

**Department of Environmental Conservation
Response to Comments**

For

City of Kodiak Wastewater Treatment Facility

APDES Permit No. AK0021555

Public Noticed February 15, 2018 – March 19, 2018

PROPOSED FINAL, MAY 10 2018



**Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Program
555 Cordova Street
Anchorage, AK 99501**

1 Introduction

1.1 Summary of Facility / Permit

The City of Kodiak operates a wastewater treatment facility (WWTF) located on Kodiak Island. The WWTF provides secondary treatment of domestic wastewater. The maximum design flow rate of the WWTF is 3.2 million gallons per day (MGD). The average daily maximum flow rate for the WWTF during the time period of February 2011 through February 2016 was 3.1 MGD. Pollutants of concern are: ammonia, copper, pH, dissolved oxygen, temperature, fecal coliform (FC) bacteria, enterococci bacteria, five day biochemical oxygen demand (BOD₅), total suspended solids (TSS), total residual chlorine (TRC, if used) and whole effluent toxicity (WET). The permit authorizes a FC bacteria mixing zone sized 3,200 meters long and 400 meters wide until completion of the compliance schedule for disinfection when the size would decrease to 49.6 meters long and 83.04 meters wide, sized for ammonia, but also providing dilution for FC bacteria, WET, DO and temperature.

1.2 Opportunities for Public Participation

The Department of Environmental Conservation (DEC or the Department) proposed to issue an Alaska Pollutant Discharge Elimination System (APDES) wastewater discharge permit to the City of Kodiak for discharge from the WWTF. To ensure public, agency, and tribal notification and opportunities for participation, the Department:

- identified the permit on the annual Permit Issuance Plan posted online at: <http://www.dec.state.ak.us/water/wwdp/index.htm>
- notified potentially affected tribes and local governments that the Department would be working on the permit via letter, fax and/or email on August 8, 2017
- posted a preliminary draft of the permit on-line for a 10-day applicant review on October 25, 2017, and notified tribes, local government(s), and other agencies
- formally published public notice of the draft permit on February 15, 2018 in the Kodiak Daily Mirror and posted the public notice on the Department's public notice web page
- posted the proposed final permit on-line for a 5-day applicant review on May 10, 2018
- sent email notifications via the APDES Program List Serve when the draft permit was available for review

The Department received a total of three sets of comments on the draft permit documents. Comments on the draft permit and supporting documents were submitted by the Environmental Protection Agency (EPA), the City of Kodiak and Gary Buhler, Project Manager at Northwestern

Aquatic Sciences. The Department also requested comment from the Departments of Natural Resources, Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service; however, no comments were received from these agencies on the draft permit.

This document summarizes the comments submitted and the justification for any action taken or not taken by DEC in response to the comments.

1.3 Final Permit

The final permit was adopted by the Department on **pending**. There were changes from the public noticed permit. Changes are identified in the response to comments and reflected in the final permit and fact sheet for the permit.

2 Ammonia Effluent Limits

2.1 Comment Summary

The City of Kodiak (City) commented that the Department's approach to the mixing zone dilution factor and size was "overly conservative and not correct." The City requested that the Department increase the mixing zone boundary distances and dilution factors so that the City's permit would not have reasonable potential (RP) to exceed the Alaska water quality standards (WQS) numeric criteria for ammonia for aquatic life. Doing so would remove the need for ammonia water quality-based effluent limits (WQBELs). The City stated the Department was "...arbitrarily implementing mixing zone size restrictions so that the reasonable potential analysis (RPA) must result in a RP for ammonia and effluent limits. This is an inherently bias (sic) approach that will always generate effluent limits for dischargers even those that have high performance diffusers." The City requested that the ammonia effluent limits be removed from the permit.

