



# FACT SHEET

NPDES Permit Numbers: AKG-57-0000, AKG-57-1000

Public Notice Start Date:

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1-800-424-4372 (within Region 10)

## **The U.S. Environmental Protection Agency (EPA) Proposes to Issue General Wastewater Discharge Permits to:**

Small Publically Owned Treatment Works and other Small Treatment Works  
Providing Secondary Treatment of Domestic Sewage in Alaska

**and the State of Alaska Proposes to Certify**

**and the State of Alaska Proposes a  
Determination of Consistency with  
the Alaska Coastal Management Program**

### **EPA Proposes NPDES Permit Issuance**

The EPA proposes to issue two *National Pollutant Discharge Elimination System* (NPDES) general permits to small publically owned treatment works (POTWs) and small sewage treatment plants (STPs) in Alaska. One general permit will cover facilities which discharge to fresh water while the second will cover facilities which discharge to marine water. The draft general permits set conditions on the discharge of pollutants from these POTWs and STPs to waters of the United States within the state of Alaska. In order to ensure protection of water quality and human health, the general permits place limits on the types and amounts of pollutants that can be discharged.

This fact sheet includes:

- information on public comment, public hearing, and appeal procedures

- a description of common small POTWs and STPs and their discharges
- a listing of proposed effluent limitations and other conditions
- a list of potential sewage treatment plants that will be covered under the permits
- detailed background information supporting the conditions in the draft general permits

### **Alaska State Certification**

The Alaska Department of Environmental Conservation (ADEC) proposes to certify the NPDES general permits for small POTWs and small STPs, under section 401 of the Clean Water Act (CWA). A draft 401 certification was provided by ADEC dated July 21, 2003. The conditions of the certification have been incorporated in the permit. The State also proposes a determination of consistency with the Alaska Coastal Management Program.

### **Public Comment on the Draft Permits**

Persons wishing to comment on the draft general permits may do so in writing by the expiration date of the public notice. All comments must be in writing and include the commenter's name, address, and telephone number and either be addressed to the Office of Water Director at U.S. EPA, Region 10, 1200 6th Avenue, OW-130, Seattle, WA 98101; submitted by facsimile to (206) 553-0165; or submitted via e-mail to lidgard.michael@epa.gov.

After the comment period closes, and all significant comments have been considered, EPA's Regional Director for the Office of Water will make a final decision regarding permit issuance. If no comments are received, the tentative conditions in the draft general permits will become final. Within 120 days following the service of notice of EPA's final permit decision under 40 CFR § 124.15, any interested person may appeal the Permit in the Federal Court of Appeals that decision in accordance with Section 509(b)(1) of the Clean Water Act. Persons affected by a general permits may not challenge the conditions of the General Permit as a right of further EPA proceedings. Instead, they may either challenge the General Permit in court or apply for an individual NPDES permit and then request a formal hearing on the issuance and denial of an individual permit.

### **Documents are Available for Review**

The draft NPDES permits 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). Copies and other information may be requested by writing to EPA at the above address to the attention of the NPDES Permits Unit, or by calling (800) 424-4EPA

United States Environmental Protection Agency  
Region 10

1200 Sixth Avenue, OW-130  
Seattle, Washington 98101  
206-553-0523 or  
1-800-424-4372 (within Alaska, Idaho, Oregon, and Washington)

The fact sheet and draft general permits are also available at:

U.S. Environmental Protection Agency Region 10  
Alaska Operations Office  
222 West 7<sup>th</sup> Avenue, #19  
Anchorage, Alaska 99513  
907-271-6561

Alaska Department of Environmental Quality  
Anchorage Office  
555 Cordova  
Anchorage, Alaska 99501  
907-269-7500

Alaska Department of Environmental Quality  
Fairbanks Office  
610 University Avenue  
Fairbanks, AK 99709  
907-451-2360

Alaska Department of Environmental Quality  
Juneau Office  
410 Willoughby Avenue, Suite 105  
Juneau, AK 99801-1795  
907-465-5010

The draft permits and fact sheet can also be found by visiting the Region 10 website at [www.epa.gov/r10earth/water.htm](http://www.epa.gov/r10earth/water.htm).

For technical questions regarding the permits or fact sheet, contact Mike Lidgard at the phone numbers or email addresses at the top of this fact sheet. Additional services can be made available to person with disabilities by contacting Mike Lidgard.

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## LIST OF ACRONYMS

ADEC	Alaska Department of Environmental Conservation
AML	Average Monthly Limit
AWL	Average Weekly Limit
BMP	Best Management Practices
BOD <sub>5</sub>	five day Biochemical Oxygen Demand
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EPA	Environmental Protection Agency
MDL	Maximum Daily Limit or Method Detection Limit
µg/L	Micrograms per liter
mgd	Million gallons per day
mg/L	Milligrams per liter
ML	Minimum Level
%MZ	Percent Mixing Zone
NPDES	National Pollutant Discharge Elimination System
POTW	Publicly Owned Treatment Works
QAP	Quality Assurance Plan
STP	Sewage Treatment Plant
s.u.	Standard units
TES	Treatment Equivalent to Secondary
TMDL	Total Maximum Daily Load
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA 1991)
TSS	Total Suspended Solids
WLA	Wasteload Allocation
WWTP	Wastewater treatment plant

## I. INTRODUCTION

### A. Basis for Issuance of a General Permit

Section 301(a) of the Clean Water Act (CWA) provides that the discharge of pollutants to surface waters of the United States is unlawful except in accordance with a National Pollutant Discharge Elimination System (NPDES) permit. EPA's regulations authorize the issuance of general NPDES permits to categories of discharges when a number of point sources:

- involve the same or substantially similar types of operations;
- discharge the same types of wastes;
- are located within a geographic area;
- require the same effluent limitations;
- require the same operating conditions;
- require the same or similar monitoring requirements; and
- in the opinion of EPA, are more appropriately controlled under a general permit than under individual permits (40 CFR 122.28).

EPA reviewed the Permits Compliance System (PCS) database to search for groups of facilities which might meet the requirements for general permit coverage in Alaska. Approximately 100 publically owned treatment works (POTWs) and sewage treatment plants (STPs) were identified as a group which met many of the conditions above and were a candidate for development of a general permit. EPA evaluation of the group found that facilities categorized by EPA as "major", that is, facilities designed to handle flows greater than 1.0 million gallons per day (mgd) required unique permit conditions and were not well suited for general permit coverage. Likewise, facilities that treat industrial waste were also expected to have varied effluent limits compared to those facilities that treat domestic waste only. Consequently, EPA found that small facilities (less than 1.0 mgd) which treat predominantly domestic sewage and do not treat industrial waste are required to

meet identical technology-based treatment limitations established by EPA and the Alaska Department of Environmental Conservation (ADEC) and also have similar waste. The types of operations at these facilities, the waste, operating conditions, effluent limitations, and monitoring requirements are all similar in this subgroup. Therefore, EPA has determined that a general permit is an appropriate NPDES permit mechanism for small POTW's and STPs which treat predominantly domestic sewage and discharge to waters of the U.S. in the State of Alaska.

EPA developed two general permits, one for facilities that discharge to marine waters, and one for facilities that discharge to fresh water, since Alaska water quality standards are based on receiving water classification. Water quality based permit limitations are different for marine versus freshwater dischargers. Instead of one general permit which would include both marine and freshwater based limitations, EPA opted for two general permits in order to clarify the requirements.

#### B. Description of Small POTWs and STP Operations

Many small POTWs and STPs that will be covered under the general permits consist of: 1) preliminary processes (pumping, screening, and grit removal), 2) primary settling to remove heavy solids and floatable materials, and 3) secondary (or equivalent to secondary). The secondary and equivalent to secondary treatment step is generally achieved by one of the following two processes:

1. **Activated Sludge Systems.** Secondary treatment is achieved when wastewater is continuously fed into an aerated tank, where it is mixed with an active mass of microorganisms (activated sludge) capable of aerobically degrading organic matter. After a specific treatment time, the mixed liquor passes into the secondary clarifier, where the sludge settles under quiescent conditions and a clarified effluent is produced for discharge. The process recycles a portion of settled sludge back to the aeration basin.
2. **Lagoon Systems.** A stabilization pond or lagoon system is a low-cost treatment process widely used in small communities and industrial facilities. It is a shallow body of wastewater contained in an earthen basin, using a completely mixed biological process without solids return. Mixing is usually provided by natural processes such as wind, heat, or fermentation, however, mixing can be induced by mechanical or diffused



aeration.

Stabilization ponds possess a similar biological community as activated-sludge with the addition of an algal population. Oxygen is supplied in an aerobic photosynthetic pond by natural reaeration from the atmosphere and algal photosynthesis. The oxygen released by photosynthetic algae is used by bacteria to degrade organic matter. Higher life forms such as rotifiers and protozoa are also present in the pond and function primarily as polishers of the effluent. Lagoon systems usually have long retention times (50-150 days).

The waste biosolids (or sludge) generated by the treatment process is generally thickened and processed for ultimate disposal. Dewatered biosolids in Alaska are either co-incinerated, placed in the municipal solid waste landfill (MSWLF), or land applied. Biosolids handling and disposal is regulated under separate federal regulation and therefore is not addressed by the general permits.

A list containing those small POTWs and STPs that have been pre-selected for coverage under the general permits is provided in Appendix A.

## II. PERMIT COVERAGE

### A. Facilities and Discharges Covered by the Permits

Coverage under the general permits will be limited to POTWs and STPs that treat primarily domestic sewage (i.e., the treatment works does not receive significant industrial influent) and that have an actual flow and design flow of less than or equal to 1.0 mgd.

Three categories of domestic wastewater dischargers have been identified for coverage under each of the draft general permits. Each facility covered by the general permits will be required to meet the limitations applicable to that category. These categories are as follows:

Category 1 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage.

Category 2 - Publically Owned Treatment Works (POTWs) and other

treatment works treating domestic sewage where a passive waste stabilization pond (non-aerated lagoon) is used as the principal process.

Category 3 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage where a mechanically aerated waste stabilization pond (aerated lagoon) is used as the principal process.

