamber where it is mixed with chlorine and held for about an hour for disinfection of bacteria and pathogens. After a de-chlorination process, the effluent flows through the outfall pipe to the Swinomish Channel for discharge. The settled solids and bacteria mass from the clarifier are routed partly back to the oxidation ditch and partly directed to a storage tank. Sludge is currently transported to the Anacortes WWTP for composting and/or disposal.

The facility discharges to the Swinomish Channel, a marine water body that is within the boundaries of the Swinomish Reservation. Refer to the process flow diagram in Appendix A for a more detailed description of the wastewater treatment process, location map, and location of discharge.

The 2010 NPDES Permit Application lists the average daily flow rate during the year prior as 0.11 million gallons per day (mgd), with the maximum daily flow rate as 0.15 mgd. When compared to the designed flow rate of the waste water treatment plant of 0.2274 mgd, the average daily flow rate is approximately half of the design flow rate.

Permit Status:
The most recent NPDES Permit for this facility was effective on February 1, 2006 and expired on January 31, 2011. The facility submitted a new permit application dated July 30, 2010. In EPA's letter dated January 10, 2011, EPA determined that the application was timely and complete. Therefore, the 2006 permit remains effective and enforceable until a new permit is issued.

Permit Compliance:
Review of monitoring and inspection reports show the facility is generally be in compliance with the conditions of the permit. Discharge Monitoring Reports (DMRs) submitted by the facility during the previous permit cycle show that there were two incidences of discharge which exceeded the permitted limits pH range.

Summary of Permit Application:
In its NPDES Permit Application dated July 30, 2010, the facility reported the following information:

- The facility has a design flow rate of 0.23 mgd.
- The facility is requesting to renew its NPDES permit for continuous discharge
- The annual average daily flow rate in 2009 was 0.11 mgd.
- The facility's collection system consists only of separate sanitary sewers. No contribution from a combined storm sewer was indicated.
- The facility does not land-apply treated wastewater.
- The facility does not discharge or transport treated or untreated wastewater to another treatment works.
- The facility has secondary treatment level.
- The facility uses chlorine disinfection and dechlorination of effluent wastewater.
- During the last permit cycle, the maximum temperature effluent was 27°C. The maximum daily discharge for ammonia is 19 mg/l, and 0.05 mg/l for Total Residual Chlorine.
- Inflow and Infiltration (I/I) rate from the wastewater collection system is estimated to be 1,250 gallons per day.

Concerning I/I, the facility has implemented a cleaning and inspection schedule in which 14 point repairs on the collection piping were completed in 2010.

Status of marine outfall: On April 27, 2006, the facility through its contractor, Liquivision Technology Diving Services, conducted an outfall inspection. The facility after having reviewed the inspection video and having debriefed its contractors, concluded that the outfall and diffuser are operating normally.

In February 2012, EPA provided copies of the preliminary draft Permit and Fact Sheet to Washington State Department of Health and to the Swinomish Tribal Community for review. By engaging the Swinomish Tribal Community, EPA had initiated government-to-government consultations pursuant to the reissuance of this proposed NPDES permit.

III. RECEIVING WATER

The receiving water from the wastewater treatment plant is discharged into Swinomish Channel, which is located in the northern half of Puget Sound in western Washington. The WWTP discharges its wastewater directly to Swinomish Channel via Outfall 001, through a marine outfall pipe equipped with a diffuser. The application states that the outfall is 200 feet from shore, and 13 feet below surface.

On April 27, 2006, the facility through its contractor, Liquivision Technology Diving Services, conducted its latest outfall inspection. Based on the inspection video and discussion with its contractors, the facility concluded that the outfall and diffuser are operating properly. The Swinomish Indian Tribal Community has determined that the point of discharge at the outfall is within the boundaries of the Swinomish Reservation. The outfall is approximately 100 feet from the boundary with the State of Washington water (see Table A-2: Outfall Location Map). Therefore, the discharge can affect waters of the State of Washington downstream from the discharge.

A. Water Quality Standards

The SITC does not have EPA approved water quality standards at this time. Lacking EPA-approved tribal standards, the State of Washington's Surface Water Quality Standards (Chapter 173-201A WAC) is used for evaluating and limiting the discharge of pollutants from this facility in this case. The SITC may promulgate its own water quality standards in the future. The state standards are consistent with federal guidance and have been approved by EPA. The state regulation is designed to protect the beneficial uses of the surface waters of the state. WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Section 301(b)(1)(c) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Federal regulations in 40 CFR 122.4(d) prohibit the issuance of an NPDES permit which does not ensure compliance with the water quality standards of all affected States.

A State’s water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as cold water biota, contact recreation, etc.) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary, by the State, to support the beneficial uses as well as to maintain and protect various levels of water quality and uses.

The receiving water is Swinomish Channel. This Swinomish Channel is classified as having "Excellent” marine waters according to the State of Washington’s Water Quality Standards (found at WAC 173-201A-612, Table 612, as amended in November, 2006). Waters classified as “Excellent” have a general description of: “excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc) rearing and spawning.” This segment of water is also listed for Shellfish Harvest, Primary Contact Recreation, Wildlife Habitat, Harvesting, Commerce and Navigation, Boating, and Aesthetics.

Treatment as a State

On April 18, 2008 EPA approved the SITC of Washington application for “treatment in the same manner as a State.” After reviewing the application and comments provided by the State of Washington, EPA found that the tribe meets the eligibility criteria of Section 518(e) of the CWA and EPA regulations at 40 CFR § 131.8(a). Therefore, the SITC is eligible to adopt water quality standards and seek EPA approval, pursuant to Section 303(c) of the CWA, and to certify that discharges comply with those water quality standards, pursuant to Section 401 of the CWA, for all surface waters of the Swinomish Reservation (http://yosemite.epa.gov/R10/WATER.NSF/Water+Quality+Standards/Tribal+WQS+Inv). The Swinomish Tribe does not yet have Water Quality Standards (WQS) that have been approved by EPA; due to this situation, the tribe is using Washington State Water Quality Standards per SITC Tribal Resolution #2008-08-201.

B. Water Quality Limited Segment

In accordance with Section 303(d) of the Clean Water Act, the State of Washington must identify state waters not achieving water quality standards in spite of application of technology-based controls in the NPDES permits for point sources. Such water bodies are known as water quality limited segments (WQLSs). A water quality limited segment is any water body or definable portion of a water body where it is known that water quality does not meet applicable water quality standards and/or is not expected to meet applicable water quality standards.

Once a water body is identified as a WQLS, the State of Washington is required under Section 303(d) of the Clean Water Act to develop a total maximum daily load (TMDL) for the pollutant of concern. A TMDL is a mechanism for determining the assimilative capacity of a water body and allocating that capacity among point and non-point pollutant sources, taking into account natural background levels and a margin of safety. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. The allocations for point sources, or “waste load allocations” (WLAs), are implemented through limits in NPDES permits. On September 16, 2011, EPA referred to Washington Department of Ecology’s website for information on Washington’s water quality assessment at http://apps.ecy.wa.gov/wqawa2008/viewer.htm. There are no Category 5 waters on the 303(d) list for impacted waters in the vicinity of the Shelter Bay WWTP outfall. The State of Washington identifies Category 5 waters as those waters where preparation of a TMDL is necessary. Therefore in conclusion, are no TMDLs in the vicinity of this WWTP.

IV. EFFLUENT LIMITATIONS

A. Basis for Permit Effluent Limits

EPA adhered to the requirements of the Clean Water Act (CWA), state and federal regulations, and EPA’s 1991 *Technical Support Document for Water Quality-Based Toxics Control* (TSD) to develop the effluent limits in the draft permit. In general, the CWA requires that the effluent limit for a particular pollutant be the more stringent of either the technology-based limit or water quality-based limit. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards of a waterbody are being met and they may be more stringent than technology-based effluent limits.

EPA sets technology-based limits based on the effluent quality that is achievable using readily available technology. EPA evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must develop more stringent water quality-based limits. Water quality-based limits are designed to prevent exceedances of the water quality standards in the receiving waters.

The proposed permit includes technology-based limits for BOD_5, TSS, pH, and fecal coliform, and water-quality based limits for total residual chlorine that has been retained from the previous permit. The basis for the proposed effluent limits described in the draft permit is provided in Appendix B.

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal and state regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 and WAC 173-210A. These regulations are performance standards that constitute best available technology for treatment for municipal wastewater.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by federal (and state) regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133. These regulations are performance standards that constitute best available technology for treatment for municipal wastewater.

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Antidegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-300.

The discharges authorized by this proposed permit should not cause a loss of beneficial uses, will not cause a lowering of water quality in the receiving water, and has permit limits that are as stringent as the previous permit authorization. Therefore, EPA believes that the proposed permit complies with the State of Washington’s Antidegradation Policy.

Critical Conditions

Surface water quality-based limits are derived for the water-body's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

The State Water Quality Standards allow the use of mixing zones around the point of discharge to comply with numerical water standards. A very limited acute zone is allowed to meet the acute standards (based on a one-hour exposure every three years) and a larger “chronic" mixing zone is allowed for meet the chronic standards (standards based on average four-day average concentration once every three years). The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone during the worst-case receiving water conditions. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-400. The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

WAC 173-201A-400(7)(b)(i) defines the mixing zone for estuarine receiving waters. The maximum size of the mixing zone may not exceed 200 feet to plus the depth of water over the discharge port as measured during Mean Lower Low Water (MLLW). Based on the latest permit application, the sewage treatment plant outfall ends approximately 200 feet offshore at a depth of 13 feet below surface. Accounting for the height of the outfall pipe and its supports, the total depth is approximately 14 feet below mean lower low water (MLLW). Therefore, the chronic mixing zone may not exceed 214 feet. WAC 173-201A-400(8)(b) indicates that the maximum size of the mixing zone where acute criteria may be exceeded is 10% of the mixing zone defined in WAC 173-201A-400(7)(b). In the case of this facility, the acute mixing zone is therefore 21.4 feet.

Use Designations of the Receiving Water

Use designations of Swinomish Channel can be found in Table 612 of WAC 173-201A-612; the receiving water is described in Table 612 as:

“*Possession Sound, Port Susan, Saratoga Passage, and Skagit Bay east of Whidbey Island and State Highway 20 Bridge at Deception Pass between 47° 57’ N (Mukilteo) and latitude 48° 27’ 20” N (Similk Bay), except as otherwise noted.*”

The following is a summary of the designated use designations:

Aquatic Life: Excellent

Protection for Shellfish Harvest

Recreation Uses: Primary Contact

Misc. Uses: Wildlife Habitat, Harvesting, Commerce/Navigation, Boating and Aesthetics.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). From WAC 173-201A-210, criteria for this receiving water are summarized below:

Table 1: Applicable Water Quality Criteria

Fecal Coliform	14 organisms/100 ml maximum geometric mean & no more than 10% of samples in excess of 43 organisms/100 mL
Dissolved Oxygen	6 mg/l minimum
Temperature	16 degrees Celsius maximum or maximum incremental increases no greater than 0.3 degrees Celsius
pH	7.0 to 8.5 standard units
Turbidity	less than 5 NTU over background when the background is 50 NTU or less; or a 10% increase in turbidity when the background turbidity is more than 50 NTU.
Toxics	Toxic 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.

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

Pollutant concentrations (e.g. chlorine, bacteria) in the proposed discharge exceed water quality criteria with technology-based controls. A previously authorized mixing zone is retained for this permit revision in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A-400 WAC. That zone is limited to a distance of 214 feet in any direction from the outfall terminus and the zone of acute criteria exceedance is limited to a distance of 21.4 feet from the outfall.

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the EPA plumes model. The dilution factors have been determined previously by Washington Department of Ecology in 1999 as follows (from Appendix C): Acute Criteria of 11:1 and Chronic Criteria of 53:1

Effluent Limitation Summary

Proposed limits are the same as the existing permit, except for the addition of the 0.265 lbs/day daily maximum loading limit for Total Residual Chlorine.

