Fact Sheet

NPDES Permit Number: AK-002255-1
Date:
Public Notice Expiration Date:

The U.S. Environmental Protection Agency (EPA) Plans To Reissue A Wastewater Discharge Permit To:

The Municipality of Anchorage
John M. Asplund Water Pollution Control Facility
2300 Hutson Drive
Anchorage, Alaska 99503

and requests the State of Alaska to certify this NPDES permit pursuant to 40 CFR Part 124.53.

EPA Proposes NPDES Permit Reissuance.

EPA proposes to reissue a *National Pollutant Discharge Elimination System* (NPDES) Permit to the Municipality of Anchorage. The draft permit sets conditions on the discharge of pollutants from the Anchorage wastewater treatment plant to the Knik Arm of Cook Inlet. It also authorizes the facility to continue to incinerate sewage sludge, called *biosolids*, and also authorizes the transfer of sewage sludge to a separate sludge disposal facility. 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, and places conditions on the use of biosolids.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge and current biosolids practices
- a listing of past and proposed effluent limitations, schedules of compliance, and other conditions
- a description of the discharge location and a map and description of the biosolids disposal or use locations
- and detailed technical material supporting the conditions in the permit

Alaska State Certification.

EPA requests the Alaska Department of Environmental Conservation (ADEC) to certify the NPDES permit for the Municipality of Anchorage, under section 401 of the Clean Water Act. EPA may not issue the NPDES permit until the state has granted, denied, or waived certification.

Public Comment.

EPA will consider all substantive comments before issuing the final permit. Those wishing to comment on the draft permit or request a public hearing may do so in writing by the expiration date of the Public Notice. All comments should include name, address, phone number, concise statement of basis of comment and relevant facts upon which it is based. A request for public hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water will make a final decision regarding permit reissuance.

If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 33 days after the issuance date, unless a request for an evidentiary hearing is submitted within 33 days.

Documents are Available for Review.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday (See address below). Draft permits, Fact Sheets, and other information can also be found by visiting the Region 10 website at www.epa.gov/r10earth/offices/water/npdes.htm.

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OW-130
Seattle, Washington 98101
(206) 553-1214 or
1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The Fact Sheet and draft permit are also available at:

EPA Alaska Operations Office
222 W. 7th Avenue #19
Anchorage, Alaska 99513-7588

Alaska Department of Environmental Conservation
555 Cordova
Anchorage, Alaska 99501

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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 Municipality of Anchorage, John M. Asplund Control Facility, 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 Municipality of Anchorage (the applicant) is seeking a waiver to the secondary treatment requirements to discharge treated primary effluent from a treatment plant with a design flow of 58 million gallons per day (mgd). The outfall is located in Knik Arm of Cook Inlet, 800 feet from shore at roughly 15 feet below mean lower low water.

EPA followed the guidance provided by the Amended Section 301(h) Technical Support Document, EPA 842-B-94-007, September 1994, (301(h) TSD) for the evaluation of the discharge. The Region relied on information in the current 301(h) application ("Renewal Application for NPDES Permit and 301(h) Variance From Secondary Treatment", Municipality of Anchorage, October 1998), 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) waiver 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. The state may grant, deny, or waive its right to certify the permit.

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

II. APPLICANT

Municipality of Anchorage, John M. Asplund Pollution Control Facility

Mailing Address:	Facility Location:
3000 Arctic Boulevard	2300 Hutson Drive
Anchorage, Alaska 99503	Anchorage, Alaska 99503

Contact: Mark Premo, General Manager, Anchorage Water and Wastewater Utility

Permit No. AK-002255-1

The Municipality of Anchorage, Alaska, has applied for renewal of the National Pollutant Discharge Elimination System (NPDES) permit for its publicly owned treatment works (POTW), permit number AK-002255-1. The permit became effective October 16, 1985 , and expired October 15, 1990. The Municipality of Anchorage submitted an application for renewal on April 12, 1990. Because the application for renewal was timely, under the conditions of 40 CFR § 122.6, the Municipality is authorized to continue discharging under the terms of the existing permit until a new permit is issued. An updated application for renewal was submitted on October 1, 1998, and is relied on as a primary source of information for reissuance.

III. FACILITY DESCRIPTION

The Municipality of Anchorage treatment plant serves the entire Anchorage area. Plant influent is primarily of domestic origin, although an industrial component is included. There are no combined sewers in the Anchorage sewer system. The existing facility provides primary treatment for a design average flow of 58 mgd and a maximum hourly flow of 154 mgd. The actual average daily discharge is approximately 33 mgd. The applicant projects an average daily discharge of 36 mgd for the year 2005. The existing outfall discharges to Knik Arm of Cook Inlet. The discharge depth of the diffuser during the typical 24-hour tidal cycle studies range from 11.5 feet to 40.5 feet. The outfall location is 61° 12' 22.5" N, 150° 01' 8.7" W.

Existing treatment units provide screening, grit removal, sedimentation, skimming, and chlorination. Sludge from the primary clarifiers is thickened and dewatered. The dewatered sludge and skimmings are incinerated and the ash disposed of in a sanitary landfill. Within the permit period, the sludge volume is expected to increase above the incinerator capacity. The excess sludge will be dewatered and disposed at the city’s landfill.

Chlorinated primary effluent is discharged through a 120 inch diameter chlorine contact tunnel and then through an 84 inch diameter outfall to Cook Inlet. The outfall extends 804

feet from shore and terminates as a trifurcated diffuser in water with a mean lower low water depth of 15 feet.

IV. BACKGROUND

The Municipality of Anchorage was first issued an NPDES permit for the John M. Asplund Facility on January 20, 1975, which expired on June 30, 1977. Section 301(b)(1)(B) of the Clean Water Act of 1972 required all publicly owned treatment works to comply with effluent limitations based upon secondary treatment by July 1, 1977. Despite all reasonable and diligent efforts, the Municipality of Anchorage could not achieve secondary treatment limitations in accordance with the July 1, 1977, deadline. On November 30, 1977, EPA exercised its prosecutorial discretion and issued an Enforcement Compliance Schedule letter specifying a schedule of compliance to achieve secondary treatment effluent limits by July 1, 1982.

Section 301(h) of the 1977 amendments of the Clean Water Act provides that "The Administrator, with the concurrence of the State, may issue a permit under section 402 which modifies the requirements of section 301(b)(1)(B) ... with respect to the discharge of any pollutant from a publicly owned treatment works into marine waters..." On June 15, 1979 EPA published the 301(h) regulations (40 CFR 125) in the Federal Register (44 Fed, Reg. 34784) establishing the criteria EPA would use for issuing an NPDES permit with a variance from secondary treatment requirements. On November 26, 1982, EPA published final amendments to the 301(h) regulations (47 Fed. Reg. 53666) which clarify, simplify, and update the regulations and application requirements. The Act was amended again in 1987. This amendment define primary treatment, added restrictions on discharges to impaired estuarine waters, and added urban area pretreatment requirements.

The city submitted an original application on September 11, 1979. Following review by EPA, a tentative decision to approve the 301(h) variance was announced September 8, 1981. A draft National Pollutant Discharge Elimination System (NPDES) permit implementing the tentative decision, was released on October 13, 1981, for a sixty-two day public comment period. During this period comments were received from the Municipality, which included a request to increase the flow limitations and shorten the originally proposed outfall extension length. These proposed changes were substantial enough to constitute a revision. Accordingly, the applicant submitted a revised application on May 31, 1984. The revised application was based on an improved discharge. A permit was issued and was effective on October 16, 1985. The permit expired on October 15, 1990. The Municipality of Anchorage submitted an application for renewal on April 12, 1990. Because the application for renewal was timely, under the conditions of 40 CFR § 122.6, the Municipality is authorized to continue discharging under the terms of the existing permit until a new permit is issued. An updated application for renewal was submitted on October 1, 1998.

V. RECEIVING WATERS

A. General Features

The outfall discharges to the saline estuarine waters of Knik Arm in Cook Inlet, 804 ft from shore off Point Woronzof. The semidiurnal mixed tides in Knik Arm have a diurnal range of 30 ft and an extreme range of 39 ft. The tides produce swift currents and vigorous mixing off of Point Woronzof. Knik Arm exhibits high tidal velocities (up to approximately 8.2 ft/sec), extensive intertidal mudflats (60 percent of Knik Arm), a brackish salinity range (from 4 parts per thousand (ppt) in summer to 21 ppt in winter), and ice flows from November through April. Currents are influenced primarily by the tides and secondarily by freshwater inflow.

The major rivers and streams contributing fresh water to Knik Arm include the Matanuska River, Knik River, Eagle River, Ship Creek, and Chester Creek. These sources of fresh water, combined with other rivers flowing into Cook Inlet, keep the salinity of Knik Arm generally below 20 ppt. The strong tidal mixing results in weak vertical density gradients throughout the year.

Knik Arm in the vicinity of the Anchorage outfall is classified by the State of Alaska as marine water subject to water quality criteria established for water use classes 2 (A-D) (18 AAC 70.020): aquaculture, seafood processing and industrial water supply, water contact and secondary recreation, growth and propagation of fish, shellfish, other aquatic life and wildlife, and harvesting for consumption of raw mollusks or other raw aquatic life.

