RESPONSE TO COMMENTS

AK-004964-6

September 29, 1999

This permit was public noticed on March 1, 1996. Comments were received from ARCO Alaska, Inc. (ARCO) and the Alaska Department of Environmental Conservation (DEC).

1. **Comment:** DEC requested that EPA re-evaluate the criteria used for Toxics and Other Deleterious Organic and Inorganic Substances. ARCO requested this same evaluation for Zinc.

   Response: The most current version of the Alaska Water Quality Standards (WQS) are dated May 27, 1999, but these have not been approved by EPA as of the above date. Since WQS cannot be used in an NPDES permits until approved by EPA, the permit effluent limitations will be based on the March 1, 1998, version of the WQS which were approved by EPA on April 3, 1998. In the 1998 WQS, the state of Alaska had not adopted EPA's 1986 Gold Book criteria for Toxics and Other Deleterious Organic and Inorganic Substances. In fact, no post-1985 chronic criteria were adopted except where the State was included in the National Toxics Rule (NTR). Acute criteria were included in the NTR so there is no conflict in those criteria used in the development of the draft permit. EPA has re-evaluated the chronic criteria used in the draft permit and has found that mistakes were made.

   The chronic criteria for zinc is 47 µg/L resulting in a chronic wasteload allocation of 94 µg/L. The permit limitations that result from this change are an Average Monthly of 77 µg/L and a Maximum Daily of 154 µg/L (See Attachment 1). These limits take into account a mixing zone with two to one dilution. The mixing zone has been certified by the state of Alaska in its § 401 Certification of this permit.

   The chronic criteria for copper was not changed from what was adopted by the WQS and what was published in the NTR. There is a discrepancy between the values for the average

monthly and daily maximum limitations listed in the fact sheet (34 and 47 µg/L, respectively) and those listed in the draft permit (21 and 29 µg/L, respectively). The limitations for the permit have been recalculated, see Attachment 1, and were found to be 34 µg/L for the monthly average and 69 µg/L for the daily maximum.

There was also a discrepancy in the daily maximum limitation for nitrates. The Fact Sheet stated that the maximum would be 28 mg/L while the permit listed it as 20. The permit has been changed to so that the maximum is 28 mg/L.

The fact sheet indicated that there was no chronic criteria for silver but that is not the case. A chronic criteria for silver was promulgated in 1980 and is applicable in Alaska. Since silver is not expected to be a pollutant of concern, the fact that there is criteria has no bearing on this permit.

2. **Comment:** ARCO comments that the toxicity reference to .01 times the LC_{50} is no longer valid and the State is now using a limit of 1 TU_C (chronic toxicity units) at the edge of the mixing zone.

Response: The 1989 version of the WQS, referenced in the Fact Sheet, includes .01 times the LC_{50} but the March 1, 1998, version does not. The permit now includes a Whole Effluent Toxicity (WET) effluent limitation of 2 TU_C based on the proposed mixing zone which has been certified in the State's § 401 Certification of this permit. The language in Permit Part I.A.3. has been updated to reflect the most recent recommendations on WET.

3. **Comment:** DEC and ARCO comment that the WQS for Petroleum Hydrocarbons, Oils and Grease has changed from a requirement of Total Hydrocarbons to Total Aqueous Hydrocarbons (TAqH).

Response: The 1998 WQS requires that total aqueous hydrocarbons in the water column shall not exceed 15 Fg/l, and total aromatic hydrocarbons shall not exceed 10 Fg/l.

Since the new outfall line has been built, the effluent will no

longer pass through the flare pit. Thus, it should not receive hydrocarbon contamination from that source. Weekly monitoring for one year has been added for Oil and Grease. This should show if any contamination from any source, including kitchen grease, is occurring. EPA will evaluate the data at the end of a year to determine whether a hydrocarbon limit is needed, and will reopen the permit to include such a limit if necessary.

4. **Comment:** ARCO comments that Permit Part I.A.1.i. should reflect that the fecal coliform criteria to be met at the edge of the mixing zone is a mean value.

Response: The requirement in this permit part was included in the State's § 401 Certification of the permit in 1991. The wording is exactly as it was in the Certification. Based on a review of the WQS for fecal coliform, EPA notes that the standard itself requires that the "mean may not exceed 20 FC/100ml." EPA requested that the State re-examine this issue and the § 401 Certification reflects that a mean at the edge of the mixing zone is acceptable.

5. **Comment:** ARCO requests that the sentence beginning "In the case of sludge. . ." be deleted from Permit Part II.B.

Response: This sentence has been deleted. The previous sentence requires the use of methods contained in 40 CFR 136 for all monitoring. Repeating the same requirement for sludge is unnecessary.

6. **Comment:** ARCO requests that monthly reporting required in Permit Part II.C. be changed to annual reporting unless there is a discharge to the unnamed lake.

