FACT SHEET

December 22, 2003

NPDES Permit Number: WA-002565-8

Public Notice Start Date: **December 23, 2003**
Public Notice Expiration Date: **January 22, 2004**

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The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a Wastewater Discharge Permit to:

Lummi Indian Business Council
Sandy Point Waste Water Treatment Plant
4369 Germaine Road
Ferndale, WA 98248

and

the State of Washington Proposes to Certify the Permit

EPA Proposes NPDES Permit Reissuance

EPA proposes to reissue a National Pollutant Discharge Elimination System (NPDES) permit to the Lummi Indian Business Council for discharge from its Sandy Point Waste Water Treatment Plant (WWTP). The draft permit sets conditions on the discharge of pollutants from the Sandy Point WWTP to the Strait of Georgia. 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.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a listing of proposed effluent limitations and other conditions
- a map and description of the discharge location
- background information supporting the conditions in the draft permit

The State of Washington Proposes Certification

The Washington State Department of Ecology proposes to certify the NPDES permit for the Sandy Point WWTP under provisions of Section 401 of the Clean Water Act.

Public Comments on the Draft Permit

Persons wishing to comment on the draft permit or to request a public hearing must do so, in writing, by the expiration date of the public notice. A request for a public hearing must state the nature of the issues to be raised as they relate to the permit, as well as the requester's name, address, and telephone number.

All comments and requests for public hearing must be submitted to EPA as described in the Public Comments section of the attached public notice.

If no significant comments are received during the public comment period, the proposed conditions in the draft permit will be included in the final permit and will become effective upon reissuance of the permit.

Any significant comments will be considered before EPA Region 10's Director of the Office of Water makes a final decision regarding permit issuance. EPA will address significant comments when it issues the permit. In such a case, the permit will become effective 33 days after the reissuance date, unless a request for an appeal is filed with the Environmental Appeals Board within 33 days.

Public Comment on the State Preliminary 401 Certification

The Washington State Department of Ecology (Ecology) provides the public with the opportunity to review and comment on preliminary 401 certification decisions. Any person may request in writing that Ecology provide that person notice of Ecology's preliminary 401 certification decision, including, where appropriate, the draft certification. Persons wishing to comment on the preliminary 401 certification should submit written comments by the public notice expiration date to the Washington Department of Ecology, 1204 Railroad Avenue, Suite 200, Bellingham, Washington 98225.

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).

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-0523 or
1-800-424-4372 x0523 (within Alaska, Idaho, Oregon, and Washington)

The fact sheet and draft permit are also available at:

Lummi Library
2520 Kwina Road
Bellingham, WA 98226
360/392-4214

EPA Washington Operations Office
300 Desmond Dr. SE, Suite 102
Lacey, WA 98503
360/753-9457

Bellingham Public Library
210 Central Avenue
Bellingham, WA 98225
360-676-6860

Whatcom County Library System
Ferndale Branch
2222 Main Street
Ferndale, WA 98248
360/384-3647

Whatcom County Library System
Reference Center
216 4th Street
Lynden WA 98264
360/354-4883

The draft permit and fact sheet can also be found by visiting the Region 10 website at http://www.epa.gov/r10earth.htm.

For technical questions regarding the permit or fact sheet, contact Sharon Wilson at the phone number or e-mail address at the top of this fact sheet. Those with impaired hearing or speech may contact a TDD operator at 1-800-833-6384 (ask to be connected to Sharon Wilson at the above phone number). Additional services can be made available to a person with disabilities by contacting Sharon Wilson.

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LIST OF ACRONYMS

ACEC	Acute critical effluent concentration, defined as 100/dilution ratio at the edge of the acute mixing zone
AML	Average monthly limit
AWL	Average weekly limit
BMP	Best Management Practices
BOD_5	Five day biochemical oxygen demand (a measure of organic matter)
BPJ	Best Professional Judgement
CFR	Code of Federal Regulations
CV	coefficient of variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FWS	U.S. Fish and Wildlife Service
LTSWD	Lummi Tribal Sewer and Water District
MDL	maximum daily limit
MGD	million gallons per day
mg/l	milligrams per liter
ml	milliliter
N	nitrogen
NH_3	ammonia
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
pH	a measure of the acidity or alkalinity of a solution
POTW	Publicly-owned treatment works (includes tribally owned)
QAP	Quality Assurance Plan
su	Standard Unit *(for measuring pH; <7=acid; 7=neutral; >7= alkaline)*
TMDL	Total Maximum Daily Load
TSD	*Technical Support Document for Water Quality-Based Toxics Control*
TSS	Total Suspended Solids
WAC	Washington Administrative Code
WET	whole effluent toxicity
WLA	wasteload allocation
WQLS	water-quality limited segment

WWTP	wastewater treatment plant

I. FACILITY INFORMATION

A. Applicant

Name:	**Lummi Indian Business Council** **Sandy Point Waste Water Treatment Plant**
NPDES Permit No.:	**WA-002565-8**
Mailing Address:	**2156 Lummi View Drive** **Bellingham, Washington 98226**
Facility Location:	**4369 Germaine Road** (see Appendix A for map) **Ferndale, Washington**
Facility Contacts:	**Darrell Hillaire, Tribal Chairman** **Marv Pulst, Manager, Lummi Tribal Sewer & Water District, 360-371-7921**

B. Facility Activity

The Lummi Tribal Sewer and Water District (LTSWD) operates a wastewater treatment plant (WWTP) that provides secondary treatment and disinfection of domestic wastes prior to discharge to Strait of Georgia. The maximum month design flow of the facility is 0.25 million gallons per day (mgd). In 2002, the treatment plant had a average annual flow of 0.104 mgd and a maximum daily flow of 0.393 mgd. This facility serves a population of approximately 1500. The plant receives domestic wastewater from residential sources. There are no industrial discharges to the collection system. Biosolids generated in the treatment process are hauled to a land application site on the reservation about four and a half miles southeast of the WWTP near the northeast corner of Haxton Way and Cagey Road or to a permitted off-Reservation site by a commercial biosolids transport and application company.