#### B. Facilities and Discharges Not Covered by the Permits

The general permits do not authorize discharges from POTWs or STPs that meet any one of the following criteria:

1. The design flow or actual discharge flow from the facility exceeds 1.0 mgd.
2. A total maximum daily load (TMDL) analysis has been approved for the receiving water including waste load allocations for the discharge.
3. The receiving water is listed on the CWA Section 303(d) list as impaired for failure to meet a water quality standard and the facility discharges a pollutant that causes or contributes to the impairment.
4. The facility receives significant contribution from a non-domestic industrial user(s).
5. The receiving water is considered to be a sensitive area by EPA or ADEC. Examples of sensitive areas which could be receiving waters which are protected for essential fish habitat or for the protection of endangered species, or at-risk water resources. EPA and ADEC would identify a sensitive area only in consultation with appropriate federal, State, tribal and local governments. EPA upholds this position on the basis of the principle of anti-degradation.

Each of the situations above require specific permit conditions and are more appropriately controlled under individual permits.

The term “Significant Industrial User” will be used in determining whether a facility receives a significant contribution from a non-domestic industrial user under criteria four above. The term is defined at 40 CFR 403.3(t), and includes all

industrial users that are subject to categorical pretreatment standards under EPA's pretreatment program. The definition also includes: other users that discharge an average of 25,000 gallons per day or more of process waste water (excluding sanitary, noncontact cooling and boiler blowdown) to the facility, and, users which contribute a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.

### III. HOW TO OBTAIN COVERAGE UNDER THE GENERAL PERMITS

#### A. Automatic Coverage

The NPDES regulations (40 CFR 122.28(b)(2)(vi)) provide that the permit issuing authority (i.e., EPA) may notify the operator that the facility is covered under the general permit even though the operator has not submitted a notice of intent (NOI) to be covered. EPA has identified several sewage treatment plants as qualifying for coverage under the draft general permits. All of these facilities were either covered by a previous individual NPDES permit or had applied for an individual permit. At EPA's request, many of the identified facilities have submitted updated information within the last three years. These facilities are listed in Appendix A and EPA proposes that these facilities receive automatic coverage under the general permits upon final issuance. This application information is on file at EPA and will serve the purpose of NOIs for these facilities. Many of these facilities were also covered by a state permit which was another source of information regarding the discharge. ADEC has reviewed the facilities and proposed authorization of mixing zones and associated limitations, also shown in Appendix A. Mixing zone authorization is discussed in Section V.C.3. of this fact sheet.

Upon permit coverage, a notice of authorization letter will be sent to the facilities identifying their NPDES permit number as well as providing a copy of the final general permit. Authorization to discharge under the general permit does not begin until the permittee receives a written notice of authorization from the permit issuing authority. Upon written notice, previous coverage under an individual EPA permit will cease.

In accordance with 40 CFR § 122.28(b)(3)(iii), any owner or operator authorized by a general permit may request to be excluded from the coverage of the general permit by applying for an individual NPDES permit. The owner or operator shall

submit EPA Application Forms 1 and 2A, with justification supporting its request for an individual NPDES permit, to EPA Region 10 no later than 60 days after the publication by EPA of this general NPDES permit in the Federal Register. The request shall be processed under 40 CFR §124. The request will be granted by issuing an individual permit if the reasons cited by the owner or operator are adequate to support the request and the application is deemed to be timely and complete.

In anticipation that some sewage treatment facilities may believe it is advantageous to be covered under an individual NPDES permit, EPA has determined that, at a minimum, the effluent limitations, effluent monitoring, and other conditions of an individual permit will include all of those in this general permit.

B. The Permittee Applies for Coverage

The EPA anticipates that there are additional facilities not in EPA's current data base that could obtain coverage under the general permits. These include facilities that are currently operating as well as new facilities. The procedure for obtaining authorization to discharge under the general permit is as follows:

1. The eligible sewage treatment plant submits, either in letter format, through EPA's example form in Appendix B, or through EPA standard NPDES permit application Forms 1 and 2A, the information specified in the NOI Requirements of the general permit. The NOI is submitted to EPA Region 10 and ADEC at least thirty (30) days before the expected start of discharge from the facility or the date when the permittee wants authorization to begin. If forms 1 and 2A are submitted, a request to be covered by the general permit shall be indicated with the submittal.
2. The permit issuing authority (i.e., EPA Region 10) reviews the NOI for completeness.
3. If the NOI is considered complete and the facility is considered eligible for coverage under the general permit, the permit issuing authority sends the operator a written notice of authorization. Authorization to discharge under the general permit does not begin until the permittee receives a written notice of authorization from the permit issuing authority. If the

NOI is not considered complete, the EPA will request that additional information is submitted. If the permit issuing authority determines that the facility is not eligible for coverage under the general permit, coverage under the general permit will be denied and, if appropriate, the operator will be directed to submit an application for an individual permit.

C. The Director Notifies the Operator of Coverage

The NPDES regulations (40 CFR 122.28(b)(2)(vi)) provide that the permit issuing authority may notify the operator that the facility is covered under the general permit even though the operator has not submitted a NOI to be covered under the general permit. A discharger so notified may request an individual permit in accordance with 40 CFR § 122.28(b)(3)(iii).

IV. NOTICE OF INTENT (NOI) REQUIREMENTS

A. Contents of the NOI

Dischargers applying for coverage under either of the general permits shall submit to EPA and ADEC a written notice of intent (NOI) to be covered by the general permit as discussed above. The NOI must fulfill the requirements for permit applications for purposes of 40 CFR §§ 122.6, 122.21 and 122.26. The following contents of the NOI are necessary for adequate program implementation:

1. Name and address of the facility.
2. Name, address, and telephone number of the applicant .
3. Name, title, and telephone number of the operator for the facility.
4. NPDES permit number(s) currently or previously assigned to the facility.
5. Treatment works information.
  - a. The design flow for the facility ( the wastewater flow rate that the plant was built to handle).
  - b. The actual (or expected) maximum and average daily flow for the facility.
  - c. A brief description of the treatment process provided by the facility

- including the level of treatment (secondary, other) and type of disinfection provided.
- d. Identification of whether the discharge is continuous or whether the discharge is intermittent or seasonal.
  - e. The method of handling and disposal of sludge produced from treatment of wastewater.
6. Category of discharge from Part I.A. of the general permits that the applicant determines is applicable for the facility (Category 1 through 3).
  7. Population served by the facility.
  8. Receiving water information.
    - a. Name of waterbody receiving the discharge.
    - b. Indicate whether the receiving area is designated as a fish spawning area by the Alaska Department of Fish and Game.
    - c. Provide a map of the waterbody receiving area with the discharge location clearly indicated.
  9. Names and approximate flow rates from any significant industrial users that discharge to the treatment works.
  10. Provide effluent testing data collected over the previous 12 months for the following parameters: BOD<sub>5</sub>, TSS, percent removal for both BOD<sub>5</sub> and TSS, pH (min,max), flow rate, chlorine, and fecal coliform.
  11. Mixing Zone Information.

Indicate whether a mixing zone is requested for this discharge. If yes, provide the following information.

    - a. Provide a detailed description of human use activities occurring in the receiving water and adjacent shoreline, (such as swimming, shell fish harvesting, drinking water use, subsistence use and etc.) and the distance from the diffuser that any of these uses occur.
    - b. Provide a detailed description of the diffuser, it's depth, size of the outfall line (diameter) and the distance form shore at the lowest yearly water level.
    - c. Provide a detailed report on any modeling that has been done to indicate the size of the mixing zone and the dilution factor.

- d. The latitude and longitude of the discharge point in the waterbody.
- e. For a discharge to a river, provide the 7-day, once in 10-year, low flow condition of the receiving water (7Q10).
- f. For a discharge to a lake, pond, or reservoir, provide the approximate area of the waterbody and the approximate volume.

B. Submittal of NOI Information

The NOI must be signed by the owner or other signatory in accordance with the signatory requirements of the permit (Section V.E.) and submitted to EPA and ADEC. The NOI may be in the form of either (1) a letter containing all of the necessary information, (2) completion of the NOI form developed by EPA (See Appendix B), or (3) EPA's standard NPDES permit application form (EPA Form 2A).

V. EFFLUENT LIMITS

A. General Approach to Determining Effluent Limits

EPA followed the Clean Water Act (CWA or the Act), State and federal regulations, and EPA's 1991 *Technical Support Document for Water Quality-Based Toxics Control (TSD)* to develop the draft effluent limits. In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either the technology-based or water quality-based limits.

Technology-based limits are set according to the level of treatment that is achievable using available technology. Technology-based limits have been included in the draft general permits for five day Biochemical Oxygen Demand (BOD<sub>5</sub>), and total suspended solids (TSS). The technology-based limitations are expressed as concentration, loading, and percent removal requirements.

The EPA evaluates the technology-based limits to determine whether they are adequate to ensure that water quality standards are met in the receiving water. If the limits are not adequate, EPA must develop additional water quality-based limits. These limits are designed to prevent exceedences of Alaska's water quality standards in the receiving water. The draft general permits include water quality-based limits for fecal coliform, total residual chlorine, dissolved oxygen, and pH.

B. Evaluation of Technology-based Limits

The CWA requires particular categories of industrial dischargers to meet technology-based Effluent Limitation Guidelines (ELGs) established by the EPA. The intent of a technology-based effluent limit is to require a minimum level of treatment for municipal and industrial point sources based on currently available treatment technologies while allowing the discharger to use any available control technology to meet the limitations. The national ELGs are developed based on demonstrated performance of a reasonable level of treatment that is within the economic means of specific categories of industry.

1. Secondary Treatment Sewage Treatment Plants

The 1972 CWA required POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as “secondary treatment”, that all POTWs were required to meet by July 1, 1977. EPA developed secondary treatment regulations as specified by the CWA. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of BOD<sub>5</sub>, TSS, and pH (see federal regulation 40 CFR 133.102).

The Alaska wastewater disposal regulations at 18 AAC 72.050 also require secondary treatment prior to discharge of domestic wastewater. The state regulation refers to a person discharging domestic wastewater to water or land as well as community treatment works as having to meet secondary treatment standards. The definition of secondary treatment in the state regulations (see 18 AAC 72.990.59) includes the federal requirements with the addition of a maximum daily effluent limitation for BOD<sub>5</sub> and TSS. The secondary treatment requirements are summarized in Table 1.

