FACT SHEET

United States Environmental Protection Agency (EPA)
Region 10
Park Place Building, 13th Floor
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-0523

Date:

Permit No.: AK-002147-4

PROPOSED REISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS PURSUANT TO THE PROVISIONS OF THE CLEAN WATER ACT (CWA)

The City of Sitka
100 Lincoln Street
Sitka, Alaska 99835

has applied for reissuance of a NPDES permit to discharge pollutants pursuant to the provisions of the CWA. This Fact Sheet includes (a) the tentative determination of the EPA to reissue the permit, (b) information on public comment, public hearing and appeal procedures, (c) the description of the current discharge, (d) a listing of tentative effluent limitations, schedules of compliance and other conditions, and (e) a sketch or detailed description of the discharge location. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the proposed permit reissuance may do so by the expiration date of the Public Notice. All written comments should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Director, Water Division, will make final determinations with respect to the permit reissuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the public notice period.

The proposed NPDES permit and other related documents are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to EPA at the above address to the attention of the NPDES Permits Unit, or by calling (206) 553-0523. The draft permit, fact sheet, and tentative decision document are also available from the EPA Alaska Operations Office, Room 537, Federal Building, 222 W. 7th Avenue, #19, Anchorage, Alaska 99513 and EPA Alaska Operations Office, P.O. Box 20370, Juneau, Alaska 99802-0370, physical address: Room 223A, 709 W. 9th Street, Juneau AK.

TECHNICAL INFORMATION

The fact sheet and tentative decision document accompanying the reissuance of the permit set forth the principal facts, legal issues, and policy questions considered in the development of the terms and conditions of the permit.

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I. EXECUTIVE SUMMARY

On the basis of the conclusions presented in this fact sheet, EPA has determined that the proposed discharge from the City and Borough of Sitka Wastewater Treatment Plant, a publicly owned treatment works (POTW), will comply with the requirements of Section 301(h) of the Clean Water Act, as amended by the Water Quality Act of 1987 (the Act) and 40 CFR Part 125, Subpart G.

The City of Sitka (the applicant) is seeking a variance to the secondary treatment requirements to discharge treated primary effluent from a 1.8 million gallon per day (mgd) treatment plant, which was completed in 1984. The outfall is located at 25.9 m (85 ft) below mean lower low water in the Middle Channel of Sitka Sound.

EPA followed the guidance provided by the Revised Section 301(h) Technical Support Document, EPA 430/9-82-011, November 1982), (301(h) TSD) for the evaluation of the improved discharge for the small applicant. The Region relied on information in the current 301(h) application, as well as the results of the monitoring conducted under the existing NPDES permit.

Available monitoring data and an evaluation of the proposed discharge characteristics support this tentative decision because monitoring conducted under the current 301(h) permit has not shown any adverse impacts on solids accumulation, water quality standards, or the biological community in the vicinity of the discharge. Continuing water quality, biological, and effluent monitoring programs will determine future compliance with the 301(h) criteria.

The applicant's receipt of a Section 301(h) variance from secondary treatment is contingent upon the following conditions:

1. State certification under Section 401 of the Act regarding compliance with State law and water quality standards, including a basis for the conclusions reached.

2. State determination that the discharge will comply with the Alaska State Coastal Management Program.

II. APPLICANT

City and Borough of Sitka Wastewater Treatment Plant

Mailing Address	Facility Location
100 Lincoln Street	416 Galena Drive
Sitka, Alaska 99835	Sitka, Alaska 99835

Contact: Mark Buggins, Environmental Superintendent

Permit No. AK-002147-4

The City of Sitka, Alaska, has applied for renewal of the National Pollutant Discharge Elimination System (NPDES) permit for its publicly owned treatment works (POTW), permit number AK-002147-4. The permit became effective April 8, 1996, and expired on May 9, 2001. Sitka submitted an application for renewal on November 8, 2000. Because the application for renewal was timely, under the conditions of 40 CFR § 122.6, the City is authorized to continue discharging under the terms of the existing permit until a new permit is issued.

III. FACILITY DESCRIPTION

The City and Borough of Sitka's Wastewater Treatment Plant is a primary treatment plant which began operation in 1984. The facility has a peak design flow of 5.3 million gallons per day. The existing outfall discharges to the Middle Channel of Sitka Sound at a depth of 85 feet below mean lower low water. The outfall location is 57° 02' 53" N, 135° 21' 13" W, near the airport.

The treatment plant currently serves a population of approximately 8,500 and was designed for a population of 10,500. Sitka's population has held steady over the last several years and the facility does not project a population increase during the term of the proposed permit. Peak design flow is 0.23 m^3/sec (5.3 mgd) and average daily design flow is 0.08 m^3/sec (1.8 mgd). The average flow in 2000 was 1.4 mgd.

The collection system is a separate sanitary sewer system consisting of approximate 50 km (31 miles) of mains and interceptors and 29 lift stations. Treatment consists of comminution of 90% of the sewage entering the treatment plant (Japonski, Alice and Charcoal Island wastewater is injected into the forcemains beyond the comminutor), fine screening (3 rotary screens), grit removal, and primary clarification (with scum skimming, sludge removal, and intermittent coagulant addition to increase BOD reduction). The applicant has not proposed to chlorinate the final effluent. Sludge from the clarifiers is thickened and dewatered. Thickener supernatant is returned to the treatment system prior to the clarifiers. Sludge, scum, grit and screenings are incinerated.

The effluent is discharged through the existing 1,676 m (5,500 ft) long marine outfall which ends in a diffuser at a depth of 25.9 m (85 feet) below mean lower low water (MLLW).

IV. RECEIVING WATERS

A. General Features

The facility discharges to the Middle Channel of Sitka Sound. In the 1983 Tentative Decision Document, the receiving water was classified as a saline estuary based on the presence of pycnocline during parts of the year and the net seaward flow of fresh water. Further information indicates that the receiving water could be considered either open ocean or saline estuary, based on geographic and oceanographic characteristics (Tetra Tech, 1988). Based on that anlaysis, EPA determined that it is more appropriate to classify the receiving water was open ocean, in recognition of the absence of a salinity gradient during parts of the year and the physical characteristics of Sitka Sound in the vicinity of the outfall (EPA 1989 Tentative Decision Document). However, to assure that the worst case conditions are considered, calculations in the proposed permit for dissolved oxygen depletion and suspended solids were ased on equations for poorly mixed, semi-enclosed embayments.

The Middle Channel of Sitka Sound is classified by the Alaska State Water Quality Standards as classes IIA(i) (ii) (iii), B(i) (ii), C and D, for use in aquaculture, seafood processing and industrial water supply, water contact and secondary recreation, growth and propagation of fish, shellfish, aquatic life and wildlife, and harvesting for consumption of raw mollusks or other raw aquatic life.

B. Circulation

A drift bottle study in Sitka Sound was initiated on September 18, 1979, to assist in interpretation of the area's circulation, specifically with regard to pollutant trajectories.

The regional net circulation in the vicinity of Sitka was shown to be northwestward parallel to the coast. Circulation in the immediate vicinity of Sitka, however, is altered significantly by Japonski and other local islands. Drift bottle drops at each of the stations in the immediate vicinity of Sitka were made over a four day period (September 18-21, 1979) and included drops during both flood and ebb tides at each drop station. Eastward dispersion of as much as three miles from the drop sites was observed; this distance is the approximate maximum transport that could be expected during the ebb tide that sets southeast through Sitka Waterfront Channel.

Bottles dropped in the vicinity of the eastern entrance to the Sitka Waterfront Channel appeared to generally bypass the harbor and were transported in a net westward direction towards the runway. A large number of bottles were recovered along the south shore of Japonski Island, including seven inside of Mt. Edgecumbe Lagoon; whereas none were found on the north shore of the island. The data indicates that Japonski Island diverts most of the net northwestward flowing coastal current to the west around the seaward tip (Makhnati Island) and that very little, if any, of the surface water passing the east entrance to the Sitka Waterfront Channel actually enters the channel. The strong onshore transport of surface waters that was observed along the south shore of Japonski Island occurred despite the exceptionally calm weather observed during, and for several days following, the bottle drops. During normal wind conditions, the prevailing southeasterly winds would serve to increase the onshore transport that was observed here during a period of calm weather.

The total absence of bottle recoveries along the north shore of Japonski Island suggests offshore (north or northwestward) transport of surface waters along the entire north coast of the island, and this further suggests coastal upwelling along the north shore in order to maintain mass balance.

C. Currents and Flushing

The applicant reports that the Middle Channel has relatively weak tidal currents, rotating in a clockwise pattern, which are superimposed on the seaward flow of fresh water in Sitka Sound. The net current was toward the southeast and included an easterly wind-driven component. Depending upon the tidal stage and direction of prevailing winds, the direction of transport of the effluent from the outfall varies.