C. Facility Background

1. Permit Status

a. 1983 Permit – EPA last issued an NPDES permit for the Sandy Point WWTP on April 26, 1983; it expired April 25, 1988.

b. 1988 Application – Lummi Indian Business Council submitted an application for renewal of its NPDES permit on July 27, 1988; due to resource constraints and other priorities, EPA took no action at that time on that application.

c. 1996 Application – Lummi Indian Business Council submitted an Interim Sewage Sludge Permit Application to EPA in 1996; due to

resource constraints and other priorities, no action was taken on this application. Since more than five years have passed since that application was submitted, an updated application should have been submitted with the 2003 application mentioned below. EPA has asked LTSWD to submit it by January 31, 2004. If it has not been submitted by the time this permit is issued, a requirement to submit it within 60 days of the effective date will be included in the permit.

d. 2003 Application – EPA received an updated application on July 15, 2003; additional monitoring data was received on July 23, 2003.

2. Compliance History

a. Recent Violations – In the past four years, the following effluent violations have been reported:
(1) BOD_5 monthly average (33 mg/l vs 30 mg/l limit) – 4/01
(2) Fecal coliform
(a) Weekly average (800/100 ml vs 400/100 ml limit – 4/00
(b) Monthly average (262/100 ml vs 200/100 ml limit – 2/00
(3) TSS weekly average (98 mg/l vs 45 mg/l limit) – 2/00

II. RECEIVING WATER

A. Location of Discharge

The Sandy Point WWTP is located at latitude: 48˚ 48' 52" N and longitude: 122˚ 42' 22" W. Outfall 001 is located 1458 feet from shore at 44 feet below the surface in the Strait of Georgia in North Puget Sound.

B. Water Quality Standards

The marine boundary of the Lummi Reservation parallels the shoreline at the - 4.5 foot contour[1]. Beyond the boundary, the State of Washington has jurisdiction. Since the Sandy Point WWTP discharges to the Strait of Georgia at a point at 44 feet below the water surface, the WWTP discharge point is in State of Washington waters, and state water quality standards apply.

[1]Figure 2, page 22 of Supplement to the Lummi Nation's March 1995 Application to Administer the Water Quality Standards Program under Sections 303(c) and 401 of the Clean Water Act. Lummi Indian Business Council, Water Resources Division, February 1, 1999.

Washington State's water quality standards are composed of classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The State designates the characteristic uses for each class. The State further designates the numeric and/or narrative water quality criteria necessary to protect the characteristic uses for which its water bodies are protected. A third component of the water quality standard is the State's anti-degradation policy, which aims to maintain existing in-stream uses and the level of water quality necessary to protect them.

The Strait of Georgia is a marine water in North Puget Sound designated as estuarine by the State of Washington in WAC 173-201A-100(7)(b)(ii). In WAC 173-201A-140(14), the State has designated all marine waters in North Puget Sound west of 122° 39' W as Class AA; the Sandy Point WWTP discharge point is west of 122° 39' W. Characteristic uses for Class AA marine waters include industrial water supply; salmonid and other fish migration, rearing, spawning, and harvesting; clam, oyster, and mussel and other shellfish rearing, spawning, and harvesting; wildlife habitat; recreation (primary contact recreation, sport fishing, boating, and aesthetic enjoyment); and commerce and navigation.

Section III of this fact sheet shows in more detail how the Washington water quality standards were considered in developing limits and conditions proposed in the draft permit.

C. 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. The Strait of Georgia is listed on the 1998 303(d) list for acenaphthene, anthracene, benz(a)anthracene, benz(a)pyrene, benzo(b,k)fluoranthenes, benzo(ghi)perylene, cadmium, chrysene, dibenz(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, pyrene, and total PCBs. A major source of these pollutants is probably the discharge from the Intalco primary aluminum smelter several miles to the north of the Sandy Point WWTP.

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. No TMDL for any of these pollutants has been developed. Since none of these pollutants is expected in domestic wastewater, the Sandy Point

WWTP discharge is not expected to contribute to the impairment of the water quality in the Strait of Georgia.

III. EFFLUENT LIMITATIONS

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. Appendix C provides discussion on the legal basis for the development of technology-based and water quality-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, fecal coliform, and pH and water-quality based limits for total residual chlorine. Appendix C describes in detail how the effluent limits were developed.

Table 1 summarizes the effluent limitations and monitoring requirements that are proposed in the draft permit. The draft permit specifies limits for chlorine, which was not limited in the previous permit. The existing wastewater treatment facility may have difficulty meeting the proposed chlorine limits. Therefore, an expeditious compliance schedule is included to allow the permittee time to bring the facility into compliance with the proposed chlorine permit limits by December 31, 2004.

In addition to the requirements listed in Table 1 below, the following limitations shall also apply:

1. The permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have clearly been identified in the permit application process.

2. Toxic substances shall not be introduced above natural background levels in waters of the state of Washington which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the Washington Department of Ecology [WAC 173-201A-040(1)].

Table 1 **Proposed Effluent Limitations Compared to Current Limitations** for Outfall 001

Parameters	Units	Average Monthly Limits		Average Weekly Limits		Maximum Daily Limits	
		Current	Proposed	Current	Proposed	Current	Proposed
BOD_5	mg/l	30	30	45	45	--	---
	lbs/day	63	63	94	94	--	---
	% removal	85%	85%	--	--	--	--
TSS	mg/l	30	30	45	45	--	---
	lbs/day	63	63	94	94	--	---
	% removal	85%	85%	--	--	--	--
Fecal coliform	# colonies/ 100ml	200	200	400	400	---	--
Total Residual Chlorine	mg/l	--	0.39	--		--	0.65
pH	Standard Units					6.0 – 9.0	6.0 - 9.0

IV. MONITORING REQUIREMENTS

Section 308 of the Clean Water Act and the federal regulation 40 CFR 122.44(i) require that monitoring requirements be included in permits to determine compliance with effluent limitations. Section 308 also authorizes additional effluent monitoring to gather information for possible future effluent limitations or to evaluate effluent impacts on receiving water quality.

A. Basis for Effluent Monitoring

The draft permit requires monitoring of the effluent for BOD_5, TSS, fecal coliform, total residual chlorine, and pH to determine compliance with the limits; it also requires monitoring of the influent for BOD_5 and TSS in order to calculate monthly removal rates. In addition, the permit includes requirements to monitor ammonia, temperature, and alkalinity to gather data to determine if there is a reasonable potential for the pollutants from this discharge to cause a violation of the Washington water quality standards in the Strait of Georgia.

LTSWD is responsible for conducting the monitoring and reporting the results to EPA on monthly discharge monitoring reports (DMRs); courtesy copies will also be sent to the Washington Department of Ecology on the same schedule to provide the state with information about the discharge into waters of the State of Washington. Providing copies to the Washington Department of Ecology does not constitute a waiver of sovereign immunity by the Lummi Nation and does not provide the State with the right to access to the facility for inspections or other purposes.

