Response to Comments
Draft NPDES Permit No. AK002189-0
City of Seward (Lowell Point) Alaska

Background:

On September 6, 2001, EPA issued a notice of proposed reissuance of a National Pollutant Discharge Elimination System (NPDES) permit for a wastewater treatment facility owned and maintained by the City of Seward, Alaska. The facility consists of a lagoon that holds about 30 million gallons, has a 22:1 feet of water depth at its lowest point, and is divided into two cells. The lagoon contains a concrete partition wall and hypalon curtain used to separate the two cells. The sewage enters the mixing zone and is immediately mixed. This dilution helps reduce the possibility of process upset by buffering hydraulic surges and diluting concentrated loadings. The first cell maintains aerobic conditions throughout the cell and allows growth of bacteria that eat the putrescible materials. The mixing zone reduces settlement of bacterial floc. Cell 2 is basically a polishing pond. At mean flows, the total detention time in the aeration system is between 45 and 60 days. There is no disinfection before it is discharged into Resurrection Bay. The public review and comment period was from September 6, 2001 through October 9, 2001.

Written comments regarding the proposed permit for the City of Seward facility were received from the permittee, through a letter from David Calvert of the City of Seward. The following summarizes and responds to each comment raised.

1. Comment: The permittee requests that the limits for effluent BOD and TSS (monthly average of 45 mg/l, weekly average of 65 mg/l, and not less than 65% removal) be maintained year round. The permittee believes there is no reason to increase the limits eight months out of the year to secondary standards (monthly average of 30 mg/l, weekly average of 45mg/l, and not less than 85% removal). The permittee also wants to bring to EPA's attention that the receiving water, Resurrection Bay, was specifically identified in federal legislation related to 301 (h) waiver to secondary treatment.

   Response: In accordance with EPA's regulation (40 CFR 133.105) a facility that consists of a pond or a trickling filter system and cannot meet the secondary standards after proper operation and maintenance may be allowed to meet treatment equivalent to secondary limits. These limits are higher than secondary but have a maximum (45/65/65). But, if the facility can do better than 45/65/65, up to 30/45/85, then their limits will be what they can achieve. In this case, the permittee can achieve the secondary treatment standards several months out of the year and does not need to have treatment equivalent to secondary during those months. An analysis was done with the data provided by the DMRs.

   According to regulation (40 CFR 133.101(f)), an analysis can be performed by using effluent concentrations consistently achievable through proper operation and maintenance. The 95% value for the 30-day average of BOD and TSS can be calculated going back at least two years,

(excluding values attributable to upsets, bypasses, operational error, or other unusual conditions) and a 7-day average value equal to 1.5 times the 30 day average value. The analysis was completed twice, once for 2 years and again for 3 years of data. The 95% was calculated using data from June 1999 to May 2001 and from June 1998 to June 2001. The 95% of 30 day average for 2 years and 3 years are; BOD 37.8 mg/l and TSS 41.2 mg/l, and BOD 40.2 mg/l and TSS 42.6mg/l, respectively. It was determined that the largest concentrations for both BOD and TSS were during the months of July, August, September, and October, probably due to temporary population increase and/or algal blooms. Because of the difference in value for these two time periods, another analysis was done without July, August, September, and October data. The 95% of 30 day average for 2 years and 3 years was; BOD15.6 mg/l and TSS 18.4 mg/l; and BOD 13.9 mg/l and 14 mg/l, respectively These values are well below the secondary standards so the decision was made to lower the treatment equivalent to secondary limits to secondary treatment limits, but only during the months of November through June. During the remaining four months of summer and fall the facility will still have treatment equivalent to secondary of 45/65/65. This facility does not have a 301 (h) waiver, they chose not to request one and developed a secondary treatment system. The limits for BOD and TSS remain as they are in the draft permit.

2. Comment: The permittee requests that the requirements for monitoring ammonia in the effluent and in Resurrection Bay be eliminated. The permittee believes there is no need for this because the outfall is 300 feet below the surface of the water and Resurrection Bay has been determined to be nutrient deficient. They believe this is an added cost to the community without a scientific need or basis. The permittee sent a followed-up to this comment including excerpts from a detailed study of the nutrient chemistry of Resurrection Bay that was conducted in 1972-1975. Ammonia and nitrate results were included in the study.

