THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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Main: 907-465-5210
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File No: 1516.38.026

June 3, 2014

Via regular and electronic mail
Mr. James B. Beckham
Petro Marine Services
P.O. Box 389, 234 4th Avenue
Seward, Alaska 99664

Re: Decision Document; Petro Marine Ketchikan
Cleanup Complete Determination with Institutional Controls

Dear Jim,

The Alaska Department of Environmental Conservation, Contaminated Sites Program (DEC) has reviewed the environmental records for the above-referenced site. This decision is based on the administrative record, located at DEC's office in Juneau, Alaska. This letter summarizes the decision process used to determine the environmental status of the site and explains the site history, cleanup activity and specific conditions required to effectively manage any remaining contamination. No additional remedial action is required as long as compliance with these conditions is maintained.

Site Name and Location
Petro Marine Ketchikan
100 Stedman Street
Ketchikan, Alaska 99901
Parcel 011542000500
Amended USS 1100

Address of Contact Party
Mr. James B. Beckham
Petro Marine Services
P.O. Box 389, 234 4th Avenue
Seward, Alaska 99664

DEC Site Identifiers
DEC Reckey: 2002130106701
File: 1516.38.026
Hazard ID: 3888

Regulatory Authority for Determination
Chapter 18 Alaska Administrative Code 75

Introduction

The environmental history at this site is somewhat convoluted, as it includes the transport and treatment of petroleum contaminated soil onsite that originated from an unrelated heating oil tank cleanup from a nearby residence, as well as a multi-year history of emergency spill response activities associated with product releases from the facility. Further, contaminated soil cleanup activities also took place at the upper AST Terminal portion of the facility at 1010 Stedman Street when it was under prior ownership by Tesoro. Because these episodes are part of the environmental work done at the site, they are referenced here in the background discussion and elsewhere in this decision document.

Site Description

The Petro Marine Ketchikan facility is located on the shoreline of Tongass Narrows at 1100 Stedman Street in Ketchikan, Alaska. A series of thirteen bulk fuel above ground storage tanks (ASTs) of varying sizes are positioned within fluid containment berms and security fencing on a bedrock bench adjacent to Stedman Street The referenced bulk fuel plant facility operates under Industry Preparedness Program (IPP) Approved Spill Contingency Plan ID# 1014 that was renewed in 2013. On the waterfront side of the AST containment berm is a corridor of native soil that aligns with the former marine shoreline sloping down to the beach. Less than fifty feet down the slope is the main operating yard where fill material was installed and capped with asphalt to extend the operating grade toward a thick concrete vertical bulkhead forming the face of the fill with Tongass Narrows. The toe of the bulkhead contacts the beach comprised mostly of bedrock. The fill and cap insulates the operating grade from the beach which consists mostly of bedrock outcrops. Groundwater flow if any, is through fractured bedrock.

The west end of the operating grade is paved in asphalt to the edge of the seawall bulkheads. The east end of the property below the AST containment berm is an unpaved equipment stockyard. Excess water that gathers in the fluid containment area surrounding the ASTs is processed through an oil/water separator (OWS) that removes floating petroleum before discharge. The OWS is positioned below grade behind a secondary concrete seawall facing north perpendicular to the seawall facing Tongass Narrows. Piping from the OWS to the AST containment runs beneath the asphalt paved driveway downhill from Stedman Street.

Figure 1. Entrance to the Petro Marine Facility from Stedman Street, northwest corner of the property

Environmental History

In November 1999, diesel contaminated soil from a residential property (North Residence - Hazard ID 3138) at 399 Salmonberry Circle in Ketchikan was approved by CS for transport to and later biocell treatment at the Petro Marine Ketchikan property. By May 2006, levels of DRO had been reduced from 4,400 ppm to concentrations averaging about 500 ppm. DEC's Contaminated Sites Program (CSP) authorized PM to land spread the last of the 200 cubic yards of contaminated soil on the AST containment berm hillside and apply seed.

Figure 2. The area in the red circle is where the biocell was assembled in 2000.

In January 2002, Petro Marine Services (PM) was transferring oil from a fuel barge at the dock into one of the bulk fuel ASTs. A filter in the piping failed, releasing an estimated volume of several thousand gallons of diesel fuel into the filter room, the pump house and the oil water separator (OWS). A DEC Preparedness and Emergency Response Program (PERP) responder assisted PM in performing the emergency response oil recovery and cleanup. Since most of the oil was released to impervious paved surfaces, and then into Tongass Narrows where it was eventually recovered, PERP and PM concluded that all the oil was recovered and accounted for.

In April 2008, PM reported to PERP and the US Coast Guard that an estimated volume of two gallons of fuel had reached marine waters from a seep in the seawall facing Tongass Narrows. PM performed emergency response with sorbent pads recovering floating fuel and boom to control sheen from migrating beyond the immediate area. PERP concluded the source of the seepage was unknown.