Table 2 presents the proposed effluent monitoring requirements for the draft permit.

Table 2: Proposed Effluent Monitoring Requirements for Outfall 001

Parameter	Units	Sample Frequency	Sample Type	Location
Outfall flow	MGD	continuous	recording	effluent
Biochemical Oxygen Demand (BOD_5)	mg/l	1/week	24 hour composite	influent & effluent
Total Suspended Solids (TSS)	mg/l	1/week	24 hour composite	influent & effluent
Fecal Coliform	#/100 ml	1/week	grab	effluent
Total Residual Chlorine	mg/l	daily	grab	effluent
pH	su	daily	grab	effluent
Temperature	deg. C.	daily	grab	effluent
Total Ammonia (NH_3)	mg/l	quarterly	24 hour composite	effluent
Alkalinity	mg/l, as $CaCO_3$	quarterly	grab	effluent

B. Whole Effluent Toxicity (WET) Testing

Because the local Cherry Point Herring stock is in significant decline and the herring have used the areas around the outfall for spawning, the permittee must collect effluent samples during the summer and during the winter for one year to determine if the effluent is creating chronic toxicity in the receiving water. These samples must be analyzed using Topside smelt and Sea Urchin or Sand Dollar (echinoderm fertilization test), since the echinoderm fertilization test is an appropriate test relating to herring spawning and toxicity.

C. Expanded Effluent Testing

Because of concern about the decline of Cherry Point herring in the vicinity of the outfall, the permittee must conduct expanded effluent testing as described in Part D of Form 2A of the NPDES permit application form if the results of WET testing show statistically significant toxicity at the acute critical effluent concentration (2% effluent concentration).

D. Basis for Surface Water Monitoring

The purpose of surface water monitoring is to determine water quality conditions as part of the effort to evaluate the reasonable potential for the discharge to cause an in-stream excursion above water quality criteria. Monitoring outside the influence of the discharge is used to determine background levels in the receiving water. This data will be used during the next permitting cycle to determine the need for incorporating water quality-based effluent limits in the permit.

The draft permit specifies monitoring outside the influence of the discharge, or at least 244 feet horizontally from the location of the outfall. Table 3 presents the proposed surface water monitoring requirements for the draft permit.

Table 3: Proposed Surface Water Monitoring Requirements (outside the influence of the discharge)

Parameter	Units	Sample Frequency	Sample Type	Method Detection Level
pH	s.u.	1/quarter	grab	--
Total Ammonia (NH_3) as N	mg/l	1/quarter	grab	10 µg/l
Alkalinity	mg/l as $CaCO_3$	1/quarter	grab	10 mg/l
Salinity	%	1/quarter	grab	–

E. Representative Sampling

The draft permit has expanded the requirement in the federal regulations regarding representative sampling (40 CFR 122.41[j]). This provision now specifically requires representative sampling whenever a bypass, spill, or non-routine discharge of pollutants occurs, if the discharge may reasonably be expected to cause or contribute to a violation of an effluent limit under the permit. This provision is included in the draft permit because routine monitoring could miss permit violations and/or water quality standards exceedences that could result from bypasses, spills, or non-routine discharges. This requirement directs LTSWD to conduct additional, targeted monitoring to quantify the effects of such occurrences on the final effluent discharge.

V. OTHER PERMIT CONDITIONS

A. Quality Assurance Plan

Federal regulations at 40 CFR 122.41(e) require permittees to properly operate and maintain their facilities, including "adequate laboratory controls and appropriate quality assurance procedures." To implement this requirement, the draft permit requires that LTSWD develop or update a Quality Assurance Plan (QAP) to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The QAP must include standard operating procedures that the permittee must follow for collecting, handling, storing, and shipping samples, for laboratory analysis, and for data reporting. The draft permit requires that, within 120 days of the effective date of the permit, LTSWD submit to EPA certification that the QAP has been developed or updated and is being implemented.

B. Facility Planning Requirement

The draft permit requires LTSWD to develop a plan when the annual average flow reaches 85% of the design flow of the plant. The plan requires LTSWD to develop a strategy for remaining in compliance with the effluent limits in the permit.

C. Sewage Sludge

Under the Clean Water Act (CWA), facilities which generate sewage sludge are subject to national standards for sewage sludge and to NPDES sludge permitting.

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 will issue a sludge-only permit to this facility at a later date. The NPDES rules require the facility to submit an application for a sewage sludge permit (Form 2S).

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. These regulations are self-implementing; therefore, permittees must comply with them whether or not a permit has been issued.

D. Standard Permit Provisions

In addition to facility-specific requirements, most of sections II, III, and IV of the draft permit contain standard regulatory language. Standard regulatory language applies to all permittees and must be included in NPDES permits. Because it is based on regulations, standard regulatory language cannot be challenged in the context of an NPDES permit action. Standard regulatory language addresses conditions, such as monitoring, recording, and reporting requirements, compliance responsibilities, and general requirements.

VI. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with the U.S. National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service (collectively referred to as "the Services") regarding potential effects that a federal action may have on threatened or endangered species. The Services have identified the following threatened species in Puget Sound and the Strait of Georgia.

Endangered Species:

Humpback Whale (*Megaptera novaeangliae*)
Leatherback Sea Turtle (*Dermochelys coriacea*)

Threatened Species:

Bald eagle *(Haliaeetus leucocephalus)*
Bull trout *(Salvelinus confluentus)*
Marbled murrelet (*Brachyramphus Marmoratus)*
Puget Sound Chinook Salmon (*Oncorhynchus tsawytscha)*
Stellar Sea Lion (*Eumetopias jubatus*)

EPA has determined that permitting the continued discharge from this source will not have an adverse impact on any of these species. Appendix D provides further information on the listed species.

B. Essential Fish Habitat

Under the Magnuson-Stevens Fishery Conservation and Management Act, NOAA Fisheries and various fisheries management councils must identify and protect "essential fish habitat" for species managed under the Act. The EPA tentatively has determined that reissuance of this NPDES permit will have **no effect** on essential fish habitat. Any comments received from the NOAA Fisheries regarding the finding of **no effect** will be considered prior to reissuance of this permit.

C. State Certification

Section 401 of the Clean Water Act requires EPA to seek certification from the State of Washington for any discharges into state waters that the permit is adequate to meet State water quality standards before issuing a final permit. The regulations allow for the state to stipulate more stringent conditions in the permit, if the certification cites the Clean Water Act or State law references upon which that condition is based. In addition, the regulations require that the state's certification include statements on the extent to which each condition of the permit can be made less stringent without violating the requirements of State law.

