

Exhibit 4

EPA'S RESPONSE TO COMMENTS

ON THE DRAFT NPDES PERMIT FOR:
ALYESKA PIPELINE SERVICE COMPANY VALDEZ MARINE TERMINAL
NPDES No.: AK-002324-8
OCTOBER 30, 2012

On February 8, 2012, the Environmental Protection Agency (EPA) proposed reissuance of a National Pollutant Discharge Elimination System (NPDES) permit number AK-002324-8 to the Alyeska Pipeline Service Company to discharge pollutants from the Valdez Marine Terminal in Valdez, Alaska, pursuant to provisions of the Clean Water Act. The discharge from the facility consists of treated ballast and bilge water and other operational wastes associated with oil storage and transport. Treated sanitary wastes are also discharged. The receiving water is Port Valdez.

The State of Alaska, Department of Environmental Conservation also issued notice of their intent to certify that the subject discharge will comply with the applicable provisions of Sections 208(e), 301, 302, 303, 306 and 307 of the Clean Water Act. A final Certification of Reasonable Assurance was issued on October 29, 2012 and is attached to this RTC. The Certification was also used in developing this response to comment document.

The public notice for comments on the draft permit and certification was published in the Anchorage and Valdez, Alaska newspapers on February 8, 2012. The comment period ended on March 9, 2012. EPA received comments on the draft NPDES permit from Alyeska Pipeline Service Company via a letter to EPA from Mr. Carl Rutz, Senior Environmental Manager dated March 8, 2012, and the Prince William Sound Regional Citizens' Advisory Council (RCAC) via a letter to EPA from Mr. Mark Swanson, Executive Director, dated March 7, 2012. This document represents EPA's response to each of the comments received during the comment period. A portion of the comment or a summary is provided below followed by EPA's response.

COMMENTS SUBMITTED BY ALYESKA PIPELINE SERVICE CO.

COMMENT #1

Page 4 Table of Submittals.

The Discharge Monitoring Report (DMR) due date is identified as the 10th day of the month following the monitoring month. Alyeska requests that the DMR due date remain consistent with the current due date of the 15th day of the month following the monitoring month. The 15 days are needed to assure that all analytical data from samples collected late in the month can be received and compiled in the DMR.

attached for measuring the density of a liquid, it is placed in the liquid and the bulb sinks according to the density of the liquid. Graduations on the tube indicate the density. A digital densitometer gauges the density of liquids and gases based on an electronic measurement of the frequency of oscillation, from which the density value is calculated. The sample tube is electromagnetically excited to vibrate at its natural frequency. The change in frequency caused by a specific fluid inside the sample tube is then used to determine the density of the sample. A digital densitometer can be used in place of the hydrometer method – both instruments and methods will provide the same information. With the use of either instrument, the Permittee must follow an approved EPA Method under 40 CFR Part 136 or follow an appropriate Standard Test Method for conducting density measurements of a liquid.

COMMENT #9 (WET-001)

Page 7 Table 2 Acute Whole Effluent Toxicity testing

Alyeska requests that the monitoring requirement for acute toxicity be removed from the final permit if it is tied to trigger limits and Toxicity Reduction Evaluations as there has been no demonstrated reasonable potential for this parameter to impair water quality based on previous monitoring. As described in more detail later in these comments, the one historic acute WET sample that had a result of 1.1 acute toxicity unit (TUA) had not shown any toxicity and was assigned the value based on the requirement to add brine to raise the salinity into an acceptable range per the test protocol (see Attachment 1). In cases where no reasonable potential for water quality impairment occurs, then the elimination or reduction of monitoring is consistent with EPA guidance.

RESPONSE #9 – *The Clean Water Act prohibits the discharge of “toxic pollutants in toxic amounts”. On October 26, 1995, EPA promulgated a final rule under the CWA that adds whole effluent toxicity (WET) testing methods to the list of nationally applicable methods in 40 CFR Part 136.*

The reasonable potential to cause or contribute to an excursion above any state water quality criteria for a given pollutant is evaluated to determine whether or not an effluent limit is established for that parameter within an NPDES permit. EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is “reasonable potential” to exceed water quality standards and a water quality-based effluent limit (WQBEL) must be included in the permit for that parameter. If the projected receiving water concentration does not demonstrate a reasonable potential to exceed the criteria, then a WQBEL is not necessary. This does not equate to a finding, however, that monitoring is unwarranted. Indeed, it is EPA policy and practice to include monitoring requirements for such parameters in efforts to better characterize the effluent and assess treatment efficiency (40 CFR 122.44(i) and 122.48). Please also refer to Section 6.3 and 8.2.4 of EPA’s NPDES Permit Writer’s Manual (EPA-833-K-10-001, September 2010), and EPA’s Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies (US EPA 1996). Given the significant changes in the treatment process for the BWTF, the considerable change in influent characteristics (i.e. once

predominantly oily ballast water, now primarily stormwater and facility process water), and the removal of the Subtidal Benthic Organism Study, it is appropriate to establish a whole effluent toxicity monitoring program that will effectively characterize the effluent. The acute WET monitoring will ensure the provisions of the mixing zone dilution allocation authorized by the State of Alaska for acute WET are being met. Finally, flow data indicate seasonal trends with higher flows in winter, spring and August, such that one annual acute toxicity test conducted in January or February is not indicative of the effluent toxicity potential throughout the year and a quarterly monitoring frequency provides an accurate means of characterizing the effluent (NPDES Permit Writer's Manual (U.S. EPA 2010)).

Pursuant to CWA Section 308, EPA has the authority to require monitoring in NPDES permits and to adjust monitoring frequencies. Furthermore, the following requirements included in the Permit are consistent with EPA policy (US EPA Clarification Memo, 3/27/2001; 2011 NPDES WET Training), and CWA Sections 308 and 402: (1) routine WET monitoring that adequately characterizes the effluent discharge to ensure that the wasteload allocation is not exceeded and to support the reasonable potential determination at permit re-issuance; (2) requirements for accelerated WET testing and a TIE/TRE based on the exceedence of the permit-specified WET numeric monitoring triggers (Part I.H.5 – 7); and (3) A permit re-opener clause to allow the permitting authority to open the permit and modify it to include WET limits, should unacceptable levels of toxicity be demonstrated in future testing (Part V.M of the Permit).

It is important to clarify that toxicity triggers are not toxicity limits. Toxicity triggers are threshold levels for WET in an NPDES permit, established by the permitting authority, which are used to trigger accelerated WET monitoring, analyses, or corrective actions (e.g., TRE) when there is no reasonable potential for WET and no WET limit.

It is also important to clarify the purpose and intent of TIE/TRE requirements. The Technical Support Document for Water Quality Based Toxics Control (TSD; USEPA, 1991b) defines a TRE as a "site specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reductions in effluent toxicity." A TIE is often a component of a TRE analysis and is a step-wise process used to identify the cause(s) of toxicity by means of accelerated WET testing and manipulation (chemical or physical) of the effluent. In the NPDES permitting program, TREs are used to identify and reduce, or eliminate, sources of effluent toxicity whether or not there are WET limits in the Permit. However, TREs are typically only required in the event the effluent is exceeding a toxicity limitation or, in the absence of a WET limitation, the toxicity allocation authorized by the appropriate State authority under the CWA Section 401 certification.

Since WET limits have not been established in this permit, the TRE triggers (for acute and chronic toxicity) were established using the WET dilution allocations (for acute and chronic toxicity) authorized by the State of Alaska. It is EPA policy to require reference steps to be taken to identify and control toxicant(s) (TRE/TIE) in the event that toxic

effluent results are observed (US EPA 2004 and US EPA 1996e, US EPA 3/27/2001: Policy Memorandum: Clarifications Regarding Toxicity Reduction and Identification Evaluations in the National Pollutant Discharge Elimination System Program.). WET testing results exceeding the TRE trigger values indicate that the effluent toxicity is exceeding the WET allocation authorized by the State of Alaska, and corrective actions to reduce toxicity to authorized levels are warranted. Furthermore, the EPA has not provided WET limits (acute or chronic) within the Permit, but, as discussed above, EPA has the authority to require WET monitoring in NPDES permits.

Two toxicity triggers for acute toxicity have been established in the final permit. The first trigger value (the "lower trigger"; Part I.H.5. of the Permit) was established using the highest acute WET value observed in the historical data (see detailed discussion below); the second trigger value (the "higher trigger"; Part I.H.8.b. of the Permit) was established based upon the mixing zone dilution allocation authorized by the State of Alaska for acute WET. The higher and lower acute WET trigger values were set at 6.9 and 1.2 TU_A, respectively. The higher acute WET trigger value was established using the 23:1 dilution authorized for acute WET by the State of Alaska and the 0.3 TU_A threshold recommended in national guidance for the control of acute toxicity (TSD; USEPA, 1991b), resulting in a trigger value of 6.9 TU_A (23:1x0.3 TU_A=6.9 TU_A). The lower acute WET trigger was calculated using 10 years of historical acute WET data, and produced a starting value of 1.1 TU_A, the highest reported historical value in the data set. The standard deviation for this value is 0.04. To build in an appropriate margin of error, EPA added 2 standard deviations, which corresponds to a 95% confidence interval and is commonly applied as a margin of error. The resulting toxicity trigger based on this calculation is 1.2 TU_A.

Exceeding the lower trigger for acute WET (1.2 TU_A) would be an indication that WET levels within the effluent are increasing beyond historical levels reported in the data set. EPA believes that an increase in toxicity beyond historical levels is contrary to the goals of the CWA and NPDES program and would warrant further investigations and analyses to determine the cause(s) of the increase in WET. Pursuant to our authority under Section 308 of the CWA to require effluent monitoring, exceedance of the lower trigger values requires the permittee to conduct accelerated WET monitoring and, if the accelerated testing indicates persistent toxicity, the performance of a TIE to identify the cause(s) of the increase in toxicity. The data generated by a TIE in such circumstances (i.e., increased toxicity above historic levels) would be valuable to the permitting authority at permit reissuance.

Exceeding the higher trigger value for acute WET (6.9 TU_A) would be an indication that effluent toxicity levels are exceeding the WET allocation authorized by the State of Alaska and corrective actions must be taken by the permittee to bring the facility's discharge into compliance with the WET allocation. For these reasons, exceedance of the higher trigger values requires accelerated testing and, if toxicity is persistent, performance of a TRE.

