

RESPONSE TO COMMENTS
ON
MUNICIPALITY OF ANCHORAGE, EAGLE RIVER WTF
NPDES PERMIT
(Permit No. AK-002254-3)

Response to Comments

Introduction

The public comment period for the draft permit for Municipality of Anchorage, Eagle River Wastewater Treatment Facility (AK-002254-3) began on September 14, 1994, and closed on October 14, 1994. Comments were received from the Municipality of Anchorage (MOA), the permittee. These comments were considered by EPA in establishing the final permit conditions. In addition, one change was made to the permit as a result of the State's 401 certification. A summary of substantive comments and EPA's response to each follows.

Comments

1. **Comment:** The MOA commented that the toxicity testing requirements were unnecessarily stringent. They stated that the chronic toxicity testing requirement should be reduced to twice during the first year, with one additional test required in the third year if no toxicity was demonstrated.

Response: To adequately characterize the effluent, it is necessary to conduct sufficient monitoring to determine variability. Two tests during the first year are not sufficient to characterize the effluent. Therefore, the requirement to conduct quarterly testing in the first year has been retained in the final permit.

EPA agrees that if no toxicity is demonstrated during the first year, it may be appropriate to reduce the monitoring frequency to one additional test during the permit term. The determination of whether toxicity is demonstrated is based on the recommendations for determining "reasonable potential" in EPA's *Technical Support Document for Water Quality-based Toxics Control (TSD)*. Based on the four samples collected in the first year, the *TSD* recommends using a factor of 4.7 to account for variability and uncertainty. The most stringent wasteload allocation (5.8 chronic toxic units) was divided by this factor to determine the maximum effluent concentration that will not have the reasonable potential to cause or contribute to an exceedance of the criterion. Therefore, if the effluent toxicity does not exceed 1.2 TU_c (or a no observed effect concentration of 83% or more), the final permit authorizes the reduction of chronic toxicity testing to one additional test in year 3 of the permit.

2. **Comment:** The MOA commented that the timing of the acute toxicity testing was inappropriate. They stated that testing with coho salmon should be done in the first calendar quarter to assure a supply of even-aged fish. They also commented that testing should begin no sooner than 180 days from the effective date of the permit, in order to give the facility time to contract the work.

Response: The permit has been changed to require testing during the first calendar quarters of 1996 and 1998. In addition to moving the requirement to the first quarter, this change will allow the requested 180 days needed to contract the work.

3. **Comment:** The MOA commented that the hardness values used to calculate the metals criteria were too low. They proposed three alternatives for establishing the appropriate hardness with which to calculate the metals criteria: 1) using the average hardness, 2) basing compliance on the actual hardness measured at the time of sampling for metals, or 3) using the correlation between the natural log (ln) of the hardness and flow to determine a fifth percentile hardness for the summer and winter flows.

Response: While EPA does not support the first two proposals, the third proposal, using the correlation between hardness and flow, is acceptable.