Response:

It is the policy of the Department, in accordance with its *APDES Permits Reasonable Potential Analysis and Effluent Limits Development Guide*, to give the driving parameter of the chronic and/or acute mixing zones WQBELs in part to ensure that the mixing zone is as small as practicable. The purpose of the WQBEL is to specify the upper bound of acceptable effluent quality, based on maintaining the effluent quality at a level that will comply with the WQS at the boundary of the mixing zone. To implement a WQBEL per regulations, the discharge must have RP to exceed WQS numeric criteria. When determining RP, the Department considers the dilution provided by the receiving water and the variability of the effluent. To size the mixing zone as small as practicable, only the minimum dilution necessary is authorized. One purpose of assigning WQBELs to driving parameters of mixing zones is to ensure that the discharge effluent concentrations are adhering to the assumptions that went into modelling the mixing zone and conducting the RPA. WQBELs are established based on wasteload allocations (WLAs) that result in the effluent meeting the WLA under normal operating conditions. Extreme values are

accounted for and low probability of exceedance is built into the calculation of the WLA. However, WQBELs are calculated in conformance with the duration and frequency requirements of the WQS numeric criteria for aquatic life, thus setting a performance expectation of the discharge not creating persistent acute or chronic toxic effects in the receiving water.

If the Department were to increase the dilution factors and mixing zone sizes as the permittee is requesting, the Department would not be ensuring that the acute and chronic ammonia WQS numeric criteria for acute and chronic aquatic life were being met at the mixing zone boundary by the City of Kodiak's WWTF discharge or that the mixing zone was as small as practicable. This would violate mixing zone regulations at 18 AAC 70.255, which require the Department to size mixing zones such a discharge may not cause or reasonably be expected to cause lethality to passing organisms.

The Department finds the permit's terms and conditions are based on State WQS, which serve the very purpose of maintaining and protecting water quality and the aquatic life the water supports. No changes were made to the permit documents based on this comment.

3 Whole Effluent Toxicity Test Species

3.1 Comment Summary

Gary Buhler, Project Manager at Northwestern Aquatic Sciences, a whole effluent toxicity (WET) lab in Newport, Oregon, submitted a comment stating that the permit-required vertebrate species (topsmelt *Atherinops affinis*) is only provided by one supplier world-wide. Mr. Buhler stated that often periods of time (e.g., weeks or longer) occur where the topsmelt is unavailable due to poor reproduction or high demand. Mr. Buhler recommended substituting the vertebrate inland silverside, *Menidia beryllina*, as an alternative test species if the topsmelt is not available and suggested the only issue with using the silverside was that WET tests then require twice the effluent volume of the topsmelt. Mr. Buhler stated that numerous other DEC APDES permits allowed the use of *Menidia beryllina* as an alternative test species.

Response:

The Department concurs that the topsmelt and inland silverside provide similar estimates of chronic toxicity and are appropriate vertebrate species, sensitive to ammonia, which is one of the toxic pollutants of concern present in the discharge. The Department concurs that in the event that topsmelt are not available to perform WET testing, the inland silverside is an acceptable substitute species. The Department revised Fact Sheet Section 4.5 and Permit Section 1.7 to reflect the substitution of species and corresponding test methods.

4 Fecal Coliform Bacteria Compliance Schedule

4.1 Comment Summary

The City of Kodiak submitted comments indicating they found the basis for the reduction in FC bacteria effluent limits unsupported by the FC bacteria ambient monitoring data collected by the City during the previous permit term.

Response:

The receiving water concentration of FC bacteria in Woody Island Channel does not serve as the basis for the reduction of FC bacteria limits in the City's APDES permit. As part of the permit effluent limit development process the Department identifies the pollutants of concern, the applicable water quality criteria, assesses the end of pipe effluent pollutant concentration data and conducts a RPA. The ambient count of FC bacteria in Woody Island Channel was considered in the final mixing zone model authorized by the Department, consistent with guidance in the CORMIX User Manual.