<b>Table 1 - Technology-Based Effluent Limitations for Secondary Treatment Facilities</b>				
<b>Parameter</b>	<b>Monthly Average (mg/L)</b>	<b>Weekly Average (mg/L)</b>	<b>Maximum Daily (mg/L)</b>	<b>Percent Removal (%)</b>
BOD <sub>5</sub>	30	45	60	85



<b>Table 1 - Technology-Based Effluent Limitations for Secondary Treatment Facilities</b>				
<b>Parameter</b>	<b>Monthly Average (mg/L)</b>	<b>Weekly Average (mg/L)</b>	<b>Maximum Daily (mg/L)</b>	<b>Percent Removal (%)</b>
TSS	30	45	60	85
Chlorine	0.5	---	---	---
pH	within the range of 6.0 -9.0 standard units			

The technology-based chlorine effluent limitation of 0.5 mg/L is not from a state regulation but is derived by EPA Region 10 from standard domestic wastewater treatment operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis. Additionally, NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) as well as average monthly limits (AMLs) unless impracticable. Using procedures in the EPA technical support document (TSD), the AWL is expressed as 1.5 times the AML, or in this case 0.75 mg/L.

Under previously cited federal and state regulations, POTWs are required to meet the technology-based effluent limitations provided in Table 1. The state regulations also require persons who discharge domestic wastewater as well as community treatment works to meet the secondary treatment requirements. Therefore, in Alaska, all persons discharging domestic wastewater must meet the technology-based requirements of Table 1 (for lagoon facilities, see section 2 below). In addition to the state regulation, it is also EPA's best professional judgement (BPJ) that the limitations presented in Table 1 should also apply to small sewage treatment plants that are authorized to discharge under this general permit.

The permitted parameters presented in Table 1 will also be incorporated into the general permit requirements as loading limitations, that is, limits

expressed on the basis of pounds per day (lbs/day). Federal regulation at 40 CFR 122.45(f)(1) require that all permit limitations, standards, or prohibitions be expressed in terms of mass units. Expressing limitations in terms of concentration as well as mass encourages the proper operation of a treatment facility at all times.

Since the loading limits are a function of facility specific design flow, loading limits must be calculated for each facility. The loadings are determined for each facility by multiplying the appropriate concentration (in mg/L) by the design flow (in mgd) and a conversion factor of 8.34 (to convert to lbs/day). The facility operator is required to calculate and report the actual loading and loading limitations on the monthly discharge monitoring reporting form submitted to EPA and ADEC. The following is an example for a facility with a design value of 50,000 gallons per day:  
 average monthly loading limit (lbs/day) = 30 mg/L x 0.050 mgd x 8.34 = 13 lbs/day

2. Equivalent to Secondary Sewage Treatment Plants,  
 Limitations for Lagoon Facilities

On September 20, 1984, EPA revised the Secondary Treatment Regulations (40 CFR 133.102) for facilities that use trickling filters or waste stabilization ponds (i.e., lagoons) as the principal process. These revisions established that the capability and performance of an individual plant be assessed and limits selected from a range of possible values. The permit limits for these types of facilities are selected from a range with the limits of Table 1 above establishing the lowest or most stringent end of the range and the limits of Table 2 representing the upper end of the range (per 40 CFR 133.105):

<b>Table 2 - Maximum Possible Effluent Limitations for Equivalent to Secondary Treatment Facilities</b>			
<b>Parameter</b>	<b>Monthly Average (mg/L)</b>	<b>Weekly Average (mg/L)</b>	<b>Percent Removal (%)</b>
BOD <sub>5</sub>	45	65	65
TSS <sup>1</sup>	45	65	65

pH	within the range of 6.0 -9.0 standard units
1. In accordance with 18 AAC 72.990.59, an average monthly limit of up to 70 mg/L is allowed for stabilization ponds in Alaska. ADEC applied for and received EPA approval of this alternate TSS limitation.	

Additionally, ADEC applied for and received alternate TSS limitations for all waste stabilization ponds. In accordance with 18 AAC 72.990.59, an average monthly limit of up to 70 mg/L applies for TSS for lagoon facilities in Alaska.

Not all of the trickling filters or lagoon facilities are eligible for treatment equivalent to secondary treatment. The facilities are eligible (in accordance with 40 CFR 133.101(g)) if:

1. the BOD and TSS effluent concentrations consistently achievable through proper operation and maintenance exceed the secondary limits of Table 1
2. a trickling filter or waste stabilization pond is used as the principal process; and
3. the treatment works provide significant biological treatment of municipal wastewater.

In order to determine what BOD concentrations are consistently achievable by the facility, the EPA uses the following procedure: The monthly average BOD concentration is calculated by taking the 95<sup>th</sup> percentile of the monthly values over a period of at least 2 years. The 95<sup>th</sup> percentile value is compared to the secondary limit. If the 95<sup>th</sup> percentile is greater than the secondary limit, but less than the upper range value listed in Table 2, it then is used to establish the monthly permit limitation for the facility. The limitations can not exceed the values of Table 2. A weekly average is calculated by multiplying the calculated monthly average by 1.5.

Lagoon facilities in Alaska can be classified into two distinct categories for the purposes of establishing NPDES limitations: Mechanically aerated lagoons and passive or non-aerated lagoons. Aerated lagoons typically

achieve a higher level of performance than non-aerated lagoons. Available data discussed below demonstrates this difference. In addition, ADEC state permitting limitations used in the past also reflect the performance difference. Since the achievable level of BOD<sub>5</sub> and TSS treatment is different among the two categories, and since ADEC has historically permitted the facilities as two different categories, EPA proposes that the draft permits also contain requirements that are distinct for each of these two lagoon categories. Passive lagoon systems are referred to as Category 2 facilities in the draft permits while mechanically aerated lagoon systems are referred to as Category 3 facilities. Category 1 facilities are all non-lagoon facilities treating domestic waste as discussed previously.

Passive Lagoons: Existing data from passive lagoon facilities was evaluated in order to determine appropriate BOD<sub>5</sub> and TSS limitations consistent with the requirements discussed above. EPA has not issued NPDES permits to passive lagoon facilities in Alaska in recent years and, consequently, no data is available from EPA's Permit Compliance System data base. ADEC has historically permitted these facilities although the effluent data available from passive lagoons is very limited. EPA obtained 24 sample reports from ADEC which was gathered from various sources but primarily from State inspections. Consistent with the procedures outlined above for determining treatment equivalent to secondary limitations for lagoon facilities, EPA calculated the 95th percentile for BOD and TSS. The 95th percentile was found to exceed the maximum values allowed for secondary treatment listed in Table 1. This result indicates that Alaskan facilities in this category should receive permit limits at the upper end of the range available for lagoon facilities.

Based on review of the available data, EPA proposes the technology-based effluent limits for passive lagoon systems presented in Table 3. The limitations have also been included in ADEC's preliminary certification of the general permits. The BOD<sub>5</sub> and TSS limits are consistent with Alaska state permits recently issued to this category of facilities.

**Table 3 - Technology-Based Effluent Limitations  
for Facilities With Passive Waste Stabilization  
Ponds**

Parameter	Monthly Average (mg/L)	Weekly Average (mg/L)	Percent Removal (%)
BOD <sub>5</sub>	45	65	65
TSS	70	---	65
Chlorine	0.5	0.75	---
pH	within the range of 6.0 -9.0 standard units		

The general permits require facilities authorized to discharge to submit effluent data to EPA, generally on a monthly basis. During the reissuance of the general permits, which expire five years after the effective date, EPA will evaluate the data to determine whether more stringent limitations are appropriate for this category or for individual facilities within this category.

Aerated Lagoons: EPA has recently permitted aerated lagoon facilities and receives monthly data reports from the Cities of Valdez, Palmer, Seward, and North Pole. ADEC has permitted the Cities of Nome, and King Salmon and has provided data for these facilities to EPA. Review of the permit requirements and effluent data shows that aerated facilities permits generally contain secondary BOD<sub>5</sub> limitations (30/45 mg/L monthly/weekly respectively and 85% removal) and the facilities are in compliance with BOD<sub>5</sub> limits. Nationally, aerated lagoons do reliably produce effluent that meets these requirements (EPA Wastewater Technology Fact Sheet, EPA832-F-02-008).

TSS limitations and performance are more variable than BOD<sub>5</sub> for aerated lagoons. Limitations for the aerated lagoon facilities range from 30/45 mg/L (monthly average/weekly average respectively) up to 45/65 mg/L and even 70 mg/L for the City of North Pole permit. Review of effluent data for the facilities authorized under EPA NPDES permits finds that most of the facilities are meeting 30/45 mg/L, with an occasional monthly exceedence typically in late summer months. Algae growth in late summer likely contributes to the TSS increases (EPA Technology Fact Sheet). The 95th percentile TSS monthly average value is typically in the range of 30-35 mg/L for these EPA NPDES authorized facilities. The Cities of Nome and King Salmon, however, were significantly higher. The 95th percentile TSS

value for Nome is 88 mg/L. Only one value was available for King Salmon: 76 mg/L. Although, neither of these facilities have NPDES permits from EPA, both do have state issued wastewater permits. Neither facility submits monitoring data on a regular basis.

In developing technology-based BOD<sub>5</sub> and TSS limits EPA reviewed the data summarized above. Aerated lagoons in Alaska appear to be fully capable of meeting the secondary BOD<sub>5</sub> limitations and, therefore, these limits are proposed for inclusion in the general permits. TSS performance is variable. It is anticipated that aerated facilities that will be covered by the general permits are more similar to the Nome and King Salmon facilities than larger facilities of Palmer, Seward, and North Pole which are currently covered by individual NPDES permits. The facilities eligible for general permit coverage are likely to be smaller than those covered by current EPA permits and not previously covered by an NPDES permit. The treatment performance will likely resemble the performance of the Nome and King Salmon facilities. For the general permits, the upper end of the range of treatment equivalent to secondary (TES) is proposed as the limitation for TSS. This is similar to current ADEC permitting practices and is included in the State’s preliminary certification of the general permits. The technology-based limits for aerated lagoons are listed in Table 4.

<b>Table 4 - Technology-Based Effluent Limitations for Facilities With Mechanically Aerated Waste Stabilization Ponds (Aerated Lagoons)</b>			
<b>Parameter</b>	<b>Monthly Average (mg/L)</b>	<b>Weekly Average (mg/L)</b>	<b>Percent Removal (%)</b>
BOD <sub>5</sub>	30	45	85
TSS	45	65	65
Chlorine	0.5	0.75	---
pH	within the range of 6.0 -9.0 standard units		

Facilities covered by the general permits will be required to submit effluent monitoring data to EPA. During the reissuance of the general permits, EPA will evaluate the data to determine whether more stringent

limitations, are appropriate for this category or for individual facilities. Facilities in this category that currently are authorized by NPDES permits with more stringent limitations than required by the general permits, will be required to continue to meet the more stringent requirements consistent with NPDES permit regulations that prevent permit back-sliding.