The tidal Current Tables for the Pacific Coast of North America and Asia (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1986) show that in Sitka Harbor in the channel off Harbor Island the maximum current average velocity is 15 cm/sec (0.3 knots) on the flood and 21 cm/sec (0.4 knots) on the ebb tides. The tide tables for the West coast of North and South America (U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1986) show that at Sitka the mean tidal range is 2.3 m (7.7 ft), the diurnal tidal range is 3.0 m (9.9 ft), and the mean tide level is 1.6 m (5.3 ft.).

V. PHYSICAL CHARACTERISTICS OF THE DISCHARGE

A. Outfall/Diffuser Design and Initial Dilution

Pursuant to 40 CFR §125.61(a)(1), the outfall and diffuser must be located and designed to provide adequate initial dilution, dispersion, and transport of wastewater to meet all applicable water quality standards at and beyond the boundary of the zone of initial dilution (ZID) during periods of maximum stratification and during other periods when more critical situations may exist. Except as otherwise noted, dilution is expressed as the ratio of the total volume of sample (effluent plus dilution water) to the volume of effluent in that sample.

The existing marine outfall consists of 5,500 ft of 24 inch pipe and 197 ft of diffuser located at approximately 25.9 m (85 ft) below MLLW. The diffuser consists of 54 ft of 24 inch pipe, 65 ft of 20 inch pipe, 26 ft of 16 inch pipe, 26 feet of 14 inch pipe, and 24 ft of 10 inch pipe. There are sixteen round, 4 inch, bell-mouthed ports, located at 0° from the horizontal along the length of the diffuser. The ports are spaced alternately left and right of the pipe on 13 ft centers, 18 inches above the seabed. The average daily design flow rate for each port is 79.26 gallons per minute at 1.8 mgd.

The model UMERGE (Mullenhoff et al. 1985) was used to compute initial dilutions for the proposed discharge. Using data showing the most stratified receiving water density profile, the calculated critical initial dilution was 122:1 for the peak wet seasonal flow rate. The trapping depth (the height, measured from the sea floor, at which the plume becomes neutrally buoyant and begins to spread horizontally) was calculated as 16.6 m (54.5 ft).

B. Zone of Initial Dilution (ZID)

The ZID is the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports. It can generally be considered to include the bottom area within a horizontal distance equal to the water depth from any point of the diffuser and the water column above that area. The ZID for the applicant's outfall was calculated using a discharge depth of 25.9 m (85.0 ft) below mean lower low water, a port height above sea bottom of 0.7 m (2.3 ft), and a mean tide level of 2.3 m (7.7 ft), the total water depth at mean sea level at the diffuser location is approximately 28.9 m (94.8 ft). Using the diffuser length of 60 m (197 ft) and an avearge diameter of approximately 0.40 m (15.7 in), the ZID was calculated to be a rectangle 117.8 m (386.5 ft) long (perpendicular to shore) and 58.2 m (190.9 ft.) wide, with an initial dilution of 122:1. Marine water quality criteria must be met at and beyond the ZID boundary. Additionally, state water quality standards must be met at the edge of the ZID for those parameters to which the 301(h) modification applies (pH, five day biochemical oxygen demand (BOD_5), suspended solids).

VI. STATUTORY BASIS FOR EFFLUENT LIMITATIONS AND OTHER PERMIT CONDITIONS

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

In general, EPA first determines which technology-based limits are required, as well as best management practices or other requirements. EPA then evaluates the effluent quality expected to result from these controls, to see if it could result in any exceedances of the water quality standards

in the receiving water. If exceedances could occur, EPA must include water quality-based limits in the permit. The permit limits will thus reflect whichever limits (technology-based or water quality-based) are most stringent.

Under section 308 of the Act and 40 CFR §122.44(i), EPA must include monitoring requirements in the permit to determine compliance with effluent limitations. Effluent and ambient monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. Under Section 301(h)(3) of the Act, the applicant must have in place a system of monitoring the impact of the discharge on aquatic biota. 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.

The basis for each permit condition is described in more detail below. Sections A. and B. discuss provisions that are relevant to all NPDES permits. Sections C. through H. discuss provisions that apply only to 301(h) permittees. Section I. is a discussion of sludge management requirements, which applies to all facilities treating domestic sewage, whether or not they have an NPDES permit.

A. Applicable Technology-Based Requirements

Section 301(b)(1)(B) of the Clean Water Act requires POTWs to achieve effluent limits based on secondary treatment. Secondary treatment is defined at 40 CFR Part 133 as being a monthly average of 30 mg/L and 85 percent removal for BOD_5 and TSS, and a pH of 6.0 to 9.0. Section 301(h) of the Act provides for a waiver from secondary treatment, if the permittee meets several specific criteria, including a requirement to achieve primary treatment. Primary treatment is defined in the Act as 30 percent removal of biochemical oxygen demand (BOD_5) and total suspended solids (TSS).

Applicants for 301(h) waivers request concentration and loading (lb/day) limits for BOD_5 and TSS based on what the facility is capable of achieving. Therefore, the technology-based requirements for POTWs with 301(h) waivers are established on a case-by-case basis. In the case of Sitka, the requested effluent limits for BOD_5 and TSS are 140 mg/L monthly average, and 200 mg/L for a daily maximum, and 6.5 - 8.5 for pH. The limits were requested by the Alaska Department of Environmental Conservation, after discussions with the permittee, and were transmitted to EPA in a letter of draft State stipulations dated June 26, 2001 (see Appendix 2). The concentrations are based on current influent conditions with 30 percent removal. The permit will also include a monthly average flow rate limitation of 1.8 mgd and a daily maximum limit of 5.3 mgd. The following projected average mass emission levels, based on a monthly design flow of 1.8 mgd, are also included as permit limitations:

Constituent	Monthly Average Mass Limitation	Daily Mass Limitation
BOD_5	2,100 lbs/day	3,000 lbs/day
TSS	2,100 lbs/day	3,000 lbs/day

Federal regulations at 40 CFR 12.44(l) require that limitations of reissued permits be at least as stringent as the limitations of the previous permit, unless the circumstances on which the previous permit was based have materially and substantially changed. The limits of the draft permit are more stringent with the exception of the monthly BOD and TSS limitations. Sitka has made significant progress recently in addressing excessive inflow and infiltration (I/I) problems. Recent data shows the influent concentrations increasing which corresponds with the I/I improvements. Significant population growth is also occurring in Sitka. Sitka has exceeded the monthly average concentration limits in 2001. The influent changes and population growth are the basis for allowing

proposed increases in the monthly average limitations. The water quality impact of these limits is evaluated in this fact sheet.

B. Water Quality Evaluation

1. Statutory Basis for Water Quality-based Limits

For 301(h) dischargers, water quality-based permit limits are based on four separate provisions. These provisions overlap to some extent.

The first is 40 CFR 122.44(d)(1), which requires that permits include limits on 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." This provision applies to all NPDES permits.

The second provision that addresses compliance with water quality standards is 40 CFR §125.61(a)(1), which states that the permittee must demonstrate that its discharge will not result in exceedances of state water quality standards at the edge of the ZID. This provision is specific to permits with 301(h) waivers.

The third provision that addresses compliance with water quality standards, section 301(h)(9) of the Act, is also specific to 301(h) waivers. Section 301(h)(9) requires that, at the edge of the zone of initial dilution, the discharge must meet water quality criteria established under section 304(a)(1) of the Act, the section that establishes criteria for toxic pollutants. Where a state has adopted numeric criteria for a given pollutant, that criterion can be used in place of the 304(a)(1) criteria. On December 22, 1992, EPA promulgated numeric criteria for toxic pollutants for the State of Alaska in the National Toxics Rule (40 CFR 131.36). Therefore, compliance with 40 CFR §122.44(d)(1) also results in compliance with this provision.

Finally, compliance with water quality standards is addressed at 40 CFR §125.61, which implements Section 301(h)(1) of the Act. This provision applies only to those parameters for which a modification is requested (i.e., BOD, TSS, and pH). Under this provision, there must be a water quality standard applicable to each pollutant for which the modification is requested (i.e., BOD and TSS or surrogates, and pH) and the applicant must demonstrate that the proposed modified discharge will comply with these standards.

The following discussion addresses compliance with each of the above requirements in more detail. See Section VI.D.(3) of this fact sheet for a discussion of monitoring frequency for these parameters.