Incorporating the modifications discussed above, EPA will retain the acute toxicity monitoring requirements, accelerated testing, and TIE/TRE requirements, as described in Section I.H. of the final Permit.

EPA agrees that if there is no demonstrated acute toxicity, then the monitoring requirements may be reduced from quarterly to semi-annually (twice per year). The Permit has been revised to include this reduction in monitoring frequency if 4 consecutive acute toxicity results do not exceed the lower numeric monitoring trigger (Table 2, Footnote 6 and Part I.H.):

⁶ Acute WET testing frequency will be reduced from quarterly to semi-annually (twice per year) after the effluent exhibits 4 consecutive tests that do not exceed the acute toxicity trigger at Part I.H.5. The Permittee must notify EPA and ADEC upon receipt of the 4th consecutive acute toxicity test below the acute toxicity trigger (See Part I.H.).

Please also refer to Comments #25, #28, and #31.

Finally, the Subtidal Benthic Organism Monitoring component of the Environmental Monitoring Program, the purpose of which was to evaluate effluent toxicity and the effects on the abundance and community structure of the benthic organism populations, was removed from the Permit. Given the nature of the facility operations and the presence of toxic compounds in the effluent, EPA believes that a more robust WET program is required so that effluent toxicity can still be monitored in a manner consistent with the former objective of the Subtidal Benthic Organism study. EPA believes that continued WET monitoring pursuant to our authorities under Section 308 are warranted to ensure the continued protection of Alaska WQS.

EPA recognizes the addition of brine solution to effluent samples may preclude the use of a 100% effluent sample. EPA has revised the permit to reflect that the highest effluent concentration achievable after salinity adjustment will be used as a substitute for, and treated as, the 100% effluent concentration.

COMMENT #10 (WET-002)

Page 7 Table 2 Chronic Whole Effluent Toxicity testing

Alyeska requests that the proposed frequency of chronic toxicity monitoring be reduced in the final permit as there has been no demonstrated reasonable potential for this parameter to impair water quality based on previous monitoring. In cases where no reasonable potential for water quality impairment occurs, then the elimination or reduction of monitoring is consistent with EPA guidance. Alyeska does not agree that assigning trigger limits is a reasonable action for parameters that have conclusively demonstrated no reasonable potential for water quality impairment and for which a minimum effluent dilution of up to 56 to 1 is available at the edge of the authorized chronic aquatic life mixing zone.

Recognizing that EPA may not agree that the elimination or reduction of WET monitoring is acceptable, Alyeska's proposed alternative WET monitoring program is described later in the comments.

RESPONSE #10 – *EPA guidance recommends that major dischargers conduct monthly WET testing (Region 8, 9, 10 Toxicity Training Tool, 2010). Historically, the Permittee has only been required to monitor chronic WET quarterly (since at least the 1997 issuance of the Permit), in conjunction with effluent toxicity evaluations as part of the Environmental Monitoring Program. Whole effluent toxicity data has not shown reasonable potential to exceed chronic toxicity water quality criteria. In 1996, EPA issued Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies. This guidance generally does not support reductions in monitoring frequencies below quarterly (4/year). For chronic wet testing, which measures longer term effects, quarterly tests are necessary to ensure that the monitoring frequency adequately characterizes and represents any temporally variability in the effluent, and takes into consideration all pertinent features of the facility's entire operation and production. As discussed in RTC #9, pursuant to CWA Section 308, EPA has the authority to require monitoring in NPDES permits and to adjust monitoring frequencies. Given the nature of the facility operations and the presence of toxic compounds in the effluent, EPA believes that continued WET monitoring pursuant to our authorities under CWA Section 308 are warranted to ensure the continued protection of Alaska WQS.*

As discussed in RTC#9, EPA has revised the permit to establish two trigger values for both acute and chronic WET. The first chronic trigger value (the "lower trigger"; Part I.H.5. of the Permit) was established using the highest chronic WET value observed in the historical data (see detailed discussion below); the second chronic trigger value (the "higher trigger"; Part I.H.8.b. of the Permit) was established based upon the mixing zone dilution allocation authorized by the State of Alaska for chronic WET. The higher and lower chronic WET trigger values were set at 56 and 13.5 TU_C , respectively.

The higher chronic WET trigger value was established using the 56:1 dilution authorized for chronic WET and the Alaska criterion for chronic WET of 1.0 TU_C ($56:1 \times 1.0 TU_C = 56 TU_C$). The lower chronic WET trigger was calculated using 10 years of historical chronic WET data, and produced a starting value of 9.6 TU_C , the highest reported historical value in the data set. The standard deviation for this value is 1.94. To build in an appropriate margin of error, EPA added 2 standard deviations, which corresponds to a 95% confidence interval and is commonly applied as a margin of error. The resulting toxicity trigger based on this calculation is 13.5 TU_C .

Exceeding the lower trigger for chronic WET (13.5 TU_C) would be an indication that WET levels within the effluent are increasing beyond historical levels reported in the data set. EPA believes that an increase in toxicity beyond historical levels is contrary to the goals of the CWA and NPDES program and would warrant further investigations and analyses to determine the cause(s) of the increase in WET. Pursuant to our authority under Section 308 of the CWA to require effluent monitoring, exceedance of the lower

trigger value requires the permittee to conduct accelerated WET monitoring and, if the accelerated testing indicates persistent toxicity, the performance of a TIE to identify the cause(s) of the increase in toxicity. The data generated by a TIE in such circumstances (i.e., increased toxicity above historic levels) would be valuable to the permitting authority at permit reissuance.

Exceeding the higher trigger value for chronic WET (56 TU_C) would be an indication that effluent toxicity levels are exceeding the WET allocation authorized by the State of Alaska and corrective actions must be taken by the permittee to bring the facility's discharge into compliance with the WET allocation. For these reasons, exceedance of the higher trigger value requires accelerated testing and, if toxicity is persistent, performance of a TRE.

In addition the discussion above, and similar to the discussion for RTC#9, chronic WET monitoring will also ensure the provisions of the mixing zone dilution allocation authorized by the State of Alaska for chronic WET are being met.

For these reasons, as well as the discussion presented in RTC#9, EPA will retain the chronic toxicity monitoring requirements, incorporating the above revisions, as described in Section I.H. of the Permit.

Please also refer to Comment #31.

COMMENT #11 (WET-003)

Page 7 Table 2 WET sampling method

Historically, all WET samples have been grab samples and the draft permit has modified the requirement to a 24-hour composite. Alyeska requests that the final permit retain the WET grab sample requirement because the final effluent sample point is downstream of the Biological Treatment Tank (BTT) which acts as a physically mixed equalization tank and prevents a plug-flow condition which would be better represented by a 24-hour composite sample. The BTTs typically provide 3-5 days of retention time at average flows and are thoroughly mixed by the aeration system so the final effluent is well mixed and representative of the characteristics of the wastewater in the system at the time of sampling. In order to provide for the capability of obtaining twenty-four hour composite samples additional sampling equipment would be required. The cost and complexity of the new equipment would provide no additional benefit for obtaining a representative effluent sample as compared to the current approved grab sample method.

RESPONSE #11 – *The purpose of 24-hr composite sampling is to obtain a representative (well mixed) sample of effluent which is characteristic of the effluent over a 24-hr period, rather than an instantaneous grab. However, since the Biological Treatment Tank provides 3-5 days of retention time at average flows and is thoroughly mixed, EPA believes that grab samples will achieve the requirement for a representative and characteristic sample of effluent over a 24-hr period. EPA has revised the final Permit to retain the grab sampling method for WET testing that appeared in prior permits.*

EPA further notes that the Alyeska facility currently employs no disinfection and the comment suggests that Alyeska objects to installing any such system. In contrast, several of the municipal wastewater treatment facilities identified by the commenter have installed or are in the process of installing disinfection systems. In particular, Juneau's Douglass facility employs ultraviolet (UV) disinfection, whereas the Anchorage POTW (AK-002255-1) disinfects using chlorination. Pursuant to a federal consent decree entered in the United States District Court in the District of Alaska, Unalaska is required to install a disinfection system by December 2014. Moreover, once the Unalaska disinfection system is operational, the facility is required to meet end-of-pipe fecal coliform limits of 400 cfu/100 mL (weekly average; AWL) and 200 cfu/100 mL (monthly average; AML).

Similarly-sized industrial facilities with domestic wastewater treatment plants also employ disinfection and are subject to similar fecal coliform limits. A primary example is Pogo Mine, which provides UV disinfection (as well as secondary treatment) for its domestic wastewater. As above, Pogo Mine is required to meet end-of-pipe fecal coliform limits of 400 cfu/100 mL (AWL) and 200 cfu/100 mL (AML). The sanitary wastewater discharge (Outfall 003) from the Cook Inlet Energy Osprey Platform, which chlorinates, has both end-of-pipe fecal coliform limits (AML = 137 cfu/100mL and maximum daily limit (MDL) = 200 cfu/10mL) and Enterococci limits (AML = 35 cfu/100mL and MDL = 276 cfu/100mL). Finally, the General Permit for Small Sewage Treatment Plants Discharging to Marine Water (AKG-57-1000) permit also sets end-of-pipe limitations for fecal coliform that assume the use of disinfection.