Additional Technology Requirements Applicable to all Lagoon Facilities:

Consistent with the secondary requirements, the BOD<sub>5</sub> and TSS limitations are also expressed as mass-based limits using the design flow of the facility. The loading is calculated as follows: concentration (mg/L) × design flow (mgd) × 8.34.

The technology-based chlorine average monthly effluent limitation of 0.5 mg/L is also required of equivalent to secondary facilities.

According to the EPA's best professional judgement (BPJ), these limitations provide the baseline requirements for the sewage treatment plants performing equivalent to secondary treatment.

C. Evaluation of Water Quality-based Limits

1. Statutory Authority

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

NPDES regulation 40 CFR 122.44(d)(1) 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." Regulations require that this evaluation be made using procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and dilution in the receiving water (where appropriate). The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any

available wasteload allocation.

Based on EPA and ADEC experience with developing permits for small Alaskan POTW's and STP's which do not have significant industrial users, fecal coliform, chlorine, and pH are pollutants present in the discharge that result in a reasonable potential to exceed criteria. Since a reasonable potential to exceed criteria exists for these three parameters, permit limits are necessary in order to protect Alaska water quality standards. For the type of discharge covered under the general permits, domestic waste meeting secondary treatment requirements, other chemical specific limitations are typically required only if the receiving water is impaired. For example, limits on parameters in the discharge that contribute to nutrient impairment of the receiving water are generally necessary only if discharging to nutrient impaired waters. As discussed previously, authorization to discharge under the general permits is not allowed for discharges to impaired waters if the discharge contributes to the impairment. Such a discharge would require an individual permit and site specific evaluation.

The sections below provide a discussion of the steps involved in developing water quality-based effluent limits (WQBEL) for fecal coliform, pH, and total residual chlorine.

2. Water Quality Criteria

Tables 5 and 6 list the applicable saltwater and freshwater criteria adopted by ADEC for fecal coliform, chlorine, and pH.

<b>TABLE 5 Applicable Saltwater Quality Criteria</b>		
<b>Parameter</b>	<b>Aquatic Acute</b>	<b>Aquatic Chronic</b>
Total residual chlorine (µg/L) <sup>1</sup>	13	7.5
fecal coliform (#/100 ml)	--- <sup>2</sup>	14 <sup>3</sup>
pH, standard units	6.5 - 8.5 <sup>4</sup>	



Footnote:

- 1 Chlorine criteria adopted by DEC and submitted to EPA for approval. If not approved by EPA prior to final issuance of the permit, the previously DEC adopted chlorine criteria will apply.
- 2 Water quality standard for the protection of water supply for aquaculture and seafood processing indicates that not more than 10% of the monitoring samples may exceed 43 FC/100 ml.
- 3 Water quality standard is to protect the harvesting for consumption of raw mollusks or other raw aquatic life.
- 4 Water quality standard is for the protection of water supply for aquaculture.

**TABLE 6 Applicable Freshwater Quality Criteria**

Parameter	Aquatic Acute	Aquatic Chronic
Total residual chlorine ( $\mu\text{g/L}$ ) <sup>1</sup>	19	11
Fecal coliform (#/100 ml)	-- <sup>2</sup>	20 <sup>3</sup>
pH, standard units	6.5 - 8.5 <sup>4</sup>	

Footnote:

- 1 Chlorine criteria adopted by DEC and submitted to EPA for approval. If not approved by EPA prior to final issuance of the permit, the previously DEC adopted chlorine criteria will apply.
- 2 Water quality standard for the protection of water supply for drinking, culinary, and food processing indicates that not more than 10% of the monitoring samples may exceed 40 FC/100 ml.
- 3 Water quality standard is for the protection of drinking water supply and is found at 18 AAC 70.020.b.
- 4 Water quality standard is for the protection of water supply for aquaculture as well as for the protection of primary contact recreation.

3. Mixing Zones

In situations where the receiving water quality meets State water quality standards, the State may authorize mixing zones. Mixing zones are areas where an effluent undergoes initial dilution. A mixing zone is an allocated impact zone in the receiving water where water quality criteria can be exceeded as long as toxic conditions are prevented and the designated use of the water is not impaired as a result of the mixing zone. The CWA allows mixing zones at the discretion of the State. Individual State policy determines whether or not a mixing zone is allowed.

In accordance with 18 AAC 70.240, ADEC may issue a discharge-specific mixing zone upon receipt of a complete NOI. Permittees may request modification to the fecal coliform, chlorine, and pH effluent limits based upon a mixing zone assigned and approved by ADEC, pursuant to 18 AAC 70.260. The NOI form in Appendix B may be used for this purpose. EPA will approve a modified effluent limit proposed by ADEC under the general permits if the modified limits and resulting mixing zone are consistent with the Clean Water Act, EPA's regulations, 18 AAC 70.245, 18 AAC 70.250, 18 AAC 70.255 and:

The mixing zone and the resulting dilution factors are established by ADEC in accordance with the State of Alaska Water Quality Standards (18 AAC 70).

The public was provided reasonable notice of and an opportunity to comment on the modified effluent limits and associated mixing zone.

The ADEC may establish limits at the edge of an authorized mixing zone in the ambient (receiving water). These limits shall be based on the limitations and requirements of the Alaska Water Quality Standards (18 AAC 70). The ADEC will be responsible for the establishment and oversight of these limitations. The permittee will be notified of receiving water limitations when issued authorization by ADEC to discharge under the general permits.

#### 4. Permit Limit Derivation

Where the EPA has determined that there is “reasonable potential” to cause or contribute to an exceedence of the criteria, the Agency applies the statistical permit limit derivation approach described in Chapter 5 of the EPA Technical Support Document to obtain the water quality-based permit limits. This approach takes into account effluent variability, sampling frequency, water quality standards, and the difference in time frames between the monthly average and daily maximum limits.

In order to develop a water quality based effluent limit a waste load allocation (WLA) must first be determined. A WLA is the concentration (or loading) of a pollutant that may be discharged by a Permittee without exceeding water quality criteria in the receiving water.

Fecal Coliform. Given the nature of the discharge covered by the permit, non-industrial sanitary waste from small facilities receiving secondary treatment, and the lack of performance data from each facility, the method of limit derivation for fecal coliform has been simplified. The acute criteria from the state water quality standards is proposed to be used directly as the waste load allocation to determine the short-term or daily effluent limit. The chronic criteria is proposed to be used directly to determine the long-term or average monthly limitation. The daily effluent limit and average monthly limit are included directly as limitations under the general permits, which assures compliance with water quality criteria.

If a mixing zone has been authorized by ADEC, a facility specific effluent limitation will be included when EPA issues coverage under the general permits (following public notice by ADEC). The fecal coliform limitations that will be included in the authorization will be the product of the state

water quality criteria (the general permit limits) and the dilution that is provided by the authorized mixing zone, thereby assuring compliance with water quality criteria at the edge of the mixing zone. For facilities automatically authorized to discharge by issuance of the general permits, facility specific fecal limitations are listed in Appendix A.

Chlorine. An approach similar to that used for fecal coliform is proposed for total residual chlorine. The Alaska water quality criteria for chlorine is incorporated directly as the chronic criteria or daily maximum water-quality based limitation. This limit is more stringent than the technology-based requirement of 0.5 mg/L discussed previously.

As with fecal coliform, if a mixing zone has been authorized by ADEC, a facility specific effluent limitation will be included when EPA issues coverage under the general permit. The chlorine limitation that will be included in the authorization will be the product of the state water quality criteria (the general permit limit) and the dilution that is provided by the authorized mixing zone, thereby assuring compliance with water quality criteria at the edge of the mixing zone. This approach is conservative for chlorine evaluation since it does not account for natural decay of chlorine. Chlorine decays naturally in the environment at rates dependent on the conditions of the receiving water. For facilities automatically authorized to discharge by issuance of the general permits, facility specific chlorine limitations are listed in Appendix A. Water-quality based chlorine limits, however, shall not exceed the technology-based limit of 0.5 mg/L

pH. The water quality criteria for pH listed in Tables 5 and 6 are more stringent than the technology-based requirements listed in Tables 1-4. In order to protect water quality standards, the water quality criteria for pH of 6.5-8.5 standard units will be included as a permit limitation.

Dissolved Oxygen. The Alaska water quality standard for dissolved oxygen (DO) has been included in the permit as a daily minimum (7 mg/L freshwater, 6 mg/L marine water). Permittees may request a modified DO limitations limit based upon a mixing zone approved by ADEC.

Flow. Flow will be limited for those permittees which are utilizing a mixing zone authorized by ADEC. Mixing zones are established based on facility flow assumptions, typically a worst case flow such as the maximum design flow. Flows used as part of the mixing zone determination by ADEC will be incorporated as a permit limitations.

D. Effluent Limits Summary

Three different categories of effluent limits are available under the general permit based on the type of treatment provided at the facility. The limitations for each category are summarized in the following tables. As discussed previously, the more stringent of the technology or water-quality based limits are included as permit limitations. For BOD<sub>5</sub> and TSS, the technology limits are included in the draft permits. For fecal coliform, total residual chlorine, and pH, the water-quality based limits are more stringent and thus proposed as limitations:

Category 1. POTWs and Other Treatment Works Treating Domestic Sewage.

Table 7. Effluent Limitations for Category 1 Facilities					
PARAMETER	UNITS	EFFLUENT LIMITATIONS			
		Average Monthly Limit	Average Weekly Limit	Daily Maximum Limit	Daily Minimum Limit
Biological Oxygen Demand (BOD <sub>5</sub> )	mg/L	30	45	60	---
	lbs/day	see note 1	see note 1	see note 1	---
Total Suspended Solids (TSS)	mg/L	30	45	60	---
	lbs/day	see note 1	see note 1	see note 1	---
Fecal Coliform <sup>2</sup>	colonies/100ml	20 (freshwater) 14(marine) <sup>note 3</sup>	---	40 (freshwater) 43 (marine)	---
Total Residual Chlorine <sup>2</sup>	mg/L	---	---	0.011 (freshwater) 0.0075 (marine) <sup>note 4</sup>	---
Dissolved Oxygen <sup>2</sup>	mg/L	---	---	---	7 (freshwater) 6 (marine)

1. BOD<sub>5</sub> and TSS mass loading limits apply to each discharge. The loading limits are calculated for each facility by the following formula: pounds per day limitation = concentration limit (mg/L) x facility design flow (mgd) x 8.34 (conversion factor). Loading limitations are applicable to the average monthly, average weekly, and maximum daily basis.
2. Permittees may request modified fecal coliform, total residual chlorine, dissolved oxygen, and pH limits based upon a mixing zone approved by ADEC pursuant to 18 AAC 70.260. EPA will approve the modified limits authorized by ADEC under this General Permit if the modified limits and resulting mixing zone are consistent with the Clean Water Act, EPA's regulations, and 18 AAC 70.250 and 255. This includes the requirement that the public was provided reasonable notice of, and an opportunity to comment on, the modified limits and associated mixing zones. See Section II.B. Total residual chlorine daily maximum limit shall not exceed 0.5 mg/L.
3. Average monthly fecal coliform results must be reported as the geometric mean of the samples.
4. When the TRC limitation is lower than 0.100 mg/l, EPA will use 0.100 mg/L as the compliance evaluation level (i.e. daily maximum concentrations below 0.100 mg/l will be considered as in compliance with the limitation).