2. Biochemical Oxygen Demand

Alaska State Water Quality Standards applicable to marine waters provide that for coastal water, the concentration of dissolved oxygen (DO) shall not be less than 6.0 mg/L for a depth of one meter and shall not be less than 4 mg/L at any point. Monitoring conducted by the applicant shows that the receiving water DO concentration complies with water quality standards.

The revised 301(h) TSD provides equations for determining the DO depletion caused by the BOD of the effluent. These equations were used to calculate the DO depression in the waste field at the completion of initial dilution, using the following worst-case assumptions as recommended in the 301(h) TSD:

Ambient DO concentration	$DO_a = 7.6$[1] mg/L
Effluent DO concentration	$DO_e = 0.0$ mg/L
Immediate DO demand	IDOD = 3.0 mg/L
Initial dilution	$S_a = 122$ mg/L

Inserting these values into the equation

$$DO_f = DO_a + (DO_e - IDOD - DO_a)/S_a$$

$$7.6 + (0 - 3 - 7.6)/122 = 7.5 \text{ mg/L}$$

the minimum DO concentration of the receiving water immediately following initial dilution (DO_f) is 7.5, a depletion of 0.1 mg/L from the ambient DO.

The applicant did not provide calculations for the farfield oxygen depression. Therefore, the simiplified method for small dischargers described in the revised 301(h) TSD is used. As discussed in IV.A. above, to ensure worst case conditions are considered, the farfield DO depression was calculated using the formula for poorly mixed semi-enclosed embayments.

$$DO = BOD_5/[10(S_a)]$$

Where:

DO = farfield oxygen depression, mg/L
BOD_5 = BOD_5 concentration in the effluent
S_a = initial dilution

$$DO = 140 \text{ mg/L}/[10(122)] = 0.11 \text{ mg/L}$$

The calculated depression was found to be 0.11 mg/L. The resulting dissolved oxygen concentration is 7.39 mg/L (7.5 - 0.11 = 7.39). This value exceeds the minimum state standard of 6.0 mg/L for dissolved oxygen in the receiving water.

Included in the State draft certification of the permit, ADEC stipulates a minimum DO for the effluent of 2.0 mg/L which has been included in the draft permit (see Appendix 2).

3. Total Suspended Solids

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[1]Ambient DO concentration determined as the lowest DO value (worst case scenario) from water quality monitoring samples collected June, 1997; November, 1997; June, 1999; and December, 1999 at 1.0 m depth at Reference Stations C and D.

Alaska State water quality standards applicable to marine waters provide that turbidity shall not exceed 25 nephelometric turbidity units (NTU) and shall not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent. In addition, the turbidity shall not reduce the maximum Secchi disc depth by more than 10 percent.

The applicant provided sixteen values for Secchi depths from surface water quality monitoring conducted in June 1997; November, 1997; June, 1999; and December, 1999. Eight measurements were taken within the ZID and eight from reference stations. These depth values ranged from 14 ft. to 46 ft. The Secchi disk depths within the ZID were greater than depths at the reference stations in June and November 1997 and in June 1999. In December, 1999, the Secchi disk depths at the edge of the ZID were higher than that recorded at Reference Station C but lower than that recorded at Reference Station D. Based on these data, effluent discharged from the Sitka facility does not appear to cause or contribute to an exceedance of state standards for Secchi disc depth.

Previous water quality monitoring results (1991 and 1993) have shown turbidities ranging from 0.15 to 2.6. There do not appear to be significant differences in turbidity between the nearfield stations and the reference stations. The effluent TSS limitation requested by the permittee was used to determine if the discharge would result in an increase in suspended solids that could cause exceedances of the turbidity standard. In using this approach, it is important to note that the correlation between suspended solids and turbidity is not certain. Turbidity is caused not only by suspended solids, but also by colloidal matter. Furthermore, turbidity is not a conservative pollutant. This means that turbidity is affected not only by dilution, but also by physical and chemical changes that may occur as the effluent interacts with the receiving water. According to the 301(h) TSD, suspended solids can be used as an estimate of light transmittance for the purposes of determining compliance with the above water quality standard. The applicant did not provide calculations for the increase in receiving water suspended solids concentration. As part of the review, the simplified method for small dischargers described in the revised 301(h) TSD was used to calculate the receiving water suspended solids concentration:

$$SS = SS_e/S_a$$

where:

SS = change in suspended solids concentration following initial dilution
SS_e = effluent suspended solids concentration
S_a = initial dilution

$$140/122 = 1.2$$

The maximum increase of 1.2 mg/L is not expected to cause an exceedance of the 25 NTU established by the Alaska state water quality standards.

4. pH

Alaska water quality standards for pH stipulate that pH may not vary more than 0.1 standard unit from natural conditions and must be within the range of 6.5 to 8.5 standard units.

The effect of on receiving water pH following initial dilution was estimated utilizing the Amended 301(h) Technical Support Document as part of this review. Utilizing the minimum pH of 6.5 included in the permit, an effluent alkalinity of 0.5 meq/L (TSD p. 65), a seawater temperature of 5° C and a critical dilution of 122, the maximum change in receiving water pH following initial dilution is determined from Table 1 to be 0.03 pH units over a seawater pH range of 7.00 to 8.50. This meets the Alaska water quality criteria as described in the paragraph above. The Alaska Department of Environmental Conservation stipulates that the effluent meet a pH of 6.5-8.5 standard units, consistent with Alaska water quality criteria.

5. Toxic Pollutants

As discussed in section (1) above, water quality-based limits must be established that result in compliance with water quality standards at the edge of the ZID.

40 CFR §122.44(d)(1)(ii) requires that, in evaluating the "reasonable potential" for criteria to be exceeded, procedures must be used which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for whole effluent 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.

This regulation also specifically addresses when toxicity and chemical-specific limits are required. A whole effluent toxicity limit is required whenever toxicity has the reasonable potential to cause or contribute to an excursion above either a numeric or narrative standard for toxicity. The only exception is where chemical-specific limits will fully achieve the narrative standard.

A chemical-specific limit is required whenever an individual pollutant is at a level of concern (as defined at 40 CFR §122.44(d)(1)) relative to the numeric standard for that pollutant. The regulations provide three options for developing a chemical-specific limit needed to control a pollutant which does not have a numeric standard, but is contributing to a problem with achieving the narrative standard.

To determine compliance with the above requirements, effluent data were compared to state standards, using the statistical procedures recommended in EPA's Technical Support Document for Water Quality-based Toxics Control.

To determine whether there is reasonable potential for a pollutant to result in an exceedance of water quality standards at the edge of the ZID, the maximum reported effluent concentration was multiplied by an uncertainty factor recommended in EPA's Technical Support Document for Water Quality-based Toxics Control (EPA 505/2-90-0001) to determine the maximum probable effluent concentration. The uncertainty factor is based on both the number of samples and the coefficient of variation (a measure of variability) of the data. If there are not enough data to calculate a coefficient of variation, the Technical Support Document recommends using 0.6 as a default value. The resulting maximum concentration was then divided by the minimum critical dilution, which was determined to be 122. Appendix 1 compares the maximum effluent concentration reported, the projected maximum concentration at the edge of the ZID, and the water quality criterion for each pollutant detected in the study.

A priority pollutant study was performed in December, 1999 on effluent samples collected at the Sitka treatment plant. Samples from each study were analyzed for a suite of 129 priority pollutants as determined by EPA protocol. The following eleven constituents were detected in the combined effluent at levels higher than the detection limit:

Constituent	Effluent Concentration (µg/L)
Beryllium	4.3
Cadmium	0.1
Copper	292
Silver	8.3
Zinc	50
Chloroform	1.83
Ethylbenzene	0.51
Methylene Chloride	0.7
Tetrachloroethane	4.76
Toluene	1.64
Benzidine	15

No pesticides or PCBs were detected in the Sitka effluent.

Multiplying the maximum reported effluent concentration by the uncertainty factors recommended in the TSD and dividing by dilution results in only copper and benzidine showing reasonable potential to violate water quality standards at the edge of the ZID. Copper is consistently detected in the plant's effluent, and therefore, the draft permit includes an effluent limit for copper of 354 µg/L as a daily maximum, with a monthly average limit of 243 µg/L. Derivation of these limits is discussed below and result in compliance with Alaska water quality standards at the edge of the ZID. Benzidine has not been consistently detected in past priority pollutant scans. Prior priority pollutant scans for Sitka were conducted in 1979, 1988, and 1992. In the 1979 priority pollutant scan, benzidine was not detected. The 1988 and 1992 priority pollutant scans did not test for benzidine. There is no known contributor of benzidine to the treatment works and since it has been detected in only one of the three previously-conducted pollutant scans, a benzidine limit will not be developed for this draft permit. However, priority pollutant scans will be required during the dry season of the first and fourth years of the permit term. If additional testing indicates benzidine exceedances, the permit may be reopened and additional effluent limits established.