The general basis for the reduction of the FC bacteria limits in the City of Kodiak's APDES permit is twofold. First, as described in Fact Sheet Section 8.5, disinfection is a widely demonstrated effective, technologically and economically feasible treatment to apply to domestic wastewater to mitigate bacteria impacts. A significant number of publically and privately owned APDES-permitted facilities exist that discharge treated domestic wastewater throughout Alaska. These facilities are performing disinfection via ultraviolet light or chlorination with design flows ranging from 750 gallons per day to 52 million gallons per day. The permits for these facilities contain the same (or more stringent) FC bacteria limits as the final limits implemented in the compliance schedule.

Second, as described in Fact Sheet Section 8.5, the large FC bacteria mixing zone proposed by the permittee was originally authorized prior to the Department's 2003 mixing zone regulations becoming effective which contain specific size restrictions that conflict with the large proposed FC bacteria mixing zone. The Department updated Fact Sheet 8.5 as a result of the comment to more accurately reflect the known universe of APDES discharge permits that require disinfection and implement FC bacteria effluent limits at least as stringent or more stringent than those implemented in the City of Kodiak's reissued permit. The Department did not change the permit as a result of this comment.

4.2 Comment Summary

The City of Kodiak submitted comments indicating they found the basis for the reduction in FC bacteria effluent limits unsupported by the fact that Woody Island Channel is not listed as an impaired waterbody for FC bacteria in *Alaska's Final 2010 Integrated Water Quality Monitoring and Assessment Report*.

Response:

As stated in Fact Sheet Section 5.4, Woody Island Channel is not impaired for FC bacteria. Accordingly, the Department is authorizing using a portion of the assimilative capacity available in Woody Island Channel for diluting the City of Kodiak WWTF effluent to meet FC bacteria WQS numeric criteria in the waterbody at the boundary of the authorized mixing zone. The 303(d) status of a waterbody is taken into account when determining the pollutants of concern and the wasteload allocation for an applicable WQBEL. The Department did not make any changes to the permit or fact sheet as a result of this comment.

4.3 Comment Summary

EPA submitted comments stating that the compliance schedule length of five to seven years was an unreasonably long amount of time to come into compliance with FC bacteria limits. EPA noted the presence of a mixing zone and the resulting dilution applied to the FC bacteria limits (i.e., that the limits were less stringent than applying end of pipe FC bacteria limits), the fact that the facility is equipped with a chlorine contact chamber, and that the receiving waterbody is protected for contact water recreation as extenuating factors contributing to their assessment that the compliance schedule length was too long.

EPA also noted that the permit compliance schedule did not require the permittee to evaluate the feasibility of using the existing chlorine contact chamber to meet the FC bacteria effluent limits as soon as possible while the permittee considers other more permanent solutions in the form of facility upgrades. EPA recommended that the Department consider the principles outlined in the May 2007 James Hanlon memo (Hanlon Memo), then Director of EPA's Office of Wastewater Management providing a framework for the review of permits consistent with the Clean Water Act (CWA) and its implementing regulations. EPA suggested that the record articulate the need for and justify the time allotted for compliance.

Response:

The Department concurs with EPA's assessment of the compliance schedule length and adopted changes in the permit and fact sheet based on the suggestions. See Permit Section 1.3 and corresponding Fact Sheet Section 8.5.

4.4 Comment Summary

The City of Kodiak submitted comments indicating they felt that a five year compliance schedule was too short of a timeframe to achieve compliance with the final FC bacteria effluent limits.

Response:

Federal regulations at 40 CFR 122.47(1) and state regulations at 18 AAC 83.560(a) require that schedules of compliance require compliance with final effluent limits as soon as possible. This sentiment is echoed in the 2003 state WQS regulations at 18 AAC 70.910(b)(3) which state that compliance schedules must require compliance in "as brief a time as is feasible". The Hanlon

Memo provides a framework for the review of discharge permits consistent with the CWA and its implementing regulations.

The Hanlon Memo suggests that in order to determine if a compliance schedule requires compliance “as soon as possible” that the permitting authority take into consideration the steps needed to modify or install treatment facilities, operations, or other measures and the time those steps would take. The Hanlon Memo states that the permitting authority should not simply presume that a compliance schedule be based on the maximum time period allowed.