B. Circulation

Circulation in Knik Arm is strongly influenced by tides and by the bathymetry of the channel. A number of studies on circulation patterns near the outfall in lower Knik Arm have been conducted in the past. Annual monitoring including flood and ebb drogue tracks and field observations have been conducted during the past 12 years. The facility's NPDES application and 301(h) variance request summarizes the results of the studies and monitoring. The information in this section is from the renewal application:

Generalized flow patterns during flood and ebb tides, deduced from the available current data, are shown in Figures 1 and 2. In general, the studies have shown very energetic circulation in Knik Arm that periodically alternates between flood and ebb flow patterns. There appears to be no observable seasonal variation in the overall circulation. As ebb tide ends, water ebbing from the Turnagain Arm channel imparts a northerly component to waters ebbing past Fire Island. As flood tide begins, this northerly component is forced to the northeast and then more easterly as the flood tide develops. At the same time, flooding water

Figure 1. Generalized Current Pattern at Point Woronzof During Ebb Tides

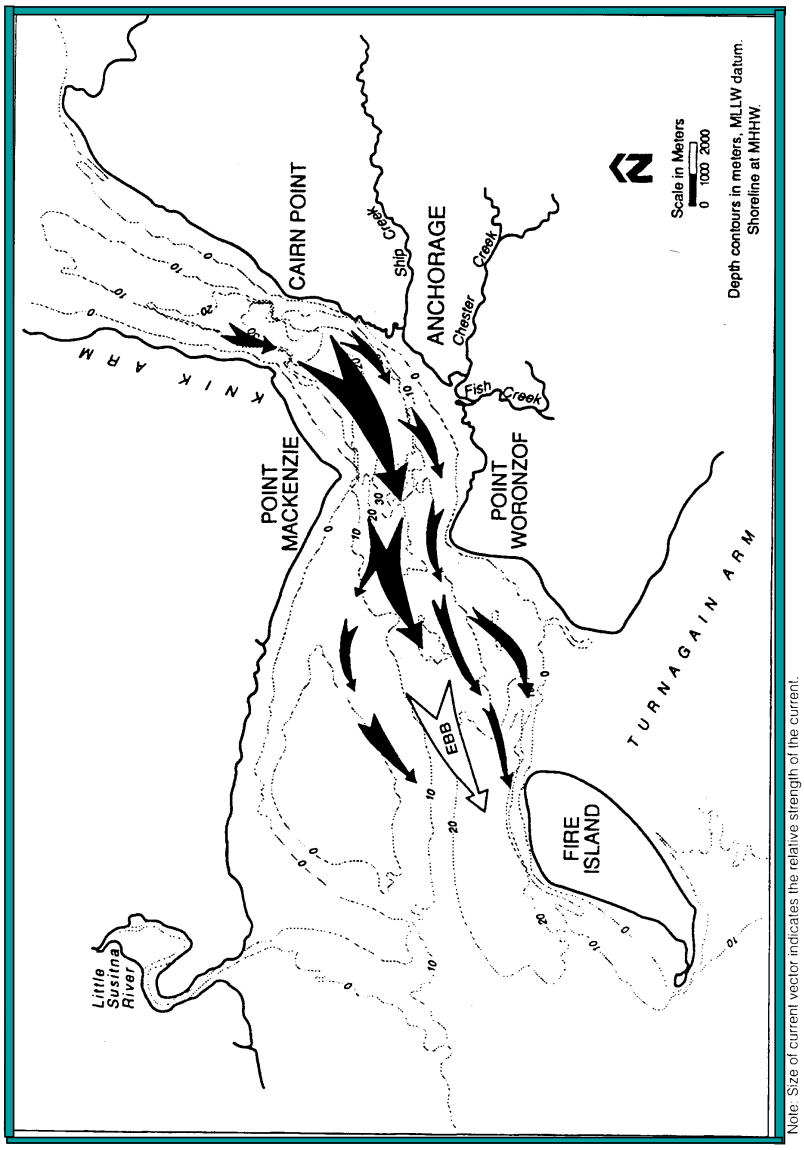
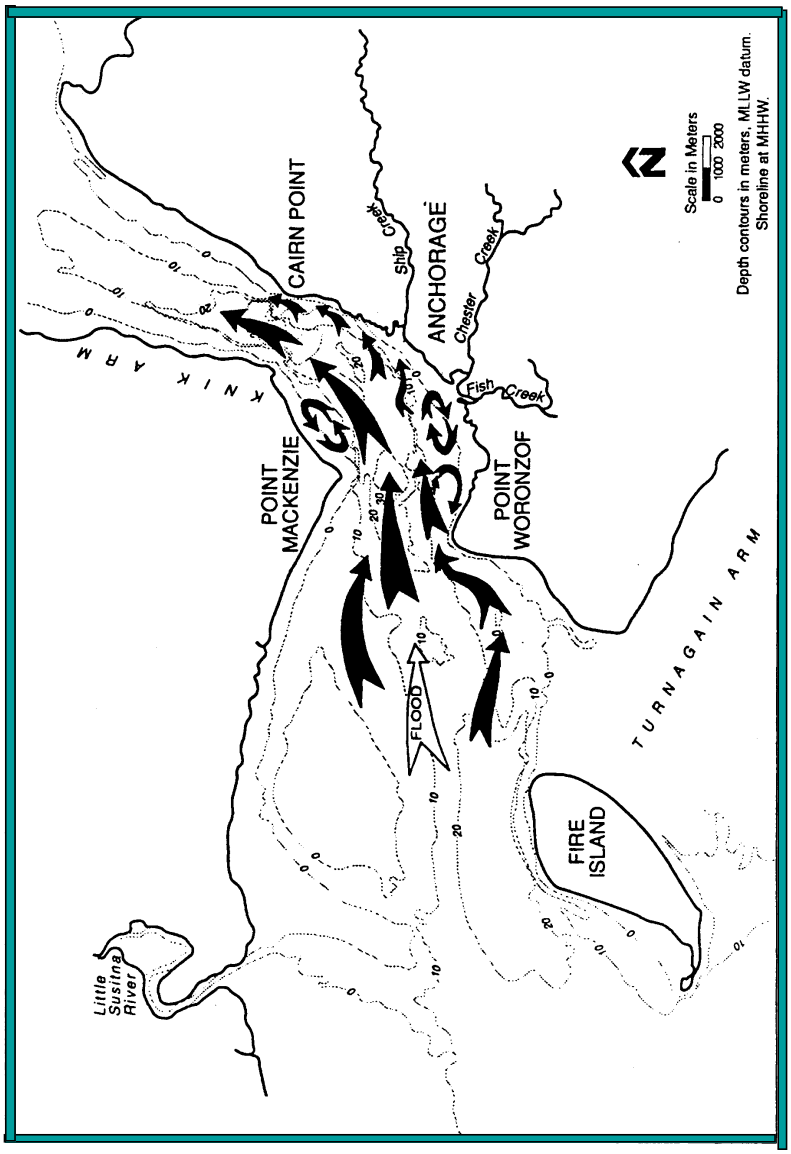


Figure 2. Generalized Current Pattern at Point Woronzof During Flood Tides



is forced between Point Woronzof and Point MacKenzie, and the "shedding" of eddies occurs upstream (east) of the Points. In early flood tide, there is a strong eddy system just east of Point Woronzof. As the tide proceeds, the eddy system constantly moves east and gradually loses energy, creating smaller eddy systems. In the latter stages of flood tide, there is almost no eddy system east of Point Woronzof.

During the flood tide at the zone of initial dilution (ZID) station, the drogue tracks indicate the development of a system of eddies to the east of Point Woronzof during the early stages of the incoming tide consistent with the above description. This occurs as the extensive mud flats adjacent to Anchorage are flooded. The quantities of water involved are large enough to create a shoreward current. This current will reinforce the development of eddies caused by flow separation around the point. The magnitude of the onshore movement of water decreases with increasing tidal height until shoreline effects are negligible. This may explain the disappearance or significant reduction in eddy formation later in the flood tide. At this point in the flood tide, drogues are carried directly up the inlet toward Knik Arm. During early flood tide, wastewater released from the outfall becomes entrained in the eddy systems, where it is mixed rapidly due to high turbulence. As flood tide progresses, the eddies begin to dissipate.

The ebb flow pattern in Knik Arm in the region off Point Woronzof generally exhibits a westward flow with some southerly drift near the north shore of Fire Island. Wastewater discharged during ebb tide is diluted as it proceeds westward. Eddies do not appear to develop as strongly on ebb tides, and do not influence the wastefield. During the early and mid-stages of ebb tide, drogues released at the ZID station are carried directly to the southwest. However, near the end of the ebb, when the tidal current has begun to diminish and the water level has dropped, the shoal to the southwest of Point Woronzof causes the drogues to move south.

C. Currents

A number of data sources are available with regards to currents in the vicinity of the outfall and are summarized in the facility's NPDES renewal application. The principal directions for the flood and ebb tide flow are 40° and 285°, respectively (degrees relative to true north). Because tidal events dominate the currents in Knik Arm, seasonal changes in predominant direction are not expected. The currents in the vicinity of the Point Woronzof outfall diffuser vary in speed from 8 cm/sec to a maximum of 250 cm/sec. The cumulative frequency distribution of current speed is shown graphically in the NPDES renewal application. The lowest 10^{th} percentile, the 50^{th} percentile, and the 90^{th} percentile current speeds are 46 cm/sec, 136 cm/sec, and 195 cm/sec, respectively.

