



## **ALASKA POLLUTANT DISCHARGE ELIMINATION SYSTEM (APDES) PERMIT FACT SHEET**

General Permit Number: AKG572000

**Small Publicly Owned Treatment Works (POTWs) and other Small  
Treatment Works Providing Secondary Treatment of Domestic  
Wastewater and Discharging to Surface Water**

**DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
Wastewater Discharge Authorization Program  
555 Cordova Street  
Anchorage, AK 99501**

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The Alaska Department of Environmental Conservation (the Department or DEC) has reissued APDES general permit to small POTWs and other small privately-owned treatment works providing secondary treatment of domestic wastewater discharging to waters of the United States (U.S.) in the State of Alaska. The general permit places conditions on the discharge of pollutants from authorized facilities to waters of the U.S. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the authorized facilities and outlines best management practices to which the facility must adhere.

This fact sheet explains the nature of potential discharges from small domestic wastewater facilities and the development of the permit including:

- a listing of effluent limitations, monitoring requirements and other conditions;
- technical material supporting the conditions in the permit; and
- information on appeal procedures.

## **Appeals Process**

The Department has both an informal review process and a formal administrative appeal process for final APDES permit decisions. An informal review request must be delivered within 15 days after receiving the Department's decision to the Director, Division of Water at the following address:

Director of Water  
Alaska Department of Environmental Conservation  
555 Cordova Street  
Anchorage, AK 99501

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal Department review.

See <http://www.dec.state.ak.us/commish/InformalReviews.htm> for information regarding informal reviews of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department within 30 days of the permit decision or a decision issued under the informal review process. An adjudicatory hearing will be conducted by an administrative law judge in the Office of Administrative Hearings within the Department of Administration. A written request for an adjudicatory hearing shall be delivered to the Commissioner at the following address:

Commissioner  
Alaska Department of Environmental Conservation  
410 Willoughby Street, Suite 303  
Juneau, AK 99811-1800

Interested persons can review 18 AAC 15.200 for the procedures and substantive requirements regarding a request for an adjudicatory hearing. See <http://www.dec.state.ak.us/commish/ReviewGuidance.htm> for information regarding appeals of Department decisions.

## **Documents are Available**

The permit, fact sheet, application, and related documents can be obtained by visiting or contacting DEC between 8:00 a.m. and 4:30 p.m. Monday through Friday at the addresses below. The permit, fact sheet, application, and other information are also located on the Department's Wastewater Discharge Authorization Program website:

<http://www.dec.state.ak.us/water/wwdp/index.htm> .

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Division of Water  
Wastewater Discharge Authorization Program  
555 Cordova Street  
Anchorage, AK 99501  
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Alaska Department of Environmental Conservation  
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## **1.0 INTRODUCTION**

### **1.1 Basis for Issuance of a General Permit**

Section 301(a) of the Clean Water Act (CWA) and 18 AAC 83.015 provided that the discharge of pollutants is unlawful except in accordance with an APDES permit. Although such permits are usually issued to individual dischargers, DEC regulations at 18 AAC 83.205 authorize Departmental issuance of general permits to categories or subcategories of discharges within existing geographic or political boundaries when

- 1.1.1** a number of point sources involve the same or substantially similar types of operations;
- 1.1.2** discharge the same types of wastes;
- 1.1.3** require the same effluent limits or operating conditions;
- 1.1.4** require the same or similar monitoring requirements; and
- 1.1.5** in the opinion of the Department, are more appropriately controlled under a general permit than under individual permits.

A violation of a condition contained in a general permit constitutes a violation of the CWA and subjects the owner or operator of the permitted discharge to the penalties specified in Section 309 of the CWA.

### **1.2 Permit Issuance History**

In 2004, the Environmental Protection Agency (EPA) identified approximately 100 small publicly owned treatment works (POTWs) and privately-owned treatment works in Alaska as candidates for general permit coverage. These were smaller facilities discharging less than 1.0 million gallons per day (mgd) treating predominately domestic wastewater and discharging to waters of the U.S. in the State of Alaska. The types of operations at these facilities, the waste, operating conditions, effluent limits, and monitoring requirements were all similar in this group. Therefore, EPA determined that a general permit was an appropriate National Pollutant Discharge Elimination System permit mechanism for these dischargers.

Upon further evaluation by EPA, it was concluded that two general permits were necessary to address the low-volume domestic discharges in the State, one for facilities that discharged to freshwater (AKG570000) and one for facilities that discharged to marine water (AKG571000). Because Alaska Water Quality Standards (WQS) contain permit limitations that are different for freshwater and marine dischargers, EPA opted for two general permits in order to clarify the requirements.

Both general permits were assigned effective dates of July 21, 2004 and corresponding expiration date of July 21, 2009. In accordance with 18 AAC 83.155, facilities authorized to discharge domestic wastewater under these permits have been operating



under an administrative extension since the permits' expiration (i.e. the conditions of the prior permits remain in effect and enforceable until a new permit is issued by the Department).

The Department is now reissuing AKG570000 and AKG571000 under general permit number AKG572000. This reissued general permit only authorizes discharges from facilities that use a mechanical means to treat domestic wastewater and that discharge to surface water. AKG572000 specifically re-authorizes existing discharges and authorizes new discharges from publicly and privately owned domestic wastewater treatment facilities (WWTFs) in the State of Alaska. Facilities previously authorized to discharge under either AKG570000 or AKG571000 that do not qualify for coverage under AKG572000 (i.e. lagoons, common collectors, etc.) will be administratively extended under the expired general permits until the Department provides coverage for them under a new general permit in the near future. Types of facilities and discharges not covered by AKG572000 are listed in part 1.3 of the permit.

There are approximately 50 facilities that were authorized to discharge to freshwater under AKG57000 or marine water under AKG571000 that are eligible for coverage under the reissued general permit. The facilities previously covered under general permits AKG570000 and AKG571000, as well as those facilities that the Department determines to be qualified for coverage under the reissued permit, will be granted automatic coverage under AKG572000. These facilities are listed in Appendix D of the general permit.

### **1.3 Description of WWTF Operations**

The operations at WWTFs that will be covered under the general permit generally include preliminary processes (e.g. pumping, screening, and grit removal), primary settling treatment in large primary clarifiers or sedimentation tanks to remove settleable suspended solids, and biological secondary treatment processes. The secondary treatment step is often achieved by an activated sludge system in which wastewater is continuously fed into an aerated tank where it is mixed with an active mass of microorganisms (i.e. activated sludge) capable of aerobically degrading organic matter. After a specific treatment time, the mixed liquor passes into a secondary clarifier where the sludge settles under quiescent conditions and a clarified effluent is produced for discharge. Most facilities provide some level of disinfection either via chlorination or ultra-violet radiation prior to discharge as well.

Advanced technologies used increasingly in Alaska include membrane bioreactors (MBRs). MBRs combine the use of biological processes and membrane technology to provide a high standard of wastewater treatment. Instead of the secondary clarifier used in the activated sludge process, flow in the MBR system passes through a microporous membrane while solids and large bacteria remain in the treatment system for biological degradation. MBRs can operate at longer solids detention times, thereby not only enhancing the treatment of organic matter, but producing less waste biosolids (or sludge).