   Response: The data from the detailed study is over 25 years old and EPA does not believe the information is an accurate representation of what exists in Resurrection Bay today. Also, EPA is not aware of any other data that has been collected since the 1972-1975 study. The reason for conducting this monitoring is to collect data that will confirm the condition of Resurrection Bay and the City of Seward's impact on the bay. The State of Alaska does have a water quality criteria for ammonia in marine waters. Resurrection Bay is classified by the State of Alaska's Water Quality Standards, 18 AAC 70, as classes 2A, 2B, 2C, and 2D for use in aquaculture, seafood processing, and industrial water supply; contact and secondary water recreation; growth and propagation of fish, shell fish, aquatic life and wildlife; and harvesting for the consumption of raw mollusks or other raw aquatic life. These designated uses determine how the water quality criteria is selected. In this case the water quality criteria is selected based on Resurrection Bay being classified to protect saltwater aquatic life. EPA does believe, however, that 12, rather than 24 samples, over 2 years would be sufficient to determine if an ammonia limit would be needed. The monitoring for ammonia in the discharge and receiving water remains in the permit. However, to lessen the burden on the facility, the frequency of monitoring has been reduced from monitoring every month to monitoring once every other month for two years.

3. Comment: The permittee requests that there be no requirement for a monitoring station in Resurrection

Bay. They believe there is no need for the ammonia monitoring, so there is no need for the monitoring station. They believe it is unreasonable to require the expenditure of funds to obtain background data when there is no reasonable expectation for concern nor is their scientific evidence

supporti ng such a need.

Response: Seward is required to monitor for ammonia in the receiving water, so the permittee will need a monitoring station. The monitoring station must be located away from the discharge area. The location of the monitoring station shall be selected by the permittee and the State of Alaska Department of Conservation (ADEC). EPA would not expect the permittee to put themselves in danger, so the permittee and ADEC would select a sight that is economical and safe.

4. Comment: The permittee requests the special notification to EPA and ADEC for Quality Assuran ce Plan (QAP) be eliminat ed. The City has a QAP in place which is reviewe d by EPA as part of their inspecti on. It is the permitte e's underst anding that EPA is satisfied with Seward 's QAP and objects to the require ment to

submit notification of a plan that is already in place and has been verified by the EPA and ADEC.

Response: There is a requirement for the permittee to have a QAP. After a QAP is in place the permittee is expected to keep the plan updated. The permittee is required to review and update the plan, if needed and send notification to the EPA once during the lifetime of the permit. The notification is EPA's means of tracking whether or not the requirement has been completed. This is not a burdensome requirement, just a few sentences that specify that the review and update have been completed.

5. Comment: The permittee believes that they already have an Operation and Maintenance Plan (O&M Plan) in place that has been approved by EPA during their inspections. They question the need for a requirement to be in the permit for a document that already exists.

Response: There is a requirement for the permittee to have an O&M Plan. After an O&M Plan is in place the permittee is required to review and update it every year. There is no requirement for the permittee to send a notification of this document or its update, however, EPA and/or ADEC may request to see the O&M Plan during inspections.

6. Comment: The permittee requests that the frequency of fecal coliform testing be changed from once per week to twice per month. They believe that once per week would be a significant burden on the utility. Their request is to reduce the testing to coincide with the BOD and TSS testing. The reduction in testing eliminates transporting samples to Anchorage twice per month. The Anchorage lab is 125 miles away from Seward.

Response: According to EPA guidance Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies, April 1996, it is appropriate to look at monitoring reductions during the permit reissuance. Certain steps must be taken in determining if a particular facility is eligible for frequency of monitoring reductions. The analysis involves looking at the facilities enforcement history, parameter-by-parameter compliance history and performance history. An analysis was done of these three categories and it was determined that the facility's history would not prevent them from receiving a reduction in monitoring frequency.

An analysis was done of the facility's fecal coliform performance history, as well. The interim guidance states: at a minimum, the two most recent years of monthly average effluent data representative of current operating conditions for the parameter at the particular outfall will be used to calculate the long term average discharge rate. In this case, 4 years of fecal coliform data were used. The ratio of long term effluent average to monthly average limit was used to determine if monitoring can be adjusted from baseline monitoring to less frequent monitoring.
The values used were:
Long Term Effluent Average = 8573
Monthly Average Limit = 50000

In order to be eligible for a reduction in frequency from 1/week to 2/month Seward would need to be less than 50% from the monthly average limit. Seward is 17% from the limit. EPA will allow less frequent monitoring for fecal coliform from 1/week to 2/month.