On May 1, 2010 PM reported to PERP that oily water was discharging from two vertical tidal exchange pipes within the seawall facing Tongass Narrows. The tidal exchange pipes provide critical structural support by draining seawater from behind the seawall at a rate similar to that of receding tidal waters. PM deployed sorbent boom along the waterfront to recover floating fuel during high tide, and at low tide installed one-way valves on the ends of the pipes to hold in the seawater backwash. As the tide receded, PM transferred the oil/seawater mixture from the seawall pipes into a containment area. Floating oil and water with sheen was transferred to drums for off-site treatment and the remaining water was processed through the permitted on-site OWS before release into Tongass Narrows.

Figure 3. West facing seawall and sorbent boom

South facing seawall and sorbent pads

PM contracted environmental consultant R&M Engineering Ketchikan (R&M) to install monitor wells to bedrock depth behind the seawall to provide additional ports to pump out subsurface water and screen for sheen. When PM observed sheen along the west seawall, the tidal exchange pipes were also retrofitted with valves to hold seawater on receding tides. These pipes were also drained into containment for screening before transfer into the OWS for final treatment. By June 25th 2010, PM had recovered 22,909 gallons of seawater from the tidal exchange backwash pipes and monitor wells, and 2,208 gallons of "oily waste" had been transported off-site and remediated.

During a facility upgrade project in October 2010, PM excavated a 93-foot long trench along the uphill side of the warehouse between the AST containment area and an oil/water separator pump house to install anode protection to buried fuel piping. When workers detected petroleum odor and stained soil in the last 40 feet of trench they halted work and reported the discovery to PERP. PERP approved PM excavating the contaminated material and stockpiling it on-site as needed to complete the project, and requested that PM submit for DEC approval a sampling plan, a plan for off-site transport of contaminated material, and a final report when work was completed. With the sampling plan approved by PERP, R&M collected samples from remaining soil in the trench for laboratory analysis. In April 2011 PERP transferred the case to CSP as a Final Report was being prepared by R&M documenting the actions taken. The R&M Final Report was ultimately reviewed and approved by CSP rather than PERP.

Contaminants of Concern

The following petroleum contaminants of concern are those above cleanup levels that were identified during the course of the site investigations summarized in the Characterization and Cleanup Activities section of this decision letter.

- Gasoline Range Hydrocarbons (GRO)
- Diesel Range Hydrocarbons (DRO)
- Benzene

Cleanup Levels

The cleanup level requirements for hazardous substances in soil are those established in 18 AAC 75.341(b)(2) Method Two for chemicals listed in 18 AAC 75.341(c) Table B1, and petroleum hydrocarbon ranges listed in 18 AAC 75.341(d) Table B2 for the over 40 inch rainfall zone. Surface water quality criteria for petroleum constituents in 18 AAC 70 Water Quality Standards are also applicable. These are total aqueous hydrocarbons (TAqH) and total aromatic hydrocarbons (TAH). Although groundwater was not encountered and was not investigated for contamination, it is important to note that soil migration to groundwater cleanup levels are also meant to minimize contaminant migration through the soil matrix to nearby surface water. Tidal waters enter and leave the property below ground surface twice each day. Contaminants of concern concentrations for this site in those tidal waters must meet regulatory levels for the receiving waters of Tongass Narrows. The following table displays the applicable cleanup levels.

Table 1 – Approved Cleanup Levels

Chemical	Soil (mg/kg)	Surface Water (ug/L)
Benzene	0.025	N/A
GRO	260	N/A
DRO	230	N/A
TAqH	N/A	15.0
TAH	N/A	10.0

mg/kg = milligrams per kilogram
mg/L = milligrams per liter
ug/L = micrograms per liter

Site Characterization and Cleanup Activities

Site Investigation of the tank farm began in March 2002. PM was excavating fuel transfer lines to install cathodes to control corrosion. When workers observed stained soil, PM hired environmental consultant TECS-AK to notify CS and investigate the site for petroleum contamination.

Figure 4. 2002 Site Assessment photos show the excavation site and its distance from the bulkhead.

TECS-AK concluded the excavation site aligned with the former marine shoreline. The toe of the bulkhead contacts a beach comprised mostly of bedrock. The fill and cap insulates the contaminated soil from rainfall; groundwater flow, if any, is most likely through fractured bedrock. TECS-AK observed the bulkhead and found a seep with barely perceptible flow in a seam directly beneath the marine end of the fuel fill lines. Located somewhat downhill from the contaminated soil excavation, water from the seep had no sheen or petroleum odor.