When considering whether the compliance schedule for disinfection necessitates the City of Kodiak to modify or install treatment facilities, operations, or other measures to achieve compliance with the final FC bacteria effluent limits of the permit, the Department considered that the facility is equipped with a chlorine contact chamber. Chlorination is a potential disinfection option. When considering chlorination as an option, the Department also considered that the chlorine contact chamber has been out of use for at least thirty years, which is a significant period of time. The viability and condition of the chlorine contact chamber is currently unknown. The Department also considered that the permit implements a total residual chlorine (TRC) permit effluent limit that is stringent enough to necessitate effective dechlorination to achieve compliance with the TRC effluent limit. The time necessary to assess the chlorination option and the fact that this option would still require time to design, construct and implement into WWTF operations factored into the Department’s decision to allow up to five years for the compliance schedule despite the presence of a chlorine contact chamber at the facility.

An examination of both current and past APDES compliance schedules for domestic wastewater treatment facilities for various pollutants indicates that securing funding for the modification or installation of treatment to achieve compliance with final effluent limits is always a component of the compliance schedule for these types of facilities. This practice acknowledges the fact that municipalities do not typically have readily available comprehensive funding necessary to implement a treatment upgrade.

When considering the steps needed to modify or install treatment technology at the City of Kodiak WWTF for disinfection, the Department considered the fact that the City will be shortly receiving a \$600,000 DEC Alaska Clean Water Fund (ACWF) loan broadly intended to assess the condition and processes of the WWTF as the first phase of a potential complete WWTF upgrade/refurbishment. Thus, the City will have funding available to assess any current disinfection capability of the facility, assess the treatment options for disinfection at the facility, choose a disinfection option for the facility and design the chosen disinfection option. However, the City would need to seek additional funding to construct the disinfection option as the ACWF loan is intended only for design/study purposes. Thus it is appropriate to allow time in the compliance schedule to secure funding for construction of the chosen treatment option, and the Department has reflected that step in the final compliance schedule.

The City of Kodiak's comments focused on the challenges they face in securing funding, and stated that the once per year loan solicitation schedule under the ACWF would delay implementation of upgrades to the WWTF. The DEC ACWF is not the only funding mechanism available to the City of Kodiak. Additionally, starting in 2018, DEC is implementing ACWF on a revised schedule such that loan questionnaires will be accepted year-round and scored on a quarterly basis. It is expected that the new quarterly solicitation schedule will result in a time period of 3-6 months elapsing between loan questionnaire submittal, scoring, application and loan.

The City of Kodiak's comments stated their desire to effectively incorporate the disinfection option into the overall WWTF upgrade project, but they did not articulate any details as to what specifically would prohibit them from achieving disinfection in five years versus seven years, or what, if any, specific circumstance prohibits them from upgrading the plant's disinfection capabilities first.

When examining existing APDES compliance schedules, the Department found that none exist that allow time for a permittee to complete other preexisting and unrelated projects or priorities prior to or as part of the compliance schedule. The Department appreciates the City of Kodiak's desire to maintain progress on refurbishing their entire WWTF, and the City's desire to make efficient use of public funds. However, the Department has determined that allowing time in a compliance schedule for upgrades to a WWTF that are not specifically meant to achieve compliance with the final effluent limits does not comply with regulations that require compliance with the permit's final effluent limits "as soon as possible". It is necessary to examine the time in which it would take to implement disinfection at the City of Kodiak WWTF, not the time it would take to implement disinfection in respect to other pre-existing prioritizations of projects by the City of Kodiak. Accordingly, the compliance schedule has reverted largely to its previous form (compliance within five years instead of seven) to reflect on the time and steps necessary to come into compliance with the FC bacteria effluent limits. Given that it is feasible to install disinfection in five years or less, seven years is not as soon as possible. All other compliance schedules for disinfection at domestic wastewater treatment facilities implemented in APDES permits have required compliance with the same final FC bacteria effluent limits implemented in the City of Kodiak's proposed final APDES permit within five years.