In deriving the water quality-based permit limits, Region 10 applied the statistical permit limit derivation approach described in the Technical Support Document for Water Quality-based Toxics Control. This approach takes into account effluent variability, sampling frequency, and the difference in time frames between the water quality standards and monthly average and daily maximum limits. In addition to numeric water quality criteria and dilution values, EPA used the following probability values in deriving limits using the formulas in the Technical Support Document for Water Quality-based Toxics Control.

Probability value for long-term average calculation	99%
Probability value for monthly average limit calculation	95%

Probability value for daily maximum limit calculation	99%
Coefficient of Variation	0.4
Frequency of monitoring for copper	Monthly

6. Fecal Coliform Bacteria

Alaska's most restrictive standard for receiving water fecal coliform bacteria concentrations is in shellfish harvest areas, which specifies that the median value shall not exceed 14 MPN/100 mL, and that not more than 10 percent of the samples shall exceed 43 MPN/100 mL. Because the receiving water is protected for this use, the discharge must result in this standard being met outside the mixing zone. Alaska water quality standards also require that fecal coliform shall not exceed 200 FC/100ml at the shoreline within the mixing zone.

Monitoring conducted by the applicant from 1996 through 2000 indicates that only two samples violated state water quality standards for fecal coliform. In August, 1998, Stations 1 and 4 measured 25 and 46 colonies fecal coliform/100 mL, respectively. Both of these values exceed the limit for shellfish harvest areas of 14 colonies/100 mL. In addition, the August, 1998 sample at Station 4 was the only sample to exceed 43 MPN/100 mL during the last five years. Based on these data, the Sitka discharge appears to be meeting water quality standards at the edge of the ZID on a consistent basis, with very few violations. In order to ensure that these standards continue to be met, fecal coliform limitations and monitoring requirements will be continued in the current permit. The ADEC draft certification of this permit stipulates effluent limitations of 1.0 million FC per 100mL for a monthly average and 1.5 million FC per 100mL for a daily maximum. The State also requires compliance outside of the mixing zone and placement of a sign on the shoreline near the mixing zone informing the public of the discharge (see Appendix 2).

7. Additional Parameters

The average ammonia nitrogen concentration in the effluent from 1996-2000 is 11 mg/L. The maximum concentration of 18 mg/L was recorded on August 31, 2000. Ammonia is a common constituent of POTW effluent. Therefore, EPA has determined that monitoring is necessary to ensure that the discharge does not cause an exceedance of state water quality standards at the edge of the ZID.

A reasonable potential analysis was conducted for ammonia to determine if ammonia could violate water quality standards at the edge of the ZID. Using a maximum effluent ammonia concentration of 18 mg/L (maximum ammonia value in monitoring data reported from 1996-2000), and determining the multiplier from Table 3-1 in the TSD, the maximum ammonia concentration at the edge of the ZID was determined to be 0.24 mg/L ammonia. The water quality criteria for ammonia was determined from text table 3, "Water quality criteria for saltwater aquatic life based on total ammonia criteria continuous concentrations," in Ambient Water Quality Criteria for Ammonia (Saltwater)-1989 (EPA 440/5-88-004, April, 1989). The following values were used to determine the worst case criteria from this table: a pH of 8.6 (highest pH value from ambient water quality monitoring conducted in 1997 and 1999), a salinity of 10 g/kg (the lowest salinity values detected during ambient water quality monitoring from 1997 and 1999), and a temperature of 5° C.

This gave a criterion of 0.75 mg/L ammonia. The ammonia concentration at the edge of the ZID was 0.24 mg/L, and therefore ammonia does not have a reasonable potential to violate water quality standards at the edge of the ZID. However, continued monitoring of ammonia will be required in the current permit to ensure compliance with this criterion. 18 AAC 70.023 of the Alaska State Water Quality Standards states the following: "An effluent discharge to a water may not impart chronic toxicity to aquatic organisms expressed as 1.0 chronic toxic unit, at the point of discharge, or if the department authorizes a mixing zone in a permit, approval, or certification, at or beyond the mixing zone boundary, based on the minimum effluent dilution achieved in the mixing zone."

The previous permit required the facility to conduct quarterly whole effluent toxicity (WET) tests during the first year of the permit term. WET testing could be reduced to one suite of quarterly tests in the fourth year of the permit if none of the first year tests showed toxicity greater than 26 toxic units. The WET results submitted with the 2000 application consisted of eight results[2]. Individual No Effect Concentrations (NOECs) ranged from 2 percent to 9 percent, with a mean NOEC of 7.5 percent. To simplify the statistical analysis, NOEC data are converted into chronic toxic units (TU_c) by dividing 100 by the NOEC concentration. The average TU_c of the Sitka effluent is 13.3 and the maximum TU_c is 50 at the point of discharge. With a dilution ratio of 122:1, the worst-case TU_c at the edge of the mixing zone is 0.4, within compliance with the Alaska water quality standards of 1.0 chronic toxic units. If a reasonable potential to exceed criteria analysis was performed on this data the worst-case effluent value would produce a positive result and suggest that the permit should include a WET limitation. The worst-case value of 50 TUc was measured in June 1996, the first test of the data set. A reasonable potential analysis based on the remaining seven values would not result in a reasonable potential to exceed finding. Since all measured values comply with the water quality standards, and only one value from 1996 shows a reasonable potential to exceed, a limitation will not be required at this time but the proposed permit will require additional testing. The proposed permit requires the facility to test for WET in the first and fourth years of the permit term. If additional testing indicates toxicity exceedances, the permit may be reopened and effluent limits established.

C. Maintenance of that Water Quality which Assures Protection of Public Water Supplies, a Balanced Indigenous Population (BIP) of Shellfish, Fish, and Wildlife, and Recreational Activities in and on the Water [40 CFR § 125.62]

1. Transport and Dispersion of Diluted Wastewater and Particulates

40 CFR § 125.62 states that wastewater and particulates must be adequately dispersed following initial dilution so as not to adversely affect water use areas. Assuring compliance with this section requires an analysis of solids accumulation.

A simplified approach to determining the need for detailed analysis of suspended solids accumulation was developed to aid small dischargers that are not likely to have sediment accumulation related problems. Two types of problems (dissolved oxygen depletion and biological effects) were considered. Data indicate that biological effects are minimal when accumulation rates are estimated to be below a steady-state sediment accumulation of 25

[2]WET tests were conducted on June 26, 1996; September 17, 1996; December 18, 1996; March 11, 1997; March 9, 1999; June 9, 1999; September 23, 1999; and December 14, 1999.

g/m^2 for estuaries and semi-enclosed embayments, which are potentially more sensitive than open coastal areas.

The applicant did not provide information concerning sediment accumulation in the 2000 application. Using Figure B-2 of the revised Section 301(h) Technical Support Document and assuming worst-case conditions to calculate mass emission rate (a reported maximum effluent TSS concentration of 90 mg/L [1051 lb/day] and an annual average flow rate of 0.0657 m^3/sec) and a minimum plume height of rise of 9.3 m (30.5 ft.), the steady state sediment accumulation is calculated as less than 25 g/m^2.

2. Impact of the Discharge on Public Water Supplies [40 CFR § 125.62(b)]

40 C.F.R. § 125.62(b) requires that the applicant's proposed improved discharge must allow for the attainment or maintenance of water quality which assures protection of public water supplies and must not interfere with the use of planned or existing public water supplies. There are no existing or planned public water supply intakes in the vicinity of the discharge.

3. Biological Impact of Discharge [40 CFR § 125.62(c)]

40 C.F.R. § 125.62(c) requires that in addition to complying with applicable water quality standards, the proposed improved discharge must comply with any additional requirements necessary to maintain water quality which provides for the protection and propagation of a balanced indigenous population (BIP) of fish, shellfish, and wildlife. Specifically, this requirement means that a BIP must exist immediately beyond the boundary of the ZID and in all areas beyond the ZID that are actually or potentially affected by the applicant's discharge.

The previous permit required qualitative observations of benthic communities at three stations in August of the second year of the permit (August 1997). The permittee has historically performed observations at the following seven stations:

- Station 1, near the end of the diffuser at the ZID boundary
- Station 2, at the northwest ZID boundary
- Station 3, approximately 150 ft to the northwest beyond the ZID boundary
- Station 4, at the southwest ZID boundary
- Station 5, 100 feet southeast of the ZID boundary
- Station 6, the southeast reference station
- Station 7, the northwest reference station

In addition, the previous permit required the collection of benthic invertebrate and total volatile solids (TVS) samples during August of the fourth year of the permit term (August, 1999). Three replicate sediment samples were collected for TVS analysis and five replicate benthic samples were taken at each of the following three stations:

- Station 2, at the northwest ZID boundary.
- Station 3, approximately 150 ft to the northwest beyond the ZID boundary
- Station 7, the northwest reference station

The benthic samples were placed in glass jars or plastic bags and preserved in buffered formalin. These samples are in storage and analyses would be required only if EPA determined substantial changes have occurred in the TVS content of the sediments in the area of the discharge.