COMMENT #25 (WET-004)

Page 15 Part H. Whole Effluent Toxicity Testing

In discussing effluent chemistry and effluent toxicity and related monitoring tools, the Fact Sheet describes how the Permittee should ensure that acute criteria are met at the edge of the initial zone of dilution (Fact Sheet at page 29) and this is to address the hypothesis W1 (Fact Sheet page 28) that contaminants in the effluent are not exceeding levels protective of the environment outside of the acute mixing zone for lethality to passing organisms and outside the chronic mixing zone. Hypothesis W1 describes the acute mixing zone for contaminants in terms of protecting for lethality to passing organisms. This concept is important in EPA's Technical Support Document for Water Quality-based Toxics Control (EPA TSD at sections 2.2.2 and 4.3.3), Alaska's regulations (18 AAC 70.240.(d)(7)&(8)) and Alaska's Implementation Guidance: 2006 Mixing Zone Regulation Revisions (pages 4 and 9). Hypothesis W2, that effluent toxicity is not adversely impacting survival, growth or reproduction of aquatic organisms outside the mixing zone in the fjord as a whole (Fact Sheet at page 28) is associated with chronic toxicity and the chronic mixing zone, and not with acute toxicity and the acute mixing zone. Alaska has adopted criteria approved by EPA for chronic WET (1 TUc) (18 AAC 70.030). Alaska chose not to adopt criteria for acute WET in ADEC standards. EPA's acute WET guidance of 0.3 TUa is informative but has no regulatory basis in Alaska. Based on the long standing monitoring program and knowledge of the characteristics of the BWT effluent it is not reasonable to increase toxicity monitoring

and establish trigger limits for constituents that have no reasonable potential to impair water quality. As described in these comments Alyeska does not agree that increased WET testing frequency, toxicity trigger limits, accelerated testing and Toxicity Reduction Evaluations are justified.

RESPONSE #25 – *Pursuant to CWA Section 308, EPA has the authority to require monitoring in NPDES permits and to adjust monitoring frequencies. For the reasons described below, and given the nature of the facility operations and the presence of toxic compounds in the effluent, EPA believes that continued WET monitoring pursuant to our authorities under Section 308 are warranted to ensure the continued protection of Alaska WQS.*

In order to conclusively prove that Water Hypothesis W2 is true, effluent toxicity studies need to be conducted. Since the Subtidal Benthic Organism Monitoring Study is no longer a requirement of the Environmental Monitoring Program, the purpose of which was to evaluate effluent toxicity and the effects on the abundance and community structure of the benthic organism populations, a more robust WET Program needs to be conducted. This WET program will provide data that is solely indicative of the effluent toxicity potential, rather than evaluating toxic effects that may be a result of other environmental pressures/triggers in the receiving water body. This WET program is required to evaluate the effluent toxicity characteristics in a manner consistent with the former objective of the Subtidal Benthic Organism study.

Whole effluent toxicity tests are an integral tool in the assessment of water quality. For the protection of aquatic life, EPA's integrated strategy includes the use of three control approaches: 1) the chemical-specific approach, 2) the WET control approach, and 3) the biological criteria/bioassessment approach. The two primary advantages of using WET controls over individual, chemical-specific controls are (1) WET tests evaluate the integrated effects of all the chemical(s) in the aqueous sample; and (2) while EPA has established aquatic life criteria for a relatively small number (126) of chemical-specific pollutants, WET tests can measure toxicity caused by other compounds for which EPA does not have chemical-specific numeric criteria for the protection of aquatic life or approved parameter-specific analytical test methods. Reliance solely on chemical-specific numeric criteria or bioassessments could result in a considerably less effective toxics control program. WET testing is a vital component of the water quality standards implementation through the NPDES permitting process and supports meeting the goals of the Clean Water Act (Section 402), "...maintain the chemical, physical and biological integrity of the nation's waters."

EPA regional and national guidance recommends the 0.3 TU_A threshold be used as the criterion maximum concentration for the control of acute toxicity (Region 8, 9, 10 Toxicity Training Tool, 2010; TSD, USEPA, 1991b). While the State of Alaska does not have numeric criterion for acute WET, there are narrative criteria that do apply to acute toxicity. AWQS (18 AAC 70.020(b)) states that for the protection of marine waters for the growth and propagation of fish, shellfish, other aquatic life, and wildlife, "there may be no concentrations of toxic substances in water....that, singly or in combination, cause,

or reasonably can be expected to cause, adverse effect on aquatic life...” ADEC’s mixing zone regulations (18 AAC 70.240) state that mixing zones may not “exceed acute aquatic life criteria at and beyond the boundaries of a smaller initial mixing zone,” and may not “result in an acute or chronic toxic effect in the water column.” In the absence of a numeric criterion for acute WET in AWQS, EPA has historically interpreted and implemented the narrative criteria for acute toxicity using the 0.3 TU_A threshold.

WET testing evaluates the integrated effects of all the chemical(s) in an effluent, and can measure toxicity caused by compounds for which EPA does not have chemical-specific numeric criteria. EPA will retain the whole effluent toxicity requirements as described in Section I.H. of the Permit, which have been revised and the changes are described in detail in RTC#9. However, EPA agrees that if there is no demonstrated acute toxicity, then the monitoring requirements will be reduced from quarterly to semi-annually after 4 consecutive acute toxicity results that do not exceed the numeric monitoring trigger under Part I.H.5. EPA has updated the Permit to reflect this acute WET monitoring requirement change. Please refer to RTC #9.

COMMENT #26 (WET-005)

Page 15 Part I.H.2 (a-b) Chronic Toxicity Test Species and Methods

EPA and ADEC determined that there was no reasonable potential to cause or contribute to exceedences of Alaska Water Quality Standards for WET and that no permit limits need to be developed (Fact Sheet at page 31). (Alyeska concurs with this conclusion).

The Fact Sheet shows that ADEC has authorized a mixing zone for chronic toxicity with a dilution factor of 9.6. The permit uses this to establish a chronic WET TU_c trigger limit of 9.6 in the permit. Exceeding the trigger limit imposes significant additional chronic toxicity testing and the possibility of implementing Toxicity Reduction Evaluations (TRE). EPA guidance shows that if there is reasonable potential to exceed either acute or chronic WET criteria at acute or chronic mixing zone dilutions, then limits are needed, but if there is no reasonable potential, then all that is needed is toxicity testing to be repeated at a frequency of at least once every 5 years as a part of the permit application. (EPA TSD, Section 3.3.3 Effluent Characterization for Whole Effluent Toxicity) There is no reasonable potential to exceed ADEC’s chronic WET toxicity standard at the edge of the chronic mixing zone which is 50 meters in all directions from the diffuser barrel. The minimum dilution factor achieved at the edge of the chronic mixing zone is 56 to 1 (Fact Sheet, Table 3 at page 22). There is no need to set a chronic WET trigger based on a dilution factor of 9.6, which lies well within the zone of initial dilution (ZID) that is described earlier in these comments. The permit and Fact Sheet should acknowledge that the discharge does not result in acute or chronic toxicity in the receiving waters and that the WET monitoring is essentially just informational to demonstrate the effectiveness of the ballast water treatment and therefore trigger limits are not necessary.

It is important to recognize that ADEC has authorized a 50-meter Mixing Zone (in all directions from the 61 meter long diffuser) that provides a minimum dilution factor at critical conditions of 56 to 1 (1.8% effluent at the edge of the mixing zone). The

requirement to perform a TRE has no basis given the authorized chronic Mixing Zone, unless the chronic WET IC" (Inhibition Concentration) results in a TUC greater than 56, (IC_s at 1.8 % effluent = 56 TUC) which is extremely unlikely. If, for example, the effluent exhibited a chronic WET IC" of 10% effluent which results in 10 TUC, (which exceeds the TUC trigger limit in the draft Permit) Alyeska would simply request the use of a larger portion of the chronic Mixing Zone which would be allowed up to the full SO-meters and affording a dilution factor of 56 to 1 which would be protective of chronic toxicity. This illustrates that the chronic whole effluent toxicity trigger limits are not necessary because there is no reasonable potential to exceed the Alaska Water Quality Standard of 1 TUC beyond the edge of the Mixing Zone. The assignment of a TUC trigger limit in the draft Permit of 9.6 TUC is onerous and unnecessary and should be removed from the final Permit. In the event a chronic toxicity trigger for accelerated WET testing is included in the final Permit it should be set at 56 TUC to correspond with the allowable dilution factor at the edge of the approved chronic mixing zone.

RESPONSE #26 – *As discussed in RTC #9 and #10, EPA revised the numeric monitoring triggers in the Permit. The determinations made in RTC #9 and #10 are consistent with EPA guidance (TSD Section 3.3.3., and guidance documents referenced in the previous responses).*

As discussed previously, EPA has the authority under Section 308 of the CWA to develop monitoring requirements in NPDES permits. Given the nature of the facility operations and the presence of toxic compounds in the effluent, EPA believes that continued WET monitoring pursuant to our authorities under Section 308 are warranted to ensure the continued protection of AWQS. Pursuant to Section 402 of the CWA, WET testing is a vital component of the water quality standards implementation through the NPDES permitting process and helps to "...maintain the chemical, physical and biological integrity of the nation's waters."

Toxicity triggers and associated accelerated testing and TIE/TRE requirements are established to ensure protection of receiving waters from unacceptable levels of toxicity. As discussed in RTC #9 and #10, exceedance of a toxicity trigger and implementation of the accelerated testing and TIE/TRE requirements will only occur in the event that the effluent toxicity is either (1) increasing beyond levels reported in the historical data (i.e. exceeding the lower trigger values; Permit Part I.H.5.) or (2) exceeding the WET allocation provided by ADEC (i.e. exceeding the higher trigger values; Permit Part I.H.8.b.), which the commenter acknowledges "is extremely unlikely." The purpose of the numeric monitoring trigger and associated accelerated testing and TIE/TRE requirements is to determine if the observed toxicity was a isolated occurrence and, if not, implement actions to identify (in the case of an exceedance of the lower trigger, indicating increasing toxicity beyond historical levels) and/or control (in the case of an exceedance of the higher trigger, indicating an exceedance of the WET allocation) the level of toxicity. Numeric monitoring triggers and TIE/TRE requirements will not be removed from the final permit.

COMMENT #27 (WET-006)**Page 15 Part I.H.2 Table 4**

If the chronic WET monitoring requirement is retained Alyeska needs clarification as to whether the chronic toxicity tests should be performed on each of the 2 species every quarter or if the frequency is 2 quarters per year per species as described in Table 4, footnote 1, because it is unclear what the correct frequency is.

Alyeska requests that it have the latitude to test either the sand dollar or the sea urchin and not be held to using the sea urchin only if the sand dollar is not available as described in footnote 2. Both organisms represent notably sensitive tests and given past availability issues we believe this request is reasonable.

Table 4 identifies the acute toxicity test as the "48 hour mysid test". If the acute WET monitoring requirement is retained Alyeska requests confirmation on the duration of the test as previous permits have used the 96 hour test and the Fact Sheet is silent on the test duration. Alyeska is comfortable performing the 48-hour mysid test but would need verification of the required test duration.