D. Flushing

Flushing time in Knik Arm, the time required for the volume of water in Knik Arm to be replaced, is a function of advective flow (riverine input) and tidal excursion (net distance a particle moves each tidal cycle). Conservative estimates of advective flow by Marine Advisers (1965) indicate there is little flow of riverine water past Point Woronzof during winter, with maximum flow occurring during July. As discussed in the Municipality of Anchorage's (MOA's) renewal application, based on 50th percentile current (136 cm/sec), tidal excursions (over a half tidal cycle) at the discharge point are on the order of 20 times the net streamflow for the summer and 1,000 times the net streamflows for the winter. Calculations of tidal excursion suggest a net excursion exists in the ebb direction of approximately three miles, after a flood excursion of 19-20 miles and an ebb excursion of 22.5-23.2 miles. These high excursions contribute to the rapid flushing rates for Knik Arm, estimated by several methods, to range from ½ to 30 days (Tetra Tech 1984). The estimated flushing times from various studies are summarized in the MOA's renewal application indicate that flushing times are on the order of hundreds of hours in the winter months and ten of hours in the summer months, with annual average flushing times in an intermediate range. This indicates that the freshwater flows in the summer do have an appreciable effect, although the tidal processes do appear to dominate the flushing.

In general, results from these studies demonstrate large tidal excursions and currents which provide an overall rapid flushing rate (on the order of days) that is greater in spring and summer (times of high freshwater inflow) than in winter.

E. Stratification

The receiving water near the discharge is well-mixed with very little density stratification. The available data show that density differences from the surface to the bottom in Knik Arm are small at all times of the year. Weak density gradients have been measured in summer (Tetra Tech 1984) and these reach maximum stratification at high tide. However, uniformity in water column density is generally maintained by the vigorous tidal mixing in Knik Arm. The limited data available for winter, when brash ice covers the surface of Knik Arm, show no evidence of winter stratification.

VI. PHYSICAL CHARACTERISTICS OF THE DISCHARGE

A. Outfall/Diffuser Design

Pursuant to 40 CFR §125.62(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 effluent is discharged through an 84-inch diameter outfall to Cook Inlet. The outfall extends 804 feet from shore and terminates as a trifurcated diffuser in water with a mean lower low water (MLLW) depth of 15 feet.

B. Initial Dilution and Zone of Initial Dilution (ZID)

Initial dilution is the rapid, turbulent mixing of the effluent and receiving water. It results from the interaction between the buoyancy and momentum of the discharge and the density and momentum of the receiving water. Initial dilution is normally complete within several minutes after discharge. The zone of initial dilution (ZID) is the region surrounding the outfall or adjacent to the end of the outfall pipe or diffuser ports in which the initial dilution occurs.

Because of the unique conditions in the estuary near Pt. Woronzof's outfall, the standard method used in EPA's 301(h) Technical Support Document is not appropriate for determining the configuration of the ZID or the available initial dilution. Instead, EPA, MOA, and ADEC have agreed that initial dilution will be assumed to have been completed when the density difference between the plume and ambient reaches 0.01 (one percent of the initial density difference, based on the EPA's dilution model UDKHDEN (Mullenhoff et al. 1985). The ZID is calculated by the distance from the trifurcated diffuser to the point when DRHO reaches 0.01. The dimensions will vary with tidal elevation, discharge flow rate, and ambient current speed.

Based on the results of the UDKHDEN model, a minimum initial dilution of 184:1 is predicted for peak hourly discharge conditions and a minimum current speed of 0.2 m/sec. Based on this prediction, EPA is proposing a dilution of 180:1 for most pollutants. For conservative pollutants (pollutants that do not decay in the receiving water) EPA is proposing a lower initial dilution, based on the following information.

Although the large tidal excursions and currents provide substantial flushing that prevents the buildup of previously discharged wastewater in the vicinity of the discharge, the current patterns in Knik Arm can result in a long-term, quasi-steady state build up of ambient wastewater concentrations. The effects of ambient wastewater accumulation from the Point Woronzof outfall were determined through the use of the link-node model of Knik Arm by the MOA as described in the NPDES permit renewal application. The long-term accumulation limits the potential subsequent dilution. Using the predicted ambient buildup concentrations during most restrictive low flow season results in a minimum effective initial dilution of 142:1 for conservative substances. EPA used this dilution for conservative substances in evaluating compliance with water quality standards.

The following discussion of determination of the ZID dimensions is principally from the MOA NPDES permit renewal application: To determine the extent of the plume at the completion of initial dilution, 24 hourly plots were created with the predicted plume for each hour. The peak hourly flow of 73.4 mgd was used to develop the hourly plume trajectories. The extent of the plume was determined by plotting the trajectory of each of the three plumes from the diffuser and superimposing the width of each plume as predicted by UDKHDEN. Specifically, the length and width of the ZID (for each hourly interval) were determined from the UDKHDEN model output for the horizontal distance parallel to the ambient current and the plume diameter or width, respectively. The plume trajectories for each hour are shown in the MOA's variance request document. The plumes are generally long and narrow; only at slack tides do they spread out, and then switch quickly when tidal directions change. The longest plumes to reach a density difference of 0.01 were about 2,130 feet. For most hours during the day, the width of the plume was less than about 165 feet. However, for slack tide, plume widths reached over 656 feet for the higher discharge rate.

Current speed and direction, water depth, and discharge rate determine the length, width, and trajectory of the plume. Based on the definition of the ZID adopted for this NPDES permit renewal, the point when initial dilution is completed is continually changing. An area encompassing these points can be defined as a sector of a circle with a radius of 2,130 feet centered 100 feet shoreward of the diffuser, as shown in Figure 3.

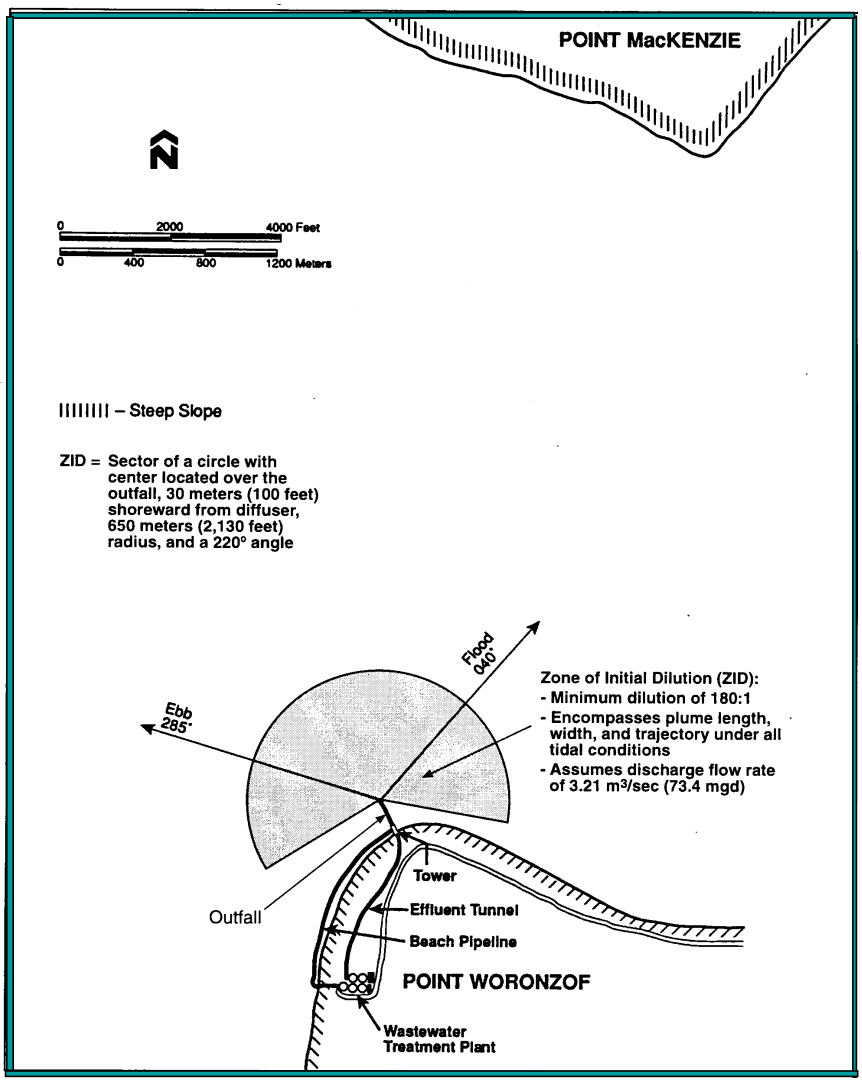
The waiver application also provides the time of travel to achieve a dilution ration of 180:1. Dilution takes place rapidly with the estimated time of travel varying from 1.4 to 10.6 minutes for the 40.9 mgd flow, and 2.2 to 12.7 minutes for the 73.4 mgd flow. The longest time is during slack tide when dilution rates are lowest.

VII. 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.

Figure 3. The Zone of Initial Dilution for the Point Woronzof Outfall



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 apply 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 biochemical oxygen demand (BOD) and total suspended solids (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 BOD and TSS.

Applicants for 301(h) waivers request concentration and loading (lb/day) limits for BOD 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 the Municipality of Anchorage, the applicant requested the concentration-based effluent limits shown in Table1.