The pH range must be between 6.5 - 8.5 standard units.

The permittee must not discharge any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water

Removal Requirements for BOD<sub>5</sub> and TSS: For any month, the monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration (i.e. achieve at least 85% removal).

Percent removal of BOD<sub>5</sub> and TSS must be reported on the Discharge Monitoring Reports (DMRs). The monthly average percent removal must be calculated from the arithmetic mean of the influent value and the arithmetic mean of the effluent value for that month. Influent and effluent samples must be taken over approximately the same time period.

Category 2. POTWs and other treatment works treating domestic sewage where a passive (non-aerated) waste stabilization pond (lagoon) is used as the principal process.

Table 8. Effluent Limitations for Category 2 Facilities.					
PARAMETER	UNITS	EFFLUENT LIMITATIONS			
		Average Monthly Limit	Average Weekly Limit	Daily Maximum Limit	Daily Minimum Limit
Biological Oxygen Demand (BOD <sub>5</sub> )	mg/L	45	65	---	---
	lbs/day	see note 1	see note 1	---	---

Total Suspended Solids (TSS)	mg/L	70	---	---	---
	lbs/day	see note 1	---	---	---
Fecal Coliform <sup>2</sup>	colonies/100ml	20 (freshwater) 14 (marine) <sup>note 3</sup>	---	40 (freshwater) 43 (marine)	---
Total Residual Chlorine <sup>2</sup>	mg/L	---	---	0.011 (freshwater) 0.0075 (marine) <sup>note 4</sup>	---
Dissolved Oxygen <sup>2</sup>	mg/L	---	---	---	7 (freshwater) 6 (marine)

1. BOD5 and TSS mass loading limits apply to each discharge. The loading limits are calculated for each facility by the following formula: pounds per day limitation = concentration limit (mg/L) x facility design flow (mgd) x 8.34 (conversion factor). Loading limitations are applicable to the average monthly, average weekly, and maximum daily basis.

2. Permittees may request modified fecal coliform, total residual chlorine, dissolved oxygen, and pH limits based upon a mixing zone approved by ADEC pursuant to 18 AAC 70.260. EPA will approve the modified limits authorized by ADEC under this General Permit if the modified limits and resulting mixing zone are consistent with the Clean Water Act, EPA's regulations, and 18 AAC 70.250 and 255. This includes the requirement that the public was provided reasonable notice of, and an opportunity to comment on, the modified limits and associated mixing zones. See Section II.B. Total residual chlorine daily maximum limit shall not exceed 0.5 mg/L.

3. Average monthly fecal coliform results must be reported as the geometric mean of the samples.

4. When the TRC limitation is lower than 0.100 mg/l, EPA will use 0.100 mg/L as the compliance evaluation level (i.e. daily maximum concentrations below 0.100 mg/l will be considered as in compliance with the limitation).

The pH range must be between 6.5 - 8.5 standard units.

The permittee must not discharge any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water

Removal Requirements for BOD<sub>5</sub> and TSS: For any month, the monthly average effluent concentration must not exceed 35 percent of the monthly average influent concentration (i.e. achieve at least 65% removal).

Percent removal of BOD<sub>5</sub> and TSS must be reported on the Discharge Monitoring Reports (DMRs). The monthly average percent removal must be calculated from the arithmetic mean of the influent value and the arithmetic mean of the effluent value for that month. Influent and effluent samples must be taken over approximately the same time period.

Best management practice for waste stabilization ponds discharging seasonally: The

permittee shall operate the discharge pump such that the intake is below the water surface and suspended in the water column in order to prevent the discharge of both the surface layer and the bottom sludge layer.

Category 3. POTWs and other treatment works treating domestic sewage where a mechanically aerated waste stabilization pond (aerated lagoon) is used as the principal process.

Table 9. Effluent Limitations for Category 3 Facilities.					
PARAMETER	UNITS	EFFLUENT LIMITATIONS			
		Average Monthly Limit	Average Weekly Limit	Daily Maximum Limit	Daily Minimum Limit
Biological Oxygen Demand (BOD <sub>5</sub> )	mg/L	30	45	60	---
	lbs/day	see note 1	see note 1	see note 1	---
Total Suspended Solids (TSS)	mg/L	45	65	---	---
	lbs/day	see note 1	see note 1	---	---
Fecal Coliform <sup>2</sup>	colonies/100ml	20 (freshwater) 14 (marine) <sup>note 3</sup>	---	40 (freshwater) 43 (marine)	---
Total Residual Chlorine <sup>2</sup>	mg/L	---	---	0.011 (freshwater) 0.0075 (marine) <sup>note 4</sup>	---
Dissolved Oxygen <sup>2</sup>	mg/L	---	---	---	7 (freshwater) 6 (marine)



1. BOD<sub>5</sub> and TSS mass loading limits apply to each discharge. The loading limits are calculated for each facility by the following formula: pounds per day limitation = concentration limit (mg/L) x facility design flow (mgd) x 8.34 (conversion factor). Loading limitations are applicable to the average monthly, average weekly, and maximum daily basis.
2. Permittees may request modified fecal coliform, total residual chlorine, dissolved oxygen, and pH limits based upon a mixing zone approved by ADEC pursuant to 18 AAC 70.260. EPA will approve the modified limits authorized by ADEC under this General Permit if the modified limits and resulting mixing zone are consistent with the Clean Water Act, EPA's regulations, and 18 AAC 70.250 and 255. This includes the requirement that the public was provided reasonable notice of, and an opportunity to comment on, the modified limits and associated mixing zones. See Section II.B. Total residual chlorine daily maximum limit shall not exceed 0.5 mg/L.
3. Average monthly fecal coliform results must be reported as the geometric mean of the samples.
4. When the TRC limitation is lower than 0.100 mg/l, EPA will use 0.100 mg/L as the compliance evaluation level (i.e. daily maximum concentrations below 0.100 mg/l will be considered as in compliance with the limitation).

The pH range must be between 6.5 - 8.5 standard units.

The permittee must not discharge any floating solids, visible foam in other than trace amounts, or oily wastes that produce a sheen on the surface of the receiving water

Removal Requirements for BOD<sub>5</sub>: For any month, the monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration (i.e. achieve at least 85% removal for BOD<sub>5</sub>).

Removal Requirements for TSS: For any month, the monthly average effluent concentration must not exceed 35 percent of the monthly average influent concentration (i.e. achieve at least 65% removal for TSS).

Percent removal of BOD<sub>5</sub> and TSS must be reported on the Discharge Monitoring Reports (DMRs). The monthly average percent removal must be calculated from the arithmetic mean of the influent value and the arithmetic mean of the effluent value for that month. Influent and effluent samples must be taken over approximately the same time period.

Best management practice for waste stabilization ponds discharging seasonally: The permittee shall operate the discharge pump such that the intake is below the water surface and suspended in the water column in order to prevent the discharge of both the surface layer and the bottom sludge layer.

## VI. MONITORING

A. Basis for Effluent and Ambient Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) requires that monitoring be included in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on DMRs to the EPA.

B. Effluent Monitoring

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

Facilities covered under the general permits are expected to range in size from a few hundred gallons per day discharge up to potentially 1 million gallons per day (mgd). Given this wide range in discharge volume, the draft general permits require monitoring frequency which is dependent on facility size as specified by design value. Facilities with design flow of greater than 0.1 mgd and up to 1 mgd are required to monitor at a frequency generally of twice per month for BOD and TSS and more frequently for other parameters. This is consistent with monitoring required at similar sized facilities by EPA NPDES permits in Alaska. These facilities are also required to do 24-hour composite sampling for BOD<sub>5</sub> and TSS. Smaller facilities that have a design flow from 0.005 mgd (5,000 gpd) to 0.1 mgd are required to monitor at the lower frequency of once per month for BOD, TSS, DO, and fecal coliform, using grab samples instead of composite samples. Facilities below 5,000 gpd are generally required to sample quarterly and report on an annual basis.

Tables 10, 11, and 12 present the draft monitoring requirements for permittees covered under the general permits. The sampling location shall be after the last treatment unit and prior to discharge to the receiving water. The monitoring samples shall not be influenced by combination with other effluent. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 10.  
Monitoring Requirements for Treatment Plants  
With Design Flow From 0.1 - 1.0 mgd

Parameter	Sample Location	Sample Frequency	Sample Type
Flow, mgd	Effluent	Daily (5/week)	recording
BOD <sub>5</sub> , mg/L	Influent and Effluent	2/month	24-hour composite
TSS, mg/L	Influent and Effluent	2/month	24-hour composite
pH, standard units	Effluent	Daily (5/week)	grab
Total Residual Chlorine, mg/L <sup>1</sup>	Effluent	Daily (5/week)	grab
Fecal Coliform, colonies/100 ml	Effluent	2/month	grab
Dissolved Oxygen, mg/L	Effluent	1/week	grab

1. Required only if chlorine is used as disinfectant in the treatment process. If not used, write "NA" on report required under Section III.B.

Table 11. Monitoring Requirements for Treatment Plants With Design Flow of 0.005 to 0.1 mgd.			
Parameter	Sample Location	Sample Frequency	Sample Type
Flow, mgd	Effluent	Daily (5/week)	measured
BOD <sub>5</sub> , mg/L	Influent and Effluent	1/month	grab or composite
TSS, mg/L	Influent and Effluent	1/month	grab or composite
pH, standard units	Effluent	3/week	grab
Total Residual Chlorine, mg/L <sup>1</sup>	Effluent	3/week	grab
Fecal Coliform, colonies/100 ml	Effluent	1/month	grab
Dissolved Oxygen, mg/L	Effluent	1/month	grab
1. Required only if chlorine is used as disinfectant in the treatment process. If not used, write "NA" on report required under Section III.B.			