401 CERTIFICATION

from Tim Wingerter for Seward, Lowell Point, AK
Changes made to the City of Seward permit number AK002189-0 were the result of the State of Alaska Environmental Department of Conservation (ADEC) 401 certification.

The changes to the permit are as follows:
Item numbers are from the 401 Certification

Item 1. The ADEC requires a flow rate limitation in accordance with State Regulations 18 AAC 70.245, Mixing Zones: Appropriateness and Size Determination. The department will consider the characteristics of the effluent, including flow rate, when determining the appropriateness and size of mixing zone. Restricting the amount of flow will assure that the size of the mixing zone is appropriate and that the treatment capacity of the facilities is not exceeded.

Change:

Condition I.A.4.(both tables): A monthly average flow rate of 0.9 mgd.
A daily maximum flow rate of 2.0 mgd.

Item 5. A condition for DO has been included in the permit. ADEC is requiring that the DO dissolved oxygen of 2.0 mg/l and maximum limitation of 17.0 mg/l. Federal regulation 40 CFR 122.44(d)(1)(vii) specify that when developing water quality based effluent limits, the permitting authority shall ensure that the level of water quality to be achieved by limits on point sources established under this paragraph is derived from and complies with all applicable water quality standards. In addition, Section 301(b) of the Clean Water Act (CWA) requires NPDES permits to include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute an excursion above any state water quality standard, including state narrative criteria for water quality. Alaska water quality standards (18 ACC 70.020) protect Resurrection Bay for several beneficial uses including water supply, supply for aquaculture, seafood processing, and industry and specify an allowable

range of 6.0 to 17.0 mg/l for dissolved oxygen. Alaska Department of Conservation has provided no technical justification for reducing the minimum level of DO from 6.0 mg/l to 2.0 mg/l. Therefore, to ensure that the discharge does not cause or contribute to an exceedance in the applicable water quality criteria, the final permit includes the range of 6.0 to 17.0 mg/l for dissolved oxygen.

Change:

Condition I.A.5.: Dissolved Oxygen (DO) of the effluent must be between 6.0 mg/l and 17.0 mg/l.

Item 9. ADEC requires monitoring at the outside edge of the mixing zone for fecal coliform bacteria. A minimum of four samples for fecal coliform bacteria analysis shall be collected in the months of June, July, August and September and once during the time period December through March of each year of the permit. The monitoring may be suspended after two years if the results indicate that the quality of the discharge has not caused the State of Alaska Water Quality Standards to be exceeded outside of the mixing zone. The samples shall be collected from three down current sites and one up current site at the edge of the mixing zone. The sample collection should take place during varying tidal stages for each sampling event Send the results in an annual report.

NOTE: The ammonia samples to be taken will be coordinated with these sampling times in an attempt to be less burdensome to the permittee.

Changes:

Condition I.B.2.c.: Monitoring for fecal coliform outside of the edge of the mixing zone must be done in June, July August and September and once during the time period of December through March of each year of the permit. The monitoring may be suspended after two years if the results indicate that the quality of the discharge has not caused the State of Alaska Water Quality Standards to be exceeded outside of the mixing zone. The samples shall be collected from three down current sites and one up current site at the edge of the mixing zone. The sample collection must take place during varying tidal stages for each sampling event Send the results in an annual report.

Condition I.B.2.b.: Monitoring for total ammonia as N, pH, temperature, and salinity must be conducted outside the mixing zone and must be done in June, July, August, September, and once during the time period of December through March. A total of 10 samples over two years must be collected before the expiration date of this permit. All four parameters must have samples collected at the same time. The results from the sampling must be included in DMR for those months.

Item 11. A sign must be placed on the shoreline near the outfall line. The sign should state that secondary treated domestic wastewater is being discharged, the name and owner of the facility and the approximate location and size of the mixing zone. The sign should inform the public that certain activities, such as the harvesting of shellfish for raw consumption and bathing should not take place in the mixing zone and give a contact number for additional information.