Table 2: Comparison of Proposed Effluent Limits With Existing Permit Limitations

Parameter	Proposed Limits	Existing Limits in 2006 Permit
BOD_5	Average Monthly Limit 30 mg/l, 57 lb./day Average Weekly Limit 45 mg/l, 85 lb./day	Average Monthly Limit 30 mg/l, 57 lb./day Average Weekly Limit 45 mg/l, 85 lb./day
TSS	Average Monthly Limit 30 mg/l, 57 lb./day Average Weekly Limit 45 mg/l, 85 lb./day	Average Monthly Limit 30 mg/l, 57 lb./day Average Weekly Limit 45 mg/l, 85 lb./day
pH	shall be within the range of 6 to 9 standard units	shall be within the range of 6 to 9 standard units
Fecal Coliform Bacteria	Average Monthly Limit 200/100 ml* Average Weekly Limit 400/100 ml* (*Geometric Mean Criterion)	Average Monthly Limit 200/100 ml* Average Weekly Limit 400/100 ml* (*Geometric Mean Criterion)
Total Residual Chlorine	Average Monthly Limit 0.05 mg/l, 0.095 lb./day Maximum Daily Limit 0.14 mg/l, and 0.265 lbs/day	Average Monthly Limit 0.05 mg/l, 0.095 lb./day Maximum Daily Limit 0.14 mg/l

D. Proposed Monitoring and Effluent Limitations

The following summarizes the proposed effluent limitations that are in the draft permit.

1. Removal Requirements for BOD_5 and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration for of BOD_5 and TSS. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time

period.

2. There must be no discharge of any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water.

3. Table 3 below presents the proposed range for pH, the concentrations and loading effluent limits for average monthly, and average weekly effluent limits for BOD_5, TSS, and fecal coliform, and the percent removal requirements for BOD_5, and TSS.

Table 3: Proposed Monitoring and Effluent Discharge Limitations

Parameter	Effluent Limitations				Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit[b]	Percent Removal	Sample Location	Sample Frequency	Sample Type
Flow, mgd	Report	---	Report	---	Effluent	Continuous	On-line
Biochemical Oxygen Demand (BOD_5)	30 mg/l	45 mg/l	---	85% (min.)	Influent and Effluent	1/week	24-hr Composite
	57 lbs/day	85 lbs/day	---				
Total Suspended Solids (TSS)	30 mg/l	45 mg/l	---	85% (min.)	Influent and Effluent	1/week	24-hr Composite
	57 lbs/day	85 lbs/day	---				
Fecal Coliform[a]	200/100 ml	400/100 ml	---	---	Effluent	1/week from Oct. to April 2/week from May to Sept.	Grab
Total Residual Chlorine[b,c]	0.05 mg/L	---	0.14 mg/l[b]	---	Effluent	5/week	Grab
	0.095 lb/day	---	0.265 lb/day[b]				
Total Ammonia as N	Report	---	Report Max. Daily Value	---	Effluent	1/quarter	24-hr Composite
Temperature, °C	Report	---	Report Max. Daily Value	---	Effluent	2/week	Grab

Parameter	Effluent Limitations				Monitoring Requirements		
	Average Monthly Limit	Average Weekly Limit	Max. Daily Limit[b]	Percent Removal	Sample Location	Sample Frequency	Sample Type
Alkalinity, mg/l as $CaCO_3$	Report	---	Report Max. Daily Value	---	Effluent	1/year	Grab
pH	6.0 to 9.0 at all times				Effluent	5/week	Grab
NPDES Application 2A Effluent Testing Data[e]	See footnote (e)				Effluent	3/5 years	See Footnote (e)

a. The Average Monthly Limit and the Average Weekly Limit for Fecal Coliform are based on the Geometric Mean in organisms/100 ml. See Part VI for a definition of geometric mean. If any value used to calculate the geometric mean is less than 1, the permittee must round that value up to 1 for purposes of calculating the geometric mean.

b. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation. See Parts I.B.2 and III.G.

c. The average monthly concentration limit for chlorine is not quantifiable using EPA approved test methods. The permittee will be in compliance with the average monthly effluent limit provided the average monthly chlorine residual levels are at or below the compliance evaluation level of 0.05 mg/l (ML).

d. Percent Removal is calculated using the following equation: ((monthly average influent concentration – monthly average effluent concentration)/monthly average influent concentration) x 100

e. For Effluent Testing Data, in accordance with instructions in NPDES Application Form 2A, Part B.6 and where each test is conducted in a separate permit year during the permitted discharge period, specifically for each of the first three years of the permit.

f. The maximum ML for Total Ammonia is 0.05 mg/l.

g. If no discharge occurs during the reporting period, “no discharge” shall be reported on the DMR.

V. MONITORING REQUIREMENTS

A. Basis for Effluent Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring, for reporting results on DMRs or on the application for renewal, as appropriate, to the U.S. Environmental Protection Agency (EPA).

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits (MDLs) are less than the effluent limits. Monitoring frequencies are listed in Table 4, above.

C. Reporting of Monitoring Results

Paper Copy Submissions

The permittee must summarize monitoring results each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1) or equivalent. The permittee must submit reports monthly, postmarked by the 10th day of the following month. The permittee must sign and certify all DMRs, and all other reports, in accordance with the requirements of Part V.E. of the proposed permit ("Signatory Requirements"). The permittee must submit the legible originals of these documents to the Director, Office of Compliance and Enforcement, with copies to SITC at the following addresses:

US EPA Region 10
Attn: ICIS Data Entry Team
1200 Sixth Avenue, Suite 900
OCE-133
Seattle, Washington 98101-3140

Swinomish Indian Tribal Community (SITC)
Office of Planning and Community Development
Water Resources Program
11430 Moorage Way
LaConner, Washington 98257

Electronic submissions

If, during the period when this permit is effective, EPA makes electronic reporting available, the permittee may submit reports electronically, following guidance provided by EPA according to the same due dates in §III.B.1, of the proposed permit. The permittee must certify all DMRs and all other reports in accordance with the requirements of Part V.E ("Signatory Requirements") of the proposed permit. The permittee must retain the legible originals of these documents and make them available, upon request, to the EPA Region 10 Director, Office of Compliance and Enforcement.

D. Outfall Evaluation

The dilution ratio calculations are based upon the integrity of the outfall pipe. The permit requires that the Permittee inspect the submerged portion of the outfall line to document its integrity and continued function. The inspection must evaluate the structural condition of the submerged portion of the outfall pipe, determine whether portions of the outfall are covered by sediments, and determine whether the outfall pipe is flowing freely. If conditions allow for a photographic verification, it must be included in the report. A brief report of this inspection must be submitted to EPA.

E. Certification by the Swinomish Indian Tribal Community

.

The state in which the discharge originates is typically responsible for issuing the certification pursuant to CWA Section 401(a)(1). In the case where the state has no authority to give 401 certification, such as for a discharge located within the boundaries of an Indian Reservation, EPA or the tribal authority provides the certification. Indian Tribes may issue 401 certification for discharges within their boundaries if the Tribe has been approved by the EPA pursuant to CWA Section 518(e) and 40 CFR Section 131.8 to administer a water quality standards program. In this case, the point of discharge of the outfall is located within boundaries of the Swinomish Indian Tribal Community. The Swinomish Indian Tribal Community has also been recognized federally to administer a water quality standards program, and has designated its tribal governmental authority to issue CWA Section 401(a)(1) certification. On April 18, 2012, the SITC has issued the draft CWA Section 401(a)(1) certification for the proposed permit (see Appendix E).

VI. SLUDGE (BIOSOLIDS) REQUIREMENTS

The facility removes solids during the treatment of the wastewater at the head works (grit and screenings), and at the clarifiers. In addition, incidental solids such as rags, scum and other debris are also removed as part of routine maintenance. Grit, rags, scum and screenings are drained and disposed as solid waste at the local landfill. Solids removed from the clarifier are transported to another facility for treatment and disposal, or may be treated with lime and land applied. Currently, the facility is shipping sludge to the Anacortes WWTP facility for composting and/or disposal.

EPA Region 10 separates wastewater and sludge permitting. Under the CWA, EPA has the authority to issue separate sludge-only permits for the purposes of regulating biosolids. EPA may issue a sludge-only permit to the facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at the facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that permittee must comply with them whether or not a permit has been issued.

VII. OTHER PERMIT CONDITIONS

A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The permittee is required to develop and implement a Quality Assurance Plan within 180 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan shall be retained on site and made available to EPA upon request.

B. Operation and Maintenance Plan

The permit requires the permittee to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for the facility within 180 days of the effective date of the final permit. The plan shall be retained on site and made available to EPA upon request.

C. Additional Permit Provisions

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

VIII. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (FWS) if their actions could beneficially or adversely affect any threatened or endangered species. Based on findings, EPA has determined that issuance of this permit will have no effect on any threatened or endangered species in the vicinity of the discharge.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. EPA has tentatively determined that issuance of this permit has no effect on EFH at the vicinity of the discharge.

D. Permit Expiration

The permit will expire five years from the effective date of the permit.

Appendix A - Facility Information

Table A-1: Summary of Swinomish Reservation Sewer District, Shelter Bay Community Wastewater Treatment Plant	
NPDES ID Number:	
Mailing Address:	1000 Shoshone Drive LaConner, WA 98257
Facility Background:	Wastewater treatment plant for domestic sewage with Secondary Treatment level
Collection System Information	
Service Area:	Shelter Bay Community
Service Area Population:	Approximately 1850
Collection System Type:	100% Separated Sanitary Sewer
Facility Information	
Treatment Train:	Secondary wastewater treatment plant with chlorine disinfection and a de-chlorination process.
Design Flow:	0.227 mgd
Months when Discharge Occurs:	Continuous
Outfall 001 Location:	Swinomish Channel
Receiving Water Information	
Receiving Water:	Marine waters, as classified by the Washington State Department of Ecology
Beneficial Uses:	Waters classified as "Excellent" have a general description of: "excellent quality salmonid and other fish migration, rearing, and spawning; clam, oyster, and mussel rearing and spawning; crustaceans and other shellfish (crabs, shrimp, crayfish, scallops, etc) rearing and spawning." This segment of water is also listed for Shellfish Harvest, Primary Contact Recreation, Wildlife Habitat, Harvesting, Commerce and Navigation, Boating, and Aesthetics.
Water Quality Limited Segment:	The area of discharge is not a listed segment on the 303(d) list, and the area of discharge does not have any Total Maximum Daily Load (TMDL) designations.
Basis for BOD_5/TSS Limits:	The facility can meet secondary treatment requirements for BOD_5 and TSS.