Table 12. Monitoring Requirements for Treatment Plants With Design Flow less than 0.005 mgd (5,000 gallons per day).			
Parameter	Sample Location	Sample Frequency	Sample Type
Flow, mgd	Effluent	1/week	measured or estimated
BOD <sub>5</sub> , mg/L	Influent and Effluent	1/quarter	grab or composite
TSS, mg/L	Influent and Effluent	1/quarter	grab or composite
Total Residual Chlorine, mg/L <sup>1</sup>	Effluent	1/week	grab
Fecal Coliform, colonies/100 ml	Effluent	1/quarter	grab
pH, standard units	Effluent	1/quarter	grab
Dissolved Oxygen, mg/L	Effluent	1/quarter	grab
1. Required only if chlorine is used as a disinfectant in the treatment process. If not used, write "NA" on report required under Section III.B.			

### C. Ambient Monitoring

Receiving water monitoring is occasionally required in NPDES permits in order to evaluate if the effluent is causing or contributing to an instream excursion of the water quality criteria. Given the nature and size of the discharges authorized under the general permits, ambient monitoring is not a requirement. The permits,

however, do allow the permitting authority to require ambient monitoring under specific situations. Ambient monitoring may be required for site specific evaluations related to: protection of state water quality standards, evaluation of receiving water impairments, or, evaluation or issues associated with threatened or endangered species. The permittee will be notified of any additional monitoring when issued authorization to discharge under the general permit.

## VII. OTHER LEGAL REQUIREMENTS

### A. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires that federal agencies consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) to determine whether their authorized actions may harm threatened and endangered species or their habitats. The consultation process involves preparation of a Biological Evaluation (BE), which is the basis from which NMFS and USFWS can evaluate the action's potential impacts to threatened and endangered species. EPA developed a draft BE for this general permit action which is available upon request (Draft BE, prepared by Tetra Tech, Inc., for U.S.EPA, June 2003).

The general permit initially covers POTWs and STPs that discharge directly or indirectly into the Beaufort, Chukchi, and Bering Seas, and the Gulf of Alaska. Other discharges may be covered during the permit term to other waters. Consequently, all significant marine waters of Alaska are potentially involved. Twelve of the species have inhabited (at least at one time) these waters and are addressed in the BE. These species and their listing status are:

Bowhead Whale ( <i>Balaena mysticetus</i> )	Endangered
Fin Whale ( <i>Balaenoptera physalus</i> )	Endangered
Humpback Whale ( <i>Megaptera novaeangliae</i> )	Endangered
Sperm Whale ( <i>Physeter macrocephalus</i> )	Endangered
Sei Whale ( <i>Balaenoptera borealis</i> )	Endangered
North Pacific Right Whale ( <i>Eubalaena japonica</i> )	Endangered
Blue Whale ( <i>Balaenoptera musculus</i> )	Endangered
Steller Sea Lion ( <i>Eumetopias jubatus</i> )	
East of 144° longitude	Threatened
West of 144° longitude	Endangered
Eskimo Curlew ( <i>Numenius borealis</i> )	Endangered
Short-tailed Albatross ( <i>Phoebastria albatrus</i> )	Endangered
Spectacled Eider ( <i>Somateria fischeri</i> )	Threatened
Steller's Eider ( <i>Polysticta stelleri</i> )	Threatened

Issuing the NPDES general permit for POTWs and STPs in Alaska will have *no effect* on bowhead, blue, fin, sei, right, humpback, or sperm whale, or short-tailed albatross populations because they do not occur in nearshore marine waters where effluents are discharged (the effluents would be well-mixed to ambient conditions before ever reaching these species). Although Steller sea lions do forage occasionally in shoreline waters, and may on occasion encounter marine outfalls, exposure would be extremely limited due their mobility and the immediate dilution of any pollutants to background conditions. In addition, the pollutants in discharges are not directly or indirectly (through foraging) toxic to this species. Thus, issuance of the NPDES general permit will also have *no effect* on local populations of Steller sea lions. Steller's and spectacled eiders do breed in the vicinity of North Slope POTWs. Eiders may occasionally rest on waste stabilization ponds/impoundments but these units do not generally provide breeding habitat for these species thus eliminating the possibility of long-term exposure. On the North Slope, encounters with effluent in marine waters would be minimal because of the limited transient exposure (only during migration from inland breeding sites to staging and overwintering areas) and the high dilution factor. Steller's eiders overwintering in Cook Inlet may encounter discharges from treatment plants. The two plants discharging in this area, however, have very low flows such that the potential for exposure to undiluted effluent is negligible. There are no POTWs near staging or molting areas for either species, or overwintering areas for spectacled eiders. Consequently, issuance of the NPDES general permit will have *no effect* on Steller's or spectacled eider populations. Finally, issuance of the NPDES general permit will have *no effect* on Eskimo curlews, as they are no longer believed to exist in Alaska.

Because of the strict limitations imposed on direct discharges to marine waters, the effect of mixing in both marine and fresh waters, the distances critical habitats occur from most outfalls, and the lack of breeding habitat afforded by waste stabilization ponds, there is *no effect* to any designated critical habitat for any species addressed in this BE.

EPA will consider any comments received on the findings of the draft BE prior to final issuance of the general permits.

#### B. Essential Fish Habitat

Section 305(b) of the Magnuson-Stevens Act (16 USC 1855(b)) requires federal agencies to consult with the NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH

regulations define an *adverse effect* as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The EPA has tentatively determined that issuance of this general permit is not likely to adversely effect EFH in the vicinity of the discharges. The finding is based on similar information as provided in the Biological Evaluation for Endangered Species Act provided in the previous section. The general permit is for authorization of small facilities treating domestic waste only, not industrial waste. The facilities are required to treat the waste to secondary treatment standards and also comply with Alaska water quality standards either at the end of the pipe or at the edge of a State authorized mixing zone. Due to the size and nature of the discharge, the treatment required, and compliance with Alaska water-quality standards, the activity proposed to be authorized is not likely to adversely effect EFH. Any comments received during the public comment period related to this determination will be considered prior to issuance of the final general permit.

#### C. Coastal Zone Management Act

The State of Alaska, Office of Management and Budget, Division of Governmental Coordination, will review this action for consistency as provided in Section 307(c)(3) of the Coastal Zone Management Act of 1972, as amended [16 U.S.C. 1456(c)(3)].

The consistency certification is a statement of assurance that this federally permitted activity, which will affect the coastal zone, will be conducted in a manner consistent with the enforceable policies and standards of the Alaska Coastal Management Program.

#### D. State Certification

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

The Alaska Department of Environmental Conservation (ADEC) issued a preliminary certification of the draft permits on July 21, 2003, in a letter from William D. McGee to Robert Robichaud, EPA. In the letter the ADEC provided stipulations for inclusion in the permit and a rationale for each stipulation. The stipulations have been incorporated into the draft permit:

E. Standard Permit Provisions

Part 122 of Title 40 of the Code of Federal Regulations provides specific regulatory requirements and conditions for NPDES permits. These conditions are included in the Permits as recording and reporting requirements (Part III), compliance responsibilities (Part IV), and other general permit provisions (Part V). The language of the regulations is literally used within the Permit to specify these conditions.

F. Ocean Discharge Criteria

The Ocean Discharge Criteria establish guidelines for permitting discharges into the territorial seas, the contiguous zone and the ocean. EPA conducts an Ocean Discharge Criteria Evaluation, or "ODCE," using criteria established in accordance with CWA § 403. EPA decides on the basis of available information whether or not the discharge will cause unreasonable degradation of the marine environment. 40 CFR § 125.121 states "unreasonable degradation of the marine environment" means:

1. Significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
2. Threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
3. Loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

CWA § 403(c) guidelines require that a number of factors be considered in the determination of unreasonable degradation or irreparable harm. These factors include the amount and nature of the pollutants, the potential transport of the pollutants, the character and uses of the receiving water and its biological communities, the existence of special aquatic sites (including parks, refuges, etc.), any applicable requirements of an approved Coastal Zone Management plan, and



potential impacts on water quality, ecological health and human health.

After consideration of these factors, EPA has determined that discharges authorized by the Permit and discharged in accordance with the requirements of the Permit will not cause unreasonable degradation of the receiving waters. The determination is based on similar information as provided in the Biological Evaluation for Endangered Species Act provided in the previous section. The general permit is for authorization of small facilities treating domestic waste only, not industrial waste. The facilities are required to treat the waste to secondary treatment standards and also comply with Alaska water quality standards either at the end of the pipe or at the edge of a State authorized mixing zone. The ESA biological evaluation tentatively finds that issuance of the general permit will have no effect on threatened and endangered species or their habitats. Likewise, the general permit is not likely to adversely effect designated Essential Fish Habitat. The State of Alaska has reviewed the permit and has issued a preliminary certification of consistency with the State water quality standards and proposes a determination of consistency with the Alaska Coastal Management Program. Due to the size and nature of the discharge, the treatment required, compliance with Alaska water-quality standards, and the ESA and EFH findings discussed previously, the activity proposed to be authorized will not cause unreasonable degradation of the receiving waters.

G. Presidential oversight of federal regulations [Executive Order 12866]

The Office of Management and Budget has exempted this action from the review requirements of Executive Order 12866 providing for presidential oversight of the regulatory process pursuant to Section 6 of that order.

H. Paperwork Reduction Act [44 U.S.C. § 3501 et seq.]

EPA has reviewed the requirements imposed on regulated facilities in the General Permit under the Paperwork Reduction Act. The information collection requirements have been approved by the Office of Management and Budget (OMB) in submissions made for the NPDES permit program..

I. The Regulatory Flexibility Act [5 U.S.C. § 601 et seq.]

EPA has concluded that NPDES general permits are permits under the Administrative Procedure Act (APA), 5 U.S.C. § 551 et seq., and thus not subject to APA rulemaking requirements or the Regulatory Flexibility Act.

J. Permit Expiration Date

The permits will expire five years from the issuance date.

VIII. DEFINITIONS AND ACRONYMS

*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative (40 CFR 122.2).

*Average monthly discharge* means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month. It may also be referred to as the "monthly average discharge"(40 CFR 122.2).