In accordance with AS 46.03.110, (d), the department may specify in a permit the terms

Change

Condition I.A.3. A sign must be placed on the shoreline near the outfall line. The sign must state that secondary treated domestic wastewater is being discharged, the name and owner of the facility and the approximate location and size of the mixing zone. The sign should inform the public that certain activities, such as harvesting of shell fish for raw consumption and bathing should not take place in the mixing zone and give contact number for additional information.

Changes that were not made:

Item2. The ADEC requires a maximum biochemical oxygen demand, (BOD5) limitation of 45 mg/l for a monthly average and 65 mg/1 for a weekly average. The percent removal must be greater than 65%. The facility will have these limits during the months of November through June. Since the facility can meet secondary standards during July through October they will be required to meet secondary standards of 30 mg/l for a monthly average and 45 mg/l for weekly average. The percent removal must be 85% or greater.

Item 3. The ADEC requires a maximum total suspended solids, (TSS) limitation of 45 mg/l for a monthly average and 65 mg/1 for a weekly average. The percent removal must be greater than 65%. The facility will have these limits during the months of November through June. Since the facility can meet secondary standards during July through October they will be required to meet secondary standards of 30 mg/l for a monthly average and 45 mg/l for weekly average. The percent removal must be 85% or greater.

Item 4. There is no disinfection done at this facility and no plans to do any in the near future. Therefore, there is no total chlorine residual limit nor is their anything to monitor.

Item 6. ADEC requires effluent limitations for fecal coliform bacteria of 100,000 fecal coliform bacteria per 100 mg of sample for a monthly average, and 150,000 per 100 ml of sample for a daily maximum. However, ADEC gives no scientific or technical justification for raising the limit from the pervious permit (in 1995 ADEC gave a limit of 50,000 fecal coliform per 100 mg of sample). Because the limit is already 50,000 fecal coliform and the facility is able to meet their limit within less than 50%, then to increase the limitation for fecal coliform would be considered backsliding. Under §402(o)(2) of the Clean Water Act (ACT), enacted in the Water Quality Act of 1987, prohibits against establishment of less stringent effluent limitations than those established in the previous permit. There may be exceptions that apply to the relaxation of permit limits, but neither the state nor permittee have requested them, so they are not considered. The limit in the permit for fecal coliform is 50,000 per 100 ml of sample.

Item 7. ADEC requires that an effluent limitation for pH be within the range of 6.0 to 9.0 standard units (S.U.). However, the permit limit is the water quality standard limit of 6.5 to 8.5 S.U. There is no technical justification for making the limit less stringent and it would be backsliding to change it. Under §402(o)(3) of the Clean Water Act (ACT), enacted in the Water Quality Act of 1987, in no event may a water quality based permit be revised to contain effluent limits less stringent than those required by effluent guidelines in effect at the time of the revision. There may be exceptions that apply to the relaxation of water quality-based permit limits, but neither the state nor permittee have requested them, so they are not

considered. The limit in the permit for pH is 6.5 to 8.5 S.U.

Item 8. ADEC designates a mixing zone for fecal coliform bacteria, contained in the discharge from the treatment plant. In accordance with 18 AAC 70.240, the department has authority to designate mixing zones in permits or certifications. However, the state has changed the size of the mixing zone and has made it 80 times larger than the mixing zone from the previous permit. There is no need to increase the mixing zone since the permittee is able to make their limit. Under §402(o)(2) of the Clean Water Act (ACT), enacted in the Water Quality Act of 1987, prohibits against establishment of less stringent effluent limitations than those established in the previous permit. There may be exceptions that apply to the relaxation of permit limits, but neither the state nor permittee have requested them, so they are not considered. The mixing zone in the permit will remain rectangular in shape, with a length of 400 meters and a width of 100 meters, centered over the outfall diffuser, and extending from the marine bottom to the receiving water surface.

Item 10. The ADEC designates a zone of initial dilution (ZID) for the effluent discharged from the WWTF. The ZID is defined as area extending 35 meters in any direction from the diffuser. The dilution ration is 1000:1. The most stringent limits for the parameters listed in the State of Alaska Water Quality Standards must be met outside of the ZID, (except for fecal coliform bacteria which must be met outside of the mixing zone.)

In accordance with State Regulations 18 AAC 70.240, the Department has authority to designate mixing zones in permits or certification. This mixing zone will ensure that the most stringent water quality standard limitations for all parameters, (except fecal coliform bacteria) are met at all points outside of the ZID. At this time there are no parameters with limitations that would qualify for this ZID.