The waste biosolids generated by the treatment processes is generally thickened and processed for ultimate disposal. Dewatered biosolids in Alaska are generally either co-incinerated, placed in the municipal solid waste landfill, or land applied. However, biosolids handling and disposal are regulated under separate federal regulations and therefore are not addressed by the general permit.

## **2.0 PERMIT COVERAGE**

### **2.1 Facilities and Discharges Covered by the Permit**

Coverage under the general permit will be limited to WWTFs that treat primarily domestic wastewater to secondary treatment standards, have an actual flow and design flow of less than 1.0 mgd, and that discharge to surface water.

The WWTFs pre-selected for coverage under the general permit use processes similar to the description of operations described in fact sheet section 1.3. These facilities are listed in two tables of Appendix D of the permit. Appendix D, Table A contains a list of WWTFs that were authorized to discharge under the administratively extended AKG570000 and AKG5710000 general permits, and Appendix D, Table B contains a list of WWTFs that submitted a notice of intent (NOI) requesting permit coverage after the expiration date of the 2004 EPA-issued general permits as well as WWTFs that were previously covered under state permits.

See part 1.3 of the general permit for facilities and discharges that are not covered by the permit.

### **2.2 Automatic Coverage**

18 AAC 83.210(h) provides that the Department may notify a discharger that their discharge is covered by a general permit even if the discharger has not submitted a NOI seeking coverage. A discharger so notified may request an individual permit under 18 AAC 83.215(b).

WWTFs authorized under the administratively extended AKG570000 and AKG571000 EPA-issued general permits with the exception of those facilities that are excluded under part 1.3 of the permit, will receive automatic coverage. Upon permit coverage, an authorization letter identifying a new APDES authorization number and a copy of the final general permit and fact sheet will be sent to qualified facilities. Authorization to discharge under the general permit does not begin until the permittee receives a written notice of authorization from the Department.

As previously mentioned, 18 AAC 83.215(b) allows any owner or operator authorized by a general permit to request to be excluded from the coverage of the general permit by applying for an individual permit. The responsible party shall submit an individual permit application (Form 2A and Form 2M if requesting a mixing zone) with reasons supporting the request to the Department no later than 90 days after the publication of the general permit. The request shall be processed under the provisions of 18 AAC

83.115 and 18 AAC 83.120. The Department will grant the request by issuing an individual permit if the reasons cited by the responsible party are adequate to support the request.

A permittee who already has authorization to discharge under an individual permit may request general permit coverage. If the Department approves coverage under a general permit, the individual permit is revoked.

### **2.3 Applying for Coverage**

The Department anticipates that there are additional facilities that could obtain coverage under the general permit. 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:

- a) The eligible facility submits a completed NOI to the Department at least 30 days before the expected start of discharge. See part 1.4 of the general permit for specific notification requirements.
- b) The Department reviews the NOI for completeness.
- c) If the NOI is considered complete and the facility is considered eligible for coverage under the general permit, the Department sends the permittee 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 Department. If the Department determines that the NOI is not complete, the Department will request that additional information be submitted. If the Department determines that the facility is not eligible for coverage under the general permit, authorization will be denied and, if appropriate, the applicant will be directed to submit an application for an individual permit.

## **3.0 EFFLUENT LIMITS**

### **3.1 Basis for Permit Limits**

In general, the CWA requires that the limits for a particular pollutant be the more stringent of either technology-based effluent limits (TBELs) or water quality-based effluent limits (WQBELs). TBELs are set according to the level of treatment that is achievable using available technology. A WQBEL is designed to ensure that the WQS of a waterbody are met and may be more stringent than TBELs. A discussion of the basis for the effluent limits contained in AKG572000 follows.

### **3.2 Technology-Based Effluent Limits**

**5-Day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), pH, and Total Residual Chlorine (TRC)**

The CWA requires a POTW to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required technology-based



performance level, referred to as “secondary treatment,” that all POTWs were required to meet by July 1, 1977. “Secondary treatment” TBELs are established in 40 Code of Federal Regulations (CFR) §133.102 [which are adopted by reference at 18 AAC 83.010(e)]. The TBELs apply to all POTWs and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of the pollutants BOD<sub>5</sub>, TSS, and pH.

Per 40 CFR §125.3(c)(2), the Department is also using best professional judgment under section 402(a)(1) of the CWA to implement case-by-case technology-based secondary treatment requirements for non-POTWs (i.e. privately-owned treatment facilities) authorized to discharge domestic wastewater under this general permit. The secondary treatment requirements found in 40 CFR §133.102 were promulgated specifically for POTWs. While secondary requirements only directly apply to POTWs, the Department is applying secondary treatment standards to the privately-owned treatment facilities covered by this permit as they are identical to POTWs in mechanics and treatment efficacy, and accordingly, (the secondary standards) provide the most meaningful baseline pollutant control guidelines for this sector of privately-owned treatment facilities.

Monthly, weekly, and percent removal BOD<sub>5</sub> and TSS effluent requirements as well as pH minimum and maximum effluent limits may be found in the federal secondary treatment regulations at 40 CFR Part 133. Additionally, a maximum daily limit (MDL) of 60 milligrams per liter (mg/L) for BOD<sub>5</sub> and TSS is included in the general permit (as was required in the previous general permits) to meet the conditions of 18 AAC 83.480 (reissued permits) that require effluent limits, standards, or conditions to be at least as stringent as the final effluent limits, standards, or conditions in the previous permit.

The TRC limit of 0.5 mg/L is not found at 40 CFR §133.102 [adopted by reference at 18 AAC 83.010(e)] nor is it a state regulation; rather it is derived from standard domestic wastewater treatment operating practices. The Water Pollution Control Federation's (WPCF) Chlorination of Wastewater (1976), indicates that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual concentration is maintained after 15 minutes of contact time. The WPCF concluded that a treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis.

An average monthly limit (AML) of 0.5 mg/L for TRC was applied as a TBEL in the previous general permits for facilities with authorized TRC mixing zones. (see fact sheet section 4.0 for a discussion on mixing zones). The general permits also contained a TRC MDL of 1.0 mg/L. Consistent with the conditions of 18 AAC 83.480 (reissued permits) that require effluent limits, standards, or conditions to be at least as stringent as the final effluent limits, standards, or conditions in the previous permit, and in the absence of new information to indicate TRC technological advances that would alter the WPCF's 1976 conclusions, the TRC limits that were applied as TBELs in the previous general permits are being applied as TRC TBELs in AKG572000.



TBELs for this general permit are presented in Table 1.

**Table 1: Technology-Based Effluent Limits**

Parameter	Average Monthly Limit (mg/L)	Average Weekly Limit (mg/L)	Maximum Daily Limit (mg/L)	Percent Removal (%)
5-Day Biochemical Oxygen Demand	30	45	60	85
Total Suspended Solids	30	45	60	85
pH	within the range of 6.0 - 9.0 standard units			
Total Residual Chlorine	0.5	---	1.0	---

### 3.3 Water Quality-Based Effluent Limits

WQBELs included in APDES permits are derived from WQS. APDES regulations 18 AAC 83.435(a)(1) require that permits include WQBELs that “achieve water quality standard established under CWA §303, including State narrative criteria for water quality.” The WQS are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy (see fact sheet section 8.0 for a discussion on antidegradation). The use classification system designates the beneficial uses that each waterbody is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the state to support the beneficial use classification of each waterbody.