The state submitted its preliminary certification of the draft permit, conditions of which were incorporated into the draft permit. Those conditions are the following:

1. Whole effluent toxicity testing, once in the summer and once in the winter.

2. Expanded effluent testing for pollutants listed in Part D of Form 2A of the NPDES permit application ("priority pollutants").

After the public comment period, a proposed final permit will be sent to Ecology for final certification. If Ecology authorizes different requirements in its final certification, EPA will incorporate those requirements into the permit.

D. Antidegradation

In setting permit limitations, EPA must consider the State's antidegradation policy. This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. For high quality waters, antidegradation requires that the State find that allowing lower water quality is necessary to accommodate important economic or social development before any degradation is authorized. This means that, if water quality is better than necessary to meet the water quality standards, increased permit limits can be authorized only if they do not cause degradation of water quality or if the State makes the determination that such degradation is necessary.

The draft permit includes effluent limits for biochemical oxygen demand, total suspended solids, fecal coliform, total residual chlorine, and pH from outfall 001. Because the issuance of this permit places continuing and more restrictive limits on an already existing discharge, the conditions in the permit will improve water quality and therefore will comply with the State's antidegradation requirements.

E. Permit Expiration

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

APPENDIX A

Facility Location

Figure A-1: **Sandy Point Wastewater Treatment Plant**

APPENDIX B

Waste Streams and Treatment Processes

I. Discharge Composition

In its NPDES application and in Discharge Monitoring Reports, the Lummi Tribal Sewer and Water District reported the pollutants listed in Table B-1 as being detected in its discharge from outfall 001. The toxic and conventional pollutant categories are defined in the regulations (40 CFR §401.15 and §401.16, respectively). The category of nonconventional pollutants includes all pollutants not included in toxic or conventional categories.

Table B-1 Pollutants Detected in Discharge

Pollutant Type	Parameter	Maximum Reported Concentration (& Loading)
Conventional	Biochemical oxygen demand (BOD_5), weekly average	43 mg/l 45 lbs/day
	Total suspended solids (TSS) weekly average	98 mg/l 82 lbs/day
	pH, min - max	6.0 – 7.9
	Fecal coliform bacteria, weekly average monthly average	800 colonies/100ml 262 colonies/100ml
	Oil & grease	6 mg/l
Non-Conventional	Chlorine, daily average	2.2 mg/l
	Ammonia	0.73 mg/l

II. Treatment Process:

The headworks facility includes the influent flow meter, bar screen, comminutor, and aerated grit chamber. Grit collected in the aerated grit chamber is sent to a landfill.

The primary clarifier allows settleable and floatable solids to be removed from the wastewater. In the pre-aeration basin, large amounts of air are entrained in the wastewater before flowing to one of the two rotating biological contactors (RBCs) that provide secondary treatment. Two secondary clarifiers provide settling of secondary sludge. Sludge from primary and secondary clarifiers is stabilized using aerobic digesters before land application at the tribal biosolids site or to a permitted off-Reservation site by a commercial biosolids transport and application company. Secondary effluent is chlorinated in the chlorine mixing basin before routing through the chlorine contact chamber to give sufficient time for the chlorine to provide the desired level of disinfection. A chlorine regulator was installed August 8, 2003.

APPENDIX C

Basis for Effluent Limitations

I. Statutory and Legal Basis for Limits

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

Section 301(b)(2) of the CWA requires technology-based controls on effluents. A technology-based effluent limit assumes a minimum level of treatment for municipal wastewater treatment plants, based on currently available treatment technology. EPA determines which technology-based limits must be incorporated into the permit.

The Clean Water Act further requires that the effluent limits for a particular pollutant be the more stringent of either the technology-based or the water quality-based limit. To meet this requirement, EPA evaluates the effluent quality expected from the assumed treatment to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur using the technology-based limits, EPA must calculate water quality-based limits for the permit.

The draft permit limits reflect whichever requirements (technology-based or water quality-based) are more stringent. The limits that EPA is proposing in the draft permit are found in Section III in the body of this fact sheet. This Appendix describes the technology-based and water quality-based evaluation for the Sandy Point WWTP discharge.

II. Technology-based Evaluation

A. Secondary Treatment – Concentration-based Limits

1. BOD_5, TSS, and pH – The 1972 Clean Water Act required publicly owned treatment works (POTWs), including those that are tribally owned, to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the Act established a required performance level, referred to as "secondary treatment," that all POTWs were required to meet by July 1, 1977. EPA specified secondary treatment requirements in 40 CFR §133.102. They identify the minimum level of effluent quality attainable by secondary treatment in terms of five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Fecal coliform – The State of Washington has promulgated a technology-based performance standard for fecal coliform in WAC 173-221-040(2).

3. Chlorine – A technology-based average monthly chlorine effluent limitation of 0.5 mg/L for wastewater treatment plants is derived 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/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. The AWL is derived by multiplying the AML by 1.5, resulting in an AWL for chlorine of 0.75 mg/L.

These technology-based limits are listed in Table C-1 below.

Table C-1: Secondary Treatment Requirements

Parameter	Average Monthly Limit	Average Weekly Limit	Minimum Percent Removal
BOD_5	30 mg/l	45 mg/l	85%
TSS	30 mg/l	45 mg/l	85%
Fecal coliform	200 colonies/100 ml	400 colonies/100 ml	--
Chlorine, Total residual	0.5 mg/l	0.75 mg/l	--
pH	between 6.0 and 9.0 standard units		

B. BOD_5 and TSS, mass based limits: Federal regulations at (40 CFR § 122.45 (f)) require BOD and TSS limitations to be expressed as mass based limits using the design flow of the facility.

1. **Monthly Average Loading** – BOD_5 and TSS

a. 30 mg/l x (Design flow) x (Conversion factors) = loading

(30 mg/l) x (0.25 x 10^6 gallons/day) x (3.8 l/gal) x (2.2 lbs/10^6 mg) = 63 lbs/day

2. **Weekly Average Loading** – BOD_5 and TSS:

a. 45 mg/l x (Design flow) x (Conversion factors) = loading

(45 mg/l) x (0.25 x 10^6 gallons/day) x (3.8 l/gal) x (2.2 lbs/10^6 mg) = 94 lbs/day

III. Water Quality-based Evaluation

A. Water Quality Standards

EPA evaluated the Sandy Point WWTP discharge to determine compliance with Section 301(b)(1)(C) of the CWA. This section requires the establishment of limitations in permits necessary to meet water quality standards.