Table A-2: Outfall Location Map

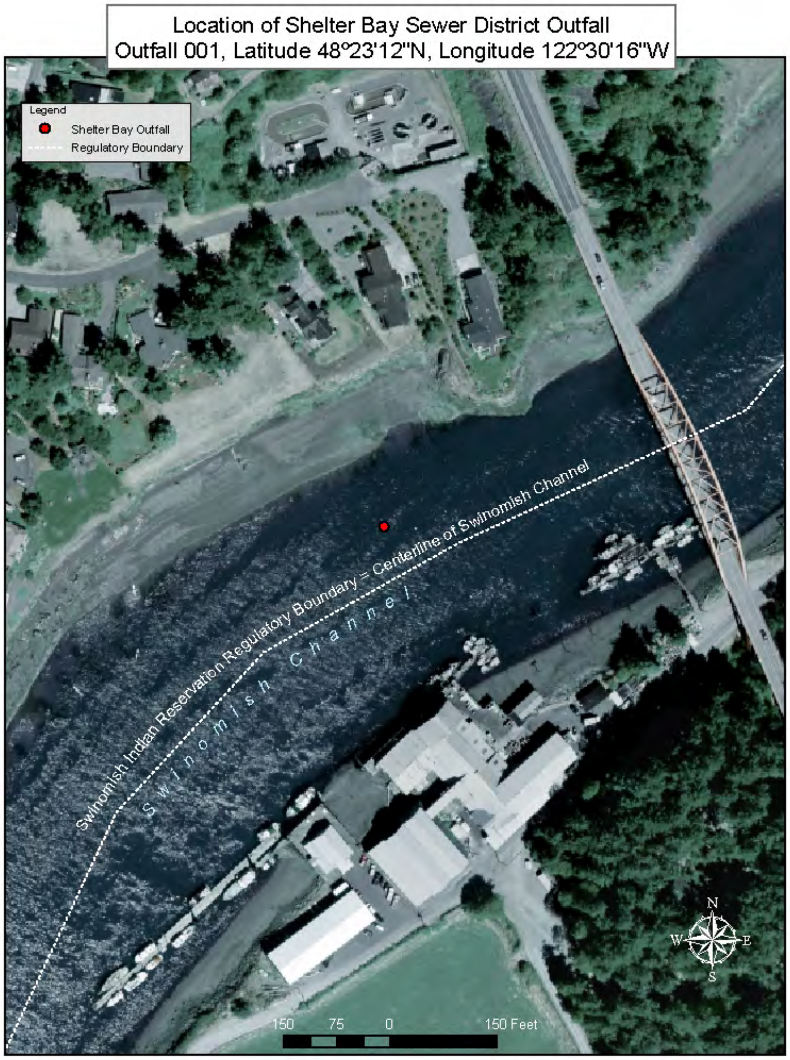
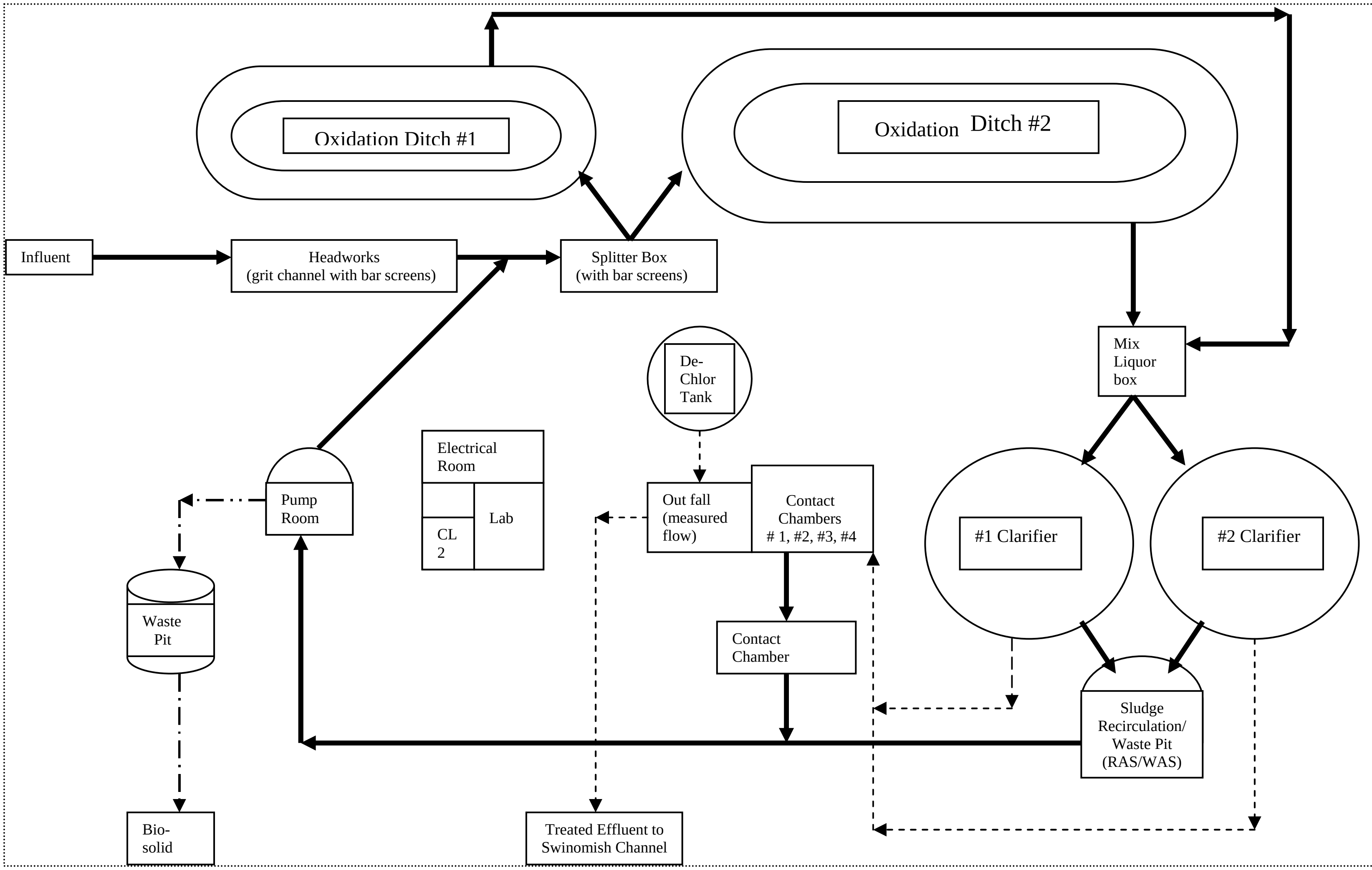


Table A-3 - Process Flow Diagram

Shelter Bay Community Wastewater Treatment Facility



Apendix B - Basis for Effluent Limitations

The Clean Water Act (CWA) requires Publicly Owned Treatment Works (POTW) to meet effluent limits based on available wastewater treatment technology. These types of effluent limits are called secondary treatment effluent limits. EPA may find, by analyzing the effect of an effluent discharge on the receiving water, that secondary treatment effluent limits are not sufficiently stringent to meet water quality standards. In such cases, EPA is required to develop more stringent water quality-based effluent limits, which are designed to ensure that the water quality standards of the receiving water are met.

Secondary treatment effluent limits may not limit every parameter that is in an effluent. For example, secondary treatment effluent limits for POTWs have only been developed for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH, yet effluent from a POTW may contain other pollutants, such as bacteria, chlorine, ammonia, or metals, depending on the type of treatment system used and the service area of the POTW (i.e., industrial facilities as well as residential areas discharge into the POTW). When technology based effluent limits do not exist for a particular pollutant expected to be in the effluent, EPA must determine if the pollutant may cause or contribute to an exceedance of the water quality standards for the water body. If a pollutant causes or contributes to an exceedance of a water quality standard, water quality-based effluent limits for the pollutant must be incorporated into the permit.

The following discussion explains in more detail the derivation of technology based effluent limits, and water quality based effluent limits. Part A discusses technology based effluent limits, and Part B discusses water quality based effluent limits.

A. Technology Based Effluent Limits

1. BOD_5, TSS and pH

Secondary Treatment:
The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," that all POTWs were required to meet by July 1, 1977. EPA developed "secondary treatment" regulations, which are specified in 40 CFR 133. These technology-based effluent limits apply to all municipal wastewater treatment plants, and identify the minimum level of effluent quality attainable by secondary treatment in terms of BOD_5, TSS, and pH.

The following technology-based limits for pH, BOD_5, and TSS are federal technology based standards taken from 40 CFR Part 133; fecal coliform bacteria and chlorine shown are from Washington State's technology-based standards:

Table B-1: Technology-based Limits.

Parameters	Effluent Limits
pH:	shall be within the range of 6.0 to 9.0 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD_5 (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
Total residual chlorine	Average Monthly Limit = 0.5 mg/L Average Weekly Limit = 0.75 mg/L

The limitation for chlorine shown above is a technology-based standard limit derived from best professional judgement and from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/liter chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, Wastewater Engineering, Treatment, Disposal and Reuse, Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/liter chlorine limit on a monthly average basis. Using the same proportionality between monthly average and weekly maximum as for BOD_5 and TSS, the corresponding weekly average is 0.75 mg/liter.

The following technology-based mass limits are based on 40 CFR Part 122.45 and 40 CFR Part 133.

Monthly average mass discharge limitation (lb./day) for TSS and BOD_5 are the maximum monthly design flow (0.2274 MGD) x Concentration limit (30 mg/l) x 8.34 (conversion factor) = 57 lb./day.

The weekly average effluent mass discharge limitation for TSS and BOD_5 are 1.5 x monthly loading of 57 lb. = 85 lb./day.

The proposed permit utilizes the above technology-based limits except for chlorine, which is a water quality based effluent limit that is retained from the previous permit.

B. Water Quality-Based Effluent Limits

The SITC does not have Tribal Water Quality Standards at this time. Lacking tribal standards, the State of Washington's Surface Water Quality Standards (Chapter 173-201A WAC) is used for evaluating and limiting the discharge of pollutants from this facility in this case. The SITC may promulgate its own water quality standards in the future. The state standards are consistent with federal guidance and have been approved by EPA. The state regulation is designed to protect the beneficial uses of the surface waters of the state. WAC 173-201A-510 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

Numerical water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC) and the USEPA Quality Criteria for Water, 1986. They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. Most chemical standards are set with two values; one to protect aquatic life from short term lethal effects (acute standard) and the other to protect from long term health effects such as reduced growth or fecundity (chronic standard). When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used for permit limitations.

Numerical Criteria for the Protection of Human Health

The EPA has issued 91 numeric water quality criteria for the protection of human health, (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, narrative water quality criteria to limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. The purpose of Washington Water Quality Standards is to establish water quality standards for surface waters of the state of Washington consistent with public health and public enjoyment of the waters and the propagation and protection of fish, shellfish, and wildlife. Designated uses and criteria to protect the specific beneficial uses of all fresh (WAC 173-201A-200) and marine (WAC 173-201A-210) waters in the State of Washington.

The following discussion is divided into four sections. Section 1 discusses the statutory basis for including water quality based effluent limits in NPDES permits; Section 2 discusses the procedures used to determine if water quality based effluent limits are needed in an NPDES permit; Section 3 discusses the procedures used to develop water quality based effluent limits; and Section 4 discusses the specific water quality based limits.

The Shelter Bay WWTP has only technology-based limits for BOD, TSS, and bacteria. A reasonable potential analysis was conducted for ammonia and chlorine in which neither parameter had reasonable potential. The existing water quality based chlorine effluent limits are retained.

Concerning water quality standards, pollutants in any effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants – their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

1. Statutory Basis for Water Quality-Based Limits

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to state waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the CWA.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing section 301 (b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.

The regulations require that this evaluation be made using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

2. Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits are needed based on chemical specific numeric criteria, a projection of the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern is made. The chemical specific concentration of the effluent and receiving water and, if appropriate, the dilution available from the receiving water are factors used to project the receiving water concentration. If the projected concentration of the receiving water exceeds the numeric criterion for a specific chemical, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small area of receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body, and decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the receiving water is below the chemical specific numeric criterion necessary to protect the designated uses of the water body.

3. Procedure for Deriving Water Quality-Based Effluent Limits

The first step in developing a water quality-based permit limit is to develop a wasteload allocation (WLA) for the pollutant that has reasonable potential to exceed water quality standards. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water.

In cases where a mixing zone is not authorized, either because the receiving water already exceeds the criterion, the receiving water flow is too low to provide dilution, or the state/tribe does not authorize one, the criterion becomes the WLA. Establishing the criterion as the wasteload allocation ensures that the permittee will not contribute to an exceedance of the criterion. The following discussion details the specific water quality-based effluent limits in the draft permit which the SITC has certified under Section 401 of the CWA (see Appendix E).

4. Specific Water Quality-Based Effluent Limits

(a) pH

The Washington water quality criterion for Excellent Quality Marine Waters specifies a pH range of 7.0 to 8.5 standard units, with human-caused variation within the above range of less than 0.5 units (WAC 173-201A-210(1)(f)). In the previous permit, the technology based limit allowed the range of pH from 6.0 to 9.0. For reference, the facility's permit application indicate that during the last permit cycle, the pH was 6.40 (minimum) to 7.70 (maximum). According to Washington Department of Ecology website which described pH data collected from

the nearest monitoring station, Skagit Bay –Hope Island (Station SKG001), that in the most recent year of data, (http://www.ecy.wa.gov/apps/eap/marinewq/mwdataset.asp?ec=no&scrolly=352&htmlcsvpref=csv&estuarycode=1&staID=131&theyear=1998&themonth=9)
pH in the receiving water was detected in the range from 7.7 to 8.1. Using a program for calculating pH, EPA analyzed if the technology limit of between 6.0 s.u. and 9.0 s.u. would exceed WQS at the edge of the mixing zone when the highest ambient pH is 8.1. EPA also used the highest ambient water temperature from Swinomish Channel from February 1992 to May 1993 of 16.0°C, and the lowest salinity of 13 psu (obtained from Appendix B, Swinomish Channel and Padilla Bay report, Bulthius and Conrad, October 1995). Alkalinity is assumed to be 2.3 meq/l (based on "Water Chemistry: pH and Alkalinity", John Tullock, January 2003: "The alkalinity of natural seawater is around 2.0 – 2.5 meq/l")

Projecting using the extreme pH effluent limit of 6.0 s.u. in Table B-2 below, the resultant projected pH at the edge of the chronic mixing zone is 7.50 s.u., which would be a decrease of 0.20 s.u. in the receiving water. This projected change is within the Excellent Quality Marine Waters standard for pH range of between 7.0 to 8.5 s.u., and also within the human caused variation standard of less than 0.5 s.u.