The average TVS concentrations in the 1999 samples were generally lower than the TVS concentrations at the same stations in previous years, and all the 1999 samples were less than 3 percent TVS by weight. Station 2, at the northwest ZID boundary, had the lowest average TVS concentrations, at 0.8 percent. The standard deviation for these replicates was 0.07, indicating that the three replicate observations did not differ greatly from each other. Station 3, approximately 150 ft to the northwest beyond the ZID boundary, had an average TVS concentration of 1 percent with a standard deviation of 0.3. Samples from Station 7, the northwest reference station, had higher average TVS percentages (averaging 2.6 percent) and a higher standard deviation (0.8) than the other two stations.

The applicant also presented TVS data from 1987, 1991, and 1993. These data were taken from all seven monitoring stations and allow a comparison of current TVS concentrations to historical data. TVS values are generally similar among samples collected in 1987 and 1993 at all stations exception at Station 6, where TVS in 1993 was lower than that observed in 1987. Data from 1991 indicate higher average TVS values than in 1987 and 1993 at all stations except Station 6, where average TVS values were similar to those recorded in 1987. The peak TVS percentage was observed at Station 1 in 1991, due to the fact that one replicate was much greater than the others. The elevated TVS percentage was not evident in the 1993 samples.

Comparisons of these historical data to data collected in 1999 show that TVS percentages were lower than in previous observations at all three stations (Stations 2, 3, and 7) that were sampled in 1999. In conjunction with the data discussed in the paragraph above, which indicates that the stations at and beyond the ZID boundary (Stations 2 and 3) do not show increased TVS percentages relative to the reference station (Station 7), these data indicate that the discharge is not contributing to increased TVS concentrations in receiving waters.

Only qualitative observations were available for evaluating differences in the biological community at stations in the vicinity of the outfall and at reference stations unaffected by the discharge. In theory, the same stations should have been sampled in each survey; therefore, it should be possible to compare the surveys and evaluate possible changes in the biota after exposure to the discharge.

Observations of substrate composition, habitat, and structural diversity conducted in 1997 and 1999 were compared as part of the permit application procedure. According to the applicant, some diversity of physical habitat was observed among the sampling stations in both the 1997 and 1999 surveys. Debris, boulders, and rocky substrate provide refuge, settling area, and perches for active, sessile and sedentary species, and in both the 1997 and 1999 surveys, boulders and cobbles were noted at many of the stations. Rocky substrates were observed at Stations 5 and 7 during both the 1997 and the 1999 surveys.

In 1997, Stations 1, 2, 3, 4, and 6 exhibited silty or muddy bottoms with sand, shells, and scattered cobbles or boulders. In 1999, these stations were characterized by coarse sand with shell hash and cobbles (and fine silty sand at Station 6).

While there is some potential habitat diversity observed at these stations, the overall quality of the benthic habitat for large easily observable benthic organisms is relatively poor at all stations, generally due to unconsolidated substrate and lack of structural relief. This is reflected in the low diversity and abundance of benthic macroinvertebrates present at the stations. Qualitative observations made in 1987, 1991, 1993, 1997, and 1999 show low species diversity and abundance at each of the 7 stations. Sea stars and clams were the most commonly observed individuals in 1987, 1991, 1993, 1997, and 1999; however, in 1991 empty clam shells were encountered by the diver at most stations. Clams were observed only while sieving the benthic infauna samples in 1993, and were alive at the time of collection. Brittle sea stars were observed more frequently during the 1987, 1993 and 1997 studies than in 1991 and 1999. In 1991 and 1993, several large sea cucumbers were encountered on or immediately adjacent to the diffuser at Station 1. Anemones (Metridium) were observed at Stations 1 and 2 during all surveys. Several large anemones have settled directly on the diffuser, adjacent to the ports. Large anemones (Tealia) were observed attached to the soft substrate at Station 7. Scallops, snails, and polychaetes were observed at several stations during all of the observation periods. None of the species observed are considered opportunistic or pollution-tolerant.

As discussed above, the abundance and diversity of organisms observed during the biological monitoring was low. Twelve different organisms were observed among the seven stations in 1999, compared to 14 in 1997, and 17 in 1993. In addition, the distribution of organisms between stations declined from 1997 to 1999. There were three organisms that were detected at all seven stations in 1997 (red sea star, brittle star, and clam), while sea stars were found at six stations in 1997; sunflower stars and sea cucumbers were observed at 5 stations, and scallops, anemones, and sculpins were found at four stations. Contrastingly, in 1999, two organisms (sunflower stars and sea stars) were found at five stations, one organism (clam) was found at four stations, and the remaining nine organisms were found at three stations or less.

While the general number of species observed appears to have declined since the 1997 survey, these decreases are consistent across all of the stations. Stations 1 and 2 have maintained the highest diversity from 1987-1999, while Stations 3, 4, and 5 show less diversity and Station 6 shows the least diversity. Because trends are consistent at stations within the ZID and at reference stations, there does not appear to be an effect on benthic infauna from the Sitka discharge.

The TVS data, and observations of the macroinvertebrate community indicate that sediment and biological changes in the vicinity of the outfall have been minor, and that the discharge has not adversely impacted the biological community.

The draft permit retains the qualitative observations for August of the second and fourth years of the permit. Since long standing sampling has indicated benthic community health, sediment sampling will only be required if evidence of an impact on the benthic community is observed during the qualitative analyses.

4. Impact of Discharge on Recreational Activities [40 CFR § 125.62(d)]

40 C.F.R. § 125.62(d) requires that the discharge have no impact on recreational activities outside the ZID. The applicant did not provide any data concerning the recreational activities that occur in or near Middle Sitka Channel but did indicate that all recreational areas are at least 5 km from the discharge. Information provided in the previous application indicates that the applicant has identified recreational activities as sportsfishing, boating, swimming, diving, picnicking, and various other beach activities.

Adverse impacts on the recreational activities occurring in Sitka Sound due the proposed discharge are not likely. Recreational activity in the immediate vicinity of the outfall is limited because the outfall is located near the end of the runway. Furthermore, the rocky shoreline is difficult to access. The nearest beach were recreational activities may occur is on Galankin Island, approximately one-half mile away.

There are no known federal, state, or local restrictions on recreational activities in the area.

D. Establishment of Monitoring Programs [40 CFR §125.62]

Under 40 CFR §125.63, which implements Section 301(h)(3) of the Act, the applicant must have a monitoring program designed to provide data to evaluate the impact of the modified discharge on the marine biota, demonstrate compliance with applicable water quality standards, and measure toxic substances in the discharge. The applicant must demonstrate the capability to implement these programs upon issuance of a 301(h) modified NPDES permit. In accordance with 40 CFR §125.63(a)(2), the applicant's monitoring programs are subject to revision as may be required by EPA.

1. Biological Monitoring Program [40 CFR §125.63(b)]

40 C.F.R. § 125.63(b) requires a permittee to implement a biological monitoring program that provides data adequate to evaluate the impact of the applicant's discharge on the marine biota.

The previous NPDES permit for the Sitka discharge required observations for benthic infauna at three stations and sample collection for infauna and total volatile solids (TVS) at three stations. TVS monitoring and sampling for benthic infauna were to be conducted in August of the fourth year of the permit period (August 1999). Qualitative observations of benthic infauna were to be conducted in August of the second year of the permit period (August 1997). The results of sampling conducted in 1997 and 1999 are discussed in VI.C.(3) of this fact sheet.

The draft permit requires continued benthic infauna observation in the second and fourth years of the permit. Sampling will be conducted at the same stations that were required during the previous permit term. If qualitative evaluation suggests an impact is occurring in the benthic community, the permit will then require analysis of sediment samples. The applicant would be required to take two replicate grab samples for TVS analysis and three replicate grab samples for evaluating the benthic community. Sampling stations shall be located and referenced using whatever navigational aids will assure accurate reoccupation of the same site in subsequent years. Analyses for TVS shall be done according to a single protocol (e.g., Standard Methods 17th edition or other methods as listed in 40 CFR § 136).

2. Receiving Water Quality Monitoring Program [40 CFR §125.63(c)]

40 C.F.R. § 125.63(c) requires that the receiving water quality monitoring program must provide data adequate to evaluate compliance with applicable water quality standards.