The regulations at 40 CFR 122.44(d) implement section 301(b)(1)(C) of the CWA. These regulations require that NPDES 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 limits must be stringent enough to ensure that water quality standards are met.

EPA uses the approach outlined below in determining whether water quality-based limits are needed and in developing those limits when necessary:

1. Determine the appropriate water quality criterion;
2. Determine whether there is "reasonable potential" to exceed the criterion;
3. If there is "reasonable potential", develop a WLA;
4. Develop effluent limitation based on WLA.

The first step in developing water quality-based limits is to determine the applicable water quality criteria. The state of Washington's water quality standards are found at WAC 173-201A. The currently applicable criteria were approved by EPA in 1998; new standards were adopted by the state on June 30, 2003, and submitted to EPA for approval on July 28, 2003. The limits in this permit are based on the 1998 criteria; the minor change in the 2003 standards will not change the limit for fecal coliform.

The applicable criteria are determined based on the class designation of the receiving water. As discussed in §II.B., the Strait of Georgia is designated as a Class AA marine water that is considered estuarine. Ambient monitoring data is not available for the immediate area of the outfall. The closest monitoring site is at Portage Point, approximately 7.7 miles southeast from the outfall. The pollutants of concern that are monitored at this station are temperature and fecal coliform. The next closest monitoring station is in Bellingham Bay, about 10 miles southeast of the outfall; there is another monitoring site about 10.25 miles west of the outfall in the Strait of Georgia.

As discussed in §III, the pollutants of concern in the discharge include BOD_5,TSS, fecal coliform, ammonia, chlorine, pH, and temperature. Each of these is discussed in detail below.

1. BOD_5: – There is no state water quality criteria for BOD_5; therefore, the technically-based limits above are applied.

2. Total Suspended Solids – There is no state water quality criteria for TSS; therefore, the technically-based limits above are applied.

3. pH: The Washington water quality criterion for Class AA marine water specifies a pH range of 7.0 to 8.5 standard units, with a human-caused variation within the above range of less than 0.2 units (WAC 173-201A-030(1)(c)(v). In the previous permit, the technically based limit allowed a range of pH from 6.0 to 9.0; historically, the pH levels in the Sandy Point WWTP discharge have ranged between 6.0 to 7.9. Effluent alkalinity, temperature, and pH and ambient temperature, alkalinity, salinity, and pH data are needed to calculate a water quality based limit, taking into account the dilution in a mixing zone. Since this data is not currently available, the permit includes the technically based limit of pH between 6.0 and 9.0 and a requirement to conduct the monitoring for these parameters to support a water quality based limit calculation in the next permit cycle.

4. Ammonia: The Washington state water quality criteria for Class AA marine waters require that ammonia be less than 0.233 mg/l as a 1-hour average concentration, not to be exceeded more than once every three years on the average; ammonia is further limited to no more than 0.035 mg/l as a 4-day average concentration, not to be exceeded more than once every three years on the average. There is not enough effluent data for this parameter to determine if a limit for ammonia is warranted. Therefore, monitoring for ammonia, pH, and temperature is required in this permit to produce the data that will be used in the next permit cycle to evaluate whether there is a reasonable potential for the discharge to violate the ammonia criteria.

5. Temperature: The Washington water quality criteria limit the ambient water temperature to 13.0°C, and when natural conditions exceed 13.0°C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C. Ambient and effluent monitoring for temperature have been incorporated into the draft permit to determine if effluent limits for temperature may be necessary in the future.

6. Fecal Coliform: The Washington water quality criteria for Class AA marine water requires that the fecal coliform levels shall both not exceed a geometric mean of 14 colonies/100 ml and not have more than 10 percent

of all samples obtained for calculating the geometric mean value exceeding 43 colonies/100 ml. (WAC 173-201A-030(1)(c)(i)(B).

Historically, fecal coliform levels in the Sandy Point WWTP effluent have ranged as high as a geometric mean of 262 colonies/100 ml as a monthly average and of 800 colonies/100 ml as a weekly average. The following calculation uses data from January – May 2000, April 2001, August 2001 – October 2002 and shows a reasonable potential to exceed the criteria.

Reasonable Potential Analysis for Fecal Coliform

Effluent Fecal Coliform data (in colonies/100ml): (0 . . . 800)		=	84 data points
Maximum effluent concentration		=	800 colonies/100 ml
Mean		=	107 colonies/100 ml
Standard Deviation (SD)		=	198.1 colonies/100 ml
Coefficient of variation (CV) =	(SD)/mean	=	1.85

Projected Ambient Concentrations:

Reasonable Potential Multiplier (RPM)

The "reasonable potential" multiplier is based on the coefficient of variation of the data and the number of data points. When there are fewer than 10 data points to calculate a CV, the EPA's *Technical Support Document for Water Quality-Based Toxics Control*[2] (TSD) recommends using 0.6 as a default value. In this case, there were 84 data points, and the CV of the data set is 1.85. Using the equations in section 3.3.2. of the TSD, the "reasonable potential" multiplier is calculated as follows:

$$p_n = (1 - \text{confidence level})^{1/n}$$

where,
p_n = the percentile represented by the highest concentration
n = the number of samples

$$p_n = (1\text{-}0.99)^{1/84}$$
$$p_n = 0.947$$

This means that the largest value in the data set of 84 data points is greater than the 94th percentile of all expected values in the population.

The RPM is the ratio of the 99th percentile to the 94.7th percentile, based on the equation:

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[2] U.S. Environmental Protection Agency. 1991. Technical Support Document for Water Quality-based Toxics Control. (EPA/505/2-90-001, March 1991). Page 52.