Table B-2: pH Mix Analysis for Effluent pH of 6.0 s.u.

Calculation of pH of a mixture in seawater.	
Based on the CO2SYS program (Lewis and Wallace, 1998)	
http://cdiac.esd.ornl.gov/oceans/co2rprt.html	Note: Source from WA Ecology Spreadsheet
INPUT	
1. MIXING ZONE BOUNDARY CHARACTERISTICS	
Dilution factor at mixing zone boundary	53.000
Depth at plume trapping level (m)	3.000
2. BACKGROUND RECEIVING WATER CHARACTERISTICS	
Temperature (deg C):	16.00
pH:	7.70
Salinity (psu):	13.00
Total alkalinity (meq/L)	2.30
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	27.00
pH:	6.00

Salinity (psu)	0.00
Total alkalinity (meq/L):	3.00
	calculate
4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>>	
OUTPUT	
CONDITIONS AT THE MIXING ZONE BOUNDARY	
Temperature (deg C):	16.21
Salinity (psu)	12.75
Density (kg/m^3)	1008.68
Alkalinity (mmol/kg-SW):	2.29
Total Inorganic Carbon (mmol/kg-SW):	2.34
pH at Mixing Zone Boundary:	7.50

Similarly, projecting the conditions using the extreme permitted pH limit of 9.0 s.u. in Table B-3 below, the resultant pH at the edge of the chronic mixing zone is 8.13 s.u., which would be an increase of 0.03 s.u. This projected change is within the Excellent Quality Marine Waters standard range for pH of between 7.0 to 8.5 s.u., and also within the human caused variation standard of less than 0.5 s.u.

Table B-3: pH Mix Analysis for Effluent pH of 9.0 s.u.

Calculation of pH of a mixture in seawater.	
Based on the CO2SYS program (Lewis and Wallace, 1998)	
http://cdiac.esd.ornl.gov/oceans/co2rprt.html	Note: Source from WA Ecology Spreadsheet
INPUT	
1. MIXING ZONE BOUNDARY CHARACTERISTICS	
Dilution factor at mixing zone boundary	53.000
Depth at plume trapping level (m)	3.000
2. BACKGROUND RECEIVING WATER CHARACTERISTICS	
Temperature (deg C):	16.00
pH:	8.10
Salinity (psu):	13.00

Total alkalinity (meq/L)	2.30
3. EFFLUENT CHARACTERISTICS	
Temperature (deg C):	27.00
pH:	9.00
Salinity (psu)	0.00
Total alkalinity (meq/L):	3.00
	calculate
4. CLICK THE 'calculate" BUTTON TO UPDATE OUTPUT RESULTS >>>	
OUTPUT	
CONDITIONS AT THE MIXING ZONE BOUNDARY	
Temperature (deg C):	16.21
Salinity (psu)	19.75
Density (kg/m^3)	1008.68
Alkalinity (mmol/kg-SW):	2.29
Total Inorganic Carbon (mmol/kg-SW):	2.17
pH at Mixing Zone Boundary:	8.13

These two analyses using extreme conditions show that the technology standard of pH between 6.0 s.u to 9.0 s.u. would NOT cause a reasonable potential to exceed Excellent Quality Marine Waters standard. Therefore the technology standard of effluent between 6.0 s.u. to 9.0 s.u is proposed to be retained for this permit cycle.

(b) Ammonia

Analysis of the ammonia data from the facility were based on 22 samples from DMR during the last permit cycle and with the maximum daily discharge of 19 mg/L reported in October 2009. A reasonable potential analysis was conducted to determine if ammonia had the potential to exceed these criteria. Analyses show no reasonable potential to exceed Washington Water Quality Standards.

In Washington State water quality standards, the criteria concentrations based on total ammonia for marine water can be found in EPA guidance, Ambient Water Quality Criteria for Ammonia (Saltwater) – 1989, EPA440/5-88-004. April, 1989. This document can be located from: http://www.epa.gov/waterscience/pc/ambientwqc/ammoniasalt1989.pdf. Using data collected by Washington Department of Ecology’s monitoring station located in Skagit Bay –Hope Island (Station SKG001), with the highest pH of 8.1 s.u.; and the highest ambient water temperature from Swinomish Channel from February 1992 to May 1993 which was 16.0°C, and the lowest salinity of 13 psu (obtained from Appendix B, Swinomish Channel and Padilla Bay report, Bulthius and Conrad, October 1995). Using Ecology's spreadsheet shown in Table B-4, the acute criteria is 5.748 mg/l, and chronic criteria is 0.893 mg/l. These criteria values were used to determine reasonable potential to exceed Washington State Water Quality Standards. EPA also researched the ambient ammonia concentration in Swinomish Channel. The ambient concentration of ammonia in the vicinity is 0.04 mg/l according to Ecology's data from its nearby Hope Island marine monitoring station (see page 17, Fact Sheet from Washington State Department of Ecology's NPDES Permit for City of La Connor, 2008). Using the EPA modified spreadsheet from Ecology that accounts for 99% confidence level and 99% probability basis, no reasonable potential to exceed water quality criteria was determined (See Table C-3).

Table B-4: Calculation of Seawater Fraction of Un-ionized Ammonia Note: Source from WA Ecology Spreadsheet	
from Hampson (1977). Un-ionized ammonia criteria for	
salt water are from WAC 173-201A and EPA 440/5-88-004.	
INPUT	
1. Temperature (deg C):	16
2. pH:	8.1
3. Salinity (g/Kg):	13
OUTPUT	
1. Unionized ammonia NH3 criteria (mgNH3/L)	
Acute:	0.233
Chronic:	0.035
2. Total ammonia nitrogen criteria (mgN/L)	
Acute:	5.748
Chronic:	0.893

(c) Temperature

In WAC 173-201A-210(1)(c), the Washington water quality standards limit ambient water temperature to 13.0 degrees C for marine water; when natural conditions exceed 13.0 degrees C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3 degrees C.

The highest ambient temperature of water at Swinomish Channel from February 1992 to May 1993 is 16°C (data from Appendix B, Swinomish Channel and Padilla Bay report, Bulthius and Conrad, October 1995). The highest temperature of the effluent as reported on the Facility's permit application during the last permit cycle was 27° C. Using the chronic dilution factor of 53, the predicted maximum temperature during the summer that is inside the dilution zone is: ((53 X 16) + (1 X 27)) /54 = 16.20^0C.

Using extreme assumptions, the ambient temperature increase in the receiving water is predicted to be 0.2°C (i.e., 16.2°C – 16.0°C = 0.2°C), which is less than 0.3°C as allowed by Washington State Water Quality Standards. Therefore, there is no potential to violate Washington State's Water Quality Standards for temperature, and no effluent limit for temperature is warranted. Effluent temperature monitoring is proposed for the draft permit for comparison with past effluent, and to obtain data for potential future effluent modeling purposes.

(d) Fecal coliform bacteria

According to WAC 173-220-130(a)(i), "Fecal coliform levels shall not exceed a monthly geometric mean of 200 organisms per 100 ml with a maximum weekly geometric mean of 400 organisms per 100 ml."
This technology based limits for fecal coliform bacteria is in the previous permit.

Concerning the "Shellfish harvesting bacteria criteria", WAC 173-201A-210(2)(b) states: "To protect shellfish harvesting, fecal coliform organism levels must not exceed a geometric mean value of 14 colonies/100 mL, and not have 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 43 colonies/100 mL".

Concerning Primary Contact Recreation, WAC 173-201A-210(3)(b) states: "Fecal coliform organism levels must not exceed a geometric mean value of 14 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 43 colonies/100 ml."

Therefore, to meet both shellfish harvesting and primary contact criteria, the facility has to meet the more stringent of the two criteria at the edges of the mixing zone.

Under critical conditions (with the dilution ratio of 53:1), mathematical calculation predicts no violation of the water quality criterion for fecal coliform. Ambient concentration of fecal coliform is 1.3 organisms/100ml (see page 17, Fact Sheet from Washington State Department of Ecology's

NPDES Permit for City of La Connor, 2008).

Washington Department of Ecology estimated the chronic dilution ratio of 53: 1 using the Visual Plumes modeling. Consistent with Ecology's methodology, the numbers of fecal coliform bacteria were then modeled by simple mixing analysis using the technology-based (weekly maximum effluent) limit of 400 organisms per 100 ml, and the dilution factor of 53.1 with a 1.3 organism/100ml background concentration. This calculation showed that the fecal coliform concentration at the edge of the mixing zone is 8.8 organisms/100 ml, which is below the State's water quality standards of 14 organisms/100 ml. Therefore, the technology-based effluent limitation for fecal coliform bacteria (as expressed in geometric mean) was retained in the proposed permit: 200 organisms/100 ml for monthly average, and 400 organisms/100 ml for weekly average. Analyses of submitted DMR data also show that the WWTP will be able to meet the proposed effluent limits for fecal coliform.

As reference, as reported the Maximum Daily Discharge had 176 organism/100ml (DMR, April 2010). The Average Monthly Discharge was 10.2 organism/100ml (DMRs from February 2006 to July 2011). The Average Daily Discharge had 18 organisms/100ml (Permit Application). This data shows that the facility is discharging below its permitted effluent limits for fecal coliform.

(e) Dissolved Oxygen (D.O.)

The dissolved oxygen water quality criteria for this receiving water at Swinomish Channel, is a minimum of 6 mg/l. According the DMRs submitted by the facility, it is in compliance with its BOD_5 permit limits during the last permit cycle. According to data from Washington State Department of Ecology's nearby monitoring station (SKG001, Skagit Bay - Hope Island, 1994-1998), the lowest recorded ambient D.O. concentration at 4m is 6.4 mg/l. This shows that the ambient concentration of D.O. is within the water quality standard of having at least 6 mg/l of dissolved oxygen. For comparison, according to the facility, the lowest D.O. effluent reading in calendar year 2010 was 3.9 mg/l (August 14, 2010). In consideration of the dilution factor of 53, no violation of the water quality standard is expected under extreme conditions, thus, no effluent D.O. limit is proposed.

(f) Total Residual Chlorine

The facility uses chlorine for disinfection prior to effluent discharge. In its existing 2006 permit, and its previous 1999 permit, the facility was required to meet the following Total Residual Chorine limits. These limits are:

Average Monthly Limits:
0.05 mg/l (concentration limit), and 0.095 lbs/day (loading limit)
Maximum Daily Limits:
0.14 mg/l (concentration limit)

Based on analysis of the facility's discharge monitoring data for chlorine, EPA has determined that there is no reasonable potential to exceed the State's Water Quality Standards for Chlorine. (For reference as shown in the Reasonable Potential calculation, the Washington State WQS (see WAC 173-201A-240, Table 240(3)) states that for marine waters, the acute criteria is 13 ug/l, and the chronic criteria is 7.5 ug/l.) In accordance with antidegradation and anti-backsliding regulations, EPA is retaining the existing limitations for Total Residual Chlorine. It is EPA's policy to have loading limits where practicable, therefore, EPA is proposing a new loading limit for the maximum daily value of 0.265 lbs/day, in addition to the existing discharge limits.