RESPONSE #27 – Chronic toxicity testing is to be conducted quarterly for both the invertebrate and vertebrate tests (i.e., four tests per year per species). The Permit has been revised to provide more clarification in this regard.

EPA agrees with the comment regarding the use of either the sand dollar or sea urchin, and has revised the Permit to reflect that either species may be used interchangeably, as available.

The 48-hour mysid test is the correct test reference, and test duration, for the acute toxicity testing.

COMMENT #28 (WET-007)**Page 16 J.H.3 (a-d) Acute Test Species and Methods**

Alyeska requests that acute toxicity monitoring be deleted from the final Permit if tied to trigger values, accelerated testing and Toxicity Reduction Evaluation. The Mixing Zone Application provided evidence that there is no reasonable potential for the discharge from Outfall 001 to cause exceedences of acute toxicity criteria or to cause acute toxicity in the receiving waters because very little dilution is necessary and that occurs rapidly in a very short distance from the diffuser ports. Fixing the acute mixing zone so close to the ports and allowing so little dilution is not practicable as it affects the acute WET monitoring trigger level, potentially imposing significant costs for no environmental benefit. In any case, the trigger limits and associated TRE should be removed as they are not necessary to be protective of water quality and create an unjustifiable expense.

Setting the acute mixing zone at 3.7 meters and allowing a dilution factor of only 3.7 is not supported by ADEC regulations, ADEC mixing zone guidance nor EPA's mixing zone guidance. The allowable dilution factors need to be changed and the acute WET

trigger and resultant consequences need to be removed from the permit. The Fact Sheet notes that "if the mixing zone changes in the final certification for the permit, then EPA will reevaluate the water quality assessments." (Fact Sheet at page 21).

If monitoring of acute toxicity is retained, then a reasonable frequency would be once per year because the risk of toxicity is unlikely as demonstrated by the results of decades of testing, significantly reduced flows (with concomitant reduction of any toxic effect components) and the establishment of a smaller mixing zone which demonstrates the risk of a toxic effect has been minimized.

RESPONSE #28 – *The toxicity triggers for acute toxicity have been revised to include a lower and higher trigger value. The lower trigger value is based upon the highest acute WET value reported in the data set, and the higher trigger was established using the dilution allocation authorized by the State of Alaska. For a detailed discussion please refer to RTC #9, 10, and 25.*

COMMENT #29 (WET-008)

New vertebrate species

The draft NPDES permit proposes a new vertebrate species, the topsmelt, for chronic WET monitoring of the Outfall 001 effluent. Alyeska requests that EPA consider the elimination of the proposed new vertebrate species, the topsmelt, for chronic WET monitoring of the Outfall 001 effluent.

The topsmelt is not an approved WET test species identified in 40 CFR 136 Table I but is used widely in West Coast NPDES permits. However, because the topsmelt WET test methodology was not developed as one of the Part 136 methods, it lacks certain QA/QC requirements that can become problematic for evaluating test results. The trigger value for the survival component of the topsmelt testing is based on the NOEC obtained during testing. The NOEC is defined as the highest concentration of toxicant at which the values for the observed responses are not statistically different from the controls. The determination of a statistical difference can be strongly affected by the "power" of the test (i.e., the ability of the test to detect a significant difference). Depending on the within-test variability, a large effect size (i.e., a significant biological effect) might not be statistically significant, but in another case a small effect size (i.e., small biological effect) might be statistically significant (Denton et al. 2007, p. 57). EPA recognizes this property of biological testing and offers solutions to both situations by stipulating that the variability of the test be evaluated by using the percent minimum significant difference (PMSD; EPA 2000a, p. 3-8). An upper bound PMSD is used to evaluate the sensitivity of the test. If the test variability exceeds the upper bound PMSD, the test should be repeated with a new sample within 14 days. However, of particular importance to Alyeska in the context of the proposed permit is the case that a small biological effect would be found to be significant. In this case, the resulting NOEC and its associated TUC could trigger accelerated testing even though the biological effect was small. In such cases, USEPA allows that a lower bound PMSD evaluation, rather than statistical significance, be used to determine the NOEC (EPA 2000a, p. 6-8; Denton et al. 2007, p.

62ff). Analyses would be done to determine the smallest concentration for which the treatment mean differs significantly from the control mean Q1d has a relative difference from the control that is not smaller than lower bound PMSD. Thus, "concentrations having a very small relative difference with control (smaller than the lower PMSD bound) would be treated as if they do not differ significantly from control (even if they do so), for the purpose of determining the NOEC." There is no single lower bound PMSD applicable across the various species tests. USEPA provided the lower bound PMSD values for several species tests (EPA 2000a, Table 3-6; Denton et al. 2007, Table 4-1), but those tests do not include the topmelt. Alyeska's consultants have not been able to find a lower bound value for topmelt although the West Coast testing guidance does give an upper bound PMSD value for the species (EPA 1995, p. 101).

If the requirement is retained, Alyeska requests that the permit have allowances for the calculation of an NOEC value using the lower bound PMSD approach to cover the scenario in which a small biological effect is determined to be statistically significant. One option might be to use the value (11 percent) provided for the inland silverside. There is example language for including the review of with-in test variability in an NPDES permit (Denton et al. 2007, Appendix D, page D-14). However, that language refers to upper and lower PMSD bounds variability criteria tables, which does not exist for topmelt. If the topmelt test remains in the final Permit WET requirements, then the Permit should provide upper and lower PMSD bounds for this species and language allowing retesting if the lower or upper bound PMSD for a test is not achieved, as recommended by EPA (2000a) and Denton, et al. (2007).

Alyeska requests that EPA consider elimination of the topmelt WET testing to avoid any false positives that could occur due to the statistical concerns with the test. The echinoderms are a sufficiently sensitive species and it is doubtful that inclusion of a vertebrate chronic WET test will increase the protection of water quality provided by the vertebrate testing provisions so it can be justified that topmelt testing be omitted in the final Permit.

RESPONSE #29 – *The use of the west coast WET methods is supported by EPA policy and regulations [40 CFR 122.41(j)(4) and 122.44(i)(1)(iv); 67 FR 69955]. While EPA acknowledges that the west coast WET methods manual [EPA/600/R-95-136] does not set a lower bound PMSD for the topmelt test, the statistical analysis prescribed in the manual for analyzing test data does set the false positive (alpha error) error rate at 0.05, or 5%, while the rate of false negatives (beta error) is uncontrolled. EPA believes that the WET testing design, with replicates, controls, and an alpha level set at 0.05 all provide an adequate protection from false positives. EPA's WET Interlaboratory Variability Study (EPA/821/B-01/004 and EPA.821/B-01/005) reported that of the twelve testing methods evaluated, the highest rate of false positives was 4.35%, lower than the theoretical value of 5% established for most WET statistical analyses. There is no requirement within the regulations or EPA's methods manuals to establish a lower bound PMSD for the topmelt test. The topmelt test will not be removed from a final permit and lower bound PMSD will not be provided.*

COMMENT #30 (WET-009)**Page 17 Part I.H.4 (b)**

The section states that if the dilution water differs from the culture water, a second control using culture water must be tested. Many toxicity labs use mysids obtained from an outside culture facility for testing and topsmelt likely would also be obtained from an offsite culture facility. Those labs often transfer the test animals to laboratory holding facilities for a short time before the initiation of a test. This step is useful to ensure the initial condition of the test organism is appropriate and may serve to acclimate the organisms to the laboratory dilution water. The proposed permit language would require each culture facility to ship a sample of culture water to the testing lab to be included as a second control in the testing. This has not been the standard practice with previous Alyeska WET testing requirements.

Alyeska requests that this requirement be either removed or clarified as it has not been the practice to set up controls using culture water in the past and it is not clear what scientific justification supports it.

RESPONSE #30 – EPA guidance and the west coast methods manuals recommend that if organisms have been cultured in water that is different from the test dilution water, a second set of controls, using culture water, should be used in the test (Regions 8, 9, 10 Toxicity Training Tool, 2010, Pg. Section 3.7; EPA/600/R-95-136, 1995, Section 7). This requirement will not be removed from the final Permit. Most suppliers of WET organisms utilize synthetic dilution water prepared in accordance with EPA’s WET methods manuals as culture water. Unless receiving water is used as dilution water, the laboratory performing the WET tests will likely be preparing the same synthetic dilution water (as prescribed by EPA’s WET methods manuals) as that used as culture water. As a result, the control organisms will effectively be cultured in the same water as that used for dilution, eliminating the need for the organism supplier to ship additional samples of culture water.

COMMENT #31 (WET-010)**Page 17 Part I.H.S. Toxicity triggers*****Acute Toxicity:***

Alyeska strongly objects to the increased monitoring and trigger values as required by the draft permit and believes EPA and ADEC have no basis to require permittees to increase monitoring and set trigger value limits for parameters that show no reasonable potential to impair water quality. Alyeska requests that the trigger value for acute toxicity be deleted from the final Permit. It is not required to be protective of water quality because the BWTF effluent has not demonstrated a reasonable potential to be acutely toxic. Setting trigger values and increasing monitoring for acute WET is not supported by EPA or ADEC guidance. The historical absence of acute toxicity indicates that monitoring for acute toxicity should be either reduced or eliminated. In addition, due to the rapid and complete mixing provided by the discharge diffuser and the corresponding low risk that the effluent poses to water quality there is virtually no risk posed from acute toxicity.

The acute toxicity trigger limit is set at an unacceptably low artificial threshold and is not representative of a toxic effluent. The basis of the limit is not reasonable and will result in unnecessary and costly testing that cannot be supported by any reasonable analysis of the risk to the environment.