Table 1. Technology-Based Effluent Limitations Outfall 001

Parameter	Average Monthly Limit	Average Weekly Limit	Daily Maximum Limit
Biochemical Oxygen Demand (BOD_5)	240 mg/l	250 mg/l	300 mg/l
	72,100 lbs/day	75,100 lbs/day	90,100 lbs/day
Total Suspended Solids (TSS)	170 mg/l	180 mg/l	190 mg/l
	51,000 lbs/day	54,000 lbs/day	57,000 lbs/day

Table 1. Technology-Based Effluent Limitations Outfall 001			
Parameter	**Average Monthly Limit**	**Average Weekly Limit**	**Daily Maximum Limit**
pH	6.0 - 9.0		

The loadings in the previous table on a pounds per day basis were calculated by multiplying the concentration limitation by the predicted average daily flow for the year 2005 (36 mgd, from 6/21/99 letter to Michael Lidgard, EPA from Noel Williams, CH2MHILL), and by a unit conversion factor (8.34).

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 §125.62(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, 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 result in compliance with these standards at the edge of the ZID.

The following discussion addresses compliance with each of the above requirements in more detail. See section VII.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. Dissolved oxygen concentrations in estuaries and tidal tributaries may not be less than 5.0 mg/L except where natural conditions cause this value to be depressed. The Alaska Department of Environmental Conservation (ADEC) has determined that waters classified as both coastal and estuarine must meet the standards for both.

The amended 301(h) Technical Support Document (TSD) provides equations for determining the DO depletion caused by the biochemical oxygen-demand (BOD) of the effluent. These equations were used to calculate the DO concentration (DO_f) 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 = 8.0 mg/L
Effluent DO concentration	DO_e = 0.0 mg/L
Immediate DO demand	IDOD = 3.0 mg/L
Initial dilution	S_a = 180

The Do_a is the minimum average water column DO concentration measured in the vicinity of the outfall. The Do_e value of 0.0 mg/L represents the worst possible case effluent with no dissolved oxygen. The IDOD number was based on value suggested in the amended 301(h) TSD.

Inserting these values into the equation:

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

$$8.0 + (0 - 3 - 8.0)/180 = 7.94 \text{ mg/L}$$

the minimum DO concentration of the receiving water immediately following initial dilution (DO_f) is 7.94, a depletion of 0.06 mg/L from the ambient DO. This represents a DO depression of less than 1 percent.

The applicant provided further DO modeling in the NPDES permit renewal application. The applicant investigated farfield DO depression due to BOD exertion of the wastefield using modeling procedures described in the 301(h) TSD. Given a BOD_5 limitation of 250 mg/L, critical initial dilution of 180 and the Brooks equation applicable to open coastal waters, the calculated maximum dissolved oxygen depression was found to be 0.061 mg/L. The maximum depression occurs at the completion of initial dilution. Beyond the area of initial dilution, farfield dilution is sufficiently high to prevent any further dissolved oxygen depression caused by BOD delay.

(3) Total Suspended Solids

Alaska State water quality standards applicable to marine waters of Cook Inlet in the vicinity of Point Woronzof provide that turbidity shall not exceed the natural condition. This site specific criteria for this portion of upper Cook Inlet took effect under state law on April 24, 1999. EPA approval is necessary before final action on this permit.

The following calculation (from Amended 301(h) TSD) was used to estimate the change in receiving water suspended solids concentration immediately following initial dilution.

$$SS_f = SS_a + \frac{SS_e - SS_a}{S_a}$$

where:

SS_f = Suspended solids concentration at completion of initial dilution, mg/L

SS_a = Affected ambient suspended solids concentration immediately upcurrent of the diffuser and from the diffuser port depth to the trapping level, mg/L

SS_e = Effluent suspended solids concentration, mg/L

S_a = Initial Dilution

$$SS_f = 240 + \frac{170-240}{142} = 239 \text{ (lower bound)}$$

$$SS_f = 2480 + \frac{170-2480}{142} = 2464 \text{ (upper bound)}$$

The suspended solids concentration in Cook Inlet varies from 240 to 2,480 mg/l. The maximum monthly average suspended solids concentration upon which this application is based is 170 mg/l. Suspended solids concentration at the completion of initial dilution will therefore vary from 239 mg/l to 2,464 mg/l. Effluent discharge into Cook Inlet reduces the suspended solids concentration of the receiving water and will decrease receiving water turbidity. The discharge would therefore also be expected to increase the sechi depth and increase the depth of the photic zone. The discharge will not cause a violation of the water quality criteria. Receiving water monitoring has also shown no impact of the discharge on turbidity.

(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.

Changes in the receiving water pH caused by the effluent discharge can be evaluated using the Amended 301(h) TSD. Average Cook Inlet water column pH in the vicinity of the outfall varies between 7.6 and 8.0. The average daily pH of the effluent, between June 1988 and May 1989, ranged from 6.5 to 7.6. The greatest potential impact to the receiving water pH would occur when effluent pH is 6.5. At this pH it is assumed that effluent alkalinity is 0.5 mg/l. The MOA NPDES permit renewal application calculated expected receiving water pH for two receiving water temperatures after an initial dilution of 180:1. The maximum change estimated under these conditions is 0.03 pH unit. The state standard requires that the maximum change in receiving water pH due to a discharge shall not be greater than 0.1 pH units. Therefore, the applicant's discharge satisfies this state requirement. The draft permit incorporates the AK water quality standard for pH as an end-of-pipe limitations. The limit in the proposed draft permit, 6.5 - 8.5 standard units, is unchanged from the existing permit.

(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.

The regulations at 40 CFR 122.44(d)(1) implement section 301(b)(1)(C) of the Clean Water Act. 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, and must be consistent with any available wasteload allocation (WLA).

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

a. Determine the appropriate water quality criteria
b. Determine whether there is "reasonable potential" to exceed the criteria
c. If there is "reasonable potential", develop a WLA
d. Develop effluent limitations based on the WLA

The following provides a discussion of determining whether there is a reasonable potential to exceed the criteria.

To determine if there is "reasonable potential" to cause or contribute to an exceedence of the water quality criteria for a given pollutant, EPA compares applicable water quality criteria to the maximum expected receiving water concentrations (RWC) for a particular pollutant. If the expected receiving water concentration exceeds the criteria, there is "reasonable potential" and a water quality-based effluent limit must be included in the permit.

EPA used the recommendations in Chapter 3 of the *Technical Support Document for Water Quality-based Toxics Control* (TSD, EPA 1991) to conduct this "reasonable potential" analysis for the Municipality of Anchorage Facility.

The maximum expected receiving water concentration C_d is determined using the following mass balance equation.

$$C_r = (C_e \text{ X dilution factor}) + C_b$$

where,

C_r = receiving water concentration of the effluent discharge at the edge of the zone of initial dilution
C_e = maximum projected effluent concentration
= maximum reported effluent value X reasonable potential multiplier
C_b = background concentration of pollutant
Dilution factor = 142:1 for conservative substances or 180:1 for non-conservative substances

The maximum projected effluent concentration (C_e) in the mass balance equation is represented by the highest reported concentration measured in the effluent multiplied by a reasonable potential multiplier. The reasonable potential multiplier accounts for uncertainty in the data. The multiplier decreases as the number of data points increases and variability of the data decreases. Variability is measured by the coefficient of variation (CV) of the data. When there are not enough data to reliably determine a CV, the TSD recommends using 0.6

as a default value. A partial listing of reasonable potential multipliers can be found in Table 3-1 of the TSD.

The resulting maximum projected effluent concentration was then divided by the minimum critical dilution, which was determined to be 142:1 for conservative substances, and 180:1 for non-conservative substances (see VI.B. of this fact sheet). This product represents the maximum effluent concentration at the edge of the ZID. The maximum effluent concentration at the edge of the ZID is then added to the background concentration, $C_{b,}$ which is represented by the 95th percentile value from the background data set. The sum, C_d, represents the projected maximum receiving water concentration (RWC) at the edge of the ZID. This concentration is compared to the water quality criterion to determine whether a water-quality based effluent limitation is needed. If the RWC exceeds the water-quality criteria then a water-quality based effluent limitation would be developed. In the following analysis, toxic substances are addressed in three separate sections: metals, other inorganic and organic compounds, and chlorine.

Metals

Table 2 shows the values used to calculate a maximum potential receiving water concentration (RWC) and compares the RWC to the most stringent criteria for metals.

Table 2. Determination of Need for Water-Quality Based Limits - Metals [1]

Metal	Background 95th percentile (µg/l), C_b	Maximum Effluent (µg/l), C_e	Reasonable Potential Multiplier	Dilution Ratio	Maximum Potential RWC, C_t	AK Most Stringent WQ Criteria[2]	WQ Based Limit Required?
Arsenic	2	2.9	3.6	142	2.07	36	No
Cadmium	.06	0.48	3.6	142	0.072	9.3	No
Chromium	0.8	13.2	3.6	142	1.14	50	No
Copper	0.9	45.2	3.6	142	2.05	3.1	No
Lead	0.1	6.8	3.6	142	0.27	8.1	No
Mercury	0.006	0.116	3.6	142	0.009	0.025	No
Nickel	1.4	2.7	3.6	142	1.5	8.2	No
Selenium	0.12	0.65	3.6	142	0.14	71	No
Silver	0.11	9.05	3.6	142	0.34	1.9	No
Zinc	2.4	480	3.6	142	14	81	No

1. Effluent values are total recoverable. All other values are dissolved fraction.
2. Site specific criteria for this portion of upper Cook Inlet took effect under state law on April 24, 1999. EPA approval is necessary before final action on this permit

Since none of the maximum potential receiving water concentrations for the metals exceed the most stringent Alaska water quality criteria, no metal effluent limitations are necessary for this discharge. This determination is conservative in that it examines the worst case conditions including: use of 95th percentile value for background, use of the maximum effluent value reported, use of reasonable potential multiplier based on default value of CV=0.6, and use of total recoverable effluent values (assumption that all metals in the effluent are bioavailable).