Waterbodies in Alaska are designated for all uses unless the water has been reclassified under 18 AAC 70.230 as listed under 18 AAC 70.230(e). Some waterbodies in Alaska may also have site-specific water quality criteria per 18 AAC 70.235, such as those listed under 18 AAC 70.236(b).

AKG572000 authorizes discharges of secondary treated domestic wastewater to both fresh and marine waterbodies. The designated uses for freshwater are water supply for drinking, culinary, and food processing, agriculture, aquaculture, and industrial; contact and secondary recreation; and growth and propagation of fish, shellfish, other aquatic life, and wildlife. The designated uses for marine water are water supply for aquaculture, seafood processing, and industrial; contact and secondary recreation; growth and propagation of fish, shellfish, other aquatic life, and wildlife; and harvesting for consumption of raw mollusks or other raw aquatic life. WQS for freshwater uses and marine uses can be different and are noted below.

#### 3.3.1 TRC

The WQS for toxic and other deleterious organic and inorganic substances for

freshwater uses are codified in 18 AAC 70.020(b)(11) and for marine water uses in 18 AAC 70.020(b)(23). TRC criteria provide protection for aquatic life. For freshwater the WQS requires that TRC may not exceed either an acute concentration of 0.019 mg/L or a chronic concentration of 0.011 mg/L. For marine water the WQS requires that TRC may not exceed either an acute concentration of 0.013 mg/L or a chronic concentration of 0.0075 mg/L.

### **3.3.2 Fecal Coliform Bacteria (FC)**

FC bacteria are a non-pathogenic indicator species whose presence suggests the likelihood that pathogenic bacteria are present. The most stringent WQS at 18 AAC 70.020(b)(2)(A) provides protection for freshwater designated for drinking, culinary, and food processing water supply. The WQS requires that in a 30-day period, the geometric mean may not exceed 20 FC/100 mL, and not more than 10% of the samples may exceed 40 FC/100 mL. The most stringent WQS at 18 AAC 70.020(b)(14)(D) provides protection for marine water designated for harvesting for consumption of raw mollusks or other raw aquatic life. The WQS require that in a 30-day period, the geometric mean of samples may not exceed 14 FC/100 mL, and not more than 10 percent of the total samples may exceed 43 FC/100 mL.

### **3.3.3 Dissolved Oxygen (DO)**

WQS at 18 AAC 70.020(b)(3) states that surface DO for freshwater uses to include the growth and propagation of fish, shellfish, other aquatic life, and wildlife must be greater than 7 mg/L and in no case may DO be greater than 17 mg/L. WQS at 18 AAC 70.020(b)(15)(C) states that surface DO for marine water uses to include the growth and propagation of fish, shellfish, other aquatic life, and wildlife must be greater than 6 mg/L and that in no case may DO be greater than 17 mg/L.

### **3.3.4 pH**

WQS for pH at 18 AAC 70.020(b)(6) for freshwater uses and 18 AAC 70.020(b)(18)(C) for marine uses provides protection for the growth and propagation of fish, shellfish, other aquatic life, and wildlife. The WQS for both freshwater and marine water pH may not be less than 6.5 standard pH units (s.u.) or greater than 8.5 s.u.

Table 2 lists the applicable water criteria as WQBELs for TRC, FC, DO and pH.



**Table 2: Water Quality Based Effluent Limits**

Parameter	Units	Water	Chronic	Acute
Total Residual Chlorine (TRC) <sup>a</sup>	mg/L	fresh	0.011	0.019
		marine	0.0075	.013
Fecal Coliform Bacteria (FC)	FC/100 mL	fresh	20	40 <sup>b</sup>
		marine	14	43 <sup>c</sup>
Dissolved Oxygen	mg/L	fresh	may not be less than 7 or greater than 17	
		marine	may not be less than 6 or greater than 17	
pH	s.u.	fresh	may not be less than 6.5 or greater than 8.5	
		marine	may not be less than 6.5 or greater than 8.5	

Footnotes:

a. TRC effluent limits are only applicable if chlorine is used as a disinfectant.

b. Not more than 10% of the samples may exceed 40 FC/100 mL

c. Not more than 10% of the samples may exceed 43 FC/100 mL



### 3.4 Flow

Flow will be based on the hydraulic design capacity of the WWTF (flow rate as gallons per day) and shall be determined by a professional engineer and approved by the Department during the WWTF plan review process conducted per 18 AAC 72. A flow limit based on the design capacity ensures that the WWTF operates within its capabilities to receive and properly treat sustained average flow quantities and specific pollutants.

### 3.5 Mass-Based Limits

The general permit contains place holders for mass-based limits for BOD<sub>5</sub> and TSS. State regulations at 18 AAC 83.540 require that effluent limits be expressed in terms of mass unless they cannot appropriately be expressed by mass, if it is infeasible, or if the limits can be expressed in terms of other units of measurement. In addition, 18 AAC 83.520 requires that effluent limits for a POTW be calculated based on the design flow of the WWTF. Expressing limitations in terms of concentration as well as mass encourages the proper operation of a WWTF at all times.

Because mass-based limits are derived from the facility's design flow, they must be calculated for each facility and therefore mass-based limits will be assigned during the authorization process. The mass-based limits are expressed in lbs/day and are calculated as follows:

$$\text{Mass based limit } \left( \frac{\text{lbs}}{\text{day}} \right) = \text{concentration limit } \left( \frac{\text{mg}}{\text{L}} \right) \times \text{design flow (mgd)} \times 8.34 \frac{\text{lbs}}{\text{gal}}$$

### 3.6 Effluent Limits Summary

The more stringent of the technology or WQBELs are included as permit limits.

**Table 3: Effluent Limits**

EFFLUENT PARAMETER	UNITS	EFFLUENT LIMITS					
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit	Average Monthly Percent Removal	Minimum Daily Limit	Basis for Limit
Flow <sup>a</sup>	gpd	---	---	---	---	---	---
pH	s.u.	---	---	8.5	---	6.5	18 AAC 83.010(e)
Total Residual Chlorine (TRC) <sup>b,c</sup>	mg/L	0.011 (fresh)	---	0.019 (fresh)	---	---	18 AAC 70.020(b)(11)
		0.0075 (marine)		0.013 (marine)			18 AAC 70.020(b)(23)
Dissolved Oxygen	mg/L	---	---	17	---	7 (fresh)	18 AAC 70.020(b)(3)
						6 (marine)	18 AAC 70.020(b)(15)
5-Day Biochemical Oxygen Demand (BOD <sub>5</sub> )	mg/L	30	45	60	85% <sup>e</sup> (minimum)	---	18 AAC 83.010(e)
	lbs/day <sup>d</sup>	---	---	---			
Total Suspended Solids (TSS)	mg/L	30	45	60	85% <sup>e</sup> (minimum)	---	18 AAC 83.010(e)
	lbs/day <sup>d</sup>	---	---	---			
Fecal Coliform Bacteria (FC) <sup>f</sup>	FC/100 mL	20 (fresh)	---	40 (fresh)	---	---	18 AAC 70.020(b)(2)
		14 (marine)		43 (marine)			18 AAC 70.020(b)(14)