4.5 Comment Summary

The City of Kodiak submitted comments stating they felt the compliance schedule structure of requiring five years for compliance with final FC bacteria effluent limits if the existing facility was used versus allowing seven years for compliance with final FC bacteria effluent limits if the facility was replaced was a wholly unreasonable, arbitrary and capricious permit requirement.

Response:

The Department, in consideration of public comments received during the public notice period, has changed the structure of the compliance schedule such that the section of the permit this comment is based on has been replaced entirely. See Permit Section 1.3 and Fact Sheet Section 8.5.

4.6 Comment Summary

The City of Kodiak submitted comments stating that Permit Section 1.3.4.1 that requires the City of Kodiak to inform DEC within two years of permit issuance of its final determination to either upgrade or replace the WWTF was an unreasonable and untenable demand that the City could not accept given the short time frame and lack of infrastructure funding.

Response:

The structure of the compliance schedule has changed as a result of comments received during the public notice. The milestone referenced in this comment is now replaced with other milestones. Federal regulations at 40 CFR 122.47(3), and state regulations at 18 AAC 70.910(b)(4) and 18 AAC 83.560(b) require that if a schedule of compliance extends beyond one year, that a permit establish remedial measures specified as a sequence of enforceable actions with completion dates leading to compliance for each requirement. Progress reports outlining the status of completion of the remedial measures are also required to be submitted. The permit still contains interim remedial measures and dates for completion as required by federal and state regulations.

5 Copper Reasonable Potential Analysis**5.1 Comment Summary**

EPA commented on Permit Table 2 and Fact Sheet Section 4.4 stating they suggest the Department perform a RPA for copper. EPA indicated an RPA should be performed for every pollutant of concern consistent with the CWA and 40 CFR 122.44(d)(ii). EPA stated that without an approved mixing zone, pollutants with sample results exceeding the water quality criteria like copper would have RP to cause an excursion above the water quality criteria. EPA suggested the Department perform the copper RPA and develop and implement a WQBEL for copper consistent with the CWA and 122.44(d)(iii) if necessary. EPA suggested that if the Department did not implement a WQBEL for copper that it include a reopener clause 1 year from the permit's issuance date as 12 copper effluent sample results would then be available to conduct a RPA.

Response:

As stated in Fact Sheet Section 4.4, the Department, consistent with its *APDES Permits Reasonable Potential Analysis and Effluent Limits Development Guide*, is not performing an

RPA for copper in this permit issuance in order to collect more data. Three detected effluent sample results currently exist for copper. As the number of effluent observations a WQBEL calculation is based on increases, the average monthly limit (AML) becomes more stringent. The converse is also true, as the number of effluent observations a WQBEL calculation is based on decreases, the AML becomes less stringent.

Performing an RPA on the three detected copper effluent samples leads to a statistically derived enlarged reasonable potential multiplier (4.4) and therefore an inflated high projected maximum expected concentration (MEC) of 66.1 $\mu\text{g/L}$. Given that the maximum observed copper effluent sample is 15.1 $\mu\text{g/L}$, the Department notes that performing an RPA and establishing a copper WQBEL with so little information about the variability of copper in the effluent does little in the practical sense to achieve protection of the WQS numeric criteria in the receiving water. The Department is requiring the permittee to collect 60 effluent copper data points during the permit term, which will result in a far more accurate copper RPA analysis that adequately represents the variability of copper in the effluent. This action is consistent with the Department's RPA Guidance as well as other APDES permits issued by the Department as well as with EPA's *Technical Support Document for Water Quality – based Toxics Control* document. The Department will evaluate copper effluent data during the permit cycle as well as at permit reissuance to determine the appropriateness of either reopening the permit or reissuing the permit to contain copper WQBELs. No changes were made to the permit or fact sheet as a result of this comment.