Other Inorganic and Organic Compounds

The MOA performed a similar analysis for other priority pollutant inorganic and organic compounds for which numeric criteria exist and which have been found to be present in the Point Woronzof effluent. This analysis was provided in the NPDES permit renewal application. The only priority pollutant that exceeded water quality criteria after initial dilution is DDT. However, no DDT has been detected in the effluent since 1991 and DDT is no longer used as a pesticide. Since DDT has not been detected in the effluent in eight years and since it is no longer in use as a pesticide, no DDT exceedances are expected in the future and no limitation has been develop for the draft permit. Monitoring for DDT will continue as will be discussed later in this fact sheet.

Chlorine

The current permit limits total residual chlorine to 1.2 mg/l monthly average and 1.4 mg/l daily maximum. The MOA NPDES permit renewal application states "The maximum chlorine residual maintained at Point Woronzof will be 1.2 mg/l." The following examines the impact on the receiving water of a 1.2 mg/l limitation.

Chlorine residual concentration in the Pt. Woronzof effluent is reduced after discharge by both initial dilution plus any chemical decay. The chemical decay is the chlorine demand of the receiving water or the chemical reaction with the seawater during typical transit times within the ZID. The MOA has conducted laboratory testing (See MOA application) which show that Cook Inlet receiving water will reduce chlorine residual with a decay rate constant of 0.15 per minute during the initial dilution process. The time for completion of initial dilution under critical conditions is 13 minutes. During this time period, chlorine will decay by 85%. The maximum chlorine residual maintained at Point Woronzof will be 1.2 mg/l. After initial dilution of 180:1 and receiving water chlorine demand during initial dilution, the final receiving water concentration will be less than 0.001 mg/l. This is lower than the AK water quality criteria of 0.002 mg/l. The MOA also calculated the average chlorine residual over the entire tidal cycle using the initial dilutions and time for completion of initial dilution. This results in an average chlorine residual over the entire tidal cycle at the completion of initial dilution of 0.002 mg/l.

Maintaining TRC in the effluent below 1.2 mg/l, the chlorine residual at the completion of initial dilution will always be less than the AK water quality criteria. Therefore, a chlorine residual of 1.2 mg/l daily maximum limitation will be included in the draft permit to insure protection of the Alaska water quality criteria.

(6) Fecal Coliform Bacteria

Alaska's most restrictive criterion 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 Cook Inlet is protected for this use, the discharge in the current permit must result in this standard being met at the edge of the ZID.

The existing permit limits are a monthly median of 850/100 mL, with not more than 10 percent of the samples greater than 2600/100 mL.

Fecal coliform levels are reduced after discharge into Cook Inlet by dilution and die-off. Initial dilution of 180:1 alone will reduce the monthly median concentration of 850/100 mL to 5/100 mL and the 2600/100 mL value to 14/100mL. This determination considers dilution only, and does not consider the expected die-off of fecal coliform that would be expected between the discharge point to the edge of the ZID. This determination also does not consider the contribution of background concentration at the edge of the ZID. Monitoring program results were evaluated to understand fecal coliform concentration in Cook Inlet near Point Woronzof.

From 1986 to the present, the NPDES monitoring program has included sample collections at intertidal (shoreline) stations and at offshore stations for fecal coliform analyses. The intertidal sampling program includes sampling stations near the mouths of the three main creeks that discharge near this intertidal region. The three creeks have shown elevated bacteria concentrations that influence the intertidal shoreline areas of Anchorage. The intertidal stations near Point Woronzof range in fecal coliform concentrations from 2 to 80 FC/100mL. The values at the control station located across Knik Arm, near Point Mackenzie range from 2 to 13 FC/100mL. The data show that the highest fecal coliform concentrations are found in the waters of the three creeks with values during the monitoring program required by the NPDES permit ranging from 2 to 5,900 FC/100 mL.

The offshore sampling program includes sampling stations within the ZID, at the ZID boundary, at nearfield stations, and at control stations located across Knik Arm, near Point Mackenzie. The fecal coliform concentrations show ranges of 2 to 170 FC/100mL at the station within the ZID or at the ZID boundary, ranges of 2 to 300 FC/100mL at the nearfield stations, and ranges of 2 to 87 FC/100 mL at the station located across Knik Arm, near Point Mackenzie. Water quality at the ZID boundary was evaluated to determine compliance with

the Alaska fecal water quality standard (see Table 3.) Over the last five years of sampling, the median value at the edge of the ZID boundary was 12 FC/100ml with not more than 10 percent of the samples exceeding 43 FC/100mL. Analysis of all data collected over the last 13 years of sampling resulted in a median value of 8 FC/100mL. The water quality at the edge of the ZID is in compliance with Alaska fecal water quality standards.

Table 3. Fecal Coliform Data Collected at the Edge of the ZID (counts/100mL)

Year:	1998	1997	1996	1995	1994
	>16	>16	1.0	8.0	8.0
	16	16	1.0	80	8.0
	5.1	5.1	2.0	23	8.0
	16	5.1	3.1	30	2.0
	30	16	1.0	23	170
	2.2	16	2.0	23	80

Statistics: n = 30
median = 12
Number > 43 = 3

Effluent data from the facility was also evaluated. Over the last five years, the facility reported monthly average fecal coliform concentrations and has been in compliance with the effluent limitation of the monthly median of 850/100mL. The monthly values ranged from 7/100mL to 179/100mL. The average value was 37/100mL. The median value was 28/100mL at the discharge point prior to any mixing with the receiving water.

Due to the dilution available within the ZID, the demonstrated compliance with the Alaska water quality standard for fecal coliform at the edge of the ZID, and the facility's compliance with permit limitations, the existing permit limits shall be retained in the revised draft permit. The draft permit will also continue the water column, intertidal, and effluent fecal coliform monitoring program currently in place. The monitoring program will provide information to evaluate compliance with Alaska fecal coliform water quality standards and to continue to discern patterns to the bacteria levels in the waters off of Point Woronzof. Details of the monitoring requirements will be discussed later in this fact sheet.

(7) Additional Parameters

There are no data presented in the NPDES renewal application for ammonia. The existing permit did not require ammonia effluent monitoring. Ammonia is a common constituent of POTW effluent although it is reasonable to expect that this facility would not cause

exceedances of the State criteria for ammonia given the dilution available within the ZID. Therefore, EPA has determined that monitoring be conducted in order to assess the discharge of ammonia from the outfall. Monitoring will be discussed later in the fact sheet.

Whole effluent toxicity (WET) tests are laboratory tests that use small vertebrate and invertebrate species or plants to measure the toxicity of an effluent. The municipal application regulations (40 CFR Part 122.21(j)(1))require POTWs with design influent flows equal to or greater than 1.0 mgd, and POTWs with approved pretreatment programs, to submit results of WET testing with their permit application. Additionally, EPA regulations at 122.44(d)(1) in effect require whole effluent data and criteria when characterizing effluents. The WET approach measures the aggregate effect of all toxicants in the effluent.

18 AAC 70.030 of the Alaska State Water Quality Standards states that "An effluent discharged 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. If the department determines that an effluent has reasonable potential to cause or contribute to exceedance of this limit, the department will require whole effluent toxicity limitations as a condition of a permit, approval, or certification."

Bioassays were conducted during 1989 with representative fish and invertebrate species to determine the potential for effluent toxicity. These test and results are described in detail in the MOA's NPDES permit renewal application. The principal goal of the Point Woronzof biomonitoring study was to quantify the acute and chronic toxicity of the Point Woronzof effluent, and to determine the temporal variability of any measured toxicity. The chronic toxicities of the effluent and receiving water were measured using echinoderm fertilization and mollusc embryo tests. The species used in the echinoderm tests included the purple sea urchin and sand dollar. The species used in the mollusc tests was the Pacific oyster. Four separate testing events were conducted using the echinoderm fertilization test; three testing events were conducted using the mollusc embryo test. The test dilutions used in the biomonitoring study ranged from 0.025 percent to 20 percent. Dilution water alone was tested for the control.

The results were reported as the no observed effect concentration (NOEC, as percent), the lowest observed effect concentration (LOEC, as percent), and the chronic value (ChV, the geometric mean of the NOEC and the LOEC). Results can be found in the MOA permit renewal application. Also reported are the salinities corresponding to each NOEC and LOEC, so adverse salinity effects can be interpreted.

Effluent exhibited chronic toxicity effects in both echinoderms and molluscs. The NOEC in echinoderms ranged from 1 to 5 percent effluent. The NOEC in molluscs ranged from 2

to 5 percent for survival and 2 to 5 percent for abnormalities. The comparison between dechlorinated effluent and as-received effluent indicated that effluent as received may be more toxic to both echinoderms and molluscs than was dechlorinated effluent. With the lowest NOEC of 1% effluent, the test results indicate that the effluent is not toxic at dilutions greater than 100:1.