DEC concurred with the conclusion of TECS-AK that the remaining soil contamination consisted of bunker C fuel that has not been stored at the facility for many years and the extent is limited for lack of native soil. DEC entered the PM facility as a new site on the Contaminated Sites Database with inactive status pending additional site characterization by PM when the removal of structures allowed access to underlying soil. DEC approved a plan by PM to back-fill the excavation with clean soil, reinstall the asphalt cap and submit a plan for enhanced biological remediation of the excavated petroleum contaminated soil on-site.

A second Site Characterization of the property occurred as part of the project transfer from PERP to CSP in April 2011. The above referenced Final Report by R &M states that in 2010 PM advanced a four-foot wide trench to bedrock that averaged a depth of three feet below the asphalt operating grade. Near the pump house filter room the trench expanded into a 20' X 20' excavation to bedrock with a similar average depth below grade. Field screening samples detected no petroleum vapor in trench soils, but R&M did observe layers of stained soil on the sidewalls. R&M collected confirmation analytical samples from each side and the bottom of the trench at ten foot intervals and from each of the four walls of the excavation. The soil type is described as fine grained with low organic content. Surface runoff collected in the trench and excavation but groundwater was not encountered.

PM advanced a second trench to bedrock depth along the main warehouse to install additional anodes to piping. This second trench was aligned parallel to the first trench but was twenty feet closer to Tongass Narrows, which R&M concluded was down-gradient of the first trench. R&M observed no soil staining, and field screening samples from the second trench had no petroleum vapor. Although they did not collect soil confirmation samples for laboratory analysis, R&M concluded that observation and field sample readings were sufficient evidence to conclude that the contamination from the first trench was limited, did not migrate to the second trench, and the volume of contaminated soil excavated from the first trench captured most of the contaminated soil. The excavated contaminated soil was moved to a biocell located inside the upper tank farm site containment. By letter dated October 2011, DEC approved Soil Sampling and Cleanup Plan (Plan) for PM to remediate the DRO contaminated soil using enhanced natural attenuation methods.

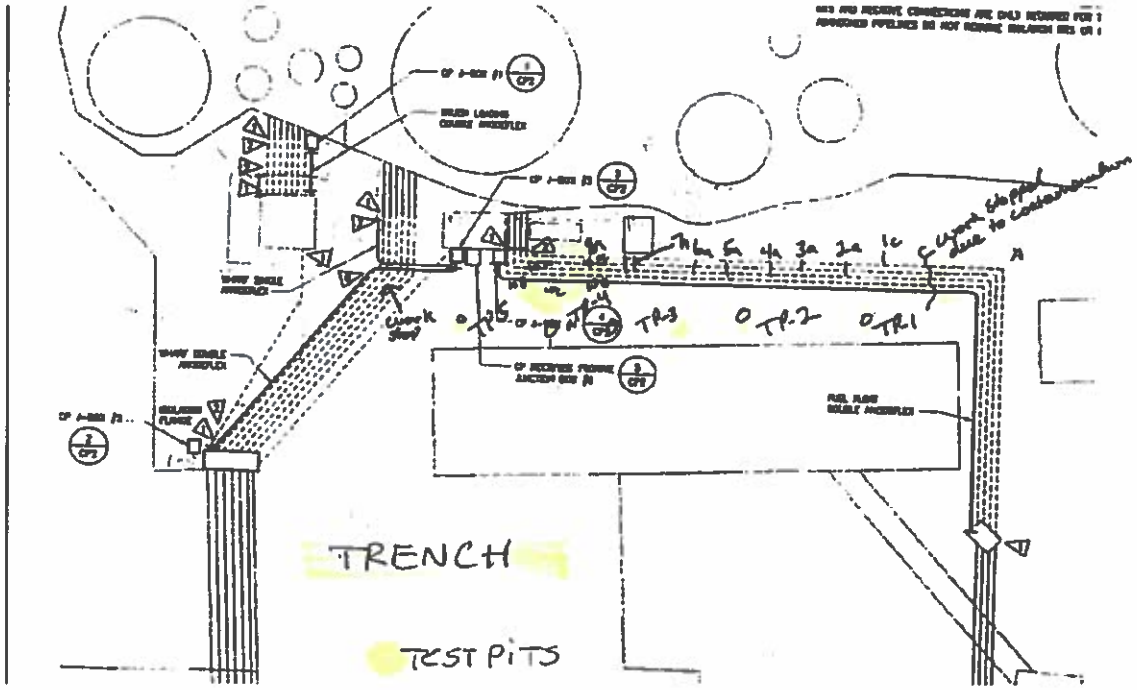

Figure 5. Numbered confirmation soil sample locations in the trench and in test pits

R&M advanced five test pits to further characterize down gradient soil over the full length of the first trench where contaminated soil was excavated. The average depth to bedrock below asphalt surface grade in the test pits was ten to twelve inches except for pit TP-5 south of the pump house that reached a depth of two and one half feet. No soil staining was observed and PID petroleum vapor readings were zero in each of the test pit soil samples. Seventeen soil samples were collected in the first trench.