Appendix C – Reasonable Potential Calculations

To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria or a given pollutant, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential to exceed Water Quality Standards (WQS), and a water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

a. Mixing Estimate

The amount of mixing provided within the dilution zone was estimated by the Department of Ecology in 1999. Based on Ecology's analysis using the Plumes Model, the Acute Dilution Factor is 11, and the Chronic Dilution Factor is 53. Below are the analyses provided by Ecology in 1999 which EPA believes is still relevant because discharge conditions from the facility and the tidal currents Swinomish Channel is unchanged.

The dilution factors calculated for the mixing zone and zone of acute criteria exceedance are summarized below. For compliance with the chronic standards at the edge of the mixing zone, the critical conditions are the average current velocity coupled with the critical ambient salinity and temperature in the receiving water. For evaluating compliance with water quality standards at the edge of the zone of acute criteria exceedance the critical conditions are the 10 percentile (slow) or 90 percentile (fast) current velocity coupled with the ambient density profile that yields the lowest dilution. These values were assumed and tested looking for reasonable worst case scenarios.

Dilution zone modeling was performed with Dilution Models for Effluent Discharges, 3rd edition and the computer programs (PLUMES interface) supplied by EPA with manual. Selection of critical conditions was done per the procedures prescribed in the Department of Ecology Permit Writer's Manual. Dilution factors were derived for acute aquatic toxicity and chronic aquatic. A summary of results from the various model scenarios, input conditions, and dilution factors for Acute Criteria is 11, and for 53 for the Chronic Criteria.

The WWTP outfall is 8-inch diameter pipe with a 6" reduction nozzle located at a depth of about 14 feet 200 feet from shore. Current is assumed to flow perpendicular to pipe end. Plant flows from the last four years and design flows are used to check how dilution changes as the flows through the WWTP increase.

Table 1: Summary of data, assumptions, PLUMES model outputs for dilution zone estimate.

SUMMARY	Aquatic Life dilution factors	Acute	Chronic
		11:1	50:1
max month design flow	0.23 MGD	Effluent temperature	
Max day design flow rate	0.57MGD	Range of 4 to 20 degrees C, use 17	
max month flow over last 4 years	0.17 MGD		
max daily flow - last 4 years	0.42 MGD	current velocity based on Jones &	

					Stokes observations and BPJ		
Acute zone extends 6.52 M from outfall					Minimal = 0.05 m/sec		
Chronic zone extends 65.2 M from outfall					median = .50 m/sec		
					Maximum = 1.0 m/sec		
Case #	effluent flowrate (MGD)	effluent temp (F)	current speed (M/sec)	Stratification case from Jones & Stokes figure 2.	Comments	acute dilution	chronic dilution
1	0.42	17	1	14:10		35	
2	**0.42**	**17**	**0.05**	**14:10**	**Critical acute**	**22.8**	**40**
3	0.42	17	0.5	14:10		39	77
4	0.42	17	0.1	14:10		36	121
5	0.42	17	0.05	17:25		25	45
6	0.42	20	0.05	17:25		25	
7	0.42	4	0.05	17:25		25	45
8	0.42	17	1	17:25		40	573
9	0.42	17	3	17:25		24	350
10	0.17	17	0.05	14:10		27	51
11	**0.17**	**17**	**0.5**	**14:10**	**Critical chronic**	**50**	**106**
12	0.17	17	1	14:10			165
13	0.17	17	1	17:25			430
14	0.17	17	0.5	17:25			418
15	0.17	17	0.05	16:30		28	49
16	0.17	17	0.5	16:30			126
17	0.48	17	0.05	14:10	For future acute	22.8	
18	0.54	17	0.05	14:10	For future acute	22.6	
19	0.6	17	0.05	14:10	For future acute	22.5	
20	0.66	17	0.05	14:10	For future acute	22.5	
21	0.19	17	0.5	14:10	For chronic graph		102
22	0.21	17	0.5	14:10	For chronic graph		99
23	0.23	17	0.5	14:10	For chronic graph		95
24	0.25	17	0.5	14:10	For chronic graph		93
25	0.27	17	0.5	14:10	For chronic graph		90

The model runs that produced the minimum amounts of dilution are shown below. Case 2 is the critical case for acute dilution. Cases 17 through 20 (table 5)show that the acute dilution displays minimal variation over the range of flows predicted as the plant reaches design capacity. Critical conditions over a range of plant flows yields dilution factors of 23 to 22. The value of 22:1, reduced by half for tidal reflux (reversing currents) yields a final acute dilution factor of 11:1.

```
Jan 27, 1999,  14: 5:43  ERL-N PROGRAM PLUMES, Ed 3, 3/11/94  Case:   2 of  26
 Title   Shelter Bay WWTP acute                                          linear
  tot flow   # ports port flow   spacing  effl sal effl temp   far inc   far dis
   0.01827         1   0.01827      1000       0.0        17     6.523    19.569
  port dep  port dia plume dia total vel horiz vel vertl vel asp coeff print frq
     4.267    0.1524    0.1524     1.002     1.002     0.000      0.10       500
 port elev ver angle cont coef  effl den poll conc     decay  Froude # Roberts F
    0.3048       0.0       1.0  -1.16146       100         0     6.235     4.848
 hor angle red space p amb den p current   far dif   far vel K:vel/cur Stratif #
        90    1000.0   16.0837   0.02466    0.0003      0.05     40.61  0.007836
     depth   current   density  salinity      temp  amb conc  N (freq) red grav.
       0.0      0.05      12.3                                 0.09251    0.1693
         1      0.05      12.2                               buoy flux puff-ther
         2      0.05      13.2                               3.093E-06     1.637
         3      0.05      14.5                               jet-plume jet-cross
         5      0.01        17                                  0.8945     5.485
                                                             plu-cross jet-strat
                                                                 206.3     1.209
                                                             plu-strat
                                                                 1.406
                                                               hor dis>=

CORMIX1 flow category algorithm is turned off.
 19.569 m, 64.20 ft                                         >0.0 to any m range
Help: F1.  Quit: <esc>.  Configuration:ATNO0.  FILE: SHLTRBAY.VAR;
UM INITIAL DILUTION CALCULATION (linear mode)
 plume dep plume dia poll conc  dilution   hor dis
         m         m                             m
     4.267    0.1524     100.0     1.000     0.000
     2.505     1.369     7.589     12.98     2.959 -> trap level
     1.780     2.429     4.329     22.77     3.966 -> begin overlap
FARFIELD CALCULATION (based on Brooks, 1960, see guide)
Farfield dispersion based on wastefield width of      2.429m
   --4/3 Power Law--   -Const Eddy Diff-
      conc  dilution      conc  dilution  distance         Time
                                                 m        sec   hrs
     4.326      22.8     4.326      22.8     6.523      51.15   0.0
     4.031      24.5     4.150      23.8     13.05      181.6   0.1
     3.471      28.5     3.814      25.9     19.57      312.1   0.1
```

Figure 1: Output of the Plumes model for the zone of acute dilution, zone is limited to 22 feet (6.52 M).

The Plumes output for critical conditions used for estimating the dilution at the edge of the mixing zone are shown in figure 7. Department policy recommends using the highest average monthly flow from the last three years as the flow on which to base the dilution; the dilution based on that flow is 106:1. The value of 106:1, reduced by half for tidal reflux (reversing currents) yields a final chronic dilution factor of 53:1. Dilution at the edge of the mixing zone varies with increasing effluent flow.

```
Jan 27, 1999,  14: 6:10  ERL-N PROGRAM PLUMES, Ed 3, 3/11/94  Case:  11 of  26
 Title   Shelter Bay WWTP chronic                                         linear
  tot flow   # ports port flow   spacing  effl sal effl temp   far inc   far dis
  0.007448         1  0.007448      1000       0.0        17      6.52      65.2
  port dep  port dia plume dia total vel horiz vel vertl vel asp coeff print frq
     4.267    0.1524    0.1524    0.4083    0.4083     0.000      0.10       500
 port elev ver angle cont coef  effl den poll conc     decay  Froude # Roberts F
    0.3048       0.0       1.0  -1.16146       100         0     2.542      7872
 hor angle red space p amb den p current   far dif   far vel K:vel/cur Stratif #
        90    1000.0   16.0837    0.2149    0.0003       0.5     1.900  0.007836
     depth   current   density  salinity      temp  amb conc  N (freq) red grav.
       0.0       0.5      12.3                                 0.09251    0.1693
         1       0.5      12.2                               buoy flux puff-ther
         2       0.5      13.2                               1.261E-06    0.3243
         3       0.5      14.5                               jet-plume jet-cross
         5      0.05        17                                  0.3647    0.2566
                                                             plu-cross jet-strat
                                                                0.1270    0.7721
                                                             plu-strat
                                                                 1.123
                                                               hor dis>=

CORMIX1 flow category algorithm is turned off.
 65.2 m, 213.9 ft                                            >0.0 to any m range
Help: F1.  Quit: <esc>.  Configuration:ATNO0.  FILE: SHLTRBAY.VAR;
UM INITIAL DILUTION CALCULATION (linear mode)
 plume dep plume dia poll conc  dilution   hor dis
         m         m                             m
     4.267    0.1524     100.0     1.000     0.000
     3.629    0.9746     3.125     31.49     2.930
     3.472     1.202     1.910     51.51     4.379 -> trap level
     3.283     1.611    0.9486     103.7     9.601
 -> local maximum rise or fall
FARFIELD CALCULATION (based on Brooks, 1960, see guide)
Farfield dispersion based on wastefield width of      1.611m
   --4/3 Power Law--   -Const Eddy Diff-
      conc  dilution      conc  dilution  distance         Time
                                                 m        sec   hrs
    0.9468     103.9    0.9468     103.9     13.04     6.878   0.0
    0.9478     103.8    0.9478     103.8     19.56     19.92   0.0
    0.9482     103.8    0.9481     103.8     26.08     32.96   0.0
    0.9478     103.8    0.9480     103.8     32.60     46.00   0.0
    0.9457     104.1    0.9468     103.9     39.12     59.04   0.0
    0.9410     104.6    0.9441     104.2     45.64     72.08   0.0
    0.9337     105.4    0.9397     104.7     52.16     85.12   0.0
    0.9241     106.5    0.9339     105.4     58.68     98.16   0.0
    0.9123     107.9    0.9269     106.2     65.20     111.2   0.0
```

Figure 2: Output of the Plumes model for the chronic dilution zone, zone is limited to 215 feet (65.2 M).

B. Reasonable Potential Analysis

EPA used Ecology's Reasonable Potential Calculation spread sheet to determine reasonable potential to exceed the Washington State Water Quality Criteria. Modifications were made to the Ecology spread sheet to accommodate EPA's assumption of 99% probability basis. Ecology had used the recommendations in Chapter 3 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991) (TSD) to construct its Reasonable Potential Calculation spreadsheet.

To perform the reasonable potential calculation, it is necessary to determine the Acute and Chronic Water Quality Criteria. Table C-1 shows the Reasonable Potential Calculation for ammonia and chlorine since these are the only parameters that have the potential to exceed water quality standards when there are no industrial sources. The calculated values of the Washington State Water Quality Criteria for the Acute and Chronic scenario were inserted into the spreadsheet.

The calculations show that there is **No** Reasonable Potential for ammonia and chlorine to exceed Water Quality Standards; therefore no effluent calculation was performed for these two parameters. As stated earlier, the effluent limits for Total Residual Chlorine is retained due to anti-degradation and anti-backsliding regulations.

Table C-1: Reasonable Potential Calculations for Ammonia and Chlorine

		State of Washington Water Quality Standard		Maximum concentration at edge of.....			Calculations								
Parameter	Ambient Conc.	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	**LIMIT REQ'D?**	Effluent percentile value		Max effluent conc. measured (metals as total recoverable)	Coeff Varia-tion		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
	ug/l	*ug/L*	*ug/L*	*ug/L*	*Ug/L*			*Pn*	*ug/L*	*CV*	*s*	n			
Ammonia	40	5748	893	3664.97	792.35	**NO**	0.99	0.811	1900	0.55	0.51	22	2.10	11	53
Chlorine	0	13	7.5	3.66	0.76	**NO**	0.99	0.997	50	0.49	0.46	1765	0.8	11	53

Note: Spreadsheet is modified and based from the "Reasonable Potential Calculation" spreadsheet from the Washington Department of Ecology (http://www.ecy.wa.gov/programs/eap/pwspread/tsdcalc0707.xls). The table accommodates EPA's policy of using the statistical probability basis of 99th percentile in lieu of Ecology's policy of 95th percentile.