Alyeska understands that the acute toxicity trigger limit was based on a single data point taken from a dataset of eight tests over an eight year span. One reported sample of 1.1 TUa (all others were 1.0 TUa with 100% survival of all test animals) was converted to a trigger value by dividing by a dilution factor of 3.7:1 to meet the EPA recommended TUa of 0.3. It needs to be pointed out that the single data point of 1.1 TUa was the result of dilution of the effluent sample by the addition of hypersaline brine to adjust the test solution salinity to be within the range of the test specifications (See Attachment 1). The test result showed no statistically significant toxicity in comparison to the control group at any of the test dilutions and was assigned a LC50 of >90% effluent because the sample was diluted with the brine addition. Since TUa is computed by using $100/LC50$, the resulting TUa became $100/90=1.1$. As the test results indicate, the effluent exhibited no relative acute toxicity yet the 1.1 TUa value has been used to set a trigger that suggests that a toxic effect had occurred. In fact, the historic acute toxicity test data demonstrate that the effluent has no reasonable potential to exhibit acute WET. It is unreasonable to assign a toxicity threshold trigger that was based on a single TUa result that exhibited no toxicity to the test organisms and to require subsequent testing and a Toxicity Reduction Evaluation when no toxicity was indicated.

In addition, the frequency of the testing has been increased to quarterly which will accelerate the likelihood that trigger values will be exceeded and costly testing and Toxicity Reduction Evaluations (TRE) will be performed unnecessarily. As a likely result, a TRE would not be able to establish the cause of toxicity because the effluent did not exhibit toxicity but rather was indicative of the requirement to dilute the sample with brine to elevate the salinity into a range necessary for the test organisms. This would create a situation where the agencies would have to provide relief to the permittee because the permit requirement was not reasonable and a revision to the permit and mixing zone authorization would be required to correct the issue.

If the acute trigger limit were to be retained, Alyeska requests that EPA and ADEC recalculate the acute toxicity trigger limit to represent an actual indicator of toxicity at the edge of the acute mixing zone or Zone of Initial Dilution (ZID) and should not be based on results caused by the preparation of the dilution series that are used to meet a range of salinity requirement or adjust the test dilution series to reflect the actual dilutions afforded by the assumed 3.7 meter rectangular acute mixing zone. As stated previously in these comments, the ZID should be set at either 18 meters or 5 meters, which provides minimum effluent dilution factors of 43 to 1 and 25.5 to 1, respectively. Thus, the correctly calculated acute toxicity triggers using an appropriate ZID should be 12.9 TUa (18 meters) or 7.65 TUa (5 meters).

Lastly, the State of Alaska has not set water quality criteria for acute toxicity and has instead adopted the EPA's recommended national criteria to establish the toxicity trigger limit. Alaska has not demonstrated that this is necessary in order to be protective of water quality as demonstrated by the lack of acute toxicity criteria in Title 18, Chapter 70 of the Alaska Administrative Code.

Chronic Toxicity:

No reasonable potential exists to exceed Alaska's chronic WET toxicity standard at the edge of the chronic mixing zone. Therefore, there is no need to set a chronic WET trigger based on a dilution factor of 9.6, which lies well within the Zone of Initial Dilution (ZID) and is much less than the mixing zone critical dilution factor of 56.

There is no regulatory basis or justification for the following sections in the permit and they should be deleted.

Section I.H.5. Toxicity Triggers

Section I.H.6. Accelerated Testing

Section I.H.7. Toxicity Reduction Evaluation (TRE)

The Fact Sheet shows that ADEC has authorized a mixing zone for chronic toxicity with a dilution factor of 9.6. The permit uses this to establish a chronic WET TUC trigger of 9.6 in the permit. Exceeding the trigger imposes significant additional chronic toxicity testing and possible Toxicity Reduction Evaluation programs. As described earlier in these comments, ADEC and EPA have authorized a 50-meter chronic mixing zone for Outfall 001 with a corresponding minimum dilution of 56 to 1. The appropriate TUC trigger would thus be 56 and no historic chronic WET test has ever reported toxicity greater than 9.6 TUC, which is 17% of the allowable chronic toxicity at the edge of the mixing zone (1 TUC). This conclusively shows that the effluent has no reasonable potential to exhibit chronic WET at the edge of the approved mixing zone. EPA guidance shows that if there is reasonable potential to exceed either acute or chronic WET criteria at acute or chronic mixing zone dilutions, then limits are needed, but if there is no reasonable potential, then all that is needed is toxicity testing to be repeated at a frequency of at least once every 5 years as a part of the permit application. (EPA TSD, Section 3.3.3 Effluent Characterization for Whole Effluent Toxicity).

If EPA and ADEC determine that the Whole Effluent Toxicity testing program can be justified based on the desire to offset the loss of information resulting from the phase out of the benthic monitoring program and the need to supplement the Environmental Monitoring program with increased WET testing, then Alyeska would be willing to consider the quarterly WET test requirement (without the associated trigger limits and TRE requirements) for a defined period of time. Alyeska proposes that if after 4 quarters of WET testing there is no demonstrated acute or chronic toxicity (within the standard deviation of 10 years of historical levels) then the frequency would revert to annual testing for both acute and chronic WET testing.

RESPONSE #31 – *Please refer to RTC #9, #10, and #25.*

COMMENT #32 (WET-011)**Page 18 Accelerated Testing and Toxicity Reduction Evaluation.**

Alyeska requests that the accelerated toxicity testing only become part of the final permit if the trigger values for acute and chronic toxicity are modified as requested in this comment letter. If the trigger values remain unchanged, then Alyeska requests that the accelerated toxicity testing required in Parts I.0.6.(a) (b) (c) and Toxicity Reduction Evaluations required in parts I.H.7.(a) (b) (c) (d) be deleted from the final permit.

RESPONSE #32 – *The chronic and acute numeric monitoring triggers have been revised. Please refer to RTC #9 and #10. The revised numeric monitoring triggers, as well as the accelerated testing and TIE/TRE requirements, will remain in the final Permit with the revisions identified in the responses listed above.*

COMMENT #33 (WET-012)**Page 19 WET test reports**

Alyeska requests that the WET testing results be submitted within 45 days of sample collection to align with the current permit requirement for submittal deadlines. The draft Permit requires the WET report be submitted with the DMR, which is not possible given the length of time the test requires and the QA/QC reviews that take place. Alyeska requests that the full WET report not be teamed with the DMR submittal but rather be a separate report submitted on its own with only the final TU results included in the DMR, as is the current practice.

RESPONSE #33 – *EPA has revised the Permit to reflect the requirement to submit the WET report separate from the DMR, which is consistent with the administratively extended permit. Part I.H.9.(a) has been updated accordingly.*

COMMENT #34 (GEN-015)**Page 20 Part II.C. I & 2 Pollution Prevention Requirements**

Alyeska request that the Pollution Prevention (P2) Requirements of the permit be deleted. Alyeska has been complying with this requirement since the 1997 NPDES Permit. The on-going requirement to produce an annual report on Pollution Prevention as it pertains to Valdez Marine Terminal operations is onerous, time consuming and repetitive because of the limited potential for new pollution prevention activities. Unlike manufacturing facilities the VMT does not generate waste products as a result of manufacturing and does not fit into typical pollution prevention efforts that are geared toward source reduction. As a result, the VMT has difficulty identifying and reporting on significant and meaningful P2 efforts that justify the need for annual reporting. There appears to be diminishing value for continuing this requirement after 14 years and we do not see the need to continue at this point in time. Alyeska would accept a once in the term of the permit reporting requirement if elimination of the requirement is not acceptable.

Exhibit 5

**Alaska Department of Environmental Conservation
Response to Comments**

For

Section 401 Certification

**National Pollutant Discharge Elimination System
Alyeska Pipeline Service Company - Valdez Marine Terminal**

NPDES Permit No. AK0023248

First Public Notice February 8 – March 8, 2012

Second Public Notice August 1, 2012 – August 30, 2012

October 29, 2012



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

1. Introduction

Summary of Facility/Permit

Alyeska Pipeline Service Co. (Alyeska) operates the Valdez Marine Terminal facility (VMT) located at the southern terminus of the Trans Alaska Pipeline System at Jackson Point, Valdez, Alaska. Crude oil transported by the pipeline is temporarily stored onsite prior to transfer to tankers that periodically moor at ship berths located at the VMT. Some tankers off load ballast water contaminated with oil to the ballast water treatment facility (BWTF) before taking on oil for shipment. After separating out any residual oil, the ballast water is treated to remove dissolved constituents prior to discharge via Outfall 001 to the waters of Port Valdez. Treated domestic wastewater generated from personnel working at the VMT is discharged via Outfall 002 to the waters of Port Valdez.

The reissued National Pollutant Discharge Elimination System (NPDES) Permit AK0023248 (permit) provides coverage for VMT discharges associated with Outfalls 001 and 002. The first NPDES permit authorizing the discharge from the facility was issued by the Environmental Protection Agency (EPA) on December 30, 1974 and was subsequently reissued in August 1980, May 1989, and May 1997. The 1989 and 1997 permits also included the domestic wastewater discharges from the VMT. The permit was again reissued in August 2004 and subsequently expired on July 31, 2009; however, Alyeska submitted a timely application and received administrative extension to continue operation under the 2004 NPDES permit until such time a new permit was reissued. Since the 2004 reissuance, significant changes to the BWTF have occurred, including large scale flow reductions, leading to the reduction of pollutants discharged through Outfall 001.

Opportunities for Public Participation

The Alaska Department of Environmental Conservation (DEC or the Department) first public noticed issuance of a draft Section 401 Certification for AK0023248 on February 8, 2012. A second public notice and comment period began on August 1, 2012 due to significant revisions to the draft certification. To ensure adequate public notification and opportunities for participation, the Section 401 Certification was:

- identified in a letter from EPA dated December 6, 2011 to DEC requesting a draft Section 401 Certification,
- public noticed concurrently with the EPA draft NPDES permit and fact sheet with a comment period of February 8 – March 8, 2012,
- public noticed as a revised draft Section 401 Certification with a comment period from August 1 to August 30, 2012,
- public noticed in the Valdez Star newspaper on August 8 and 15, 2012 as a revised draft Section 401 Certification,

- identified by EPA in a letter dated October 15, 2012 requesting a final Section 401 Certification, and
- issued as a final Section 401 Certification concurrent with the final permit in October 2012.

With respect to the first publicly noticed draft Section 401 Certification, DEC received comments from two interested parties, Alyeska and the Prince William Sound Regional Citizens Advisory Council (RCAC). During the second public notice for the revised draft Section 401 Certification, only Alyeska provided comments. The second comments submitted by Alyeska only served to reaffirm that all of their previous comments were still valid. Accordingly, note that DEC's response to Alyeska comments apply appropriately to both the first and second comment periods.