C_p = $\exp(z\sigma - 0.5\sigma^2)$

where CV = 1.85

σ^2 = $\ln(CV^2 + 1)$
= $\ln(1.85^2 + 1)$
= 1.49

σ = $(\sigma^2)^{½}$
= 1.21

z = normal distribution value
= 2.326 for the 99th percentile
= 1.626 for the 94.7th percentile

C_p = $\exp(z\sigma - 0.5\sigma^2)$
C_{99} = $\exp(2.326 * 1.21 - 0.5 * 1.49)$
= 7.92

$C_{94.7}$ = $\exp(1.626 * 1.21 - 0.5 * 1.49)$
= 3.40

RPM = $C_{99}/C_{94.7}$
= 7.92/3.40

Reasonable Potential Multiplier = 2.33

Highest expected effluent value =
(Maximum effluent concentration) x (Reasonable Potential Multiplier)
(800 colonies/100 ml x 2.33) = 1863 colonies/100 ml

Highest Projected Concentrations at edge of mixing zones:

Dilution Factors were calculated using the VISUAL PLUMES dilution model, Version 1.0, to estimate minimum dilution to be expected at the boundaries of mixing zones sized according to criteria in the Washington water quality standards (WAC 173-201A-100). The estimated dilution ratios were 50:1 at the boundary of the acute mixing zone (7.4 meters (24 feet) from the outfall) and 168:1 at the boundary of the chronic mixing zone (74 meters (244 feet) from the outfall)[3].

The highest projected concentrations at the edge of the mixing zones are calculated by dividing the highest expected effluent value by the dilution ratio.

Acute: (1863 colonies/100 ml)/50 = 37 colonies/100 ml

Chronic: (1863 colonies/100 ml)/168 = 11 colonies/100 ml

[3] Cope, Ben. Dilution Analysis for Discharges to Hale Passage and Strait of Georgia, internal EPA memo to Sharon Wilson, September 18, 2003.

Comparison with ambient criteria

In order to determine if there is a reasonable potential for this discharge to violate the ambient criteria, the highest projected concentrations at the edge of the mixing zones are compared with the ambient criteria.

Acute:	37 colonies/100 ml	>	14 colonies/100 ml	–	**YES**, there is reasonable potential to violate
Chronic:	11 colonies/100 ml	<	14 colonies/100 ml	–	**NO**, there is not reasonable potential to violate

Calculation of Water Quality Based Effluent Limits for Fecal Coliform

Wasteload allocations (WLAs) – The WLA is the concentration at the outfall that would be needed to meet the criteria at the edge of the mixing zone; it is calculated by multiplying the ambient criteria by the dilution ratio:

Acute WLA:	14 colonies/100 ml x 50	=	700 colonies/100 ml
Chronic WLA:	14 colonies/100 ml x 168	=	2352 colonies/100 ml

Long-Term Averages (LTAs) – The LTA concentrations are the average concentrations in the effluent that will assure that 99% of the time the effluent will be at or below the WLA.

Acute LTA: $LTA_a = WLA_a \times e^{**} [0.5\sigma^2 - z\,\sigma]$

where $\sigma^2 = ln[CV^2 + 1]$

$z = 2.326$ for 99^{th} percentile occurrence probability

LTA_a = 700 colonies/100 ml x 0.124^4 = 86.8 colonies/100 ml

[4] EPA. 1991. Table 5-1: *Back Calculations of Long-Term Average.*

Chronic LTA: $LTA_c = WLA_c \times e^{**} [0.5\sigma_4^2 - z\,\sigma_4]$

where $\sigma_4^2 = ln[CV^2/4 + 1]$
z = 2.326 for 99th percentile occurrence probability

LTA_c = 2352 colonies x 0.219^5 = 515.1 colonies/100 ml

Choice of limiting LTA

The lowest of the calculated LTAs is selected as the limiting LTA:

LTA_a = 86.8 colonies/100 ml – **the limiting LTA**

LTA_c = 515.1 colonies/100 ml

Limit Derivation - The limiting LTA is used to derive both the maximum daily and average monthly limits.

Maximum Daily Limit (MDL):

MDL = $LTA \times e^{**}[z\sigma - 0.5\,\sigma^2]$

where $\sigma^2 = ln[CV^2 + 1]$
z = 2.326 for 99th percentile occurrence probability

MDL = 86.8 colonies/100 ml x 8.10^6 = **703 colonies/100 ml**

Average Monthly Limit (AML)

AML = $LTA \times e^{**}[z\sigma_n - 0.5\sigma_n^2]$

where $\sigma^2 = ln[CV^2/n + 1]$
z = 1.645 for 95th percentile occurrence probability
n = numbers of samples/month, i.e. 4 in this case

AML = 86.8 colonies/100 ml x 2.68^7 = **233 colonies/100 ml**

Comparison between Technical & Water Quality Based Fecal Coliform Limit

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5 Ibid.

6 EPA. 1991. Table 5-2: *Calculation of Permit Limits*

7 Ibid.

Selection of Fecal Coliform Limits			
	Average Monthly	**Average Weekly**	**Maximum Daily**
Technical Limit	200 colonies/100 ml	400 colonies/100 ml	–
Water Quality Limit	233 colonies/100 ml	–	703 colonies/100 ml
Selected Limits:	**200 colonies/100 ml**	**400 colonies/100 ml**	**–**

The technically based limit of 200 colonies/100 ml as an average monthly limit is chosen as more protective than the calculated water quality average monthly limit of 233 colonies/100 ml. The technically based average weekly limit of 400 colonies/100 ml is chosen as more protective than the maximum daily water quality based limit of 703 colonies/100 ml because weekly monitoring will produce data that would be evaluated for both daily and weekly limits; the lower weekly limit is more protective.

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7. Chlorine: The Washington water quality criteria for Class AA marine water limit total residual chlorine at 13 µg/l as a 1-hour average concentration, not to be exceeded more than once every three years on the average; it is further limited to 7.5 µg/l as a 4-day average concentration, not to be exceeded more than once every three years on an average. Historically, chlorine in the Sandy Point effluent has been reported as high as 1.67 mg/l as a monthly average and as 2.20 mg/l as a daily maximum In the following calculation, only daily values from August 9, 2003, through August 31, 2003, were used, since the chlorine regulator was installed on August 8, 2003. The calculation shows a reasonable potential to violate the criteria.

Reasonable Potential Analysis

Effluent Chlorine data (in mg/l): (0.51 . . . 2.20)	=	23 data points
Maximum effluent concentration	=	2.2 mg/l
Mean	=	1.05 mg/l
Standard deviation (SD)	=	0.43
Coefficient of variation (CV) = SD/mean	=	0.41

Projected Ambient Concentrations:

Reasonable Potential Multiplier (RPM)

The "reasonable potential" multiplier is based on the coefficient of variation of the data and the number of data points. Where there are fewer than 10 data points to calculate a CV, the TSD recommends using 0.6 as a default value. In this case, there were 23 data points, and the CV of the data set is 0.41. Using the equations in section 3.3.2. of the TSD, the "reasonable potential" multiplier is calculated as follows:

p_n = (1 - confidence level)$^{1/n}$

where,
p_n = the percentile represented by the highest concentration
n = the number of samples

p_n = $(1-0.99)^{1/23}$
p_n = 0.8185

This means that the largest value in the data set of 23 data points is greater than the 81st percentile of all expected values in the population.