Response: EPA believes that having this type of reporting requirement would be confusing and difficult to track. But EPA is not unsympathetic to the idea of reducing reporting frequency especially for a permit that is going to be used for contingency purposes. Therefore, EPA will require annual reporting of the

monthly monitoring results. Permit Part II.C. will be changed to require these reports to be postmarked no later than January 31st for the previous year. Permit violations are still required to be reported according to Permit Part II.G.

7. **Comment:** ARCO notes that the DEC address in Permit Part II.C. is incorrect.

Response: The address has been updated. EPA has also taken this opportunity to update its own addresses that appear in this same permit part.

8. **Comment:** DEC comments that the sediment standard has been changed so that the using TSS as an indicator of meeting this standard may not be valid.

Response: The state standard for turbidity is expressed in nephelometric turbidity units (NTUs) above natural conditions and the sediment standard is reported as settleable solids expressed in ml/L. ARCO has only reported total suspended solids (TSS) expressed in mg/L. Thus, a direct comparison of effluent data to these standards is not possible.

Because of the lack of data on the parameters of concern, EPA has included these parameters in the environmental monitoring requirements for both nearfield and farfield conditions in the receiving water. See Permit Part I.D.

9. **Comment:** DEC comments that the newest WQS includes a section on anti-degradation.

Response: The development of the draft permit considered the state's anti-degradation policy as is stated in the Fact Sheet. The cite in the WQS was changed between the 1989 and 1998 versions. Instead of being in 18 AAC 70.010(c), the anti-degradation policy is in 18 AAC 70.011.

10. **Comment:** DEC comments that in determining the Chlorine limitation, EPA erroneously applied a first order decay equation for a non-

conservative pollutant to a technology-based limitation. The calculated limitation was then compared to the water quality-based limitation at the edge of the mixing zone. DEC understood that effluent limitations would be compared at the end of the pipe.

Response: EPA regrets any confusion this calculation may have caused. The effluent limitations contained in permits are usually based on end of pipe measures. The equation that was utilized:

$$C = C_o e^{-kt}$$

where C_o is the effluent concentration, C is the concentration at the edge of the mixing zone, k is the decay rate constant (8.3×10^{-6} sec^{-1}), and t is the time necessary for the effluent to reach the edge of the mixing zone (9.63×10^5 sec), can be solved for C_o just as easily as C. The resulting equation would be:

$$C_o = C/e^{-kt}$$

where C would be the water quality standard of 10 µg/l.

If a dilution factor of 2 is also taken into account, the concentration at the end of the pipe for a standard of 10 µg/L would be 60 mg/l. This is much larger than the daily maximum technology-based limitation of 1 mg/l. Thus, the technology-based chlorine limits are stringent enough to ensure that the water quality standard for chlorine will be met. Moreover, if the more restrictive standard of 2 Fg/l is used, the end of pipe limit with dilution is 12 mg/l so the technology-based limitation of 1 mg/l is still protective of salmonid fish.

The use of this methodology has been recognized in the State's § 401 Certification of this permit.

11. **Comment:** DEC expressed concern that the disposal of wastewater through a Class II Underground Injection (UIC) Well may be in violation of the Safe Drinking Water Act.

Response: 40 CFR 144.6 allows for three types of Class II UIC wells which inject fluids (1) which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection; (2) for enhanced recovery of oil or natural gas; and (3) for storage of hydrocarbons which are liquid at standard temperature and pressure. The state agency which regulates Class II UIC wells in the state of Alaska, the Alaska Oil and Gas Conservation Commission, has approved these wastewaters for use in the enhanced oil recovery operation at Kuparuk.

ATTACHMENT 1

Calculation of permit effluent limitations for Zinc and Copper

	Copper	Zinc
Hardness (H)	200	200
Chronic Criteria	$e^{(0.8545\ \ln H\ -1.465)} = 21.41$	47
Acute Criteria	$e^{(0.944\ \ln H\ -1.464)} = 34.44$	$e^{(0.8473\ \ln H\ -0.8604)} = 210.84$
Wasteload Allocation$_C$	2 * 21.41 = 42.82	2 * 47 = 94
Wasteload Allocation$_A$	2 * 34.44 = 68.88	2 * 210.84 = 421.68
Long Term Average$_C$	"0.527(42.82) = 22.57	"0.527(94) = 49.54
Long Term Average$_A$	"0.321(68.88) = 22.11	"0.321 (421.68) = 135.36
Average Monthly Limitation	"1.55(22.11) = 34.27 (34)	"1.55(49.54) = 76.79 (77)
Maximum Daily Limitation	"3.11(22.11) = 68.76 (69)	"3.11(49.54) = 154.07 (154)
"See Attachment 2A and 2B.		