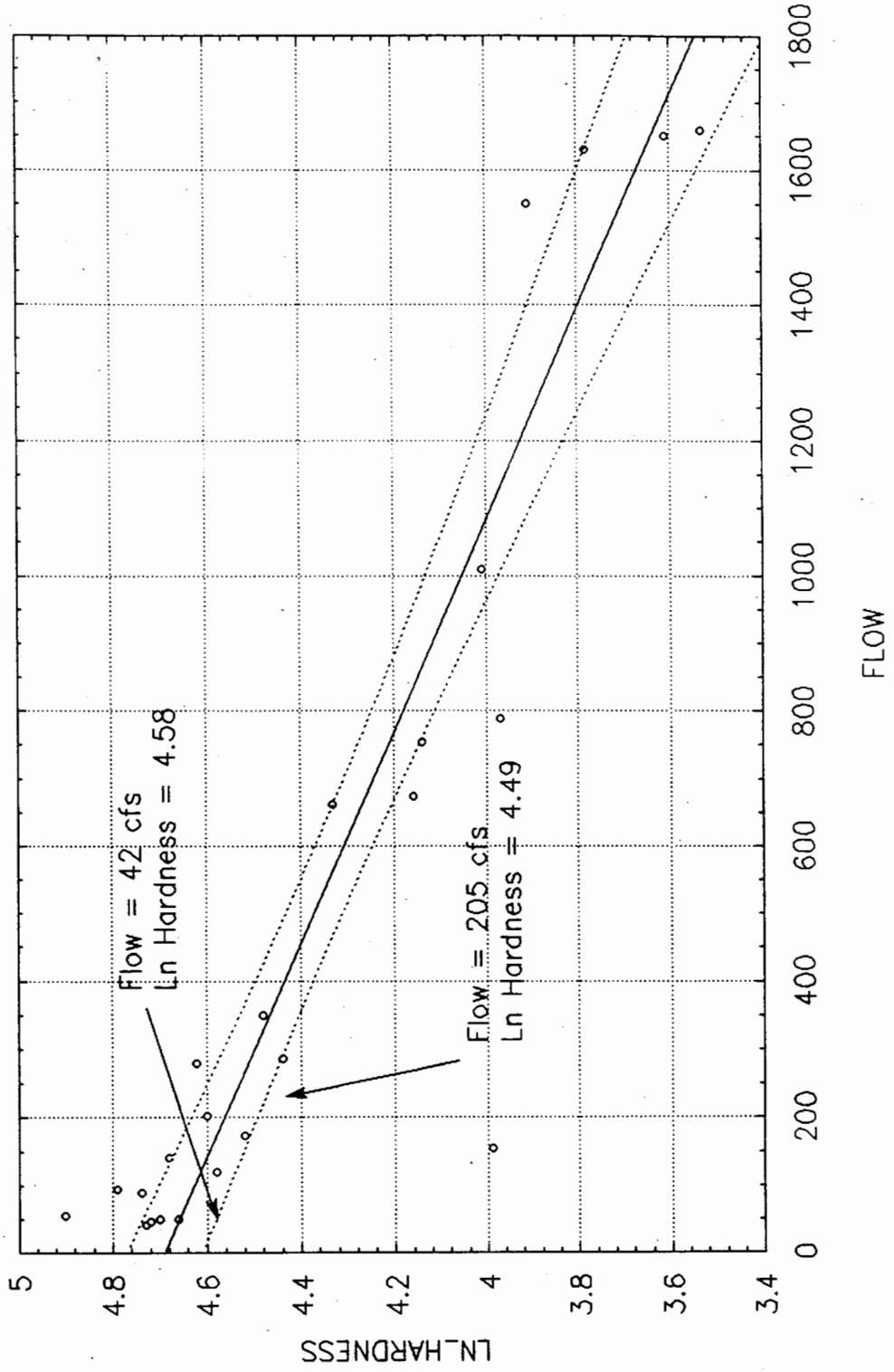
With respect to the first proposal, EPA does not believe it is appropriate to use an average hardness because the acute and chronic criteria are based on one-hour and four-day exposures, respectively. EPA's *Technical Support Document for Water Quality-based Toxics Control (TSD)* recommends the use of "worst-case" conditions when developing permit limits based on steady-state modeling.

Regarding the second proposal, EPA does not support the approach of determining compliance with metals limits based on the hardness measured at the time the metals sample is taken. This approach would require use of a formula as a permit limit, which would make tracking compliance difficult. In addition, this approach would make it difficult for the permittee to know when the limit was being approached so that corrective measures could be taken before the limit was exceeded. Most importantly, this approach does not ensure protection of the receiving water. The purpose of permit limits is to ensure that the criteria are met under most receiving water conditions. This approach provides only a "snapshot" and does not account for the variability in the effluent or the receiving water.

EPA has determined that the third proposal, basing the criteria on the fifth percentile hardness as correlated with flow, is essentially sound. In deriving the draft permit limits, hardness data were arranged seasonally, and the fifth percentile for each season was selected. The MOA submitted data showing that flow and the ln hardness are inversely related; that is, high flow is correlated with low ln hardness and low flow is correlated with high ln hardness. This means that a low flow and a fifth percentile hardness were unlikely to occur together, so using both of these parameters to determine the loading capacity was unnecessarily stringent. EPA concurred with this comment and, in the final permit based the criteria on the fifth percentile hardness that corresponds to the low flow for each season. The low flow is represented by the 7 day, 10 year low flow (7Q10). A 7Q10 flow is the average of 7 consecutive days flow that has a one-in-ten chance of occurring in any given year.

Figure 1 shows the correlation between flow and ln hardness (solid line) as well as the 90 percent confidence interval around the line (dotted lines). The lower dotted line represents the 5th percentile, which means that, for a particular flow, the corresponding ln hardness will be greater than that value 95 percent of the time. Similarly, the upper dotted line represents the 95th percentile.