**Footnotes**

- A facility specific flow limit shall be included as a part of the authorization to discharge.
- The TRC effluent limits are not quantifiable using EPA approved analytical methods. DEC will use the minimum level (ML) of 0.1 mg/L as the compliance evaluation level for this parameter.
- Monitoring for chlorine is not required if chlorine is not used as a disinfectant or introduced elsewhere in the treatment process.
- 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.
- Minimum % Removal = [(monthly average influent concentration in mg/L - monthly average effluent concentration in mg/L) / (monthly average influent concentration in mg/L)] x 100. The monthly average percent removal must be calculated using the arithmetic mean of the influent value and the arithmetic mean of the effluent value for that month.
- All effluent FC average results must be reported as the geometric mean. When calculating the geometric mean, replace all results of zero, 0, with a one, 1. The geometric mean of "n" quantities is the "nth" root of the quantities. For example the geometric mean of 100, 200, and 300 is  $(100 \times 200 \times 300)^{1/3} = 181.7$ .

## 4.0 MIXING ZONES

Mixing zones are DEC authorized areas where an effluent undergoes initial dilution. A mixing zone is an allocated impact zone in the receiving waterbody 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.

In accordance with 18 AAC 70.240, as amended through June 23, 2003, DEC may authorize mixing zones. Permittees may request modification to effluent limits pursuant to 18 AAC 70.260. If a mixing zone is requested, Form 2M must also be submitted with the NOI. Form 2M may be located through the link in part 1.4.2 of the general permit. Per 18 AAC 70.260,



the burden of proof for justifying a mixing zone rests with the applicant. Note the Department has determined that existing dischargers listed in Appendix D of the permit (that requested a mixing zone) have satisfied this requirement.

Appendix A outlines criteria that must be met prior to the Department authorizing a mixing zone. These criteria include an analysis of the size of the mixing zone, treatment technology, existing uses of the waterbody, human consumption, spawning areas, human health, aquatic life, and endangered species. If one criterion is not met, then a mixing zone is prohibited and effluent limits must be met at the end of the outfall line prior to discharge to the receiving waterbody.

The Department may establish limits at the boundary of an authorized mixing zone in the receiving waterbody. These limits shall be based on the limits and requirements of the Alaska WQS (18 AAC 70). The permittee will be notified of any receiving waterbody limits when issued authorization by DEC to discharge under the general permit.

The Department reviewed effluent and mixing zone monitoring data for each of the facilities that were authorized mixing zones under AKG570000 and AKG571000. The monitoring results do not support revising the mixing zones, nor is there a documented basis for concern to do so at this time. Therefore, the mixing zones for each of the facilities previously authorized under AKG570000 and AKG571000 and that are eligible for coverage under AKG572000 shall be reauthorized. If facility conditions change (e.g. increase flow volume) requiring the permittee to provide updated mixing information, DEC will evaluate the submitted information to determine if modification of the existing mixing zone authorization is warranted.

## **5.0 MONITORING**

### **5.1 Basis for Effluent and Ambient Monitoring**

In accordance with 18 AAC 83.430, the Department may specify in a permit the terms and conditions under which waste material may be disposed of. Monitoring in permits is required to determine compliance with effluent limits. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limits are required and/or to monitor effluent impact on receiving waterbody quality. The permittees are responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the Department. In addition to the pollutants that are listed above as having permit limits that require monitoring to track compliance, sections 5.2 through 5.4 outline additional monitoring requirements DEC has determined necessary to implement in the permit.

### **5.2 Enterococci Bacteria**

Enterococci bacteria are indicator organisms of harmful pathogens in marine water and are a better indicator of acute gastrointestinal illness than fecal coliform bacteria. In 1986 EPA published Ambient Water Quality Criteria for Bacteria-1986 that contained their recommended bacteria water quality criteria for primary contact recreational users from gastrointestinal illness. The Beaches Environmental Assessment and Coastal



Health Act of 2000 requires states and territories with coastal recreation waters to adopt bacteria criteria into their WQS that are as protective as EPA's 1986 published bacteria criteria by April 10, 2004. Alaska did not adopt the enterococci bacteria into the WQS by the April 10, 2004 deadline, therefore EPA promulgated the 1986 bacteria criteria for Alaskan coastal recreational waters in 2004. Accordingly, monitoring for enterococci bacteria shall be required for all facilities authorized to discharge under AKG572000. At the end of the five year permit cycle, DEC will evaluate the monitoring data and assess the need for applying enterococci limits in the next reissuance of the general permit.

### **5.3 Total Ammonia as Nitrogen**

Total ammonia is the sum of ionized ( $\text{NH}_4^+$ ) and un-ionized ammonia ( $\text{NH}_3$ ). Temperature and pH affect which form,  $\text{NH}_4^+$  or  $\text{NH}_3$  is present.  $\text{NH}_3$ , which is more toxic to aquatic organisms than  $\text{NH}_4^+$ , predominates at higher pH and temperature levels.

Biological wastewater treatment processes reduce the amount of total nitrogen in domestic wastewater; however without advanced treatment, wastewater effluent may still contain elevated levels of ammonia nitrogen. Excess ammonia nitrogen in the environment can lead to dissolved oxygen depletion, eutrophication, and toxicity to aquatic organisms.

In order to evaluate the discharge of ammonia nitrogen, the Department is requiring that the largest facilities, those that discharge above 0.25 mgd up to 1.0 mgd and that would likely have the largest impact in the environment, to monitor for total ammonia as nitrogen for four years beginning in the second year of the general permit. Criteria for ammonia are pH and temperature dependent; therefore temperature and pH measurements shall be taken concurrently with ammonia. The Department will analyze the monitoring results to determine whether continued monitoring or limits for total ammonia are warranted in the next reissuance of the general permit. If the Department discontinues ammonia monitoring it will be discontinued as per the requirements for reissued permits at 18 AAC 83.480.

### **5.4 Temperature and pH**

Criteria for ammonia are pH and temperature dependent, therefore temperature and the pH measurements that are necessary for ammonia monitoring shall be taken concurrently with ammonia.

### **5.5 Monitoring Frequencies**

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 and compliance. Permittees have the option of taking more frequent samples than are required under the general permit. These samples must be used for averaging if they are conducted using the Department-approved test methods (generally found in 18 AAC 70 and 40 CFR §136 [adopted by reference in 18 AAC 83.010]) and if the method detection limits are less than the effluent limits.

Facilities covered under the general permit are expected to range in size from a few hundred gallons per day (gpd) discharge up to 1 mgd. Given this wide range in discharge



volume, the general permit requires monitoring frequencies that are dependent on the design flow of the facility.

The monitoring frequencies are divided into three categories:

- Class A WWTFs with a design flow above 250,000 gpd up to 1.0 mgd
- Class B WWTFs with a design flow above 5,000 gpd up to and including 250,000 gpd
- Class C WWTFs with a design flow less than and including 5,000 gpd

Table 4 summarizes monitoring frequencies for the three design flow categories.