The previous permit required semi-annual monitoring in the second and fourth year of the permit for the parameters listed below at the surface, mid-depth, and bottom at four locations:

- temperature
- salinity
- dissolved oxygen (DO)
- pH
- Secchi disk depth (surface only)

Sampling was conducted in the following locations: one station on the eastern boundary of the ZID; one station on the western boundary of the ZID, and two reference sites.

The reference stations were required to be at least 750 m west and 750 m east of the discharge, and at the same depth as the discharge. In addition, the reference sites were required to be located in areas unaffected by the discharge or other pollutant sources, and were to be representative of the conditions in the area.

The previous permit required fecal coliform monitoring five times per year, in April, June, July, August, and November. Fecal coliform was required to be measured at the surface at the following locations:

- Station 1: Shoreline area of human use, close to the discharge point/diffuser
- Station 2: Shoreline area just outside of the point where the outer edge of the mixing zone touches the shoreline near the Sitka National Historical Park.
- Station 3: Outside the edge of the mixing zone between Passage and Smith Islands.
- Station 4: Shoreline area of human use inside the mixing zone in Sitka Harbor near the boat ramp on Japonski Island.
- Station 5: Outside the edge of the mixing zone between Morne Island and the Sitka National Historical Park.
- Station 6: Outside the edge of the mixing zone between Whale and Kayak Islands.
- Station 7: 500 m southeast of the discharge (between Rockwell and Beardslee Islands).

The draft permit contains the same sampling requirements for surface water quality as the previous permit. Monitoring for surface water quality will be required four times during the

term of the permit: twice a year (once during wet weather and once during dry weather) in years two and four of the permit. Surface water quality will be measured 1 meter below the surface, mid-depth, and 1 meter above the bottom at the four sites referenced above. Fecal coliform monitoring will be reduced in the draft permit from the previous permit to once per year (July) monitoring. Monitoring in year four, however, will be required in April, June, July, August, and November in order to gather information for the next permit reissuance. Reduction in monitoring is justified based on continued compliance over the past permit cycle.

Finally, all reports shall be submitted within 30 days of the end of each sampling period. This frequency will provide EPA with current information in evaluating future reissuance of the permit.

3. Effluent Monitoring Program [40 CFR §125.63(d)]

40 C.F.R. §125.63(d) requires an effluent monitoring program and the applicant proposes continuation of the current monitoring program. The current permit's influent and effluent monitoring program required weekly sampling for BOD_5, settleable solids and TSS. Flow is monitored continuously and effluent pH is monitored weekly.

The draft permit will require analyses of the effluent to determine compliance with permit limitations (flow, BOD_5, TSS, copper, dissolved oxygen, and pH) and analysis of the influent for BOD_5 and TSS to determine compliance with the primary treatment requirements. The draft permit requires continuous flow monitoring, weekly sampling for BOD_5, TSS, and pH.

The proposed permit requires the facility to conduct whole effluent toxicity tests during the first and fourth years of the permit to determine whether there is "reasonable potential" to cause or contribute to an exceedance of water quality standards, as discussed in section VI.B.(7). If additional testing shows that toxicity is of concern, the permit may be reopened and effluent limits established.

The applicant has certified that there are no industrial inputs to the collection system. Therefore, as provided in 40 CFR §125.66(a)(2), the draft permit need not require the permittee to perform chemical analyses of its effluent for toxic pollutants. However, as discussed in Section VI.B.(5) and VI.F., because of the presence of toxics in the effluent, EPA is requiring testing in the first and fourth years of the permit. Results of the analysis shall be submitted to EPA with the permittee's application for reissuance.

E. Effect of Discharge on Other Point and Nonpoint Sources [40 CFR §125.64]

Under 40 CFR §125.64, which implements Section 301(h)(4) of the Act, the applicant's proposed discharge must not result in the imposition of additional treatment requirements on any other point or nonpoint source. The state has determined that the discharge will not affect treatment requirements for any other point or nonpoint sources.

F. Toxics Control Program [40 CFR §125.66]

1. Chemical Analysis and Toxic Pollutant Source Identification [40 CFR §§125.66(a) and (b)]

Under 40 §125.66(a), applicants are required to perform chemical testing for toxic pollutants and pesticides, unless they certify to the Agency that there are no known or suspected toxic pollutants, and verify this certification by performing an industrial user survey.

The results of the facility's most recent priority pollutant scan (conducted as a requirement of the previous permit) indicated six organic compounds and beryllium, cadmium, copper, silver and zinc present in the effluent. After analysis, only copper and benzidine showed a reasonable potential to violate water quality standards at the edge of the ZID (see Section VI.B.(5).

2. Industrial Pretreatment Program [40 CFR §125.66(c)]

40 C.F.R. §125.64 (c) requires that applicants which have known or suspected industrial sources of toxic pollutants shall either have or develop an approved pretreatment program in accordance with the requirements of 40 CFR Part 403 (Pretreatment Regulations). This program is subject to revision as may be required by EPA.

The applicant provided certification stating that there are no known or suspected sources of toxic pollutants to the sewer system. The facility documented this certification with an industrial user survey. Therefore, the applicant is not required to develop an industrial pretreatment program.

3. Nonindustrial Source Control Program [40 CFR §125.66(d)]

40 CFR §125.66(d), which implements Section 301(h)(6) of the Act, requires the applicant to submit a proposed public education program designed to minimize the entrance of non-industrial toxic pollutants and pesticides into its POTW. In addition, the applicant must promulgate a schedule of activities for identifying nonindustrial sources of toxic pollutants and pesticides and for developing and implementing control programs, to the extent practicable.

A small section 301(h) applicant, which certifies there are no known or suspected water quality, sediment accumulation, or biological problems related to toxic pollutants or pesticides in its discharge, is required only to develop the public education program. The applicant has furnished this certification.

A public education program has been implemented and pamphlets are distributed every two years. Information is distributed by mass mailings or newspaper notices. Pamphlets are also made available when new utility hookups are requested. This program will be continued in the draft permit and information shall be distributed to the public.

G. Effluent Volume and Amount of Pollutants Discharged [40 CFR §125.67]

Under 40 CFR §125.67, which implements section 301(h)(7) of the Act, the applicant's proposed modified discharge may not result in any new or substantially increased discharges of the pollutant to which the modification applies above the discharge specified in the 301(h) modified permit.

The projected maximum mass emission levels are based on effluent BOD_5 and TSS concentration limits of 140 mg/L monthly average and 200 mg/L daily maximum along with the design flow of 1.8 mgd. The mass limitations are as shown below:

Constituent	Monthly Average Mass Limitation	Daily Mass Limitation
BOD_5	2,100 lbs/day	3,000 lbs/day
TSS	2,100 lbs/day	3,000 lbs/day

H. Percent Removal Requirements

Pursuant to Section 301(h)(9) of the Act, the applicant must be discharging effluent that has received at least primary or equivalent treatment by the time the modified permit becomes effective. Primary or equivalent treatment is defined as "...treatment by screening, sedimentation, and skimming adequate to remove 30 percent of the biological oxygen demanding material and of the suspended solids in the treatment works influent..."

The applicant has addressed the excessive inflow/infiltration discussed in the existing permit. In addition, the applicant has installed baffles and adjusted the weirs in the clarifiers and introduced the use of polymers to increase BOD and TSS removal efficiencies. Data show that these actions have resulted in the achievement of 30 percent removal of BOD and TSS.

I. Sludge Management Requirements

The biosolids management regulations at 40 CFR §503 were designed so that the standards are directly enforceable against most users or disposers of biosolids, whether or not they obtain an NPDES permit. Therefore, the publication of Part 503 in the *Federal Register* on February 19, 1993 served as notice to the regulated community of its duty to comply with the requirements of the rule, except those requirements that indicate that the permitting authority shall specify what has to be done.

Requirements are included in Part 503 for pollutants in biosolids, the reduction of pathogens in biosolids, the reduction of the characteristics in biosolids that attract vectors, the quality of the exit gas from a biosolids incinerator stack, the quality of biosolids that is placed in a municipal solid waste landfill (MSWLF) unit, the sites where biosolids are either land applied or placed for final disposal, and for a biosolids incinerator.

Even though Part 503 is self-implementing, Section 405(f) of the CWA requires the inclusion of biosolids use or disposal requirements in any NPDES permit issued to a Treatment Works Treating Domestic Sewage (TWTDS). In addition, the biosolids permitting regulations in 40 CFR §122 and §124 have been revised to expand its authority to issue NPDES permits with these requirements. This includes all biosolids generators, biosolids treaters and blenders, surface disposal sites and biosolids incinerators. In the future, EPA Region 10 will be issuing a separate NPDES general permit which deals only with the use and disposal of biosolids. Facilities that generate biosolids, including the City of Sitka, will be required to be covered under the biosolids general permit. As mentioned earlier, even though the permittee does not presently have a permit for biosolids use or disposal, the Permittee is responsible for complying with the requirements of 40 CFR 503.