Some comments pertaining primarily to the draft NPDES permit and fact sheet are included in this response to comments. Typically, DEC responds only to those comments specifically regarding the draft Section 401 Certification. However, some comments specific to the draft permit reference DEC as well as EPA. Although DEC is not responsible for responding to comments on the draft permit (and fact sheet), these comments were responded to for clarification and to ensure completeness, as appropriate.

2. General Support and Opposition for the Permit

2.1 Comment Summary

The Department received comments of both general support and opposition to the permit from Alyeska and the RCAC. Comments directed to DEC from both entities were primarily concerned with DEC's authorization of mixing zones. Other comments not directly related to the mixing zone authorizations in the Section 401 Certification were also presented, with emphasis on Whole Effluent Toxicity (WET) requirements.

Response:

In response, DEC responded to questions and concerns regarding authorization of mixing zones, WET requirements and Section 401 Certification with respect to water quality standards (WQS), which are codified in Alaska Administrative Code (AAC) 18 AAC 70. Other comments that referenced DEC that did not pertain to mixing zone authorizations or WQS were responded to for completeness and clarification on underlying authority.

3.0 Comments From Alyeska

3.1 Comment Summary

Alyeska does not agree that EPA and DEC have demonstrated the need or rationale to require fecal coliform and enterococci bacteria limits in the draft permit for the domestic Outfall 002.

However, if the bacteria limits are carried forward into the final permit, Alyeska requests authorization for a mixing zone for these parameters.

Response:

DEC responds that inclusion of permit limits for fecal coliform and enterococci bacteria in the draft permit rests with EPA and is outside the legal purview of DEC's Section 401 Certification. However, DEC does have authority under 18 AAC 70.240 – 18 AAC 70.270 to authorize a mixing zone in the Section 401 Certification. DEC has authorized a mixing zone for Outfall 002 for fecal coliform and enterococci bacteria, ammonia, pH and total residual chlorine. The mixing zone is a 0.32 meter zone in all directions around Outfall 002. This mixing zone shall become effective at the conclusion of the compliance schedule.

3.2 Comment Summary

Based on their modeling efforts, Alyeska states that the description of the chronic mixing zone for Outfall 001 should be as follows: "A rectangle that extends 50 meters in all directions from the 61 meter long diffuser barrel."

Response:

DEC replies that the description of the mixing zone dimensions "A rectangle that extends 50 meters in all directions from the 61 meter long diffuser barrel" is noted as being diagramed in Figure 1, Part 1 of the Mixing Zone Application, page 4. DEC agrees with the accuracy of the description and will incorporate it into the final Section 401 Certification.

3.3 Comment Summary

Alyeska recommends that the acute mixing zone for Outfall 001 be set to either 18 meters in all directions from the diffuser barrel or five meters in all directions from the diffuser barrel, both of which are in accordance with the DEC acute mixing zone guidance contained in *Implementation Guidance: 2006 Mixing Zone Regulation Revisions, February 3, 2009 (2006 Implementation Guidance)*.

Response:

The 2006 mixing zone regulations found in the 2006 version of the WQS (18 AAC 70) have not been approved by EPA for use in NPDES or APDES permits issued in the State of Alaska. The most recent version of the EPA-approved WQS are the 2003 standard. Accordingly, the use of the *2006 Implementation Guidance* is not appropriate. However, regulation 18 AAC 70.255(d) in the 2003 version of the WQS references the same methods for sizing acute mixing zones contained in the *2006 Implementation Guidance* and the *EPA-823-B-94-005a - EPA Water Quality Standards Handbook, Second Edition, August 1994*. Depending on the method used, the acute mixing zone could be either five or 18 meters in size. Given that the five meter mixing zone represents the smallest practicable size, it has been retained in the final Section 401 Certification for the acute mixing zone for Outfall 001. Additionally, DEC responds that "five

meters in all directions from the diffuser” will be used to describe the boundary of the acute mixing zone in the final certification.

3.4 Comment Summary

Alyeska directed comments to both DEC and EPA objecting to specific elements of the WET requirements contained in the draft permit. Similarly, comments were directed to both agencies objecting to the new permit water quality-based effluent limits (WQBEL) for fecal coliform and enterococci bacteria and commenting that other facilities in the state have large mixing zones for fecal coliform bacteria.

Response:

With the exception of authorizing chronic and acute WET mixing zones associated with Outfall 001, DEC has not included additional WET requirements in its draft or final Section 401 Certification. Excluding the aforementioned sentence, all WET requirements discussed in the comments were included in EPA permit. Accordingly, it is appropriate for EPA to respond to comments relating to permit WET requirements, not DEC.

The decision to include WQBELs for fecal coliform and enterococci bacteria post completion of a three-year compliance schedule was included in the EPA permit. Similarly to the above, since the requirement was a permit decision, and not a Section 401 Certification condition, it is appropriate for EPA to respond to those comments. In terms of the large bacteria mixing zones authorized for certain municipalities in the state, Alyeska has cited many facilities that have an approved 301(h) waiver from secondary treatment standards (40 CFR Part 133) from EPA, which require large mixing zones to meet certain water quality criteria (e.g., fecal coliform bacteria). Further, in DEC’s second public noticed draft Section 401 Certification, a mixing zone for fecal coliform and enterococci bacteria was authorized for the subject parameters once the new permit limits are in effect post completion of the compliance schedule.

3.5 Comment Summary

Alyeska requests that total aqueous hydrocarbons (TAqH) be added to the list of constituents authorized in the mixing zone even though EPA determined that no reasonable potential would occur at the boundary of the chronic mixing zone for Outfall 001.

Response:

The reasonable potential analysis projects that TAqH will exceed applicable water quality criterion at the end-of-pipe following treatment. In addition, based on the mixing zone model, there is assimilative capacity in the receiving water to authorize a mixing zone for TAqH. Accordingly, DEC has included TAqH in the chronic mixing zone for Outfall 001.

3.6 Comment Summary

Alyeska comments – Page 15 Part I.H.2 (a-b). Alyeska states that for Outfall 001, DEC authorized a mixing zone for chronic toxicity with a dilution of 9.6. Alyeska explains that the 9.6 dilution factor is inappropriate and that the model has indicated a dilution factor of 56 would result if a 50 meter mixing zone is authorized.

Response:

DEC responds that mixing zone dilution factors are based on those values obtained from the model output provided by the applicant and/or through verification of such models by DEC. The DEC-authorized chronic mixing zone of 50 meters for Outfall 001 provides a dilution factor of 56 at the boundary of that mixing zone. The 9.6 dilution factor referenced in the comment is a trigger for accelerated WET monitoring included in the draft EPA permit. Therefore, the imposition of a trigger is not under the purview of DEC in the Section 401 Certification.

3.7 Comment summary

Alyeska comments – Page 16 I.H.3 (a-d). Alyeska makes an argument similar to that stated in Comment 3.6 for the dilution factor associated with the acute mixing zone for Outfall 001.

Response:

DEC responds that it did not authorize a dilution factor of 3.7 for an acute toxicity trigger. The authorized acute mixing zone dilution factor for Outfall 001 is 23 and was determined from model output provided by Alyeska and evaluated by DEC for the five meter mixing zone. Similar to the response above for the chronic WET trigger of 9.6, the 3.7 dilution referenced in the comment is a trigger for accelerated WET monitoring included in the draft EPA permit and is accordingly not under the purview of DEC in the Section 401 Certification.

3.8 Comment Summary

Alyeska indicates that Alaska chose not to adopt criteria for acute WET in DEC standards. The acute WET criterion of 0.3 acute toxicity units (TUa) is informative but has no regulatory basis in Alaska.

Response:

DEC responds that 18 AAC 70.030, which covers WET limits, does not include the adoption of the criterion of 0.3 TUa for acute WET tests as recommended in the *Technical Support Document for Water Quality-based Toxics Control, March 1991* nor is the 0.3 TUa criterion established in any other DEC regulation or policy. The 0.3 TUa criterion for acute WET was included by EPA in its draft permit, which is beyond the purview of DEC's Section 401 Certification.

3.9 Comment Summary

Alyeska strongly objects to the increased WET monitoring and trigger values as required by the draft permit for Outfall 001 and believes EPA and DEC have no basis to require permittees to increase monitoring and set trigger value limits for parameters that show no reasonable potential to impair water quality.

Response:

As indicated previously, WET monitoring frequencies and trigger values associated with Outfall 001 are included as provisions of the EPA draft permit and are beyond the purview of DEC's Section 401 Certification.

3.10 Comment Summary

Alyeska requests that the requirement to notify DEC prior to any sludge removal activity be deleted as it is an onerous and unsupported requirement that has no basis or value.

Response:

DEC responds that solid waste is regulated by the Resource Recovery Act and the Alaska Solid Waste Management regulations found in 18 AAC 60 and is typically addressed via Best Management Practices (BMP) in NPDES permits. The final permit retains this requirement in Section II.D.8.e - BMP Plan, BMP Requirements.

3.11 Comment Summary

Alyeska contends that the requirement that DEC be notified 15 days in advance of abrasive blasting projects to provide DEC personnel oversight responsibilities on NPDES issues at VMT is no longer valid and that EPA and DEC can request this information at any time and that the requirement to keep abrasive blasting activities is superfluous except in the case where blasting occur over open water.

Response:

DEC responds that although the previous Section 401 Certification for NPDES permit AK0023248 included requirements for notification of abrasive blasting projects, this condition has not been retained in the current Section 401 Certification. However, note that the final permit retains this requirement under Section II.D.8.e - BMP Plan, BMP Requirements.

4.0 Comments from RCAC

RCAC comments are based on results from the Environmental Monitoring Program and Long Term Environmental Monitoring Program. There is some historic evidence of oil in sediments near the diffuser of Outfall 001. RCAC questions whether the effluent plume contacts the bottom under unanticipated conditions and recommends collecting seasonal water column data at the

diffuser location to create a more realistic model and thus better assurance of mixing zone compliance.