APPENDIX D - Endangered Species Act and Essential Fish Habitat

A. Endangered Species Act

According to the U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, the following listed species were identified on its website. The list is based on the service's Revised August 1, 2011 version.

U.S. Fish and Wildlife Service, listed species for Skagit County:

(1) Bull trout (*Salvelinus confluentus*) – Coastal-Puget Sound DPS

(2) Canada lynx (*Lynx canadensis*)

(3) Gray wolf (*Canis lupus*)

(4) Grizzly bears (*Ursus arctos = U. a. horribilis*)

(5) Marbled murrelets (*Brachyramphus marmoratus*)

(6) Northern spotted owl (*Strix occidentalis caurina)*

Critical habitat for: bull trout, marbled murrelet, and northern spotted owl.

EPA conducted a web search of NOAA's National Marine Fisheries Service, and located two lists that are entitled:

"***Endangered Species Act Status of West Coast Salmon & Steelhead***" (updated August 11, 2011) – this list shows that Chinook Salmon (O. tshawytscha) and Steelhead (O.mykiss) both are listed as "Threatened" in Puget Sound. Steelhead is also listed as an ESA Listing Action that is Under Review for Critical Habitat.
http://www.nwr.noaa.gov/ESA-Salmon-Listings/upload/1-pgr-8-11.pdf

"***ESA-Listed Marine Mammals***" – Under the jurisdiction of NOAA Fisheries Service that may occur in Puget Sound, lists the following:
Southern Resident Killer Whale (Endangered), Orcinus orca;
Humpback Whale (Endangered), Megaptera novaeangliae; and,
Stella Sea Lion (Threatened), Eumetopias jubatus.
http://www.nwr.noaa.gov/Marine-Mammals/ESA-MM-List.cfm

Shandra O'Haleck (NOAA) informed EPA on June 28, 2007, that the Humpback Whale and the Stella Sea Lion are considered to have "No Effect" because they are rarely found inside Puget Sound.

Evaluation of Species Listed

ESA listed species from NOAA and U.S FWS are described above. EPA evaluated each of these listed species and critical habitat species for potential impact from the Shelter Bay WWTP. Descriptions are grouped into fish and marine mammals which are described in (a) to (f); terrestrial species are described in (g) below.

In addition, according to SITC, there are no designated critical habitats for salmon on the Swinomish Reservation. The reservation also has an approved species restoration plan. For more information, contact the Todd Mitchell, SITC Water Resources Manager at (360) 466-7201.

(a) *Puget Sound Chinook Salmon*

Status

The Puget Sound ESU of Chinook salmon was listed as threatened on March 24, 1999 (64 FR 14308).

Geographic Range and Spatial Distribution

The boundaries of this salmon ESU correspond with the Puget Lowland Ecoregion. This ESU encompasses all runs of Chinook salmon in the Puget Sound region from the North Fork Nooksack River to the Elwha River on the Olympic Peninsula. Chinook salmon in this area all exhibit an ocean-type life history. Although some spring-run Chinook salmon populations in the Puget Sound ESU have a high proportion of yearling smolt emigrants, the proportion varies substantially from year to year and appears to be environmentally mediated rather than genetically determined. Puget Sound stocks all tend to mature at ages 3 and 4 and exhibit similar, coastally-oriented, ocean migration patterns (Meyers et al. 1998).

Hatchery fish are known to spawn in the wild in the Elwha and Dungeness river basins and are not considered discrete stocks from the wild fish (WDFW and WWTIT 1994). Adult Chinook begin to enter the Elwha River in June and continue through early October. The timing for entry into the Dungeness is unknown. Spawning in both rivers takes place between August and October (WDFW and WWTIT 1994). Outmigration of Chinook smolts in the Elwha and Dungeness basins occurs between March and mid-July (Williams et al. 1975).

Critical Habitat

Critical habitat was initially designated for Puget Sound Chinook on February 16, 2000 (65 FR 7764) and has been revised on September 2, 2005 (70 FR 52630). Critical habitat consists of the water, substrate, and the adjacent riparian zone of accessible estuarine and riverine reaches. The February 2000 critical-habitat designation included Puget Sound marine areas, including the south Sound, Hood Canal, and north Sound to the international boundary at the outer extent of the Strait of Georgia, Haro Strait, and the

Strait of Juan de Fuca to a straight line extending north from the west end of Freshwater Bay, inclusive. The revised critical habitat has added 12 miles of occupied habitat areas of the Middle Fork Nooksack, 47 miles of the South Fork Stillaguamish and 12 miles of the Cedar River. 6 miles of the unoccupied stream reaches of the Lower Snoqualmie River and tributaries of Lake Washington were excluded. The marine nearshore zone from extreme high tide to mean lower low tide within several Navy restricted zones has also been included in the final habitat designation.

Historical Information

Chinook salmon were abundant in Washington State near the turn of the century, when estimates based on peak cannery pack suggested peak runs of near one million fish in the Oregon Coast, Washington Coast, and Puget Sound ESUs. However, Chinook salmon in this region has been strongly affected by losses and alterations of freshwater habitat. Timber harvesting and associated road building have occurred throughout this region. Agriculture is also widespread in the lower portions of river basins and has resulted in widespread removal of riparian vegetation, rerouting of streams, degradation of streambanks, and summer water withdrawals. Urban development has substantially altered watershed hydrodynamics and affected stream channel structure in many parts of Puget Sound.

The peak recorded harvest landed in Puget Sound occurred in 1908, when 95,210 cases of canned Chinook salmon were packed. This corresponds to a run-size of approximately 690,000 Chinook salmon at a time when both ocean harvest and hatchery production were negligible. (This estimate, as with other historical estimates, needs to be viewed cautiously; Puget Sound cannery pack probably included a portion of fish landed at Puget Sound ports but originating in adjacent areas, and the estimates of exploitation rates used in run-size expansions are not based on precise data.) Recent mean spawning escapements totaling 71,000 correspond to a run entering Puget Sound of approximately 160,000 fish. Based on an exploitation rate of one-third in intercepting ocean fisheries, the recent average potential run-size would be 240,000 Chinook salmon (ACOE 2000a).

Life History

Puget Sound Chinook salmon prefer to spawn and rear in the mainstem of rivers and larger streams (Williams et al. 1975, Healey 1991). Although the incubation period is determined by water temperatures, fry typically hatch in about eight weeks (Wydoski and Whitney 1979, Healey 1991). After emergence, Puget Sound juvenile Chinook salmon migrate to the marine environment during their first year.

Rearing and development to adulthood occurs primarily in estuarine and coastal waters (Meyers et al. 1998). The amount of time juvenile Chinook spend in estuarine areas depends upon their size at downstream migration and rate of growth. While residing in upper estuaries, juvenile prey mainly on benthic and epibenthic organisms, such as amphipods, mysids, and crustaceans. Juveniles typically move into deeper waters when they reach approximately 65-75 mm in fork length. As the juveniles grow and move to deeper waters with higher salinities, their main prey changes to pelagic organisms such as decapod larvae, larval and juvenile fish, drift insects, and euphausids (Simenstad et al. 1982).

Hatchery Influence

By 1908 there were state-run and federally-run Chinook hatcheries operating in this ESU. Transfers of Chinook salmon eggs to Puget Sound from other regions, especially the Lower Columbia River, were common practices of early hatcheries (Meyers et al. 1998). By the 1920's, several million Chinook salmon had been released into Puget Sound tributaries (Cobb 1930). Recently, stock integrity and genetic diversity have become important objectives. New policies have been initiated to reduce the impact of hatchery fish on natural populations (WDF 1991, WDF et al. 1993). The abundance of Chinook salmon in watersheds throughout this ESU has been closely related to hatchery efforts (Meyers et al. 1998).

WDFW classified 11 out of 29 stocks in this ESU as being sustained, in part, through artificial propagation. Nearly 2 billion fish have been released into Puget Sound tributaries since the 1950s. The vast majority of these have been derived from local returning fall-run adults. Returns to hatcheries have accounted for 57 percent of the total spawning escapement, although the hatchery contribution to spawner escapement is probably much higher than that, due to hatchery-derived strays on the spawning grounds (ACOE 2000a).

Population Trends and Risks

The abundance of Chinook salmon in this ESU has declined since historic levels. Widespread stream blockages have reduced available spawning habitat. Widespread release of hatchery fish from limited stocks has increased the risks of loss of genetic diversity and fitness to natural populations. In addition, the large numbers of hatchery releases masks natural population trends and makes it difficult to determine the sustainability of the natural populations. Forestry practices, farming and urbanization have also blocked or degraded fresh water habitat (Meyers et al. 1998).

Analysis of Potential Impacts to Puget Sound Chinook Salmon

In consideration of all factors pertaining to the Puget Sound Chinook Salmon and the discharge from the Shelter Bay WWTP, it is predicted that there will be no impact to the Puget Sound Chinook Salmon. This is because the characteristics of the discharge and permit conditions will not cause any harmful or beneficial effects to the Chinook Salmon. The discharge is not from a major facility, and the effluent is treated to Federal Secondary Treatment Standards, as well as meeting State Water Quality Standards. The outfall is also located in fairly deep water where significant dilution factors are achieved. There is no measurable impact to the Chinook Salmon, therefore, there is **no effect** on the Chinook Salmon from the discharge.

(b) Puget Sound Steelhead

Status

The Puget Sound steelhead was designated as threatened on May 11, 2007 (72 FR 26722). Critical habitat has not been designated for this species**.**

Geographic Range and Spatial Distribution

This coastal steelhead ESU occupies river basins of the Strait of Juan de Fuca, Puget Sound, and Hood Canal, Washington. Included are river basins as far west as the Elwha River and as far north as the Nooksack River. The Puget Sound steelhead DPS includes more than 50 stocks of summer- and winter-run fish, the latter being the most widespread and numerous of the two run types (WDF et al. 2005). Hatchery steelhead production in Puget Sound is widespread and focused primarily on the propagation of winter-run fish derived from a stock of domesticated, mixed-origin steelhead (the Chambers Creek Hatchery stock) originally native to a small Puget Sound stream that is now extirpated from the wild. Hatchery summer-run steelhead are also produced in Puget Sound; these fish are derived from the Skamania River in the Columbia River Basin. The majority of hatchery stocks are not considered part of this DPS because they are more than moderately diverged from the local native populations (NMFS, 2005).

Critical Habitat

Critical habitat has not been designated for this species.

Historical Information

Analysis of the catch records from 1889 to 1920 indicates that the estimated peak run size for Puget Sound would range from 327,592– 545,987 fish (NMFS 2005).

Habitat and Hydrology

In general, winter-run, or ocean maturing, steelhead return as adults to the tributaries of Puget Sound from December to April (WDF et al. 1973). Spawning occurs from January to mid-June, with peak spawning occurring from mid-April through May (Table 1). Prior to spawning, maturing adults hold in pools or in side channels to avoid high winter flows.

Steelhead tend to spawn in moderate to high-gradient sections of streams. In contrast to semelparous Pacific salmon, steelhead females do not guard their redds, or nests, but return to the ocean following spawning (Burgner et al. 1992). Spawned-out females that return to the sea are referred to as “kelts.”

The life history of summer-run steelhead is highly adapted to specific environmental conditions. Because these conditions are not common in Puget Sound, the relative incidence and size of summer-run steelhead populations is substantially less than that for winter-run steelhead. Summer-run steelhead have also not been widely monitored, in part, because of their small population size and the difficulties in monitoring fish in their headwater holding areas.

The majority of steelhead juveniles reside in fresh water for two years prior to emigrating to marine habitats (Table 2a-c), with limited numbers emigrating as one or three-year old smolts. Smoltification and seaward migration occur principally from April to mid-May (WDF et al. 1972). Two-year-old naturally produced smolts are usually 140- 160 mm in length (Wydoski and Whitney 1979, Burgner et al. 1992). The inshore migration pattern of steelhead in Puget Sound is not well understood; it is generally thought that steelhead smolts move quickly offshore (Hartt and Dell 1986).