FIGURE 1
FLOW vs LN HARDNESS
LN HARDNESS = 4.690 - .0006 * FLOW



The ln hardness corresponding to summer low flow (205 cubic feet per second) is 4.49, which translates to a hardness of 89 mg/l as calcium carbonate (CaCO_3). There are no hardness data corresponding to winter low flow (31 cfs). In this case, EPA determined that it was not appropriate to extrapolate beyond the range of the data. Therefore, EPA used the lowest flow for which hardness data were available, 42 cfs, resulting in a ln hardness of 4.58, which corresponds to a hardness of 97mg/l CaCO_3 . These values compare with hardness values of 33 and 66 mg/l CaCO_3 for summer and winter, respectively, used for the draft permit.

Using the above hardness values, EPA calculated the seasonal criteria for copper, lead, and silver. To determine if permit limits were still necessary for these parameters, the criteria were compared with the maximum projected receiving water concentration, calculated based on the maximum reported effluent concentration, dilution and the "reasonable potential" multipliers recommended in the TSD. Based on this analysis, no reasonable potential exists for the discharge to cause or contribute to a violation of the silver criteria. Therefore, effluent limitations and effluent monitoring for silver have been deleted from the final permit. However, the discharge still has the potential to cause or contribute to an exceedance of the criteria for copper and lead. Therefore, the final permit contains limits based on the newly calculated criteria. Table 1 summarizes the maximum projected receiving water concentration, draft and final criteria and effluent limitations for copper and lead. The summer values are designated as "S" and the winter values are designated as "W".

Basing the criteria on hardness as correlated with flow also changes the total maximum daily loads (TMDLs) for these pollutants. See the attached final TMDLs for a complete discussion of the TMDLs. As discussed above, the discharge has no reasonable potential to cause or contribute to a violation water quality standards for silver; therefore, silver was not included in the final TMDL. Note, however, that this conclusion was reached assuming that ambient concentrations are zero. Therefore, the permit still requires receiving water monitoring for silver so that EPA can determine whether the background concentrations or contributions from the MOA's storm water discharge require that the total maximum daily load (TMDL) for silver be finalized.

4. **Comment:** The permittee commented that the monitoring frequency for fecal coliform bacteria and ammonia should be reduced, because there have been no violations of the permit limits, nor were any expected.

Response: EPA agrees that a reduced frequency of fecal coliform monitoring would be adequate to show compliance with the permit limits. However, the state water quality standard is based on five samples taken in a month. Therefore, the monitoring frequency for fecal coliform in the proposed final permit has been reduced from twice weekly to five samples per month.

EPA does not agree that the monitoring frequency for ammonia should be reduced. Effluent samples taken before the facility increased cell residence

TABLE 1: Receiving Water Concentrations, Criteria, and Effluent Limits																			
Parameter	Max Rcv Wtr Conc ¹ ($\mu\text{g}/\text{l}$)	Acute/Chronic Criteria ($\mu\text{g}/\text{l}$)						Effluent Limitations ($\mu\text{g}/\text{l}$)											
		Draft			Final			Draft			Final			Draft			Final		
		S	W		S	W		S	W		S	W		S	W		S	W	
Copper	33	6.2/ 4.6	12/ 8.3	16/ 11	17/ 12		69	70		47	48		175	100		120	69		
Lead	11	20/ 0.78	48/ 1.9	70/ 2.7	79/ 3.1		14	48		9.6	12		50	29		34	20		
Silver	1.8	0.60/ NA	2.0/ NA	3.3/ NA	3.9/ NA		6.6	NA		4.5	NA		NA	NA		NA	NA		

¹ Based on maximum reported concentration multiplied by "reasonable potential" factor

time to control ammonia show that the effluent sometimes exceeded the proposed effluent limits. Although samples taken after ammonia control measures were instituted show a significant decrease in ammonia concentration, there are very few data points, so it is difficult to assess variability associated with this control strategy. In addition, as population grows, flow to the treatment plant will increase, decreasing the cell residence time. Frequent monitoring is needed to assess the relationship between cell residence time and effluent ammonia concentration.

5. **Comment:** The MOA commented that the requirement to monitor the Eagle River WTF sludge annually for metals should be deleted because sludge from that facility is mixed with the sludge from the Asplund WWTF prior to incineration, and the mixed sludge is monitored monthly.

Response: EPA believes that testing of the sludge at individual facilities is necessary to evaluate whether pretreatment requirements will be necessary in the future. Therefore, the requirement in the permit for annual sludge monitoring for metals remains unchanged.