Presently, the permittee transports biosolids to the Sitka Waste To Energy Incinerator Facility (WTEIF). Biosolids are first thickened in a sludge thickener and then dewatered on a belt filter press. They are then transported to the WTEIF in closed containers each handling approximately 5-6 cubic meters of biosolids. The draft permit requires the permittee to comply with 40 CFR Part 503 during biosolids removal.

VII. COMPLIANCE WITH PROVISIONS OF OTHER STATE, LOCAL OR FEDERAL LAWS

Pursuant to 40 CFR §125.59(b)(3), a modified NPDES permit may not be issued unless the proposed discharge complies with applicable provisions of state, local, or other federal laws or Executive Orders, including the Coastal Zone Management Act, 16 U.S.C. 1451 et seq., the Endangered Species Act, 16 U.S.C. 1531 et seq., and the Marine Protection, Research, and Sanctuaries Act 16 U.S.C. 1431 et seq.

A. State Coastal Zone Management Program

EPA has determined that the activities authorized by this permit are consistent with local and state Coastal Management Plans. The proposed permit and consistency determination will be submitted to the State of Alaska for state interagency review. A preliminary draft of the permit was sent to ADEC and comments received have been incorporated into the public notice draft of the permit. The requirements for State Coastal Zone Management Review and approval must be satisfied before the permit may be issued.

B. Endangered or Threatened Species

EPA Region 10 requested and received a species list from the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service. This list indicated that threatened or endangered species that had the potential to occur in the vicinity of the Sitka discharge included the Northern right whale (*Balaena glacialis*), the Sei whale (*Balaenoptera mysticetus*), the Blue whale (*Balaenoptera musculus*), the Fin whale (*Balaenoptera physalus*), the Humpback whale (*Megaptera novaeangliae*), the Sperm whale (*Megaptera novoangeliae*), the Steller sea lion (*Eumetopias jubatus*), and several populations of salmon. The salmon populations are the Snake River sockeye salmon (*Oncorhyncus nerka*), the Upper Columbia River spring, Snake River spring/summer, Snake River fall, Puget Sound, Lower Columbia River, and Upper Williamette River chinook salmon (*Oncorhychus tshawytscha*), and the Upper Columbia River, Snake River Basin, Lower Columbia River, Upper Williamette River, and Middle Columbia River steelhead (*Oncorhychus mykiss*). EPA has determined that the discharge authorized by this permit is not likely to adversely impact any threatened or endangered species or critical habitat listed pursuant to the Endangered Species Act. A Biological Evaluation document for the Sitka wastewater treatment facility has been prepared to support this conclusion.

C. Essential Fish Habitat

The Magnuson-Stevens Act (January 21, 1999) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. 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.

In a February 21, 2001, letter to EPA, NMFS indicated that the NPDES analysis should include an EFH assessment. The EFH species for the area of the discharge include chinook (king), sockeye (red), pink, and chum salmon, and a number of groundfish species (Habitat Assessment Reports for Essential Fish Habitat, NMFS, 1998). The NMFS letter specifically listed salmon, flatfish, rockfish, and sculpin as species using near-shore habitats which potentially could be degraded by insufficient treatment of waste-water or by chlorine residuals.

For the following reasons, EPA has tentatively determined that issuance of this permit is not likely to adversely affect any EFH in the vicinity of the discharge. The proposed permit has been

developed to protect all aquatic life species in the receiving water in accordance with the Alaska water quality standards, including meeting Alaska water quality standards at the edge of the zone of initial dilution. The facility has a relatively small zone of initial dilution as described in the fact sheet. EPA believes that the Alaska water quality criteria for the protection of aquatic life should protect both the managed EFH species and their prey. The effluent is treated wastewater of domestic origin with no significant industrial component. Chlorine is not used as a disinfection agent at this facility. Monitoring has shown compliance with Alaska fecal criteria in the vicinity of the discharge.

EPA will provide NMFS with copies of the draft permit and fact sheet during the public notice period. Any comments received from NMFS regarding EFH will be considered prior to reissuance of this permit.

D. Marine Protection, Research, and Sanctuaries Act

The proposed discharge will not be located in a federal marine sanctuary nor is it located in a sanctuary designated under the Coastal Zone Management Act.

E. Other State, Local, or Federal Laws

Alaska State law (Title 18, Alaska Administrative Code, Section 72.029) requires secondary treatment for all POTWs which discharge to natural surface waters unless a modification of the secondary treatment requirement is granted in accordance with Section 301(h) of the Clean Water Act. The state must certify that the modified discharge complies with applicable provisions of local law before a 301(h) modified permit can be issued. As discussed in Section VI.B., reissuance of this permit will not result in an additional pollutant loading to the receiving water. Therefore, reissuance is consistent with the State of Alaska's antidegradation policy [18 AAC 70.010(c)].

VIII. STATE CONCURRENCE IN VARIANCE

Section 301(h) of the Act and 40 CFR §125.59(i)(2) provide that a 301(h) variance may not be granted except with State concurrence. State concurrence has not yet been given. In accordance with the procedures of 40 CFR §124.54(b), before EPA can issue the applicant a 301(h) modified NPDES permit, the state must either grant its certification pursuant to Section 401 of the Act or waive certification, which will serve as state concurrence in the variance. The state will make this determination upon review of the draft and proposed final permits.

IX. CONCLUSION

It is the conclusion of EPA, Region 10, that the applicant's proposed discharge will comply with the requirements of Section 301(h) of the Clean Water Act, as amended by the Water Quality Act of 1987, and 40 CFR Part 125, Subpart G.

REFERENCES

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U.S. Environmental Protection Agency, 1989. Ambient Water Quality Criteria for Ammonia (Saltwater) - 1989. U.S. Environmental Protection Agency, Office of Water Regulations and Standards, Washington, D.C.

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Appendix 1

APPENDIX 1
Priority Pollutants Detected In
2000 Effluent Sampling Events
Table 1

Detected Pollutant	Max Reported Effluent Conc (µg/L)	Projected Max Edge of ZID Conc[1] (µg/L)	Most Stringent Marine Criterion
Beryllium	4.3	0.47	[n]
Cadmium	0.1	0.01	9.3
Copper	292	4.31	2.9
Silver	8.3	0.90	2.3
Zinc	50	5.41	86
Chloroform	1.83	0.20	470
Ethylbenzene	0.51	0.06	29000
Methylene Chloride	0.7	0.08	1600
Tetrachloroethane	4.76	0.52	11
Toluene	1.64	0.18	200000
Benzidine	15	1.62	0.00054
Ammonia	15	0.24	0.75[2]

[1]Based on maximum reported effluent concentration divided by dilution and multiplied by uncertainty factors from EPA's Technical Support Document for Water Quality-based Toxics Control(EPA/505/2-90-001, March 1991).

[2]Criterion determined from text table 3, "Water quality criteria for saltwater aquatic life based on total ammonia criteria continuous concentrations," in Ambient Water Quality Criteria for Ammonia (Saltwater)-1989 (EPA 440/5-88-004, April, 1989). Based on pH of 8.6, salinity of 10 g/kg, and temperature of 5° C.

[n] EPA has not promulgated criteria for this contaminant.

Appendix 2

DIVISION OF AIR AND WATER QUALITY
Wastewater Discharge Permits Program

June 26, 2001

Mr. Mike Lidgard
NPDES Permits Unit
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, WA 98101

RE: State of Alaska Review of Pre-draft NPDES Permit No. AK-002147-4

Dear Mr. Mike Lidgard;

I have reviewed the above referenced pre-draft NPDES Permit and Fact Sheet for the City of Sitka. I have the following comments and recommendations.

Draft Permit

State of Alaska Certification Stipulations

1.) The State of Alaska's certification of this permit will require a flow rate limitation of 1.8 mgd for a monthly average and 5.3 mgd for a daily maximum.

Rationale: In accordance with State Regulations 18 AAC 70.045, the Department will consider the characteristics of the effluent, including flow rate, when determining the appropriateness and size of a mixing zone. Restricting the amount of flow will assure that the size of the mixing zone is appropriate and that the treatment capacity of the facilities is not exceeded.

2.) The State of Alaska certification of this permit will require a maximum Biochemical Oxygen Demand, (BOD5) limitation of 140 mg/l for a monthly average and 200 mg/l for a daily maximum.