Steelhead oceanic migration patterns are poorly understood. Evidence from tagging and genetic studies indicates that Puget Sound steelhead travel to the central North Pacific Ocean (French et al. 1975, Hartt and Dell 1986, Burgner et al. 1992). Puget Sound steelhead feed in the ocean for one to three years before returning to their natal stream to spawn. Typically, Puget Sound steelhead spend two years in the ocean, although, notably, Deer Creek summer-run steelhead spend only a single year in the ocean before spawning (NMFS 2005).

Hatchery Influence

Because virtually all hatchery steelhead produced in Puget Sound are considered excluded from the Puget Sound steelhead ESU, the negative effects of these programs tend to outweigh any potential positive effects (NMFS 2005). There are two hatchery steelhead programs within the ESU, the Hamma Hamma River and the Green River, which have the potential to benefit natural populations in those rivers, but neither program has yet collected sufficient data to estimate their positive (or negative) effects with any certainty. It does appear that the Hamma Hamma program has successfully increased the number of natural spawners in the population, but the success of the program will not be known until the natural offspring of the captively reared spawners return (B. Berejikian, NMFS, unpubl. data). Risks associated with the hatchery programs in Puget Sound included potential effects of outbreeding depression resulting from the natural interbreeding of hatchery and wild fish, and adverse ecological interactions between hatchery and wild steelhead, including density dependent effects on growth and survival (NMFS 2005).

Population Trends and Risks

Total steelhead run size (catch and escapement) for Puget Sound in the early 1980s can be calculated from estimates in Light (1987) to be approximately 100,000 winter-run and 20,000 summer-run fish. In the 1990s the total run size for major stocks in this ESU was greater than 45,000, with total natural escapement of about 22,000. Busby et al. (1996) estimated 5-year average natural escapements for streams with adequate data range from less than 100 to 7,200, with corresponding total run sizes of 550-19,800. Of the 21 populations in the Puget Sound ESU reviewed by Busby et al. (1996), 17 had declining and 4 increasing trends, with a range from 18% annual decline (Lake Washington winter-run steelhead) to 7% annual increase (Skykomish River winter-run steelhead).

Analysis of Potential Impacts to Puget Sound Steelhead
In consideration of all factors pertaining to the Puget Sound Steelhead and the discharge from the Shelter Bay WWTP, it is predicted that there will be no impact to the Puget Sound Steelhead. This is because the characteristics of the discharge and permit conditions will not cause any harmful or beneficial effects to the Steelhead. The discharge is not from a major facility, and the effluent is treated to Federal Secondary Treatment Standards, as well as meeting State Water Quality Standards; therefore, no harmful effects are predicted. The outfall is also located in fairly deep water where significant dilution factors are achieved. There is no measurable impact to the Steelhead, therefore, there is **no effect** to the Steelhead from the discharge.

(c) Puget Sound Bull Trout

Status
The coastal/Puget Sound (PS) bull trout DPS encompasses all Pacific coast drainages within Washington, including Puget Sound and Olympic Peninsula (50 FR Part 17). This ESU has been designated as threatened on June 10, 1998 (63 FR 31693).

Geographic Range and Spatial Distribution

The coastal/Puget Sound bull trout DPS encompasses all the Pacific coast drainages north of the Columbia River in Washington including those flowing into Puget Sound. This population is comprised of 34 populations which are segregated from other subpopulations by the Pacific Ocean and the Cascade Mountains. Within this area, bull trout often occur with Dolly Varden. Because these species are virtually indistinguishable, USFWS currently manages them together as “native char”. The Puget Sound DPS is significant because it is thought to contain the only anadromous forms of bull trout in the coterminous United States (64 FR 58910).

The coastal bull trout subpopulations occur in five river basins: Chehalis River, Grays Harbor, Coastal Plains, Quinault River, Queets River, Hoh River, and Quillayute River. While most of the northwest coast subpopulations occur within Olympic National Park with relatively undisturbed habitats, subpopulations in the southwestern coastal area are in relatively low abundance.

Critical Habitat

Critical habitat has been designated for Puget Sound bull trout on September 26, 2005 (70 FR 56213). The critical habitat designation for Puget Sound bull trout critical habitat includes a total of 388 miles of streams in the Olympic Peninsula and 646 miles of streams in Puget Sound as well as 419 shoreline miles in the Olympic Peninsula marine areas and 566 shoreline miles in the Puget Sound marine areas.

Historical Information

Historical reports for the Puget Sound bull trout population demonstrates that bull trout were once more abundant and widely distributed throughout Puget Sound and the Olympic Peninsula (Suckley and Cooper 1860, Norgore and Anderson 1921, King County Department of Natural Resources 2000). Bull trout are now rarely observed in the Nisqually River and Chehalis River systems, which may have supported spawning populations in the past (USFWS 2002c, 2004). In the Puyallup River system the amphidromous life history forms currently exist in low numbers, as does the migratory form in the South Fork Skokomish River (USFWS 2002c,2004). In the Elwha River and parts of the Nooksack River, amphidromous bull trout are unable to access historic spawning habitat resulting from manmade barriers (USFWS 2002c, 2004).

Historically, sport fishing regulations were liberal for bull trout. However, recent decline of fish abundance has led to more restrictive regulations (WDFW 2003).

Life History

Small bull trout eat terrestrial and aquatic insects but shift to preying on other fish as they grow larger. Large bull trout are primarily fish predators. Bull trout evolved with whitefish, sculpins and other trout and use all of them as food sources. Adult bull trout are usually small, but can grow to 36 inches in length and up to 32 pounds. Bull trout reach sexual maturity at between four and seven years of age and are known to live as long as 12 years. They spawn in the fall after temperatures drop below 9ºC, in streams with abundant cold, unpolluted water, clean gravel and cobble substrate, and gentle stream slopes. Many spawning areas are associated with cold water springs or areas where stream flow is influenced by groundwater. Bull trout eggs require a long incubation period compared to other salmon and trout, hatching in late winter or early spring. Fry may remain in the stream gravels for up to three weeks before emerging (USFWS 2002a).

Bull trout may be either resident or migratory. Resident fish live their whole life near areas where they were spawned. Migratory fish are usually spawned in small headwater streams, and then migrate to larger streams, rivers, lakes, reservoirs or salt water where they grow to maturity. Smaller resident fish remain near the areas where they were spawned while larger, migratory, fish will move considerable distances to spawn when habitat conditions allow. For instance, bull trout in Montana's Flathead Lake have been known to migrate up to 250 km to spawn (USFWS 2002a).

Habitat and Hydrology

Bull trout are seldom found in waters where temperatures are warmer than 15 C to 18 C. Besides very cold water, bull trout require stable stream channels, clean spawning gravel, complex and diverse cover, and unblocked migration routes (USFWS 2002a).

Hatchery Influence

No information was found on the influence of hatcheries on bull trout.

Population Trends and Risks

The Coastal-Puget Sound bull trout are vulnerable to many of the same threats that have reduced bull trout in the Columbia River and Klamath River Basins including hybridization and competition with non-native brook trout, brown trout and lake trout, degradation of spawning and rearing habitat, and isolation of local populations due to dams and diversions (67 FR 71240). Due to their need for very cold waters and long incubation time, bull trout are more sensitive to increased water temperatures, poor water quality and degraded stream habitat than many other salmonids.

In many areas, continued survival of the species is threatened by a combination of factors rather than one major problem. For example, past and continuing land management activities have degraded stream habitat, especially along larger river systems and streams located in valley bottoms. Degraded conditions have severely reduced or eliminated migratory bull trout as water temperature, stream flow and other water quality parameters fall below the range of conditions which these fish can tolerate. In many watersheds, remaining bull trout are smaller, resident fish isolated in headwater streams. Brook trout, introduced throughout much of the range of bull trout, easily hybridize with them, producing sterile offspring. Brook trout also reproduce earlier and at a higher rate than bull trout so bull trout populations are often supplanted by these non-natives. Dams and other in-stream structures also affect bull trout by blocking migration routes, altering water temperatures and killing fish as they pass through and over dams or are trapped in irrigation and other diversion structures (USFWS 2002a).

Analysis of Potential Impacts to Bull Trout

In consideration of all factors pertaining to the Bull Trout and the discharge from the Shelter Bay WWTP, it is predicted that there will be no impact to the bull Trout. The discharge does not contribute to the factors responsible for the bull trout's decline as described above. The characteristics of the discharge and permit conditions will not cause any harmful or beneficial effects to the Bull Trout. The bull trout is a highly mobile species, discharge is not from a major facility, and the effluent is treated to Federal Secondary Treatment Standards, as well as meeting State Water Quality Standards; therefore, no harmful effects are predicted. The outfall is also located in fairly deep water where significant dilution factors are achieved. The outfall is not located in bull trout spawning areas, and the outfall pipe is pointed towards the direction of significantly deeper marine water. There is no measurable impact to the bull trout, therefore, there is **no effect** on the bull trout from the discharge.

(d) Southern Resident Killer Whale

Status

The Southern Resident killer whale (Orcinus orca) has been designated as endangered throughout their entire range under the Endangered Species Act on November 18, 2005 (70 FR 69903).

Geographic Range and Spatial Distribution

Killer whales are the most widely distributed marine mammals. They are found in all parts of the ocean and in most seas from the Arctic to the Antarctic. In the North Pacific Ocean, killer whales are often sighted from the eastern Bering Sea to the Aleutian Islands; in the waters of southeastern Alaska and the intercoastal waterways of British Columbia and Washington State; along the coasts of Washington, Oregon and California; along the Russian coast in the Bering Sea and the Sea of Okhotsk; and on the eastern side of Sakhalin and the Kuril Islands and the Sea of Japan.

The Southern Resident killer whale population contains three pods – J pod, K pod and L pod. Their range during the spring, summer and fall includes the island waterways of Puget Sound, the Strait of Juan de Fuca, and Southern Georgia Strait. Their occurrence in the coastal waters off Oregon, Washington and Vancouver Island, and more recently off the coast of central California in the south and off Queen Charlotte Islands to the north has been documented. Little is known about the winter movements and range of the Southern Resident stock.

Critical Habitat

Critical habitat for the Southern Resident killer whale was designated on November 29, 2006. Approximately 2,560 square miles of marine habitat within the area occupied by Southern Resident killer whales in Washington was designated as critical habitat. Three areas are encompassed in the critical habitat and include 1) the summer core area of marine waters in Whatcom and San Juan counties and all marine waters in Skagit County west and north of Deception Pass Bridge; 2) the Puget Sound area and 3) the Strait of Juan de Fuca area.

Life History

Killer whales are the most widely distributed cetacean species in the world. Killer whales have a distinctive color pattern, with black dorsal and white ventral portions. They also have a white patchabove and behind the eye and a gray or white saddle behind the dorsal fin. Adult male killer whales can reach up to 32 feet in length and can weigh nearly 22,000 lbs; females can reach 28 feet in length and can weigh up to 16,500 lbs.

Sexual maturity of female killer whales occurs when the whales reach approximately 15-18 feet in length, depending on the geographic location. The gestation period for killer whales varies from 15-18 months, and birth may occur in any month. Calves nurse for at

least one year, and wean between one and two years of age. The bith rate for killer whales is estimated as every 5 years for an average period of 25 years. Life expectancy for wild female killer whales is approximately 50 years , but it is estimated they can live to 80-90 years. Male killer whales usually live for about 30 years, but it is estimated they can live up to 50-60 years.
The diet of killer whales can be specific to geography or population. In the eastern North Pacific, resident killer whale populations feed mainly on salmonids including Chinook and chum salmon, while transient whale populations feed more on marine mammals, including Dall's porpoises, Pacific white-sided dolphins, California and Steller sea lions, harbor seals, sea otters, and even large baleen whales.

Killer whales are highly social mammals and usually occur in pods, or groups of up to 40-50 animals. Single whales, usually adult males, may also occur in populations. Differences in spatial distribution, abundance, behavior, availability of food resources probably account for the variation in group size for whale populations. Like all cetaceans, killer whales depend heavily on underwater sound for orientation, feeding and communication. Killer whales of different populations demonstrate specific vocalization types.