**1. Table 4: Monitoring Requirements**

Design Flow	Parameter	Monitoring Frequency	Sample Type
Class A: above 250,000-1,000,000 gpd	Flow	daily (5/week)	recording
	pH	daily (5/week) <sup>a</sup>	grab
	Total Residual Chlorine (TRC)	daily (5/week)	grab
	Dissolved Oxygen (DO)	1/week	grab
	5-Day Biochemical Oxygen Demand (BOD <sub>5</sub> )	2/month	24-hour composite <sup>b</sup>
	Total Suspended Solids (TSS)	2/month	24-hour composite <sup>b</sup>
	Fecal Coliform Bacteria (FC)	2/month	grab
	Enterococci Bacteria	1/month <sup>c</sup>	grab
	Total Ammonia as Nitrogen	quarterly (4/year) <sup>d</sup>	grab
	Temperature	quarterly (4/year) <sup>a,d</sup>	grab
Class B: above 5,000-250,000 gpd	Flow	daily (5/week)	measured
	pH	3/week	grab
	TRC	3/week	grab
	DO	1/month	grab
	BOD <sub>5</sub>	1/month	grab or composite
	TSS	1/month	grab or composite
	FC	1/month	grab
	Enterococci Bacteria	1/month <sup>c</sup>	grab
Class C: less than 5,000 gpd	Flow	1/week	measured or estimated
	pH	1/quarter	grab
	TRC	1/week	grab
	DO	1/quarter	grab
	BOD <sub>5</sub>	1/quarter	grab or composite
	TSS	1/quarter	grab or composite
	FC	1/quarter	grab
	Enterococci Bacteria	1/quarter <sup>c</sup>	grab

**Footnotes:**

- a. pH and temperature must be measured concurrently with ammonia when ammonia is sampled.
- b. See Appendix C of the general permit for a definition of composite
- c. Enterococci bacteria monitoring only required May – September when discharging to marine water.
- d. Ammonia and temperature sampling is only required in years 2 through 5 of the permit.



## **6.0 AMBIENT MONITORING**

Receiving water monitoring is occasionally required in APDES permits in order to evaluate if the effluent is causing or contributing to an in stream excursion of WQS. Given the nature and size of the discharges authorized under the general permit, ambient monitoring is not a permit requirement. The permit, however, does allow the permitting authority to require ambient monitoring under specific situations. Ambient monitoring may be required in individual authorizations for site specific evaluations related to: protection of WQS, evaluation of receiving waterbody 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.

## **7.0 COMPLIANCE SCHEDULES**

Per 18 AAC 70.910, the Department has authority to include compliance schedules as conditions of a permit, certification, or approval. 18 AAC 83.560 also specifically discusses compliance schedules in APDES permits. DEC has determined that facilities that have historically received authorizations containing high FC permit effluent limits (e.g. AML 100,000 FC/100 mL, MDL 150,000 FC/100 mL) will receive five-year compliance schedules in their authorizations to come into compliance with the more stringent FC limits (AML 200 FC/100 mL, AWL 400 FC/100 mL, MDL 800 FC/100 mL) that the vast majority of permittees covered by this general permit have demonstrated the capability of achieving on a regular basis.

Compliance with the new FC effluent limits must be met as soon as possible. However, in order to meet the new FC effluent limits, facility upgrades may become necessary and will require the submittal and DEC approval of engineered plans, the procurement of funding, the seeking and awarding of bids, the construction or installation of new treatment operations, the receipt of DEC's final approval to operate, and the optimization of the facility with the new upgrade. Therefore, a five-year compliance schedule will provide a reasonable and appropriate time frame to achieve compliance with the new FC effluent limits. Also since the compliance schedules will extend beyond one year, 18 AAC 83.560(b) states that interim requirements and dates for their achievement must be established. These interim requirements and dates for their achievement will be outlined in each authorization that obtains the five-year compliance schedule.

## **8.0 ANTI-BACKSLIDING**

18 AAC 83.480 requires that "effluent limitations, standards, or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." 18 AAC 83.480 (c) also says that a permit may not be reissued "to contain an effluent limitation that is less stringent than required by effluent guidelines in effect at the time the permit is renewed or reissued." The effluent limitations in this permit reissuance are consistent with 18 AAC 83.430. The permit effluent limitations, standards, and conditions in AKG572000 are



as stringent as in the previous permits, AKG570000 and AKG571000. Accordingly, no backsliding analysis is required for this permit reissuance.

## 9.0 ANTIDEGRADATION

The Antidegradation Policy of the Alaska WQS (18 AAC 70.015) states that the existing water uses and the level of water quality necessary to protect existing uses must be maintained and protected. The Department's approach to implementing the policy found in 18 AAC 70.015 is based on the requirements in 18 AAC 70 and the *Interim Antidegradation Implementation Methods* dated July 14, 2010. Using these requirements and policies, the Department determines on a parameter-by-parameter basis whether a waterbody or a portion of a waterbody is classified tier 1, 2, or 3 where a larger number indicates a greater level of water quality protection. Tier 3 classifications, or "outstanding national resource" waters, have not currently been identified in the State. Where there is insufficient information to make a determination about water quality, the Department presumes that the water is of high quality and subject to at least tier 2 protection. A degradation to tier 2 waters may occur only after the Department concludes that the five findings at 18 AAC 70.015(a)(2)(A)-(E) are met.

There is insufficient information to make a reasonable determination of water quality for all potential waterbodies under AKG572000 on a parameter-by-parameter basis. As a result, for purposes of applying the antidegradation policy, the Department has conservatively assumed that the receiving waterbody for each authorized discharge is a tier 2 waterbody for all parameters regulated under the permit.

18 AAC 70.015(a)(2)(A)-(E) and the Department's findings are as follows:

- ***AAC 70.015 (a)(2)(A). Allowing lower water quality is necessary to accommodate important economic or social development in the area where the water is located.***

Because of the nature of the discharges, all existing facilities covered under the general permit, expansions of existing facilities (still resulting in a total design flow of less than 1.0 mgd), and facilities authorized to discharge under the general permit for the first time would be expected to cause only minor degradation of water quality. All facilities authorized to discharge under the general permit are minor POTWs or other facilities treating domestic wastewater with design discharge flows of less than 1.0 mgd. Furthermore, most facilities authorized to discharge have flow volumes that are considerably less than 1.0 mgd. These facilities do not receive significant contributions from non-domestic industrial users. Facilities not meeting these criteria are excluded from coverage under the general permit. The effluent limits in the general permit are consistent with all applicable technology standards and Alaska WQS and, as discussed above in part 8.0, are the same as the effluent limits in the 2004 EPA-issued general permits, AKG570000 and AKG571000. Consequently, the allowable concentrations of pollutants discharged by facilities covered under the existing general permit remain the same.



The treatment processes used at the treatment facilities covered under the general permit are considered standard secondary treatment (e.g. activated sludge) and are processes commonly used by POTWs and other privately-owned treatment works treating domestic wastewater throughout the U.S. A major upgrade of treatment processes or implementation of other wastewater disposal alternatives designed to eliminate the potential for minor degradation of water quality, if technically feasible, would require a substantial financial investment for both community-based POTWs and small privately owned treatment works as well as state and federal grant and loaning agencies, and could result in an increase in user and consumer fees. Increased treatment costs and consumer fees lead to decreases in “after tax” or disposable personal income (DPI) spending of ratepayers. Reductions in DPI in a community’s local economy would result in fewer dollars being spent on non-essential goods and services by ratepayers, ultimately leading to decreases in labor demand, which further impacts household spending due to losses in employment.