The results indicate a WET limit need not be developed at this time based on the dilution available for the facility's discharge (142:1). However, due to a number of factors including the facility's size, the industrial contribution to the facility, the date for the last WET test, and the relatively limited WET data base, the draft permit proposes that WET testing be conducted quarterly for three species. The results of the WET test shall be submitted with the DMR for the corresponding month. The results of the WET testing will be considered during permit re-issuance.

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.

The accumulation of suspended solids may lower dissolved oxygen concentrations in near-bottom waters and cause changes in the benthic communities. Accumulation of suspended solids in the vicinity of a discharge is influenced by the amount of solids discharged, the settling velocity distribution of the particles in the discharge, the plume height-of-rise, and current velocities. Sedimentation of suspended solids is generally of little concern for discharges into very well-flushed receiving waters.

The discharge from the outfall is not expected to have a significant impact on sediment dissolved oxygen demand. Because of the extremely fast currents in the vicinity of the outfall, there is no seabed accumulation of suspended sediments (either natural or from the discharge). Because of the fast currents, the seabed in the vicinity of the diffuser is composed of coarse gravel and cobble.

The lack of sediment accumulation has been shown in numerous investigations which were summarized in the MOA's NPDES permit renewal application. Sites nearest the present outfall were characterized as dominated by poorly graded sand and gravel to a maximum size of about 3 inches. Other samples in the areas were dominated by gravel up to 2 inches in

diameter, mixed with a sandy-silt matrix. Sediment samples were also collected in 1986 and 1988 as part of the annual monitoring program required by the NPDES permit. Three intertidal benthic stations and two subtidal benthic stations were collected. In general, the subtidal station samples consisted of gravel, rocks, and cobbles. The intertidal stations consisted of mostly silt-sized particles. Particle size distributions of natural suspended sediments off Point Woronzof were also investigated. Very large particles are suspended by the high current turbulence, with 50 percent of the load being in the size range of 0.065 to 0.250 mm. Settling rate tests of this suspended material and corresponding test on effluent and on mixtures with receiving waters were conducted. About 93 percent of the solids in the ambient sample settled in about 20 minutes versus about 50 percent of the solids in the effluent. The settleable solids load present in the receiving water was much greater than that of the effluent (11.6mL/L compared to 0.4mL/L). Chemical testing of sediments has also been conducted. The results indicate that organic matter is only a relatively small fraction of the sediments. There was no evidence of any significant accumulation of organic material from the effluent in the sediments.

Because of the rapid currents in the vicinity of Point Woronzof, effluent settleable solids are not expected to settle in the vicinity of the diffuser and the existing sediments consist of waste gravel and cobble with very low organic content. No dissolved oxygen depression resulting from sediment demand and resuspension of sediments is expected.

(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 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 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 applicant has provided data which is sufficient to demonstrate that the existing discharge probably has no significant impact on the shellfish, fish, and wildlife populations within and beyond the ZID. The discharge area in Knik Arm is a nondepositional, high-energy environment characterized by a cobble and sand bottom and an impoverished infauna (few

species with low density). Fast tidal currents and tremendous mixing produce rapid dispersion of particulates. High sediment loads, large fluctuations in salinity and water level, low light penetration and ice souring combine with these factors to produce physically-controlled planktonic and benthic communities.

Plankton

Nuisance phytoplankton blooms have not been reported for Knik Arm. Nuisance blooms are not expected since poor light penetration limits growth, nutrients in the effluent are rapidly diluted, and because phytoplankton communities are rapidly flushed from the vicinity of the discharge. Furthermore, because the amount of industrial effluent is small, no effects of toxic pollutants on phytoplankton are expected.

Like phytoplankton communities, zooplankton communities are unlikely to be affected by the effluent toxics or suspended solids. The intertidal and subtidal biota in Knik Arm and upper Cook Inlet are patchily distributed and are characterized by low density and biomass. No impacts of effluent on benthic fauna or on fish communities have been detected. The Alaska Department of Fish and Game confirms that mass mortalities of fishes have not been observed in the Point Woronzof area, and no evidence of diseases related to sewage contamination or warnings, restrictions, or closures of fisheries in Knik Arm have been reported. Given the rapid mixing and flushing in Knik Arm, and the absence of impacts attributable to the present discharge, it is unlikely that the proposed discharge will have any detectable effect on communities within or beyond the ZID.

Subtidal macroinvertibrates

The applicant provided results from four studies that collected subtidal benthic samples. Two studies were done in the 1970's and found benthic biota to be virtually absent in the Pt. Woronzof area. Two other studies in 1986 and 1989 were done as required by the 1985 NPDES permit. The results of the 1986 and 1989 benthic sampling studies were essentially identical to the results of those conducted in the 1970's. The subtidal benthic biota is naturally limited in upper Cook Inlet or Knik Arm by conditions that likely prevent colonization of the substrate, or smothers and abrades organisms that do become established.

Intertidal macroinvertibrates

Intertidal sampling conducted in the 1970's found essentially no benthic biota on the gravel, cobble beaches at Pt. Woronzof, or at the control area, similar to the subtidal benthic results. An intertidal benthic program was initiated in 1986 and 1989 as required by the 1985 NPDES permit. Results are summarized in the MOA NPDES permit renewal application. The 1986 and 1989 studies indicate an intertidal marine benthic flora of very low standing crop and low species diversity in the vicinity of the discharge. Only one species of marine macrophytic algae was found in the intertidal collections, and only four taxa of macrofaunal invertebrates that can be considered truly marine were observed.

Bioaccumulation

Attempts in 1979 to measure bioaccumulation of toxics in a bivalve shellfish failed to produce enough tissue for analysis because of the extremely low density of organisms and their small size. In 1987 and 1989, a field bioaccumulation program was conducted as required by the 1985 NPDES permit. In the absence of adequate invertebrate populations in the area, the field program used the intertidal yellow-brown macroalgae *Vaucheria.* Samples were collected at a site near Pt. Woronzof and at a control site. The MOA NPDES permit renewal application details the study and the results. In 1987, of all constituents tested, significant differences in levels of four constituents were detected between the Point Woronzof samples and the control site samples. Nickel and cyanide concentrations were higher at the control site while mercury and 4-methylphenol were higher at the Pt. Woronzof site. No meaningful pattern of bioaccumulation was indicated by the 1987 data. In 1989, concentration of cadmium and arsenic were statistically higher near the outfall than at the control site. Concentration of most of the other metals were higher at the control site though differences were not statistically significant. Algae at the outfall site were noticeably greener and denser than algae at the control site. In addition, algal percent moisture and silt-clay composition of the two sites differed, with effects on bioaccumulation unknown. Like the 1987 study, the 1989 study found differences between some constituents but no meaningful pattern of bioaccumulation of pollutants in algae near the outfall relative to algae at the control station.

Salmon migration

Upper Cook Inlet and Knik Arm are important migratory pathways for salmonids during their out-migration as smolt and their return to freshwater spawning beds as adults. Although specific migratory routes of the salmon species in Cook Inlet have not been described, salmon are known to move nearshore and parallel the beach before entering their home streams. The nearest stream supporting significant anadromous fish runs (Ship Creek) is located 4.5 miles from the discharge. Only very brief contact by fish with the wastefield (diluted) is likely. The ZID is extremely small when compared to the cross-sectional area of Cook Inlet in the vicinity of the discharge (ZID cross section of 21,500 ft^2 versus 1.4 billion ft^2 between Point Woronzof and Point MacKenzie). As a result, no impact of the discharge on fish migration is anticipated.

(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. There are no discharge-related restrictions on recreational activities in the Anchorage area. Beach use, water contact sports, and harvesting or consumption of shellfish or finfish in the discharge vicinity are not limited by federal, state, or local restrictions.

Recreational fisheries have not been affected by the Anchorage discharge nor are they likely to be affected by the discharge. Substantial recreational fishing occurs in the tributaries to Knik Arm, however, the closest stream to the discharge is Ship Creek, 4.7 miles from the outfall; other streams are from 12.7 to 36.7 miles from Point Woronzof. No impact of the outfall on recreational fishing in Knik Arm is expected.

Few other recreational activities occur in Cook Inlet in the vicinity of the applicant's discharge. The Alaska Department of Fish and Game reports that shellfishing, swimming, wading, and diving are rare. Low water temperatures, strong currents, and limited accessibility deter most water-related recreational activities in areas near and beyond the Anchorage effluent ZID.

In addition to the limited recreational use of the Point Woronzof areas, receiving water bacterial standards will be met at the edge of the ZID to protect water for shellfish harvest which is Alaska's most restrictive fecal coliform bacteria criterion. This stringent level is achieved even though the use is not believed to occur in the area of the discharge. As discussed in the limitations section above, fecal coliform levels are reduced after discharge into Cook Inlet by dilution and die-off. Initial dilution of 180:1 alone will reduce monthly average fecal limitation of the permit to a concentration of 5/100 mL at the edge of the ZID without consideration of die-off within the ZID.