Response:

Mixing zone analysis employs cumulative “worst-case” conditions such that the determined dilution is reliably conservative. This is due to an understanding that it is highly unlikely that all “worst-case” conditions will occur simultaneously. For the mixing zone study for Outfall 001, the most critical parameters are temperature and density. The mixing zone model uses updated maximum effluent flow rates and the 99th percentile density derived from five years of recent and representative monitoring data. Effluent flow rates are based on maximum design flow rates that are seldom observed and the probability that the highest flows occur with the 99th percentile effluent characteristics is very low. In the receiving water, current and density stratification are critical parameters. Between October 1971 and 1986, Alyeska conducted eight stratification and six current studies. The mixing zone analysis uses the 10th and 90th percentile currents, as well as the greatest observed stratification. DEC finds the volume and nature of the data to be sufficient as a basis for the mixing model for Outfall 001.

Exhibit 6



THE STATE
of **ALASKA**
GOVERNOR SEAN PARNELL

Department of Environmental
Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501
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October 29, 2012

DEC File No: 1200.48.002

Mr. Mike Lidgard, NPDES Unit Manager
U.S. Environmental Protection Agency, Region 10
1200 Sixth Avenue, Suite 900, OWW-130
Seattle, Washington 98101

RE: Alaska Department of Environmental Conservation Draft Section 401 Certification of NPDES Permit No. AK0023248, Alyeska Pipeline Service Company, Valdez Marine Terminal

Dear Mr. Lidgard:

On October 15, 2012, the Environmental Protection Agency (EPA) requested a final Section 401 Certification of Reasonable Assurance (Section 401 Certification) for National Pollution Discharge Elimination (NPDES) Permit AK0023248 - Alyeska Pipeline Service Company (Alyeska), Valdez Maintenance Terminal (permit). The NPDES permit will regulate wastewater discharges from the Valdez Marine Terminal (VMT) to the receiving waters of Port Valdez located in Valdez, Alaska.

In accordance with Section 401 of the Clean Water Act (CWA) and Alaska Administrative Code (AAC) 18 AAC 15 (Administrative Procedures), 18 AAC 70 (Water Quality Standards[WQS]), and 18 AAC 72 (Wastewater Disposal), the Alaska Department of Environmental Conservation (DEC or the Department) has prepared the enclosed final Section 401 Certification of Reasonable Assurance, including an Antidegradation Analysis. On February 8, 2012 the EPA public noticed the draft Section 401 Certification along with the draft permit and fact sheet for a 30-day comment period. After revising the Section 401 Certification, the Department public noticed the revised draft Section 401 Certification again on August 1, 2012 for a 30-day comment period.

The Department reviewed the proposed discharges with respect to limits proposed in the permit and the antidegradation requirements of the Alaska WQS found in 18 AAC 70.015. The Department certifies that there is reasonable assurance that the discharges are in compliance with the requirements of Section 401 of the CWA, which includes the Alaska WQS codified in 18 AAC 70, provided that the terms and conditions of this certification are adhered to. DEC finds any reduction in water quality resulting from proposed discharges is in accordance with the antidegradation provisions of 18 AAC 70.015.

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

Director, Division of Water
Alaska Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501-2617

Interested persons can review 18 AAC 15.185 for the procedures and substantive requirements regarding a request for an informal review. See <http://www.dec.state.ak.us/commishiReviewGuidance.htm> for information regarding appeals 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, whichever is later. 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 must be delivered to the Commissioner at the following address:

Commissioner
Alaska Department of Environmental Conservation
410 Willoughby Avenue, 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.

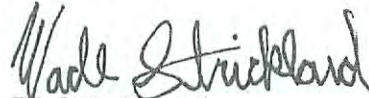
Please be advised that, pursuant to 18 AAC 15.120(c), the certification of this NPDES permit constitutes the permit required under Alaska Statute 46.03.100. 18 AAC15.120(c) also states, "Any rights or privileges inuring to the benefit of EPA in the NPDES permit, including any right to enter, inspect, sample, and have access to records, also inure to the benefit of the Department. Any reports or other information filed with EPA in accordance with the NPDES permit must be contemporaneously filed with the department."

By virtue of this letter, DEC is advising EPA of our actions and enclosing a copy of the final Section 401 Certification for their use.

DEC Section 401 Certification AK0023248

If you have any questions regarding this final Section 401 Certification, please contact Gerry Brown at Gerry.Brown@alaska.gov or (907) 269-4874.

Sincerely,



Wade Strickland
Program Manager

Enclosure: Final Section 401 Certificate of Reasonable Assurance

Cc via electronic transmittal:

Ms. Karen Burgess, EPA Region 10/Seattle
Ms. Hanh Shaw, EPA Region 10/Seattle
Ms. Erin Seyfried, EPA Region 10/Seattle
Ms. Sharon Morgan, DEC/Juneau
Mr. Gerry Brown, DEC/Anchorage
Mr. Marc Bentley, DEC/Anchorage

**STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DRAFT SECTION 401 CERTIFICATE OF REASONABLE ASSURANCE
AK0023248**

A final Certificate of Reasonable Assurance (Section 401 Certification), as required by Section 401 of the Clean Water Act (CWA) was requested by the Environmental Protection Agency (EPA) Region 10 for National Pollutant Discharge Elimination System (NPDES) Permit AK0023248 - Alyeska Pipeline Service Company (Alyeska), Valdez Marine Terminal (permit). The area of coverage includes State waters at the Port of Valdez, Valdez, Alaska for the following proposed discharges:

<u>Outfall Number</u>	<u>Discharge Name</u>
001	Ballast Water Treatment Facility Effluent
002	Sewage Treatment Plant Effluent

Notice of the application for a final Section 401 certification was made in accordance with 18 Alaska Administrative Code (AAC) 15.140 through a letter from EPA dated October 15, 2012 requesting a written determination for the final permit provided as an enclosure. A Section 401 Certification is required because wastewater discharges will be authorized by an EPA-issued NPDES permit that will result in discharges to waters of the United States located in the State of Alaska.

The Alaska Department of Environmental Conservation (DEC or the Department) reviewed the EPA final permit and certifies that, upon compliance with specified permit conditions, there is reasonable assurance that the permit is in compliance with the requirements of Section 401 of the CWA, which includes the Alaska Water Quality Standards (WQS), codified in 18 AAC 70. Through this Section 401 Certification, in accordance with 18 AAC 15.120 Adoption of NPDES Permits, the final NPDES permit will constitute the permit required under Alaska Statute (AS) 46.03.100 Waste Disposal Permit, provided that the terms and conditions of the final Section 401 Certification are made part of the final NPDES Permit. The Department is specifying the following permit terms and conditions under authority of AS 46.03.110(d):

Terms

- 1) This Section 401 Certification shall become effective when the final subject permit becomes effective.
- 2) This Section 401 Certification shall be valid until such time as the permit is modified, suspended, revoked, or reissued or the applicable WQS are revised or modified. If the applicable WQS are revised or modified and the discharge activities comply with the revisions or modifications, then this Section 401 Certification shall remain valid.
- 3) All terms, requirements, limitations, and restrictions specified in this Section 401 Certification shall become part of the permit and shall be primarily enforced by EPA until EPA transfers oil and gas permitting and compliance authority to the State of Alaska. At that time, the terms, requirements, limitations and restrictions of the permit and Section 401 Certification shall be primarily enforced by DEC.

- 4) EPA proposes to issue NPDES Permit AK0023248 as DEC transitions as the oil and gas wastewater permitting authority in the State of Alaska under the Alaska Pollutant Discharge Elimination System (APDES) Program. During this transition, several conditions of this permit present dual reporting requirements to both DEC and EPA; however, post transfer of this permit to DEC on October 31, 2012, all documentation submittals required per the permit need only be submitted to DEC at the address below:

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

Conditions

- 1) Ballast Water Treatment Facility Effluent (Outfall 001).
 - a. DEC authorizes a 100-meter by 161-meter, rectangular chronic mixing zone that extends from the sea surface to the seafloor, excluding sediments. The chronic mixing zone has a dilution factor of 56 and applies to total aromatic hydrocarbons (TAH), total aqueous hydrocarbons (TAqH), pH, total zinc, and chronic whole effluent toxicity (WET). The chronic mixing zone is centered on a 61 meter diffuser barrel with 20 ports such that the boundary of the chronic mixing zone is 50 meters from the outfall in all directions.
 - b. An acute mixing zone with a dilution factor of 23 is also authorized for Outfall 001. The acute mixing zone extends five meters in all directions and results in an area that is 10 meters wide by 71 meters long centered above the diffuser barrel similar to the chronic mixing zone. The mixing zone extends from the sea surface to the sea floor, excluding sediments. The acute mixing zone applies to total zinc and WET.
- 2) Sewage Treatment Plant Effluent (Outfall 002). DEC authorizes a mixing zone with a 0.32-meter radius centered on the diffuser that extends from the sea surface to the seafloor, excluding sediments. The mixing zone has a dilution factor of 9.2 that applies to fecal coliform and enterococci bacteria, pH, ammonia, and total residual chlorine (TRC).
- 3) Any modifications to existing treatment systems must comply with 18 AAC 72 - Wastewater Disposal.

ANTIDegradation ANALYSIS UNDER 18 AAC 70.015

The Antidegradation Policy of the WQS at 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. This analysis provides rationale for DEC decisions required under Section 401 of the CWA with respect to the Antidegradation Policy.

The permit covers discharges from Valdez Maine Terminal (VMT) Outfall 001 and Outfall 002 to Port Valdez. The portion of Port Valdez located in the vicinity of Jackson Point, Alaska is considered State waters subject to 18 AAC 70 WQS. Relevant information from environmental studies designed to determine the effects of VMT discharges to the Port of Valdez conducted by the Institute of Marine Science, School of Fisheries and Ocean Sciences and the University of Alaska, Fairbanks (Blanchard, et.al, 2011) were reviewed to aid in the antidegradation determination for Outfalls 001 and 002.

Antidegradation determination:

The Department's approach to implementing the Antidegradation Policy is based on the requirements in 18 AAC 70 and the Department's July 14, 2010, *Policy and Procedure Guidance for Interim Antidegradation Implementation Methods (Interim Methods)*. Using these requirements and policies, the Department determines whether a water body or portion of a water body is classified as Tier 1, Tier 2, or Tier 3. Tier 3 water bodies are those high quality waters that constitute an outstanding national resource, and the Department states that the quality of such waters shall be maintained and protected (18 AAC 70.015(a)(3)). This is consistent with the *Interim Methods* recommendations. Alaska has not identified any Tier 3 water bodies.