*Beneficial use* means any of the various uses which may be made of the water of Alaska, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics (IDAPA 16.01.02.003.04).

*Best Management Practices (BMP)* means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of “waters of the United States”. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage of raw material storage (40 CFR 122.2).

*BMPs* mean “best management practices.”

*Biochemical oxygen demand* means the measure of the amount of oxygen necessary to satisfy the biochemical oxidation requirements of organic materials at the time the sample is collected; unless otherwise specified, this term will mean the five (5) day BOD incubated at twenty (20) degrees C (BOD5) (IDAPA 16.01.02.003.11).

*BOD* means “biochemical oxygen demand.”

*Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

*CFR* means the Code of Federal Regulations.

*cfs* means cubic feet per second.

*Composite sample* means a flow-proportioned mixture of not less than four discrete representative samples.

*CWA* means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483, and Public Law 97-117, 33 U.S.C. 1251 et seq. (40 CFR 122.2).

The *Director* means the Regional Administrator of EPA.

*Discharge* when used without qualification means the “discharge of a pollutant.”

*Discharge Monitoring Report* means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by permittees (40 CFR 122.2).

*Discharge of a pollutant* means:

(a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source,” or

(b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any “indirect discharger” (40 CFR 122.2).

*DMR* means “Discharge Monitoring Report” (40 CFR 122.2).

*Draft permit* means a document prepared under 40 CFR 124.6 indicating the Director's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a “permit” (40 CFR 122.2).

*Effluent* means any wastewater discharged from a treatment facility (IDAPA 16.01.02.003.32).

*Effluent limitation* means any restriction imposed by the Director on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States,” the waters of the “contiguous zone,” or the ocean

(40 CFR 122.2).

*Effluent limitations guidelines* means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise “effluent limitations.” (40 CFR 122.2).

*EPA* means the United States Environmental Protection Agency.

*Fecal coliform* means the portion of the coliform group of bacteria present in the gut and feces of warm-blooded animals, usually expressed as number of organisms/one hundred (100) ml of sample (IDAPA 16.01.02.003.37).

*General permit* means an NPDES “permit” issued under Sec. 122.28 authorizing a category of discharges under the CWA within a geographical area. (40 CFR 122.2)

*Grab sample* means a single sample or measurement taken at a specific time.

*Hazardous material* means a material or combination of materials which, when discharged in any quantity into state waters, presents a substantial present or potential hazard to human health, the public health, or the environment (IDAPA 16.01.02.003.44).

*Influent* means the point(s) where the water enters the facility or settling pond(s).

*mg/L* means milligrams of solute per liter of solution, equivalent to parts per million, assuming unit density (IDAPA 16.01.02.003.58).

*Maximum* means the highest measured discharge or pollutant in a waste stream during the time period of interest.

*Maximum daily discharge limitation* means the highest allowable “daily discharge” (40 CFR 122.2).

*Mixing zone* means a defined area or volume of the receiving water surrounding or adjacent to a wastewater discharge where the receiving water, as a result of the discharge, may not meet all applicable water quality criteria or standards. It is considered a place where wastewater mixes with receiving water and not as a place where effluents are treated (IDAPA 16.01.02.003.59).

*ml/L* means milliliters per liter.

*Monthly average* means the average of “daily discharges” over a monitoring month,

calculated as the sum of all “daily discharges” measured during a monitoring month divided by the number of “daily discharges” measured during that month (40 CFR 122.2).

*National Pollutant Discharge Elimination System* (NPDES) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of CWA (40 CFR 122.2).

*Notice of Intent* (NOI) means a request, or application, to be authorized to discharge under a general NPDES permit.

*NOI* means Notice of Intent

*NPDES* means “National Pollutant Discharge Elimination System.”

*Nuisance* means anything which is injurious to the public health or an obstruction to the free use, in the customary manner, of any waters of the State (IDAPA 16.01.02.003.65).

*Nutrients* means the major substances necessary for the growth and reproduction of aquatic plant life, consisting of nitrogen, phosphorus, and carbon compounds (IDAPA 16.01.02.003.66).

*Outstanding resource water* means a high quality water, such as water of national and state parks and wildlife refuges and water of exceptional recreational significance. ORW constitutes as outstanding national or state resource that requires protection from point and nonpoint source activities that may lower water quality (IDAPA 16.01.02.003.70).

*Point source* means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (40 CFR 122.2).

*Pollutant* means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.

*Sanitary wastes* means human body wastes and the wastes from toilets and other

receptacles intended to receive or retain body wastes.

*Secondary treatment* means processes or methods for the supplemental treatment of wastewater, usually following primary treatment, to affect additional improvement in the quality of the treated wastes by biological means of various types which are designed to remove or modify organic matter (IDAPA 16.01.02.003.89).

*Sewage* means human body wastes and the wastes from toilets and other receptacles intended to receive or retain body wastes.

*Significant contribution or Significant Industrial User* is defined at 40 CFR 403.3(t), and includes all industrial users that are subject to categorical pretreatment standards. The definition also includes: other users that discharge an average of 25,000 gallons per day or more of process waste water (excluding sanitary, noncontact cooling and boiler blowdown) to the facility, and, users which contribute a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant.

*Special resource water* means those specific segments or bodies of water which are recognized as needing intensive protection to preserve outstanding or unique characteristics or to maintain current beneficial use (IDAPA 16.01.02.003.95).

*Technology-based permit effluent limitation* means wastewater treatment requirements under Section 301(b) of the Clean Water Act that represent the minimum level of control that must be imposed in a permit issued under Section 402 of the Clean Water Act (IDAPA 16.01.02.003.102).

*Total maximum daily load (TMDL)* means the sum of the individual wasteload allocations for point sources, load allocations for nonpoint sources, and natural background. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality (IDAPA 16.01.02.003.103).

*TMDL* means total maximum daily load.

*Toxic substance* means any substance, material or disease-causing agent, or a combination thereof, which after discharge to waters of the State and upon exposure, ingestion, inhalation or assimilation into any organism (including humans), either directly from the environment or indirectly by ingestion through food chains, will cause death, disease, behavioral abnormalities, malignancy, genetic mutation, physiological abnormalities

(including malfunctions in reproduction) or physical deformations in affected organisms or their offspring. Toxic substances include, but are not limited to, the one hundred twenty-six (126) priority pollutants identified by EPA pursuant to Section 307(a) of the Clean Water Act (IDAPA 16.01.02.003.105).

*TSS* means total suspended solids, of which the concentration in water is measured in mg/L.

*Upset* means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance.

*Outstanding resource water* means a high quality water, such as water of national and state parks and wildlife refuges or careless or improper operation (see Part IV.H.).

*U.S.C.* means United States Code.

*USGS* means the United States Geologic Survey.

*Water pollution* means any alteration of the physical, thermal, chemical, biological, or radioactive properties of any waters of the State, or the discharge of any pollutant into the waters of the States, which will or is likely to create a nuisance or to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to fish and wildlife, or to domestic, commercial, industrial, recreational, aesthetic, or other beneficial uses (IDAPA 16.01.02.003.113).

*Water quality-based effluent limitation* means an effluent limitation that refers to specific levels of water quality that are expected to render a body of water suitable for its designated or existing beneficial uses (IDAPA 16.01.02.003.113).

*Waters of the United States* or waters of the U.S. means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- (b) All interstate waters, including interstate “wetlands;”
- (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, “wetlands,” sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

- (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
- (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
- (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of the United States under this definition;
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) “Wetlands” adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition (40 CFR 122.2).



APPENDIX A - List of Potential Sewage Treatment Plants for Coverage  
 Facilities to be Authorized Under the General Permit to Discharge to Fresh Water

Previous EPA Permit Number	Alaska State Permit Number	Name 1	Name 2	Permit Category <sup>1</sup>	Facility Specific Permit Limitations						
					Mixing Zone Authorized by ADEC	Fecal Coliform, colonies/100ml		Flow, mgd (million gall/day)	Chlorine, mg/L, Daily Maximum	DO, mg/L, Daily Minimum	pH Range, S.U., Min-Max
						Average Monthly	Daily Maximum				
AK0049832		Ambler, City of	Indian Health Service Project	2	150 meter radius	200	800	0.015	NA	2	6.0-9.0
AK0020931	0025DB012	Artec Alaska	Cape Romanzof	1	100 meters downstream	200	800	0.003	0.5	2	6.0-9.0
AK0020940	9940DB004-314	Artec Alaska	Cape Newenham	3	90 meter radius	200	800	0.003	0.5	2	6.0-9.0
AK0053015	0031DB006	Artec Alaska	Oliktok LRRS	1	100 meters downstream	200	800	0.0007	0.5	2	6.0-9.0
AK0028606	9573DB001	BP Exploration (Alaska) INC	Central Sewage Treatment (CSTF)	1	100 meters downstream	200	400	0.175	0.5	2	6.0-9.0
AK0021229	9473DB005	BP Exploration (Alaska) INC	Prudoe Bay Operations Center	1	none	200	400	0.25	0.5	2	6.0-9.0
AK0020923	9725DB002	Defense, Air Force	King Salmon Airport	3	100 meters downstream	100	200	0.057	0.5	2	6.0-9.0
	0031DB002	Defense, Air Force	Galena Airport	3	100 meters downstream	200	800	0.060	0.5	2	6.0-9.0
AK0021067	0031DB063	Defense, Army	Fort Greely	3	100 meters downstream	200	800	0.46	0.5	2	6.0-9.0
	0231DB004 OR 9731DB004	Alaska Travel Adventures Inc.	Denali Riverside RV park	1	50 meters downstream	100	200	0.008	0.5	2	6.0-9.0

Previous EPA Permit Number	Alaska State Permit Number	Name 1	Name 2	Permit Category <sup>1</sup>	Facility Specific Permit Limitations						
					Mixing Zone Authorized by ADEC	Fecal Coliform, colonies/100ml		Flow, mgd (million gall/day)	Chlorine, mg/L, Daily Maximum	DO, mg/L, Daily Minimum	pH Range, S.U., Min-Max
						Average Monthly	Daily Maximum				
AK0021873	AK0021873	Dillingham, City of	Dillingham Sewer Treatment Facility	2	Rectangular area, 485 meters by 60 meters	200	400	0.273	NA	2	6.0-9.0
AK0025712	0136DB004 OR 9973DB001	Dowell-Schlumberger Co	Prudhoe Bay Camp Facility	1	100 meter radius	200	400	0.0085	0.5	2	6.0-9.0
Ak0053210	0031DB007	Grand Denali Hotel	Buff Properties Inc	1	100 meters downstream	100	200	0.03	0.5	2	6.0-9.0
AK0026174	0131DB005	Moose Creek Apartments	North Star Acquisitions	1	50 meters downstream	100	200	0.01	0.5	2	6.0-9.0
AK0043362	0125DB003	Naknek, City of		2	100 meters downstream	100,000	150,000	0.05	NA	2	6.0-9.0
AK0028002	0031DB003	Nenana, City of		1	100 meters downstream	100	200	0.06	0.1	2	6.0-9.0
AK0049999	0176DB003	North Slope Borough	Service Area 10	1	100 meter radius	200	800	0.09	0.5	2	6.0-9.0
	0231DB001	Alaska Hotel Properties Inc.	Denali Princess Lodge	1	50 meters downstream	100	200	0.145	0.5	2	6.0-9.0
AK0029556		Emmonak, City of		2	100 meters downstream	100,000	150,000	0.04	NA	2	6.0-9.0
AK0053161		McNeil Canyon Elementary		1	50 meters downstream	200	800	0.002	NA	2	6.0-9.0
AK0021563		Scammon Bay, City of		2	100 meters downstream	100,000	150,000	0.025	NA	2	6.0-9.0

Footnote 1: Permit Category refers to categories listed in Section I. A. of the general permit. The effluent limitations applicable to the facility vary by category. The categories from the permit are as follows:

Category 1 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage.