D. Establishment of Monitoring Programs [40 CFR §125.63]

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) 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 with some adjustments. The influent and effluent monitoring program of the current permit requires continuous sampling of flow and total residual chlorine, daily sampling of temperature, pH, dissolved oxygen, and settleable solids. Sampling of BOD_5, suspended solids, total solids, fecal coliform bacteria, oil and grease, heavy metal and cyanide was required from weekly to 5/week depending on the parameter. Toxic pollutants and pesticides were sampled 4/year. In the Municipality's 301(h) waiver request, the permittee request minor adjustment to the effluent monitoring program, largely to frequency and monitoring locations. The most significant request was

a request to adjust the toxic pollutant and pesticide sampling to 2/year from 4/year, with the inclusion of both dissolved and total recoverable fractions of metals. Based on the results of recent effluent sampling, EPA concurs with this suggested reduction in frequency. The draft permit requires monthly effluent sampling for ammonia which is a new requirement from the existing permit.

Whole effluent toxicity (WET) tests are laboratory tests that use small vertebrate and invertebrate species or plants to measure the toxicity of an effluent. The WET testing approach measures the aggregate effect of all toxicants in the effluent. The State of Alaska water quality criteria for whole effluent toxicity requires that the chronic criterion of 1.0 TUc be met at the point of discharge or at the edge of the mixing zone. For this discharge the minimum critical dilution has been determined to be 142:1 for conservative substances at the edge of the ZID, therefore, if a limit was established in the permit it would be142 TUc at the end-of-pipe. As discussed earlier, little WET data is available for this facility. What data is available does not indicate a potential to exceed state criteria at the edge of the ZID. Since little WET data exist for this facility a WET limit will not be established at this point. However, the draft permit proposes that WET testing be conducted quarterly for three species. The results of the WET test shall be submitted with the DMR for the corresponding month and a final report will be due by the end of the month. The results of the WET testing will be considered during permit re-issuance. Also, a trigger point of 142 TUc in the effluent was established in the draft permit. If the effluent exceeds the trigger additional testing is required. If additional test continue to demonstrate that the trigger is being exceeded, the permittee will be required to conduct a Toxicity Reduction Evaluation (TRE). A TRE is a site-specific study conducted to identify the cause of the toxicity and to evaluate toxicity control options.

(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 current permit required annual water quality monitoring during the summer season for the following parameters at the depths indicated:

Surface	Surface, Mid-depth, and Bottom	Profiling
fecal coliform bacteria	dissolved oxygen	pH
enterococci bacteria	turbidity	temperature
color		salinity
total residual chlorine		
total hydrocarbons		
total aromatic hydrocarbons		

Nonfixed stations have been sampled during cruises made during a consecutive flood and ebb tide. Each cruise was made by following the track of a drogue released above the diffuser. Stations include: above the diffuser, as close to the ZID boundary as practicable, at least one station in the channel in Knik Arm and Cook Inlet, and the shallow subtidal. Flood-tide control cruises were similarly conducted in conjunction with the cruises near the outfall. The control cruises began at a fixed station located due north across Knik Arm from Pt. Woronzof, near Pt. Mackenzie. Monitoring of fecal coliform and enterococci bacteria was conducted at eight intertidal stations in the summer in conjunction with the water quality monitoring program.

The draft permit retains the monitoring locations and frequency established in the current permit for water quality monitoring with the addition of metals. This monitoring is required to adequately demonstrate compliance with applicable water quality criteria as required at 40 CFR 125.63c). EPA Region 10 has determined that a frequency of once per summer is the minimum frequency required for the Point Woronzof facility. This determination considers the size of the facility, monitoring frequency for other 301(h) facilities, the desire to continue annual monitoring to track long-term trends, determination of compliance with Alaska water quality standards and the projected growth and increases in loading projected for the area serviced by the facility. The permittee has recommended water quality monitoring once during the five year term of the reissued permit. Monitoring once during the permit period is not sufficient to demonstrate compliance as required for 301(h) facility's under 40 CFR 125.63(c).

(3) 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 current NPDES permit for the Anchorage discharge required benthic surveys and sediment analyses in years 1 and 4 of the permit and bioaccumulation studies conducted in years 2 and 4. The results from the benthic surveys, sediment analyses, and bioaccumulation studies were presented in previous sections of this fact sheet. In order to meet the regulatory requirement to implement a biological monitoring program and in order to gather adequate data to evaluate the impact of the applicant's discharge on the marine biota, the draft permit will require the permittee to repeat the sediment analysis and bioaccumulation test of the previous permit, although at a reduced frequency. The sediment and bioaccumulation samples required by the 1985 permit provided useful results to evaluate the discharge which demonstrated no detrimental environmental impact. Repeating these test will provide data that will be useful in confirming whether the discharge continues to have no adverse affect on the marine biota. Using similar methods and collection points will also provide a useful historical record of the biota and provide a record to evaluate long-term trends in the area

potentially affected by the discharge. Due to the results found from the previous sampling it is possible to decrease the frequency of biological monitoring in the draft permit from 2 events during the five year period to one event. Biological sampling will be required in year 4 only. The subtidal and intertidal benthic macroinvertibrates surveys found the benthic biota so naturally limited, and the benthic flora of very low standing crop and low species diversity, that it is of no value to repeat these benthic survey test.

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 applicant states in the 301(h) waiver request that no known sources have been identified within 2 miles of the outfall so no additional treatment will be required for any other source because of the discharge.

F. Toxics Control Program [40 CFR §125.66]

(1) Chemical Analysis [40 CFR §§125.66(a)]

Under 40 §125.66(a), applicants are required to submit chemical analysis of its discharge for toxic pollutants and pesticides. The applicant provided results of both dry- and wet-weather priority pollutant and pesticide analyses for years 1986 through 1997. Results are available in the NPDES permit renewal application and in annual reports submitted to EPA. The applicant compared concentrations of toxic pollutants and pesticides detected in the final effluent with data from an EPA study of 40 Publicly Owned Treatment Works (POTWs) and concludes, “values are within the range of those detected in other POTWs from across the nation, even though the Point Woronzof Plant provides only primary treatment as compared to secondary treatment provided at the other plants.”

(2) Identification of Sources [40 CFR §125.66(b)]

40 C.F.R. § 125.66(b) requires the applicant to identify sources of toxic pollutants and pesticides. An industrial waste survey for the Municipality of Anchorage was completed in 1981 as part of the Industrial Pretreatment Study. The inventory identified industries with industrial and non-industrial discharges to the municipal wastewater system. In 1986, the Industrial Waste Survey was updated. The update was specifically intended to identify “significant” industrial users, who would then be issued discharge permits under AWWU’s new permit program. To complete the update, results of the 1981 survey were reviewed to identify potentially significant users. In addition, utility records, telephone yellow pages, and other sources of information were reviewed to identify new potentially significant users who may have connected to the sewerage system since the 1981 survey. Detailed questionnaires

were mailed to potentially significant users. The facilities were then called and interviewed. Since 1986, the surveys have continued. As a result, nine facilities have been identified as significant users.

(3) Industrial Pretreatment Requirements [40 CFR §125.66(c)]

40 C.F.R. § 125.66(c) requires that the applicant have an approved pretreatment program. The applicant has an industrial pretreatment program which was approved by EPA on April 9, 1982, and has been fully implemented. The major elements include an industrial wastewater survey, development of discharge limitations and pretreatment requirements, a discharge monitoring program, legal authority and enforcement procedures, implementation needs, a new user identification system, and public participation. Much of this program was implemented through the promulgation of Anchorage Municipal Code 26.50, Sewer Service. The draft permit will contain pretreatment program requirements.

(4) 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 public education program designed to minimize the entrance of non-industrial toxic pollutants and pesticides into its POTW and to develop a non-industrial source control program. The applicant has implemented a public education program as part of its Hazardous Waste Management Plan. Elements of the program include a hazardous waste curriculum in the public schools, citizen's workshops on hazardous wastes, educational posters, slide shows, television programs, newspaper articles, flyers, and radio interviews. In addition, the Municipality allowed the public the opportunity to assist in establishing the priorities of the program through community meetings and conferences, formation of a hazardous waste task force, and public service announcements. A number of other public education programs have been implemented in recent years and are listed in the MOA 301(h) waiver request.

The NPDES permit issued to the Anchorage Water and Wastewater Utility in 1985 outlined five requirements for the Non-Industrial Source Control Program. These requirements are:

A. Develop and adopt, as necessary, ordinances to control the introduction of toxic pollutants from non-industrial sources to the wastewater collection system. As part of this activity, ordinances to revise building codes and control the sale of toxic pollutants shall be considered.
B. Develop guidelines specifying what toxic pollutants can and cannot be discharged to the sewer system and identifying alternative disposal methods for prohibited pollutants.
C. Implement the control program for non-industrial sources as contained in the pretreatment program approved by EPA on April 9, 1982.

D. Provide alternative disposal methods for non-industrial toxic pollutants such as the annual hazardous waste cleanup program.
E. Adopt a hazardous waste management plan for small quantity generators, including implementing ordinances.

All of these requirements have been met, and the progress of the non-industrial source control program has been reported to EPA annually in the Anchorage Non-Industrial Source Control Program Annual Report. Continuation of these requirements are included in the draft reissued permit.