WWTFs, facility expansions, and surface water discharges from new facilities accommodate planned and approved growth in the areas surrounding the facilities. Thus, current and future development in the communities served by the facilities authorized to discharge under the general permit is dependent on collection, treatment, and discharge of wastewater. Eliminating or requiring implementation of alternatives to existing discharges, prohibiting capacity increases of existing discharges, and prohibiting coverage of new dischargers under the general permit would inhibit important socioeconomic growth and development in the areas where the discharges are located.

DEC determined that the permitted activities are necessary to accommodate important economic and social development and the anticipated minor lowering of water quality is necessary for these purposes; therefore, 18 AAC 70.015(a)(2)(A) is satisfied.

- ***18 AAC 70.015 (a)(2)(B). Except as allowed under this subsection, reducing water quality will not violate the applicable criteria of 18 AAC 70.020 or 18 AAC 70.235 or the whole effluent toxicity limit in 18 AAC 70.030.***

Facilities with wasteload allocations from an approved total maximum daily load analysis and facilities discharging a pollutant that causes or contributes to an impairment of a waterbody listed as impaired on the CWA Section 303(d) list are excluded from coverage under the general permit. Therefore, discharges authorized by the general permit will not cause or contribute to impairment of the state’s waters. Furthermore, general permit conditions stipulate that the discharge shall not cause contamination of surface or ground waters nor shall the discharge cause a violation of Alaska WQS 18 AAC 70.

Pollutants of concern in treated domestic wastewater include the conventional pollutants BOD<sub>5</sub>, TSS, oil and grease, pH, and FC. TRC is also a pollutant of concern where chlorine is used for treatment of pathogens. The general permit includes numeric or narrative effluent limits and best management practices addressing each of these pollutants of concern. Furthermore, the general permit contains monitoring and reporting requirements for



enterococci bacteria to determine what levels, if any, of this pathogen is present in the wastestream.

In addition, any facility receiving a significant contribution from a non-domestic industrial user is excluded from coverage under the general permit. Because of the nature of the permitted discharges, other pollutants are not expected to be present in the discharges at levels that would cause, have the reasonable potential to cause, or contribute to an exceedance of any Alaska WQS, including the whole effluent toxicity limit at 18 AAC 70.030.

DEC determined that the reduction in water quality will not violate the criteria of 18 AAC 70.020, 18 AAC 70.235, or 18 AAC 70.030; therefore, 18 AAC 70.015(a)(2)(B) is satisfied.

- ***18 AAC 70.015(a)(2)(C). The resulting water quality will be adequate to fully protect existing uses of the water.***

The general permit requires eligible POTWs and other privately-owned treatment facilities treating domestic wastewater to meet numeric and narrative effluent limits. The effluent limits and best management practices are derived from and comply with the applicable technology standards and Alaska WQS, including the most stringent water quality criteria for each pollutant of concern to ensure protection of all water use classes in Alaska's WQS.

The general permit requires influent and effluent monitoring at frequencies based on design flow. Facilities with larger design flows are required to monitor more frequently than facilities with smaller design flows. The results of this monitoring must be reported to DEC. In addition, DEC will perform permit compliance inspections to meet the goals of the Department's Division of Water Compliance Program. The permit allows DEC to require additional or ambient monitoring through the authorization to discharge for site-specific evaluations related to protection of WQS, evaluation of receiving water impairments, or evaluation of issues associated with threatened or endangered species.

DEC determined that the discharges from POTWs and other privately-owned treatment facilities treating domestic wastewater operating under the terms and conditions of the general permit will be adequate to fully protect the existing uses of the water; therefore, 18 AAC 70.015(a)(2)(C) is satisfied.

- ***18 AAC 70.015(a)(2)(D). The methods of pollution prevention, control, and treatment found by the department to be most effective and reasonable will be applied to all wastes and other substances to be discharged.***

The general permit contains effluent limits for BOD<sub>5</sub> and TSS based on the federal secondary treatment standards at 40 CFR 133.102. These standards are adopted by reference at 18 AAC 83.010(e) and applied to all facilities discharging domestic wastewater (including privately-



owned treatment facilities) by 18 AAC 72.050. The activated sludge treatment processes used at the treatment facilities covered under the general permit are considered standard secondary treatment processes used by POTWs and other privately-owned treatment facilities treating domestic wastewater throughout the U.S.

The pH, FC, TRC, and DO limits in the permit are derived from and comply with Alaska's WQS. These limits are applied based on attaining the most stringent applicable water quality criteria at the point of discharge or on attaining these water quality criteria at the boundary of a mixing zone authorized pursuant to 18 AAC 70.240. Any modified effluent limits based on an authorized mixing zone must also comply with the applicable technology standards. For example, modified pH limits may not be less than 6.0 or greater than 9.0 standard units, which are the secondary treatment standards for pH. These values were included in the 2004 EPA-issued general permit based on standard treatment practices and have been carried over to the reissued general permit.

The methods of prevention, control, and treatment DEC finds to be most effective are the practices and requirements set out in the permit; therefore, 18 AAC 70.015(a)(2)(D) is satisfied.

- ***18 AAC 70.015(a)(2)(E). All wastes and other substances discharged will be treated and controlled to achieve (i) for new and existing point sources, the highest statutory and regulatory requirements; and (ii) for nonpoint sources, all cost-effective and reasonable best management practices.***

The "highest statutory and regulatory requirements" are defined in 18 AAC 70.990(30) (as amended June 26, 2003) as:

- (A) any federal TBEL identified in 40 CFR §125.3 and 40 CFR §122.29, as amended through August 15, 1997, adopted by reference;
- (B) minimum treatment standards in 18 AAC 72.040; and
- (C) any treatment requirement imposed under another state law that is more stringent than a requirement of this chapter.

The first part of the definition includes all federal TBELs for POTWs. CWA Section 304(d) required EPA to publish information on the degree of effluent reduction attainable through the application of secondary treatment for certain types of POTWs. Section 301(b)(1)(b) requires POTWs to meet effluent limits based on secondary treatment standards. EPA promulgated secondary treatment standards at 40 CFR Part 133. Alaska adopted these standards by reference at 18 AAC 83.010(e) and applied them to all facilities discharging domestic wastewater including privately-owned treatment works in 18 AAC 72.050. Facilities receiving authorization to discharge under AKG572000 must meet the terms and conditions included in the permit that are derived from and comply with these statutory and regulatory requirements.



TBELs found at 40 CFR §133.102 include BOD<sub>5</sub>, TSS, and pH. These limits are applied as TBELs in AKG572000. The regulations at 40 CFR §122.29 refers to industrial wastewater discharge and does not apply to AKG572000's domestic wastewater discharge.