Tier 1 protection (18 AAC 70.015(a)(1)) applies to water bodies whose existing quality is no better than the CWA "Fishable/Swimmable" uses, and existing water uses and the level of water quality necessary to protect such uses must be maintained and protected (18 AAC 70.020(a)(1)(C) and 18 AAC 70.020(a)(1)(B)(i)). Port Valdez water quality, as a whole, is of a higher quality than Tier 1 as it has not been listed on the Department's 2010 *Integrated Water Quality Monitoring and Assessment Report* as impaired, nor is the Department aware of other baseline data documenting water body impairment.

The Department determined that Tier 2 applies to the receiving waters in Port Valdez using the DEC *Interim Methods* and knowledge of the water body associated with the permit. The Department also determined that the antidegradation analysis under 18 AAC 70.015(a)(2) is applied to permit limits. The fact sheet for the permit describes the derivation of those limits.

The Antidegradation Policy of the WQS (18 AAC 70.015(a)(2)) states that, if the quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife in and on the water, that quality shall be maintained and protected, unless the department makes five specific findings, which are documented as follows:

18 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.

The Alyeska Pipeline Bulk Petroleum Storage Terminal and its related industries have been important to the economy of the Valdez-Cordova Borough for over 40 years and comprise the first five in the top ten major industries in the area. Direct impact of the facility and related oil and gas industry was reported by the Alaska Department of Labor and Workforce Development, Research and Analysis (May 2011) to account for 1,147 jobs out of a population of 3,475 in 2009, making up 33% of total employment for major industries in the borough. In addition, this facility and other directly related industries accounted for 70% of the City of Valdez's budget and 90% of all property taxes generated for the City of Valdez (Alaska Oil and Gas Association, 2011).

The Department finds that the lowering of water quality is necessary to accommodate important economic or social developments and finds the requirement is met.

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.

The permit limits established for Outfalls 001 and 002 will ensure that water quality criteria will not be exceeded at or beyond the boundary of the revised chronic and acute mixing zones. The revised mixing zones for Outfall 001 are based on Visual Plumes UM3 (Frick, W.E., et.al., 2003), which is an updated version of UMERGE (UM) with a Visual Plumes interface modeling (Baumgartner, et.al., 1993). Mixing zones were reevaluated for Outfall 001 to include a new water-quality based effluent limit recently added to the permit for TAH and to account for a significant reduction in discharge volume. The result is a substantially smaller mixing zone than previously authorized.

The mixing zones for Outfall 002 were also reassessed to account for future upgrades that include disinfection, which is necessary to meet bacteria water quality criteria during this permit cycle. Cornell Mixing Zone Expert System (CORMIX, 2007) was used to evaluate mixing zones and dilution for Outfall 002 based on the assumption that TRC will be eventually used for disinfection. The size of the mixing zone is significantly reduced from the previously authorized mixing zone. All mixing zones are specifically authorized in accordance with 18 AAC 70.240 – 18 AAC 70.270 and have been sized to ensure that all applicable water quality criteria are met at the boundary of and at all points outside of the mixing zones, including WET per 18 AAC 70.030. Lastly, since site-specific criterion per 18 AAC 70.235 has not been established, it is not of concern in this permitting action.

DEC finds that reducing water quality will not violate the applicable criteria found in 18 AAC 70.020, 18 AAC 70.235 and 18 AAC 70.030 and that this requirement has been met.

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

The waters in Port Valdez are protected for the following uses, per 18 AAC 70.020(a)(2)(A) – (D): water supply for aquaculture, seafood processing, and industrial activities; water recreation, both 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. The permit limits will ensure that water quality criteria will not be exceeded at or beyond the mixing zone boundaries of Outfalls 001 and 002. The previous permits issued to the facility included a monitoring program for Port Valdez to address the fate and transport of pollutants in the water column and sediments. These studies provided detailed site-specific information on water quality, sediment quality, and physical and biological parameters for Port of Valdez waters. The studies demonstrated that there are only minimal effects to biota in the immediate area of the diffuser, within the boundaries of the mixing zones, and that overall water quality was maintained and the existing uses protected in the water body as a whole.

DEC finds that water quality will be adequate to fully protect the existing uses of the water and that this requirement has been met.

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

Wastewater associated with Outfall 001 includes ballast water, storm water, crude and diesel storage tank water draws, boiler blowdown, service vessel bilges and slops, process water, air pollution scrubber blowdown, potable water, and utility water. Treatment methods for these combined waste streams include primary oil-water solids separation and equalization in covered, air emission-controlled tanks, dissolved air flotation for secondary oil-solids separation with vapors being ducted to a new regenerative thermal oxidizer for destruction of volatile organic compounds. Dissolved air flotation treatment is followed by tertiary treatment in new seven-tray (shallow tray) air strippers. The air strippers remove essentially all highly volatile organic compounds from the wastewater with associated exhaust being sent to the regenerative thermal oxidizer to destroy volatile organic compounds stripped from the wastewater. Tertiary treatment is in turn followed by quaternary biological treatment in one of the two existing biological treatment tanks (BTT) to remove any poorly strippable organic compounds that may be present following shallow-tray air strippers. Polishing treatment for volatile organic compounds, if required, will be accomplished by way of an existing packed-tower air stripper that follows the BTTs (Conner, D. 2011).

The sewage treatment system for Outfall 002 is comprised of a series of sequencing batch reactors (SBRs). SBRs operate on a fill and draw principle. That is, raw wastewater is mixed with settled microorganisms from the last batch, aerated to biodegrade organics, and then allowed to settle without aeration. Clear liquid is then decanted to the outfall, and the process repeated with more raw sewage introduced to the remaining settled microorganisms. SBRs are an effective treatment for five-day biological oxygen demand (BOD₅) and total suspended solids (TSS) but have limited removal efficiencies for fecal coliform or enterococci bacteria unless disinfection is included prior to discharge. Therefore, the permit requires construction of a disinfection system by end of a three-year compliance schedule. While there are several effective disinfection technologies available, chlorination with or without dechlorination is most common and has been assumed in the permit. The permittee is required to conduct a study to determine which disinfection technology is the most effective and reasonable process for the upgrade within 18 months of

the effective date of the permit. Once the permittee upgrades the treatment system to include disinfection under the compliance schedule, effective disinfection treatment measures will be in place at the facility.

DEC finds that the methods of pollution prevention, control, and treatment included in the permit are the most effective and reasonable and that this requirement is met.

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 applicable “highest statutory and regulatory treatment requirements” are defined in 18 AAC 70.990(30) (as amended June 26, 2003) and in the July 14, 2010, DEC guidance titled *Interim Antidegradation Implementation Methods*. Accordingly, there are three parts to the definition, which are:

- (A) any federal technology-based effluent limitation 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 (i.e. Alaska) that is more stringent than a requirement of this chapter.

(A) Federal technology-based effluent limitations

The first part of the definition includes all federal technology-based Effluent Limitations Guidelines (ELGs). EPA has published ELGs for shore reception facilities, but none have been published specifically for discharges from ballast water treatment facilities, such as the wastewater discharged through Outfall 001. Where EPA has not yet developed guidelines for a particular industry, permit conditions can be established using Best Professional Judgment (BPJ) procedures (40 CFR §122.43, §122.44, and §125.3). In the 1989 permit, EPA established technology-based limits for TSS and BTEX as a surrogate to control TAH. EPA determined that the best available technology for the removal of BTEX, and by extension TAH, is a combination of biological treatment system and air stripping. In 1996, EPA developed limits for TSS that accounted for operation of packed air stripping towers that slough biomass during periods of high BTEX concentrations. These TSS limits are carried forward in this permit. Recent addition of seven-tray strippers has increased treatment performance and reliability beyond the minimum technology requirements developed through BPJ.

Technology-based effluent limits based on BPJ have also been applied to the discharge from Outfall 002. In this case, secondary treatment requirements (40 CFR Part 133 adopted by reference in 18 AAC 83.010) for publicly-owned treatment works have been applied to the privately-owned sanitary treatment system for Outfall 002. Previously, EPA did not require disinfection prior to discharge as part of the BPJ technology standard for the permit. However, based on new BPJ evaluation contained in the permit, disinfection will be required within three years of the effective date of the permit as stipulated by a compliance schedule therein. Once disinfection is online, the treatment technology will be consistent with best available technology determined by BPJ applied at similar facilities.

(B) Minimum treatment standards 18 AAC 72.040

The second part of the definition 18 AAC 70.990(B) (2003) 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 only. The authorized domestic wastewater discharge is in compliance with the minimum treatment standards found in 18 AAC 72.050 as reflected by the permit limits specifying secondary treatment standards.

(C) Any treatment requirement imposed under another state law that is more stringent than 18 AAC 70.

The third part of the definition includes any more stringent treatment required by state law, including 18 AAC 70 and 18 AAC 72. The correct operation of equipment, visual monitoring, and implementing BMPs, as well as other permit requirements, will control the discharge and satisfy all applicable federal and state requirements.

DEC has determined that the treatment of discharges from Outfalls 001 and 002 conform to the highest statutory and regulatory requirements and the requirement is met.

Oct. 29, 2012

Date

Wade Strickland

Wade Strickland,
Program Manager

REFERENCES

DEC Section 401 Certification AK0023248

Alaska Department of Environmental Conservation. July 14, 2010. *Policy and Procedure Number 05.03.103. Interim Antidegradation Implementation Methods.*

Alaska Oil and Gas Association Website, 2011. <http://www.aoga.org/facts-and-figures/economic-impact-reports-2/2011-valdez/>

Robert L. Doneker and Gerhard H. Jirka, December 2007. *CORMIX User Manual – A Hydrodynamic Mixing Zone Model and Decision Support System for Pollutant Discharges into Surface Waters.*

Frick, W.E.; Roberts, P.J.W.; Davis, L.R.; Keyes, J.; Baumgartner, D.J.; George, K.P., March 2003. *Dilution Models for Effluent Discharges – Visual Plumes 4th Edition.*