6. **Comment:** The MOA requested that the quality assurance plan be required 180 days after the effective date of the permit, instead of 90 days. They assert that additional time is required to contract out work and to document new sampling, handling, and analytical techniques for the new monitoring requirements in the permit.

Response: EPA agrees that 180 days is a reasonable amount of time to address quality assurance and contracting for the new monitoring requirements. The permit has been changed to allow additional time.

7. **Comment:** The permittee commented that the ambient monitoring program should require monitoring at two locations (one upstream from urban influence and one immediately upstream from the discharge) instead of four, with three replicates per sample. In addition, monitoring frequency should be reduced from quarterly to twice per year for one year only. Finally, the permittee requested that the monitoring not begin sooner than 180 days after the effective date of the permit to allow adequate time for contracting.

Response: One of the requirements of the ambient sampling program is that it adequately address spatial and temporal variability, as well as analytical variability. This is required so that, when EPA is assessing the adequacy of the total maximum daily load (TMDL), there are sufficient data so that large margins of safety will not be necessary. With only two sample locations, it will not be possible to determine if variability is due to urban influences or to spatial or analytical variability. Similarly, two sets of samples will not distinguish between seasonal variability and analytical variability. Therefore, the number of stations and the frequency of monitoring are unchanged in the final permit. The number of replicates per station is also unchanged from the three required in the draft permit.

EPA agrees that one year of monitoring will be sufficient to determine if the TMDL is adequate to protect the receiving water. Therefore, the permit has

been changed to require one year of ambient monitoring. The permit has also been changed to allow 180 days to develop the program.

8. **Comment:** The MOA commented that the WTF must have the ability to switch from monitoring total recoverable metals to dissolved metals if the National Toxics Rule (NTR) changes. If the NTR does not change before the permit is issued, the permit should allow an automatic change in method if the NTR changes.

Response: The recently-adopted state water quality standards reference EPA's 1986 *Quality Criteria for Water (Gold Book)*. The *Gold Book* bases the metals criteria on total recoverable metals. This means that even if the NTR were to be stayed, EPA must still base permit limits on total recoverable criteria, as required under state standards. Therefore, the monitoring in the final permit remains unchanged.

9. **Comment:** The permittee has commented that the pH limits in the permit should be changed to 6.0 to 9.0. This request is based on changes that the permittee has made to the facility that require the addition of chemicals to control pH. The fact sheet for the permit cited 40 CFR 122.44(1) as requiring that the new permit contain limits as stringent as the existing permit because the permittee was capable of meeting them. However, under 40 CFR 122.44(1)(2)(i)(A), the permittee believes that backsliding is authorized based on the changes at the facility.

Response: EPA agrees that the process changes at the Eagle River WTF constitute new information. However, discharge monitoring report data submitted by the permittee state that the discharge has consistently met permit limits since the expansion. Additionally, unless the State authorizes a mixing zone, water quality criteria have to be met at the point of discharge. In its final certification for the permit, the State chose not to authorize a mixing zone for pH. Therefore, the pH limits in the final permit remain unchanged.

10. **Comment:** The permittee requested clarification of the chlorine limit. Their understanding is that the chlorine limit in the permit is determined based on an average of all values measured during a day, with non-detects being averaged as zero.

Response: EPA concurs with this interpretation. Under 40 CFR §122.2, the definition of daily discharge for pollutants with limitations expressed in terms other than loading (lb/day) states that the daily discharge is calculated as the average measurement of the pollutant over the day. Because the limits for chlorine are expressed as a concentration ($\mu\text{g}/\text{l}$), this definition would apply. In addition, as stated by the MOA, non-detects should be considered zeros for averaging.

11. **Response:** The MOA requested that the section on feedstock handling under the sludge provisions (Section III.A.4.b.) be deleted because all sludge is handled "in-house." The contingency plan for addressing periods of incinerator downtime is adequate to address concerns regarding sludge handling.

Comment: EPA agrees that for facilities where sludge is handled in-house, the feedstock handling provisions are unnecessary. The permit has been changed to delete most of section III.A.4.b. The final permit retains the requirement to manage feedstock in such a manner as to prevent harm to public health or the environment and the reopener to incorporate additional limits, if necessary.

State 401 Certification Conditions

As part of its 401 certification, the State requested that copies of acute and chronic toxicity tests be submitted to Alaska Department of Fish and Game. That change has been made to the final permit.