The RPM is the ratio of the 99th percentile to the 81.85th percentile, based on the equation:

C_p = $\exp(z\sigma - 0.5\sigma^2)$

where CV = coefficient of variation
= 0.41

σ^2 = $\ln(CV^2 + 1)$
= $\ln(0.41^2 + 1)$
= 0.155

σ = $(\sigma^2)^{½}$
= 0.394

z = normal distribution value
= 2.326 for the 99th percentile
= 0.910 for the 81.85th percentile

C_{99} = exp([2.326 * 0.394] - [0.5 * 0.155])
= 2.31

$C_{81.85}$ = exp([0.910 * 0.394] - [0.5 * 0.155])
= 1.32

RPM = $C_{99}/C_{81.85}$
= 2.312/1.32

Reasonable Potential Multiplier = 1.75

Highest expected effluent value =
(Maximum effluent concentration) x (RP multiplying factor)
(2.2 mg/l x 1.75) = 3.85 mg/l

Highest Projected Concentrations at edge of mixing zones:

Dilution Factors were calculated using the VISUAL PLUMES dilution model, Version 1.0, to estimate minimum dilution to be expected at the boundaries of mixing zones sized according to criteria in the Washington water quality standards (WAC 173-201A-100). The estimated dilution ratios were 50:1 at the boundary of the acute mixing zone (7.4 meters (24 feet) from the outfall) and 168:1 at the boundary of the chronic mixing zone (74 meters (244 feet) from the outfall)[8].

The highest projected concentrations at the edge of the mixing zones are calculated by dividing the highest expected effluent value by the dilution ratio.

Acute:	(3.85 mg/l)/50	= 0.077 mg/l
Chronic:	(3.85 mg/l)/168	= 0.022 mg/l

Comparison with ambient criteria

In order to determine if there is a reasonable potential for this discharge to violate the ambient criteria, the highest projected concentrations at the edge of the mixing zones are compared with the ambient criteria.

Acute:	0.077 mg/l	>	0.013 mg/l (1 hr criteria)	–	**YES**, there is reasonable potential to violate
Chronic:	0.022 mg/l	>	0.0075 mg/l (4 day criteria)	–	**YES**, there is reasonable potential to violate

Calculation of Water Quality Based Effluent Limits

[8] Cope, Ben. 2003. Ibid.

Wasteload allocations (WLAs) – The WLA is the concentration at the outfall that would be needed to meet the criteria at the edge of the mixing zone; it is calculated by multiplying the ambient criteria by the dilution ratio:

Acute WLA: 0.013 mg/l x 50 = 0.650 mg/l

Chronic WLA: 0.0075 mg/l x 168 = 1.26 mg/l

Long-Term Averages (LTAs) – The LTA concentrations are the average concentrations in the effluent that will assure that 99% of the time the effluent will be at or below the WLA.

Acute LTA: $LTA_a = WLA_a \times e^{**} [0.5\sigma^2 - z\,\sigma]$

where $\sigma^2 = ln[CV^2 + 1]$ and CV = 0.41

$= ln(0.41^2 + 1) =$ **0.155**

$\sigma = (\sigma^2)^{½} =$ **0.394**

z = 2.326 for 99th percentile occurrence probability

LTA_a = 0.650 mg/l x 0.440^{9} = 0.286 mg/l

Chronic LTA: $LTA_c = WLA_c \times e^{**} [0.5\sigma_4^2 - z\,\sigma_4]$

where $\sigma_4^2 = ln[CV^2/4 + 1]$

z = 2.326 for 99th percentile occurrence probability

CV = 0.41

LTA_c = 1.26 mg/l x 0.643^{10} = 0.810 mg/l

Choice of limiting LTA

LTA_a = 0.286 mg/l – **the limiting LTA**

LTA_c = 0.810 mg/l

[9] EPA. 1991. Table 5-1: *Back Calculations of Long-Term Average.*

[10] Ibid.

Limit Derivation - The limiting LTA calculated above is used to derive both the maximum daily and average monthly limits.

Maximum Daily Limit (MDL):

MDL = LTA x e **[$z\sigma - 0.5\ \sigma^2$]

where $\sigma^2 = ln[CV^2 + 1]$

z = 2.326 for 99th percentile occurrence probability

CV = 0.41

MDL = 0.286 mg/l x 2.27^{11} = **0.65 mg/l**

Average Monthly Limit (AML)

AML = LTA x e **[$z\sigma_n - 0.5\sigma_n^2$]

where $\sigma^2 = ln[CV^2/n + 1]$

z = 1.645 for 95th percentile occurrence probability

n = numbers of samples/month, i.e. 30 in this case

CV = 0.41

AML = 0.286 mg/l x 1.36^{12} = **0.39 mg/l**

Comparison between Technical & Water Quality Based Chlorine Limit

	Average Monthly	Average Weekly	Maximum Daily
Technical Limit	0.50 mg/l	0.75 mg/l	--
Water Quality Limit	0.39 mg/l		0.65 mg/l
Selected Limit:	**0.39 mg/l**		**0.65 mg/l**

Maximum Daily Limit for Total Residual Chlorine: **0.65 mg/l**

Average Monthly Limit for Total Residual Chlorine: **0.39 mg/l**

[11] Ibid. Table 5-2: *Calculation of Permit Limits*

[12] Ibid.

APPENDIX D

Biological Assessment

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the U.S. Fish and Wildlife Service (FWS) regarding potential effects an action may have on listed endangered species.

According to communication with Bob Donnelly of NOAA, Chinook salmon and Stellar Sea Lion are listed as threatened species; according to Tom Sibley of NOAA (and NOAA's website at http:/www.nwr.noaa.gov/mmammals/whales/marmamlist.html), Humpback whales and Leatherback Sea Turtles are endangered, but found in Puget Sound very infrequently.

In an August 26, 2003, letter from Ken Berg of FWS' Western Washington Office, listed species in the vicinity of the Sandy Point WWTP outfall are bald eagles, bull trout, and marbled murrelets.

Threatened Species

Bald eagle *(Haliaeetus leucocephalus)* – Bald eagles have increased in Washington State from about 105 nesting pairs in 1980 to about 650 pairs in 2001[13]. Many additional eagles winter along the state's rivers to feed on spawned salmon. The recovery of bald eagles in recent years can be attributed to several factors, including the ban on the use of the pesticide DDT, protection of nesting and roosting habitat, the use of non-toxic shot for waterfowl hunting, and probably, a reduction in shooting and persecution.