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 draft permit contains the proposed effluent concentrations from the Municipality's 301(h) waiver request and are listed in the following table. Loading limitations were calculated from the projected year 2005 flow, which is the end of the permit term, as submitted by the applicant (36 million gallons per day):

Constituent	Unit of Measure	Monthly Average	Weekly Average	Daily Maximum
Concentration:				
BOD5	mg/L	240	250	300
Suspended Solids	mg/L	170	180	190
Mass Emission Rate*:				
BOD5	lbs/day	72,100	75,100	90,100
Suspended Solids	lbs/day	51,000	54,000	57,000

* Mass emission rate (lbs/day) = conc.(mg/L) x 36 (mgd) x 8.34 (conversion factor)

The permit will limit the discharge to these projections.

H. Percent Removal Requirements

Pursuant to Section 301(h)(9) of the Act and 40 C.F.R. 125.60, 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 biochemical oxygen demanding material and of the suspended solids in the treatment works influent..."

The existing plant meets the primary or equivalent treatment requirements as required by federal regulations. The applicant presented influent and effluent concentration data for year 1997 in the permit application. The BOD percent removal ranged from 53 - 59%. The TSS removal ranged from 79 - 86%.

I. Sludge Management Requirements

The sludge management regulations of 40 CFR § 503 were designed so that the standards are directly enforceable against most users or disposers of sewage sludge, whether or not they obtain a 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.

Though Part 503 is largely self-implementing, Section 405(f) of the CWA requires the inclusion of sewage sludge use or disposal requirements in any NPDES permit issued to a Treatment Works Treating Domestic Sewage. In addition, the sludge permitting regulations defined in 40 CFR Sections 122 and 124 have been revised to expand its authority to issue NPDES permits with these requirements. This includes all sewage sludge generators, sewage sludge treaters and blenders, surface disposal sites and sewage sludge incinerators. The requirements of 40 CFR § 503 must be met when sewage sludge is applied to the land, placed on a surface disposal site, placed on a municipal solid waste landfill (MSWLF) unit, or fired in a sewage sludge incinerator.

Part 503 contains provisions relating to pollutants in sewage sludge, the reduction of pathogens in sewage sludge, the reduction of the characteristics in sewage sludge that attract vectors, the quality of the exit gas from a sewage sludge incinerator stack, the quality of sewage sludge that is placed in a MSWLF unit, the sites where sewage sludge is either land applied or placed for final disposal, and sewage sludge incinerators.

To ensure compliance with the CWA and the federal standards contained in 40 CFR § 503 for the use or disposal of biosolids, the draft permit contains the following requirements:

1. State Laws and Future Federal Standards: Pursuant to 40 CFR § 122.41(a), a condition has been incorporated into the draft permit requiring the Permittee to comply with all existing federal and state laws, and all regulations applying to biosolids use and disposal. These standards shall be interpreted using the draft permit and the specific EPA guidance documents listed below. These documents are used by EPA Region 10 as the primary technical references for both permitting and

enforcement activities: *Part 503 Implementation Guidance*, EPA 833-R-95-001, and *Environmental Regulations and Technology: Control of Pathogens and Vector Attraction in Sewage Sludge*, EPA/625/R-92/013.

2. Health and Environment General Requirement: The CWA requires that the environment and public health be protected from toxic effects of any pollutants in biosolids. Therefore, the Permittee must handle and use/dispose of biosolids in such a way as to protect human health and the environment. Under this requirement the permittee is responsible for being aware of all pollutants allowed to accumulate in the sludge, and for preventing harm to the public from those pollutants. EPA has published the following guidance document to help facilities evaluate potential nutrient and micronutrient problems: *A Guide to the Biosolids Risk Assessment for the EPA Part 503 Rule*, EPA 832-B-93-005.

3. Sludge Use and Disposal Practices: Sludge from the John M. Asplund Water Pollution Control Facility is transferred and disposed by incineration at the Asplund sewage sludge incinerator owned and operated by the Municipality of Anchorage. The facility also receives sludge from the Eagle River WWTP, and the City of Girdwood WWTF. On an infrequent basis, the facility also accepts sludge from: City of Palmer, City of Wasilla, Talkeetna Service Districts, and City of Whittier. An updated sewage sludge permit application was received from the Anchorage Water and Wastewater Utility as an addendum to the NPDES permit in a letter from Mark Premo, General Manager, dated September 23, 1999.

   The facility's primary method of sludge disposal is incineration. In the event that the incinerator is out of service for an extended period of time or is unable to process all of the sludge produced, the permittee plans to haul dewatered sludge to the Municipality of Anchorage Regional Landfill. The permittee is also interested in obtaining authority to dispose of sludge by transferring to a public or private composting enterprise. The facility does not currently transfer to a composting facility but may do so at some point during the effective period of the permit. The transfer of sludge to the incinerator, landfill facility, or a composting operation is authorized in the draft permit as options for sludge disposal provided these facilities are operating in compliance with a current permit from the appropriate regulatory authority. The permittee is required to suspend the transfer of sludge to any recipient facility that is not in full compliance with 40 CFR § 503 or its own permit.

   Should the Municipality of Anchorage decide to pursue additional sludge handling options within the life of this permit, EPA would require the facility to submit an additional NPDES sludge permit application. The CWA authorizes EPA to issue special NPDES permits to sludge processing and disposal facilities solely for the purpose of regulating sewage sludge. As such, if an in-vessel compost or other such

facility is owned and operated by the Municipality, EPA would have the option of either incorporating it into the current NPDES permit or issuing a special NPDES permit classified as "sludge-only". The Municipality has asked that EPA issue a separate "sludge-only" permit for the incinerator itself, and has submitted an application for that permit.

The permitting of additional sludge management practices will be scheduled according to the permitting priorities and resources available at the time. However, because 40 CFR § 503 is a self-implementing standard, any new sludge management practice may begin operation prior to EPA issuing an additional permit or permit modification provided the facility is in full compliance with the provisions of the Part 503 standard and a permit application for the operation has been received by EPA.

4. Sludge Monitoring: The permittee is responsible for ensuring that sludge quality is in compliance with the disposal requirements of the draft permit and any current or future operating permits of the sludge receiving facility. The permittee will not be required to collect and analyze samples for each batch of sludge transferred to an approved use or disposal facility provided the sludge has been characterized as meeting the applicable quality criteria for the receiving facility and sludge quality is consistent from batch to batch.

VIII. 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 fact sheet containing this consistency determination will be submitted to the State of Alaska for state interagency review at the time of public notice. 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 (NMFS). The USFWS identified those

species which are of concern under the Endangered Species Act (ESA) for the Upper Cook Inlet. The USFWS letter identified the American peregrine falcon as endangered and the Arctic peregrine falcon as "delisted". The following is from the NMFS letter in response to a request for a species list: "A review of the Knik Arm/Upper Cook Inlet area shows that any threatened or endangered species for which our agency bears responsibility would not commonly occur in these waters. Small cetaceans (beluga and minke whales) are seasonally common to Upper Cook Inlet. However, the presence of endangered species of great whales, or Steller sea lions in waters near the project area would be rare." EPA has determined that the discharge authorized by this permit will not adversely impact any threatened or endangered species or critical habitat listed pursuant to the Endangered Species Act. EPA will provide NMFS and USFWS with copies of the proposed permit and fact sheet during the public notice period. Any comments received from these agencies regarding this determination will be considered prior to reissuance of this permit.

Although not listed as endangered EPA is aware of concerns related to the beluga whale population in Cook Inlet. Based on evaluation of the results of the effluent, water quality, and biological monitoring conducted under the NPDES permit and summarized in this fact sheet, and the fact that beluga whales are only seasonally common to Upper Cook Inlet, EPA has determined that the discharge will not adversely impact the beluga whales. EPA is evaluating potential impacts to beluga whales from this and other NPDES facilities in Cook Inlet. Results from this evaluation and any comments received regarding EPA's determination will be considered prior to reissuance of this permit.

C. 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.

D. Other State, Local, or Federal Laws

Alaska State law (Title 18, Alaska Administrative Code, Section 72.029) requires secondary treatment for all POTWs that 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 grant, deny, or waive its right to certify that the modified discharge complies with applicable provisions of local law, before a 301(h) modified permit can be issued.

The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act set forth a number of new mandates for the National Marine Fisheries Service (NMFS), regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The Act requires "essential fish habitat" (EFH) be identified for all species which are federally managed. Federal agencies proposing

actions that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to the fisheries service's recommendations. EPA is currently developing an EFH assessment for this permit action along with the site-specific water quality criteria revisions for this portion of Cook Inlet which were adopted by the State on April 24, 1999, and have been submitted to EPA for approval. When complete, EPA will provide the EFH assessment to NMFS for review. Consultation as required by the Magnuson-Stevens Act will be completed prior to EPA approval of the state criteria revisions and final NPDES permit reissuance.

IX. STATE CONCURRENCE IN WAIVER

Section 301(h) of the Act and 40 CFR §125.59(I)(2) provide that a 301(h) waiver may not be granted except with State certification under 401 of the Act. 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 waiver. In a letter from Michele Brown, ADEC Commissioner, to Chuck Clarke, EPA, dated August 2, 1999, the State provided notice to EPA that DEC waives its right under Section 401 to certify municipal sewage treatment plant permits issued by EPA under CWA Section 402. This decision was made by DEC due to state budget considerations. EPA will provide DEC the draft and proposed final permit to allow an additional opportunity for the State to certify this NPDES permit. Should ADEC continue with the decision to waive certification, 40 CFR 125 Subpart G still allows EPA to issue a 301(h) permit with a zone of initial dilution (ZID).

X. 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.