The second part of the definition appears to be in error, as 18 AAC 72.040 describes discharges to sewers and not minimum treatment. The correct reference appears to be the minimum treatment standards found at 18 AAC 72.050, which refers to domestic wastewater discharges. Coverage under this permit will be limited to POTWs or privately-owned treatment works that provide a minimum of secondary treatment of domestic wastewater, the minimum treatment requirements found at 18 AAC 72.050.

The third part of the definition refers to treatment requirements imposed under another state law that are more stringent than 18 AAC 70. Other regulations beyond 18 AAC 70 that apply to this permitting action include 18 AAC 15 and 18 AAC 72. Neither the regulations in 18 AAC 15 and 18 AAC 72 nor another state law that the Department is aware of impose more stringent requirements than those found in 18 AAC 70.

The methods of treatment and control DEC finds to achieve the highest statutory and regulatory requirements are the practices and requirements set out in the permit; therefore, 18 AAC 70.015(a)(2)(E) is satisfied.

## **10.0 OTHER LEGAL REQUIREMENTS**

### **10.1 Endangered Species Act**

The National Marine Fisheries Service (NMFS) is responsible for administration of the Endangered Species Act (ESA) for listed cetaceans, seals, sea lions, sea turtles, anadromous fish, marine fish, marine plants, and corals. All other species (including polar bears, walrus, and sea otters) are administered by the U.S. Fish and Wildlife Service (USFWS).

Section 7 of the ESA requires a federal agency to consult with the USFWS and NMFS to determine whether their authorized actions may harm threatened and endangered species or their habitats. As a state agency, DEC is not required to consult with USFWS or NMFS regarding permitting actions; however, DEC interacts voluntarily with these federal agencies to obtain listings of threatened and endangered species and critical habitat.

The general permit covers WWTFs that discharge into all potential marine and freshwater surface waterbodies in the State of Alaska. Tetra Tech, Inc., on behalf of the Department, conducted an Ocean Discharge Criteria Evaluation (ODCE) in 2010 and identified threatened and endangered species that may be potentially affected by discharges from facilities authorized under the general permit.

The Department reviews the listing periodically for updates. Species of concern that inhabit or that have inhabited these waters at least at one time and that are listed as either threatened or endangered as of April 2012 are included in Table 5. The



USFWS and NMFS Endangered, Threatened, Proposed, Candidate, and Delisted Species in Alaska table may be accessed through the following link:

<http://www.fakr.noaa.gov/protectedresources/default.htm>

**Table 5: Threatened and Endangered Species**

Species Name	Scientific Name	Listing Status
Albatross, short-tailed	<i>Phoebastria (Diomedea) albatrus</i>	Endangered
Bear, polar	<i>Ursus maritimus</i>	Threatened
Curlew, Eskimo	<i>Numenius borealis</i>	Endangered
Eider, spectacled	<i>Somateria fischeri</i>	Threatened
Eider, Stellar's AK breeding population	<i>Polysticta stelleri</i>	Threatened
Otter, Northern Sea southwest Alaska distinct population segment	<i>Enhydra lutris kenyoni</i>	Threatened
Seal, bearded Beringia distinct population segment	<i>Erignathus barbatus nauticus</i>	Proposed for Listing
Seal, ringed Arctic subspecies	<i>Phoca hispida hispida</i>	Proposed for Listing
Sea turtle, green*	<i>Chelonia mydas</i> , including <i>agassizi</i>	Threatened
Sea turtle, leatherback*	<i>Dermochelys coriacea</i>	Endangered
Sea turtle, loggerhead*	<i>Caretta caretta</i>	Threatened
Sea-lion, Stellar eastern population (east of 144° longitude)	<i>Eumetopias jubatus</i>	Threatened
Sea-lion, Stellar western population (west of 144° longitude)	<i>Eumetopias jubatus</i>	Endangered
Whale, blue*	<i>Balaenoptera musculus</i>	Endangered
Whale, bowhead	<i>Balaena mysticetus</i>	Endangered

Species Name	Scientific Name	Listing Status
Whale, Cook Inlet beluga	<i>Delphinapterus leucas</i>	Endangered
Whale, finback	<i>Balaenoptera physalus</i>	Endangered
Whale, humpback	<i>Megaptera novaeangliae</i>	Endangered
Whale, North Pacific right*	<i>Eubalaena japonica</i>	Endangered
Whale, sei*	<i>Balaenoptera borealis</i>	Endangered
Whale, sperm	<i>Physeter catodon</i> (= <i>macrocephalus</i> )	Endangered
*Occurs rarely in Alaska		

## 10.2 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) designates Essential Fish Habitat (EFH) in waters used by anadromous salmon and various life stages of marine fish under NMFS jurisdiction. EFH refers to those waters and associated river bottom substrates necessary for fish spawning, breeding, feeding, or growth to maturity—including aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish. Spawning, breeding, feeding, or growth to maturity covers a species' full life cycle necessary for fish from commercially-fished species to spawn, breed, feed, or grow to maturity.

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.

Section 305(b) of the Magnuson-Stevens Act 916 USC 1855(b)) requires federal agencies to consult the NMFS when any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated EFH as defined by the Act. As a state agency, DEC is not required to consult with NMFS regarding permitting actions, but interacts voluntarily with NMFS to identify EFH.

Tetra Tech, Inc., on behalf of the Department, conducted an ODCE in 2010 and identified EFH for Alaska marine waters. (Tetra Tech 2010b). These maps are available for review in Appendix C of the ODCE prepared by Tetra Tech, or at <http://www.alaskafisheries.noaa.gov/habitat>



ADF&G also maintains regulatory and interactive maps that identify anadromous streams, fish passage, and fish inventory at:

<http://www.adfg.alaska.gov/sf/SARR/AWC/index.cfm?ADFG=maps.maps>

### **10.3 Ocean Discharge Criteria Evaluation**

The Ocean Discharge Criteria establish guidelines for permitting discharges into the territorial seas, the contiguous zone and the ocean. The Department conducted an ODCE using criteria established in accordance with CWA Section 403 and 40 CFR Part 125, adopted by reference at 18 AAC 83.010(c). Based on the available information, the Department determines whether the discharge will cause unreasonable degradation of the marine environment. 40 CFR Part 125.121, adopted by reference at 18 AAC 83.010(c)(8), states unreasonable degradation of the marine environment means

- a) significant adverse changes in ecosystem diversity, productivity, and stability of the biological community within the area of discharge and surrounding biological communities;
- b) threat to human health through direct exposure to pollutants or through consumption of exposed aquatic organisms; or
- c) loss of aesthetic, recreational, scientific or economic values which is unreasonable in relation to the benefit derived from the discharge.

40 CFR Part 125.122, adopted by reference at 18 AAC 83.010(c)(8), provides 10 criteria to consider in the determination of whether there is unreasonable degradation or irreparable harm. The 10 criteria 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 importance of the receiving water area; 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 criteria, the Department 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 general permit is for authorization of small facilities treating domestic wastewater only. Facilities are required to treat the wastewater to secondary treatment standards and comply with WQS either at the end of the pipe prior to discharge, or at the boundary of an authorized mixing zone. Due to the size and nature of the discharge and compliance with WQS, unreasonable degradation should not occur when facilities are operating under the terms and conditions of the permit.