There are a number of bald eagles' nests in the general vicinity, the closest being about a mile east of the outfall.

It has been determined that this discharge will not negatively impact bald eagles, whose nests have coexisted with this discharge for at least two decades. Since this permit applies more stringent limits than were applied in the previous permit, the impact on the receiving water and therefore on bald eagles should be positive. Outside the mixing zone, water quality criteria for Class AA marine waters will be met, and EPA finds that there will be no adverse effect on bald eagles and their prey species.

Bull trout *(Salvelinus confluentus)* – Bull trout are native chars and part of the salmonid family, that range from eight inches to more than two feet in length. They are found in small streams, rivers, reservoirs, lakes and in salt waters across the state. Human activities that degrade bull trout habitat include: disturbing spawning and rearing areas

[13] Washington Department of Fish and Wildlife. 2001. Bald Eagles in Washington; fact sheet. http://www.wa.gov/wdfw/factshts/baldeagle.htm

through mineral prospecting, dredging and allowing farm animals into rivers; egg-smothering siltation from road building; worsening the gravel-scouring effects of flooding by urban development; removing pool-building wood debris and water-cooling shade by logging and water withdrawals for agriculture, industry and urban development.

It has been determined that this discharge will not negatively impact bull trout, who can easily avoid the 244-foot radius chronic mixing zone allowed for this discharge in the Strait of Georgia. Outside the mixing zone, water quality criteria for Class AA marine waters will be met, and EPA finds that there will be no adverse effect on bull trout.

Chinook salmon (*Oncorhynchus tshawytscha)* – The Puget Sound chinook salmon is considered an *evolutionarily significant unit (ESU)*, a distinctive population of chinook salmon; the Puget Sound ESU was listed as threatened in March 1999. Drastic declines in population levels in the last century are attributed to a myriad of factors, including modification of stream flow regimes, withdrawal of water from streams, pollution from mining, agriculture, logging, urban development, recreation, increased temperatures in streams, reduced spawning habitat, obstructions to upstream and downstream migration, overfishing, climatic change, and competition and interbreeding with hatchery fish.

It has been determined that this discharge will not negatively impact chinook salmon, who can easily avoid the 244-foot radius chronic mixing zone allowed for this discharge in the Strait of Georgia. Outside the mixing zone, water quality criteria for Class AA marine waters will be met, and EPA has determined that there will be no adverse effect on chinook salmon.

Marbled murrelet (*Brachyramphus Marmoratus)* – Murrelet populations in the Pacific Northwest are believed to be constrained primarily by the availability of quality nesting habitat, that is, late-successional and old-growth forest (USFWS 1995[14], USDI 1996[15]). Processes at sea may have an additive positive or negative effect on murrelets. These effects can be direct (for example, effects of oil spills or incidental take in gill nets) or indirect (for example, effects of factors that enhance or reduce the availability of forage fish). Indicators of marine processes that may affect murrelet productivity or survival include oceanographic conditions (for example, cold-water currents, coastal upwelling, sea surface temperatures, El Nino—Southern Oscillation), abundance and species composition of macrozooplankton, abundance and species composition of forage fish that are consumed by murrelets, success (catch per unit effort) of certain commercial

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[14] U.S. Department of the Interior, Fish and Wildlife Service. 1995. Draft recovery plan for the marbled murrelet (*Brachyrhamphus marmoratus*) in Washington, Oregon, and California. Portland, OR.

[15] U.S. Department of the Interior, Fish and Wildlife Service. 1996. Final designation of critical habitat for the marbled murrelet. Portland, OR: 61 *Federal Register* 103.

fisheries, and the reproductive success of other alcids (murres, guillemots, puffins, auklets) that depend on forage fish and feed within the murrelet area.

It has been determined that this discharge will not negatively impact marbled murrelets, whose foraging has coexisted with this discharge for at least two decades. Since this permit applies stringent limits for chlorine that were not applied in the previous permit, the impact on the receiving water and therefore on marbled murrelets should be positive. Outside the mixing zone, water quality criteria for Class AA marine waters will be met, and EPA finds that there will be no adverse effect on marbled murrelets and their prey species.

Stellar Sea Lion *(Eumetopias jubatus)* – Stellar Sea Lions in the North Pacific region are considered in two distinct stocks. West of 144 deg. W. longitude, they are listed as endangered, but as threatened east of that longitude. The range of the eastern stock extends through southeast Alaska, British Columbia, Washington, Oregon, and California as far south as the Channel Islands. The stock is declining in California, but stable to increasing somewhat in Oregon, Washington, British Columbia, and Alaska. There are no breeding rookeries in Washington, though there are major haul-outs at five locations along the outer Washington coast, and they are occasionally reported to haul out in the inland waters of Puget Sound and the Strait of Georgia.

Where declines in population have occurred, they are thought to be attributable to reduced prey availability, contaminants, and disease. Because Stellar Sea Lions do not haul-out in the area of the discharge and have not been observed to frequent the area, EPA has determined that this discharge will have no adverse effect on the species.

Endangered Species

Humpback Whale *(Megaptera novaeangliae)*

Humpback whales have been sighted infrequently in the inland waters of Puget Sound and the Strait of Georgia[16]. Therefore, EPA has determined that this discharge will have no adverse effect on them.

[16] Tom Sibley, Personal communication, 8/6/03.

Leatherback Sea Turtle *(Dermochelys coriacea)*

Leatherback sea turtles, the world's largest sea turtles, are endangered throughout their range, which includes almost all the world's oceans. Nesting occurs on tropical beaches; other than nesting and hatching, the turtles spend their entire lives in the water. They have been reported as far north as Norway; in cooler waters, they have sometimes been reported to enter shallow estuarine bays, though they are usually found near the edge of the continental shelf.

They are threatened most by the taking of turtle eggs, highly prized by humans and other predators alike. They are further threatened by direct hunting of adult turtles, detrimental fishing practices that entangle them in nets or entice them to bite hooks. They are also threatened by the abundance of plastic garbage in the oceans, especially bags, which look very similar to their primary food source – jellyfish.

They are the most pelagic of turtles and are very infrequently reported in Puget Sound and the Strait of Georgia[17]; therefore, EPA has determined that this discharge will have no adverse effect on them.

[17] Ibid.