Rationale: In accordance with State Regulations 18 AAC 15.090, the Department may attach terms and conditions to a permit, variance, or approval, including operating, monitoring, inspection, sampling, access to records and reporting requirements, and the posting of a performance bond or other surety, that it considers necessary to ensure that all applicable criteria will be met.

3.) The State of Alaska's certification of this permit will require a maximum Total Suspended Solids limitation of 140 mg/l for a monthly average and 200 mg/l for a daily maximum.

Rationale: In accordance with State Regulations 18 AAC 15.090, the Department may attach terms and conditions to a permit, variance, or approval, including operating, monitoring, inspection, sampling, access to records and reporting requirements, and the posting of a performance bond or other surety, that it considers necessary to ensure that all applicable criteria will be met

4.) The State of Alaska certification of this permit will require effluent limitations for Fecal Coliform Bacteria of 1.0 million per 100 ml for a monthly average and 1.5 million per 100 ml for a daily maximum. Sampled at one time per month.

Rationale: In accordance with State Regulations 18 AAC 70.045, the Department will consider the characteristics of the effluent, including flow rate, when determining the appropriateness and size of a mixing zone. Restricting the amount of flow will assure that the size of the mixing zone is appropriate and that the treatment capacity of the facilities is not exceeded.

5). The ADEC will designate a Mixing Zone (MZ) for Fecal Coliform Bacteria contained in the discharge from the City of Sitka Wastewater Treatment Facility. The mixing zone is defined as a circle with a radius of 1600 meters, centered on the outfall and over the diffuser.

Rationale: In accordance with State Regulations 18 AAC 70.240, the Department has authority to designate mixing zones in permits or certifications. This mixing zone will ensure that the most stringent water quality standard limitations for fecal coliform bacteria; 14 FC/100 ml, 30 day average, (not more than 10% of the samples may exceed 43 FC/100 ml.), is met at all points outside of the mixing zone.

6). The ADEC will designate a Zone of Initial Dilution (ZID) for fecal coliform bacteria contained in the discharge from the City of Sitka Wastewater Treatment Facility. The ZID is defined as a rectangle 118 meters by 58 meters, centered on the diffuser and located perpendicular to the shoreline. The most stringent limits for the parameters listed in the State of Alaska Water Quality Standards must be met outside of the ZID, (except for fecal coliform bacteria which must be met outside of the mixing zone)

Rationale: In accordance with State Regulations 18 AAC 70.240, the Department has authority to designate mixing zones in permits or certifications. This mixing zone will ensure that the most stringent water quality standard limitations for all parameters, (except fecal coliform bacteria) are met at all points outside of the ZID.

7). The ADEC will require that fecal coliform numbers shall not exceed 200 FC/100 ML at the shoreline within the designated mixing zone.

Rationale: In accordance with State Regulations 18 AAC 70.020, the Department has authority to protect classes of use of the state's water. The limitation (200 FC/100 ML) is protective of the water quality for secondary recreation.

8). ADEC will require Fecal Coliform Bacteria limitations of 14FC/100 ml for a monthly average and 43 FC/100 ml for a daily maximum be met outside of the mixing zone.

Rationale: In accordance with State Regulations 18 AAC 70.020, the Department has authority to protect classes of use of the state's water. The limitations are protective of the most stringent State of Alaska Water Quality Standards for Fecal Coliform Bacteria.

9). The ADEC will require that signs be placed on the shoreline near the mixing zone and outfall line. The signs should state that treated domestic wastewater is being discharged, the name and owner of the facility and the approximate location and size of the mixing zone. The signs should inform the public that

certain activities, such as the harvesting of shellfish for raw consumption and bathing should not take place in the mixing zone and give a contact number for additional information.

Rationale: In accordance with AS 46.03.110, (d), the department may specify in a permit the terms and conditions under which waste material may be disposed of. The notification requirement is intended to inform and provide assurances to the public that the wastewater is being treated in accordance with Alaska Water Quality Standards, 18 AAC 70.

State of Alaska Recommendations and Suggestions

2.) Page 6 – Temperature readings of effluent required twice a week. Temperature of effluent does not fluctuate greatly. Suggest: Reduction in monitoring to once per week to correspond with pH, BOD, TSS and DO requirements.

3.) Page 7 – Receiving Water Quality Monitoring Requirements. – Number of samples collected per station is not specified for FC. Old permit stated 5 samples per station, this is excessive for FC (see pg 13 of old permit) Suggest: One samples per station shall be collected on the same day that the effluent is sampled for FC concentrations.

4.) Page 7 – Table 2. Influent/Effluent Monitoring Requirements (footnotes) table boarders are not lined up.

5.) Page 10 – Biological Monitoring for Benthic Infauna and Sediment Analysis. - Testing Stations have been increased from the last permit from 3 to 7 stations. Suggest: Remain with three stations for qualitative observations (including video along the diffuser as well as at the sample sites so qualitative observations cover a large area and also give a survey of diffuser condition) in August of Second Year and a change August of 4th year observations to qualitative observations. Sediment Sampling should occur *IF* evidence of rippling or settleable solids deposition is apparent or non-growth of benthic community are observed at stations, samples shall be collected at those stations. 2 TVS and 3 benthic samples is recommended if sampling becomes necessary.

Rational: High costs associated with sampling at 3 stations (2,3 & 7 are all in the NW area), 5 benthic and 3 TVS replicate samples at each station is excessive. Long standing monitoring and sampling (1987, 1991, 1993, 1997, 1999) performed by Sitka Wastewater Treatment Facility on Benthic Fauna and TVS strongly indicate benthic community health. We believe the qualitative video survey coupled with sampling *if deemed necessary* achieves the objective of this monitoring program.

6.) Page 14 - C Whole effluent Toxicity (WET) Testing – Testing shall be conducted quarterly in the first and fourth years of the permit term.

Due to the small community resources and the high cost associated with WET testing, history of acceptable WET results, and lack of evidence suggesting harmful effects from effluent on the benthic community; ADEC suggests decreased monitoring requirements. Suggests rewording to: For the first year and fourth year of the permit term, the Permittee shall conduct one chronic toxicity test for determining the toxicity of the effluent from outfall 001 in accordance subsections 1-12 below.

7.) Page 4 Effluent Limitations - limitations for effluent limits/monitoring of Dissolved Oxygen has not been established. Suggest: 2.0 mg/L, once per week.

8.) Page 19 – G (3) – Quality Assurance Requirements – Quality Assurance Plans have become much more comprehensive since the request for a quality assurance plan was as for in 1996. Due to limited personnel, a greater length of time, Suggest: 120 days, for the City of Sitka to develop their Quality Assurance Plan is advised.

9.) Page 23 II (C) Monitoring, Recording and Reporting Requirements – Copy to should be changed to:

Alaska Department of Environmental Conservation
Division of Air and Water Quality
410 Willoughby Ave., Suite 303
Juneau, AK 99801
907-465-5300
907-465-5274(fax)
may be submitted via scanned and saved (.pdf, .bmp or .tif) document to: wq permit@envircon.state.ak.us

Fact Sheet

State of Alaska Recommendations and Suggestions

1) Page 2 – Correct Address for Juneau EPA Alaska Operations Office to:

EPA Alaska Operations Office
PO Box 20370
Juneau, AK 99802-0370

Physical Address:
Room 223 A
709 W. 9th Street
Juneau, AK 99802

2) Page 2 – The three permit FACT SHEETS that we are currently working on should have the same information on where information may be obtained from for Haines, Petersburg and Sitka.

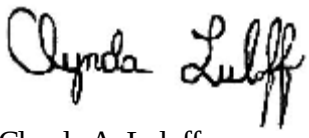
3) Page 14 (6) Fecal Coliform Bacteria - Last sentence in the first paragraph is incorrect. The State of Alaska WQS's apply outside of the mixing zone and not outside of the ZID for fecal coliform bacteria.

4) Page 17 (7) Additional Parameters – 1st paragraph. "… is necessary to endure that the discharge…" Suggest: "…is necessary to ensure that the discharge…"

5) Page 19 (3) Biological Impact of discharge; 7 stations. The previous permit only required 3 testing stations. The City of Sitka's contractor chose to monitor 7 stations. Based on the satisfactory performance during permit terms, ADEC would suggest that monitoring requirements be reduced. This is especially true for the fecal coliform bacteria monitoring requirements, which we believe could be reduced to once each year (at 3 stations) during the month of July, except during the fourth year of the permit which should remain as previously required to provide sufficient information for the next permit renewal.

Please free to contact me at this office if you have any questions or wish to discuss the departments review of this permit further. Thank you.

Sincerely,



Clynda A. Luloff
Environmental Specialist