### **10.4 Permit Expiration**

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

## REFERENCES

- DEC (Alaska Department of Environmental Conservation). 2003. Alaska water quality criteria manual for toxic and other deleterious organic and inorganic substances. State of Alaska, Department of Environmental Conservation.
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- Tetra Tech, Inc. 2010a. *Unpublished*. Alaska general permits for small wastewater treatment plants, fact sheet discussion—antidegradation policy implementation. Located at: Alaska Department of Environmental Conservation, 610 University Avenue, Fairbanks, Alaska and Alaska Department of Environmental Conservation 555 Cordova Street, Anchorage, Alaska.
- Tetra Tech, Inc. 2010b. *Unpublished*. Ocean discharge criteria evaluation, APDES general permit small publicly owned treatment works and other small treatment works providing secondary treatment of domestic sewage discharging to marine water in Alaska, APDES general permit No. AKG57M000. Located at: Alaska Department of Environmental Conservation, 610 University Avenue, Fairbanks, Alaska and Alaska Department of Environmental Conservation 555 Cordova Street, Anchorage, Alaska.
- USFWS (U.S. Fish and Wildlife Service). 2010. U.S. Fish & Wildlife Service, endangered species. [http://alaska.fws.gov/fisheries/endangered/consultation\\_guide.htm](http://alaska.fws.gov/fisheries/endangered/consultation_guide.htm). Accessed February 15, 2011.
- Water Pollution Control Federation. 1976. Chlorination of wastewater, manual of practice no. 4. Moore & Moore, Washington D.C.



## APPENDIX A: MIXING ZONE ANALYSIS CHECK LIST

The purpose of the Mixing Zone Check List is to guide the permit writer through the mixing zone regulatory requirements to determine if all the mixing zone criteria at 18 AAC 70.240 through 18 AAC 70.270 are satisfied, as well as provide justification to establish a mixing zone in an APDES permit. In order to establish a mixing zone, all criteria must be met. The permit writer must document all conclusions in the permit Fact Sheet; however, if the permit writer determines that one criterion cannot be met, then a mixing zone is prohibited, and the permit writer need not include in the Fact Sheet the conclusions for when other criteria were met.

Criteria	Description	Resources	Regulation
Size	Is the mixing zone as small as practicable? <b>Yes</b>	<ul style="list-style-type: none"> <li>• Technical Support Document for Water Quality Based Toxics Control</li> <li>• DEC's RPA Guidance</li> <li>• EPA Permit Writers' Manual</li> </ul>	<p><u>18 AAC 70.240 (a)(2)</u></p> <p><u>18 AAC 70.245 (b)(1) - (b)(7)</u></p> <p><u>18 AAC 70.255(e) (3)</u></p> <p><u>18 AAC 70.255 (d)</u></p>
Technology	Were the most effective technological and economical methods used to disperse, treat, remove, and reduce pollutants? <b>Yes</b>		<u>18 AAC 70.240 (a)(3)</u>
Low Flow Design	<b>For river, streams, and other flowing freshwaters.</b> - Determine low flow calculations or documentation for the applicable parameters.		<u>18 AAC 70.255(f)</u>
Existing use	Does the mixing zone...		

Criteria	Description	Resources	Regulation
	(1) partially or completely eliminate an existing use of the waterbody outside the mixing zone? <b>No</b> <b>If yes, mixing zone prohibited.</b>		<u>18 AAC 70.245(a)(1)</u>
	(2) impair overall biological integrity of the waterbody? <b>No</b> <b>If yes, mixing zone prohibited.</b>		<u>18 AAC 70.245(a)(2)</u>
	(3) provide for adequate flushing of the waterbody to ensure full protection of uses of the waterbody outside the proposed mixing zone? <b>Yes</b> <b>If no, mixing zone prohibited.</b>		<u>18 AAC 70.250(a)(3)</u>
	(4) cause an environmental effect or damage to the ecosystem that the department considers to be so adverse that a mixing zone is not appropriate? <b>No</b> <b>If yes, then mixing zone prohibited.</b>		<u>18 AAC 70.250(a)(4)</u>
Human consumption	Does the mixing zone...		
	(1) produce objectionable color, taste, or odor in aquatic resources harvested for human consumption? <b>No</b> <b>If yes, mixing zone may be reduced in size or prohibited.</b>		<u>18 AAC 70.250(b)(2)</u>
	(2) preclude or limit established processing activities of commercial, sport, personal use, or subsistence shellfish harvesting? <b>No</b> <b>If yes, mixing zone may be reduced in size or prohibited.</b>		<u>18 AAC 70.250(b)(3)</u>
Spawning Areas	Does the mixing zone...		



Criteria	Description	Resources	Regulation
	(1) discharge in a spawning area for anadromous fish or Arctic grayling, northern pike, rainbow trout, lake trout, brook trout, cutthroat trout, whitefish, sheefish, Arctic char (Dolly Varden), burbot, and landlocked coho, king, and sockeye salmon? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255 (h)</u>
Human Health	Does the mixing zone...		
	(1) contain bioaccumulating, bioconcentrating, or persistent chemical above natural or significantly adverse levels? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.250 (a)(1)</u>
	(2) contain chemicals expected to cause carcinogenic, mutagenic, tetragenic, or otherwise harmful effects to human health? <b>No</b> If yes, <b>mixing zone prohibited.</b>		
	(3) create a public health hazard through encroachment on water supply or through contact recreation? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.250(a)(1)(C)</u>
	(4) meet human health and aquatic life quality criteria at the boundary of the mixing zone? <b>Yes</b> If no, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255 (b),(c)</u>
Aquatic Life	(5) occur in a location where the department determines that a public health hazard reasonably could be expected? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255(e)(3)(B)</u>
	Does the mixing zone...		
	(1) create a significant adverse effect to anadromous, resident, or shellfish spawning or rearing? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.250(a)(2)(A-C)</u>
	(2) form a barrier to migratory species? <b>No</b> If yes, <b>mixing zone prohibited.</b>		

Criteria	Description	Resources	Regulation
	(3) fail to provide a zone of passage? <b>No</b> If yes, <b>mixing zone prohibited.</b>		
	(4) result in undesirable or nuisance aquatic life? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.250(b)(1)</u>
	(5) result in permanent or irreparable displacement of indigenous organisms? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255(g)(1)</u>
	(6) result in a reduction in fish or shellfish population levels? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255(g)(2)</u>
	(7) prevent lethality to passing organisms by reducing the size of the acute zone? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255(b)(1)</u>
	(8) cause a toxic effect in the water column, sediments, or biota outside the boundaries of the mixing zone? <b>No</b> If yes, <b>mixing zone prohibited.</b>		<u>18 AAC 70.255(b)(2)</u>
	Are there threatened or endangered species (T/E spp) at the location of the mixing zone? <b>No</b> If yes, are there likely to be adverse effects to T/E spp based on comments received from USFWS or NOAA? <b>Not applicable</b> If yes, will conservation measures be included in the permit to avoid adverse effects? <b>Not applicable</b> If yes, explain conservation measures in Fact Sheet. If no, <b>mixing zone prohibited.</b>		Program Description, 6.4.1 #5 <u>18 AAC 70.250(a)(2)(D)</u>
Endangered Species			