Category 2 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage where a passive waste stabilization pond is used as the principal process (no mechanical aeration).

Category 4 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage where an aerated waste stabilization pond is used as the principal process.

Effluent limits for each category are listed in section II.A. of the permit.

Facilities to be Authorized Under the General Permit to Discharge to Marine Waters

Previous EPA Permit Number	Alaska State Permit Number	Name 1	Name 2	Permit Category <sup>1</sup>	Facility Specific Permit Limitations						
					Mixing Zone Authorized by ADEC	Fecal Coliform, colonies/100ml		Flow, mgd (million gall/day)	Chlorine, mg/L, Daily Maximum	DO, mg/L, Daily Minimum	pH Range, S.U., Min-Max
						Average Monthly	Daily Maximum				
AK0021008	9940DB004-301	Artec Alaska	Cape Lisburne	1	150 meter radius	200	800	0.005	0.5	2	6.0-9.0
AK0039291	0136DB005	Barrow, City of	Municipal W WTP	2	200 meter radius	200	800	0.220 <sup>2</sup>	NA	2	6.0-9.0
	9740DB001	Bima Dock	Bima Dock W WTF	1	100 meter radius	100,000	150,000	0.0015	NA	2	6.0-9.0
AK0020907	9825DB002	Defense, Air Force	Eareckson Air Station	3	200 meter radius	100,000	150,000	0.33	NA	2	6.0-9.0
AK0043885	0013DB025	Eichner Subdivision Owners Assn	Residential Development	1	200 meter arc	200	800	0.2	0.1	2	6.0-9.0
AK0024775	0111DB001	Hoonah, City of	Municipal W WTP	1	300 m by 800 m "V" shape, centered on the point of discharge	100,000	150,000	0.17	0.5	2	6.0-9.0
AK0053091		Interior, Indian Affairs	Annette Bay 1 STP/Wy Wuh Base Camp	1	100 meter radius	100,000	150,000	0.01	NA	2	6.0-9.0
AK0022136	AK0022136	Interior, National Park Service	Bartlett Cove Ranger Station	1	circle of 12 meter radius	200	800	0.04	0.5	2	6.0-9.0
AK0021407	AK0021407	Juneau, City and Borough of	Auke Bay	1	30 meter radius	200	800	0.16	0.5	2	6.0-9.0
AK0021792	0013DB004	Ketchikan Gateway Borough	Airport W WTP	1	100 meter radius	100,000	150,000	0.0035	NA	2	6.0-9.0
AK0049824	0013DB068	Ketchikan Gateway Borough	Mountain Point Service Area	1	300 meter radius	200	800	0.7	0.1	2	6.0-9.0

Previous EPA Permit Number	Alaska State Permit Number	Name 1	Name 2	Permit Category <sup>1</sup>	Facility Specific Permit Limitations						
					Mixing Zone Authorized by ADEC	Fecal Coliform, colonies/100ml		Flow, mgd (million gall/day)	Chlorine, mg/L, Daily Maximum	DO, mg/L, Daily Minimum	pH Range, S.U., Min-Max
						Average Monthly	Daily Maximum				
AK0021482		Metlakatla Indian Community		2	100 meter radius	100,000	150,000	0.075	NA	2	6.0-9.0
AK0052612	0036DB065	North Slope Borough	Wainwright Water/Sewer System	1	200 meter radius, semi-circle	200	800	0.028	0.5	2	6.0-9.0
	0132DB001	North Slope Borough	Pt. Lay WWTF	1	100 meter radius, semi-circle	200	800	0.011	0.5	2	6.0-9.0
AK0047279		Seward, City of	Spring Creek Correctional Center	3	100 meter radius	100,000	150,000	0.195	NA	2	6.0-9.0
AK0000531	0212DB001	City and Borough of Sitka	Sawmill Cove Industrial Site	1	100 meter radius	100,000	150,000	0.02	NA	2	6.0-9.0
AK0049808	0113DB004	Thorne Bay, City of		1	Rectangular area, 30 m by 90 m, oriented along the outfall and over the diffuser, extending to the surface	100,000	150,000	0.4	NA	2	6.0-9.0
AK0020338	0136DB009	Ukpeagvik Industrial Center	Northern Academic Research Lab	1		200	400	0.048	0.5	2	6.0-9.0
AK0020281		Adak Reuse Corporation	formerly Defense, Air Force	1	100 meters radius	100,000	150,000	0.9	NA	2	6.0-9.0
	0211DB007	Juneau, City of Borough of	Lena Point Subdivision	1	30.5 meter radius	400	800	0.085	NA (UV)	2	6.0-9.0

Previous EPA Permit Number	Alaska State Permit Number	Name 1	Name 2	Permit Category <sup>1</sup>	Facility Specific Permit Limitations						
					Mixing Zone Authorized by ADEC	Fecal Coliform, colonies/100ml		Flow, mgd (million gall/day)	Chlorine, mg/L, Daily Maximum	DO, mg/L, Daily Minimum	pH Range, S.U., Min-Max
						Average Monthly	Daily Maximum				
		Native Village of Kwinhagek IRA Council	Quinhagek Sewage Lagoon	2	152 meters radius	100,000	150,000	0.05	NA	2	6.0-9.0

Footnote 1: Permit Category refers to categories listed in Section I. A. of the general permit. The effluent limitations applicable to the facility vary by category. The categories from the permit are as follows:

Category 1 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage.

Category 2 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage where a passive waste stabilization pond is used as the principal process (no mechanical aeration).

Category 3 - Publically Owned Treatment Works (POTWs) and other treatment works treating domestic sewage where an aerated waste stabilization pond is used as the principal process.

Effluent limits for each category are listed in section II.A. of the permit.

Footnote 2: Flow listed for the City of Barrow is for average influent flow. Flow for determination of BOD<sub>5</sub> and TSS loading will be based on flow that occurs during discharge event from this lagoon facility as specified in the ADEC authorization.

## APPENDIX B - Optional Notice of Intent Form

The Alaska Department of Environmental Conservation (ADEC) provided the EPA with draft allowable mixing zones for chlorine and fecal coliform. The mixing zones provided by the State during draft certification of the permit vary dependant on the receiving water being either fresh water or marine water. The fresh water mixing zone, typically to rivers and streams, provides for a dilution ratio of receiving water to effluent of 10:1. If the ratio of receiving water flow to effluent flow is less than 10:1, a mixing zone will not be authorized under the general permit. The marine water mixing zone allows for a dilution of 100:1. If EPA or ADEC determines that conditions, such as poor mixing due to a highly confined inlet, do not allow for a dilution of 100:1, a mixing zone will not be authorized under the general permit.

The mixing model VISUAL PLUMES was used to evaluate a marine mixing zone to determine maximum mixing zone dimensions. Worst case conditions were modeled including: a maximum discharge of 1 million gallons per day, the most allowed by the general permit although much greater than the typical discharge covered by the permit, shallow discharge depth, worst case current flow, and average pipe diameter (lowest pipe velocity). Under these assumptions the model predicts a dilution ratio of 100:1 would be achieved at a distance of 210 meters from the discharge point. It would take 0.55 hours for the effluent to travel from the discharge point to the edge of the mixing zone. Given the results of the modeling, any discharge authorized under the general permit would be expected to achieve 100:1 mixing within 210 meters from the discharge point with most facilities achieving 100:1 at much shorter distances from the outfall.

chlorine: The technology-based requirement limits the concentration of chlorine in the effluent to 0.5 mg/L as discussed previously. With dilution in the mixing zone of 10:1 in fresh water and 100:1 in marine water, simple mass balance would predict in stream concentrations of 0.05 and 0.005 mg/L in the receiving water respectively. In addition to mixing zone dilution, chlorine in the environment is reduced by natural decay as determined by the chlorine demand of the receiving water. The rate of decay is determined by receiving water conditions. One study of chlorine decay in Alaskan waters was conducted recently by the Municipality of Anchorage. The Municipality used samples of their municipal discharge and dilution water from Cook Inlet in order to examine decay rates as part of their NPDES permit application (MOA NPDES Permit Application). The Municipality found chlorine decayed exponentially at a mean decay rate of 15% per minute. In the Municipality of Anchorage example, effluent required 13 minutes to travel from the discharge point to the edge of the mixing zone and chlorine decayed 85% due to the receiving water demand, in addition to dilution within the mixing zone.



Similar decay rates would be expected to occur for discharges from other waste water treatment plants in Alaska. As an example, the modeling done to determine the worst-case mixing zone dimensions above, found that it took 0.55 hours for a discharge to reach the edge of the mixing zone. Using the MOA decay rate, chlorine would decay 99% in addition to dilution while traveling from the discharge point to the edge of the mixing zone.

A number of factors limit the chlorine residual in the receiving water from the discharges that will be authorized under this general permit: the technology-based limitation required for chlorine, the dilution available from the approved mixing zone, and natural decay from the chlorine demand of the receiving water. Given these factors, along with consideration of the size and nature of the discharges authorized under the general permit, water quality-based chlorine limitations will not be required, although, facilities must meet the technology-based chlorine limitation.