<u>Population Trends and Risks</u>

There is little historical information on the abundance of killer whales worldwide. It is thought that many populations have declined since 1800 due to diminished stocks of fish, whales, seals and sea lions in the ocean. During the past few decades, the use of photo-identification studies or line-transect counts have been used to survey killer whale populations. The Southern Resident killer whale population is currently estimated at about 88 whales, a decline from its estimated historical levels of about 200 in mid-to late 1800s. Beginning around 1967 and estimated 47 whales were removed using live-capture fishery for oceanarium display. The population fell approximately 30% to about 67 whales by 1971. By 2003, the population is estimated to have increased to 83 whales, still reduced from historical estimates.

<u>Analysis of Potential Impacts to Southern Resident Killer Whale</u>
In consideration of all factors pertaining to the Southern Resident Killer Whale and the discharge from the Shelter Bay WWTP, it is predicted that there will be no impact to the Puget Sound Southern Resident Killer Whale. This is because the characteristics of the discharge and permit conditions will not cause any harmful or beneficial effects to the Killer Whale. The discharge is not from a major facility, and the effluent is treated to Federal Secondary Treatment Standards, as well as meeting State Water Quality Standards; therefore, no harmful effects are predicted. The outfall is also located in fairly deep water where significant dilution factors are achieved. In addition, the Killer Whale is a marine mammal that is highly mobile. It is expected that the discharge to have no measurable impact to the Killer Whale, therefore, there is **no effect** on the killer whale.

(e) Humpback Whale

Status

Humpback whales are listed as endangered throughout their entire range under the Endangered Species act on June 2, 1970 (35 FR 8491).

Geographic Range and Spatial Distribution

Surveys indicate that humpbacks occupy habitats around the world, with three major distinct populations: the north Atlantic, the north Pacific, and the southern oceans. These three populations do not interbreed. Humpbacks generally feed for 6-9 months of the year on their feeding grounds in Arctic and Antarctic waters. The animals then fast and live off their fat layer for the winter period while on the tropical breeding grounds (USEPA 2002). The north Pacific herd of humpback whales that typically occupies southeastern Alaska waters also migrates to Hawaii and Mexico in the winter months for breeding. Humpback whales in the North Pacific are seasonal migrants feeding on zooplankton, and small schooling fish in coastal waters off the coastal waters of the western United States, Canada (NMFS 2002).

Humpback whales are not expected to be routinely present in Washington.

Critical Habitat

There is no designated critical habitat for the Humpback whale.

Historical Information

Whaling took large numbers of humpbacks from the late 1800s through the early 20th century. Even though the International Whaling Commission provided protection to the species in the early 1960s, the Soviet Union has recently revealed massive illegal and unreported kills that occurred up until 1970 in the southern oceans.

Population Trends and Risks

The humpback whale population is listed as “depleted” under the Marine Mammal Protection Act. As a result, the Central North Pacific population of humpback whale is classified as a strategic stock. The Central North Pacific population has increased in abundance between the early 1980s and early 1990s; but the status of this population relative to its optimum sustainable population size is unknown (NMFS 2002).

The largest threats to their survival include entanglements in fishing gear, collisions with ship traffic, and pollution of their coastal habitat from human settlements (USEPA 2002).

Analysis of Potential Impacts to the Humpback Whale

In consideration of all factors pertaining to the Humpback Whale and the discharge from the Shelter Bay WWTP, it is predicted that there will be no impact to the Humpback

Whale. This is because the characteristics of the discharge and permit conditions will not cause any harmful or beneficial effects to the Humpback Whale. The discharge is not from a major facility, and the effluent is treated to Federal Secondary Treatment Standards, as well as meeting State Water Quality Standards; therefore, no harmful effects are predicted. The outfall is also located in fairly deep water where significant dilution factors are achieved. In addition, the Humpback Whale is a marine mammal that is highly mobile and is seldom found in Puget Sound. It is expected that the discharge would have no measurable impact to the Humpback Whale, therefore, there is **no effect** on the Humpback Whale.

(f) Steller Sea Lion

Status

The Steller sea lion was listed as a threatened species under emergency role by NMFS in April 1990; final listing for the species became effective in December 1990.

Geographic Range and Spatial Distribution

Steller sea lions are polygamous and use traditional territorial sites for breeding and resting. Breeding sites, also known as rookeries, occur on both sides of the north Pacific, but the Gulf of Alaska and Aleutian Islands contain most of the large rookeries. Adults congregate for purposes other than breeding in areas known as haulouts (USEPA 2002). In 1997, NMFS classified Steller sea lions into two distinct population segments divided by the 144°W latitude. The eastern population segment occupies habitat including southeastern Alaska and Admiralty Island. Currently, NMFS has classified the western population segment as endangered, while classifying the eastern population segment as threatened (62FR24345). Although the Steller sea lion population has declined steadily for the last 30 years, scientists have yet to identify the cause of the decline (USEPA 2002).

Steller sea lions may be observed in Puget Sound year-round, but they are most abundant during the fall and winter months. Three major haulout areas exist on the Washington outer coast and one major haulout area is located at the Columbia River south jetty.

No breeding rookeries have been identified in Washington waters (NMFS 1992).

Critical Habitat

Steller sea lion critical habitat has been designated in Alaska, California, and Oregon (64 FR 14051) and includes a 20-nautical-mile buffer around all major haulouts and rookeries, as well as associated terrestrial, air, and aquatic zones, and three large offshore foraging areas. No critical habitat has been designated in Washington.

Life History

Steller sea lion habitat includes both marine and terrestrial areas that are used for a variety of purposes. Terrestrial areas (e.g., beaches) are used as rookeries for pupping and breeding. Rookeries usually occur on beaches with substrates that include sand, gravel, cobble, boulder, and bedrock (NMFS 1992). Haul-out areas are used other than during the breeding and pupping season. Sites used as rookeries may be used as haul-out areas during other times of the year. When Steller sea lions are not using rookery or haul-out areas, they occur in nearshore waters and out over the continental shelf. Some individuals may enter rivers in pursuit of prey (Jameson and Kenyon 1977).

Steller sea lions are opportunistic feeders and consume a variety of fishes such as flatfish cod, and rockfish; and invertebrates such as squid and octopus. Demersal and off-bottom schooling fishes predominate (Jones 1981). Steller sea lions along the coasts of Oregon and California have eaten rockfish, bake, flatfish, cusk-eel, squid, and octopus (Fiscus and Baines 1966, Jones 1981, Treacy 1985); rockfish and hake are considered to be consistently important prey items (NMFS 1992). Feeding on lamprey in estuaries and river mouths has also been documented at sites in Oregon and California (Jones 1981, Treacy 1985). Spalding (1964) and Olesiuk et al. (1990) have documented Steller sea lions feeding on salmon, but they are not considered a major prey item (Osborne 1988).

The breeding range of Steller sea lions extends from southern California to the Bearing Sea (Osborne 1988). Breeding colonies consisting of small numbers of sea lions also exist on the outer coasts of Oregon and British Columbia. There are currently no breeding colonies in Washington State (NMFS 1992), although three major haul-out areas exist on the Washington outer coast and one major haul-out area is located at the Columbia River south jetty (NMFS 1992). Jagged Island and Spit Rock are used as summer haul-outs, and Umatilla Reef is used during the winter (National Marine Mammal Laboratory, unpublished data). Other rocks, reefs, and beaches as well as floating docks, navigational aids, jetties, and breakwaters are also used as haul-out areas (NMFS 1992).

<u>Population Trends and Risks</u>

The worldwide Steller sea lion population is estimated at just under 200,000, with the majority occurring in Alaska. The range of the Steller sea lion extends around the North Pacific Ocean rim from northern Japan, the Kuril Islands and Okhotsk Sea, through the Aleutian Islands and Bering Sea, along Alaska's southern coast, and south to California (Kenyon and Rice 1961, Loughlin et al. 1984).

Responses to various types of human-induced disturbances have not been specifically studied. Close approach by humans, boats, or aircraft will cause hauled-out sea lions to go into the water. Disturbances that cause stampedes on rookeries may cause trampling and abandonment of pups (Lewis 1987). Areas subjected to repeated disturbance may be permanently abandoned (Kenyon 1962), and/or the repeated disturbance may negatively affect the condition or survival of pups through interruption of normal nursing cycles. Low levels of occasional disturbance may have little long-term effect (NMFS 1992).

<u>Analysis of Potential Impacts to the Stellar Sea Lion</u>

In consideration of all factors pertaining to the Stellar Sea Lion and the discharge from the Shelter Bay WWTP, it is predicted that there will be no impact to the Stellar Sea

Lion. This is because the characteristics of the discharge and permit conditions will not cause any harmful or beneficial effects to the Stellar Sea Lion. The discharge is not from a major facility, and the effluent is treated to Federal Secondary Treatment Standards, as well as meeting State Water Quality Standards; therefore, no harmful effects are predicted. The outfall is also located in fairly deep water where significant dilution factors are achieved. In addition, the Stellar Sea Lion is a marine mammal that is highly mobile and is seldom found in Puget Sound. It is expected that the discharge to have no measurable impact to the Stellar Sea Lion, therefore, there is **no effect** on the Stellar Sea Lion.

(g) Terrestrial Species

The Canada Lynx, Gray Wolf, Grizzly bear, Marbled Murrelet, and Northern Spotted Owl are listed species (U.S. Fish and Wildlife Service). Of these, the Marbled Murrelet and the Northern Spotted Owl are also designated as having critical habitat.

Analysis of Potential Impacts to Terrestrial Species

The effluent discharged is located beneath 13 feet of marine waters, and therefore, does not come into contact with terrestrial species. Since there is no measurable impact, there is **no effect** on terrestrial species from the discharge.

Analysis of Potential Impacts to all Listed Species, and Species with Critical Habitat

EPA has evaluated all the listed species and species with critical habitat from NOAA and the U.S. Fish and Wildlife that could potentially be impacted from the discharge. Based on the information above, EPA has determined that there is no measurable impact, therefore, there is **no effect** to all ESA listed species and critical habitat.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) Essential Fish Habitats. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

Due to the nature of this relatively small wastewater treatment plant with secondary treatment, which operates with disinfection, and the outfall which is significantly deep, EPA has determined that issuance of this permit has no measurable impact to EFH, therefore, there is **no effect** on EFH in the vicinity of the discharge.

APPENDIX E – SECTION 401 CERTIFICATION

Swinomish Office of Planning & Community Development
Water Resources Program
11430 Moorage Way - LaConner, WA 98257 - 360.466.7280 - 360.466.1615 fax

April 18, 2012

Mr. Kai Shum
US Environmental Protection Agency, Region 10
Attn: NPDES Permits Unit Manager
1200 6th AVE, Suite 900 OWW-130
Seattle, WA 98101-3140

Re: Section 401 Water Quality Certification of **NPDES Permit for Shelter Bay Community Wastewater Treatment Plant, WA-002442-2,** Swinomish Channel, Swinomish Reservation, Washington.

Dear Mr. Shum:

This Clean Water Act (CWA) Section 401 certification **No. 2012-02** applies to the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) permit described in NPDES Permit and Fact Sheet # WA-002442-2 (2012), involving the discharge of treated wastewater from the Shelter Bay Community Wastewater Treatment Plant located on the Swinomish Reservation and discharging to the Swinomish Channel of the Regulated Surface Waters of the Swinomish Tribal Community.

Section 401 of the CWA [33 U.S.C. Section 1341 (a)] requires that applicants for Federal permits allowing discharges into waters of the United States obtain certification that the discharge will comply with the applicable provisions of CWA Sections 301, 302, 303, 306 and 307.

The Swinomish Office of Planning and Community Development (OPCD) is providing Water Quality Certification pursuant to Section 401, for this Permit. As the Tribe has no approved water quality standards, OPCD will be using the state water quality standards [WAC 173-201A] as guidance per Tribal Resolution #2008-08-201.

The OPCD has completed its review of your application and certifies that the discharge will comply with the applicable provisions of the CWA. This certification is valid for the duration of this NPDES Permit. For further coordination with OPCD on this project, please contact me at (360) 466-7201.

Sincerely,

Todd Mitchell, Water Resources Manager

cc: file