The following table displays the highest levels detected above laboratory reporting limits in confirmation samples collected from remaining soil during site investigations, the sample number, location, and depth below the surface where each sample was collected, and the Method Two Migration to Groundwater (M2 MTG) soil cleanup levels listed in 18 AAC 75.341 Table B1 and Table B2 that are applicable to this site. The levels in bold are above the M2 MTG cleanup levels and represent the contaminant(s) of concern for the site. Polycyclic aromatic hydrocarbons (PAH) compounds were detected above laboratory reporting limits in a third of the soil samples but all the results were below M2 MTG cleanup levels.

Table 2. The highest level of petroleum analytes detected in soil remaining at the site.

Hydrocarbon range & compounds of concern	Greatest level in soil mg/kg	Sample name, sample location in the trench displayed in Figure 5, and depth below ground surface	M2 MTG Cleanup Levels mg/kg
GRO	637	Sample 4 from mid trench at 3.0 feet	260
DRO	4,030	Sample 10A from north end at 2 feet	230
RRO	330	Sample 4 from mid trench at 3.0 feet	9700
Benzene	0.245	Sample 10A from north end at 2 feet	0.025
Ethylbenzene	0.614	Sample 10C from north end at 2 feet	6.9
Total Xylenes	5.89	Sample 4 from mid trench at 3 feet	63

On-site Biocell Soil Remediation

Since November 2010, Biocells A and B were positioned side by side in the northwest corner of the upper AST bulk fuel terminal containment area at 1010 Stedman Street. PM purchased the upper AST terminal facility from Tesoro in 1999.[1] The contaminated soil originated from the 2010 piping trench cleanup excavation. BTEX and GRO concentrations in soil samples from the trench were low, with only a few results slightly above the benzene and GRO cleanup levels (see Table 2). As a result, DEC approved using DRO concentrations to determine when contamination in the biocells were reduced below soil cleanup levels. In September 2011, CS approved a work plan submitted by R&M to collect representative samples from the cells.

DEC approved the analytical results in the R&M Sampling Report with DRO levels ranging from 268 to 381 mg/kg in samples collected from Biocell A, and DRO levels that ranged from 962 to 1,500 mg/kg in samples collected from Biocell B. Due to the low organic content, R&M recommended mixing the soil with fertilizer and land spreading the soil on-site within the containment area of the upper AST terminal facility. During a site visit in October 2012, DEC approved PM implementing the land spreading option in the approved Plan on the condition that treated soils will remain inside the AST containment area.

Groundwater and Surface Water

Groundwater was not encountered in sufficient volume to be investigated for contamination. Previous site investigation determined that remaining soil contamination on the property had detectable levels of BTEX and PAH compounds but only benzene, GRO and DRO remained in soil at levels above Method Two migration to groundwater soil cleanup standards.

Figure 6. Seawall tidal exchange pipes and monitor well locations

In September 2011, DEC approved the Site Monitoring Plan (Plan) prepared and submitted by R&M to periodically collect analytical samples from the water wells at the north and west seawalls (See spill response discussion under Environmental History, above). Due to the close proximity to marine waters, DEC and R&M found BTEX and PAH compounds that comprise surface water quality criteria (TAH and TAqH) as the appropriate laboratory methods for the Plan. R&M had difficulty, however, collecting

[1] A chronology of CS oversight of oil spill cleanup activity by previous and current property owners is recorded on the CS Database under the name of Ketchikan Tank Farm. The current status of that site is cleanup complete with institutional controls.

representative samples of groundwater from the wells at the seawall. Even during seasonal high rainfall the wells consistently would not recharge after a conventional amount of purging. DEC and R&M agreed that surface water rather than groundwater regulatory levels were appropriate for these samples.

As a result, in October 2011, DEC approved a revision of the Plan to evaluate water from the seawall wells and pipes for TAH and TAqH. Since PM was routinely pumping the water out of the seawall tidal exchange pipes and wells into open containers to screen for sheen and treat through an oil/water separator and filtration before discharge, R&M collected analytical samples from those containers twice each month through February 2012.

Based on the consistent concentrations of PAH and BTEX compounds as TAH and TAqH in the analytical samples of pre-treatment water, CSP approved reducing the sampling frequency from bi-monthly to 90 days (quarterly) and only from the Port E on the south wall facing Tongass Narrows. The modified sampling protocol continued through the second and third quarters of 2012, with results indicating the concentrations of TAH and TAqH in samples of untreated water exceed Water Quality Standards in 18 AAC 70.020 (b) (17) (A).

During a site inspection in October 2012, DEC verbally approved suspending the collection of analytical samples of seawater until the Plan could be incorporated into a cleanup complete with institutional controls determination. The subsequent R&M letter report Seawall Water Monitoring Petro Marine Ketchikan stated that concentrations of TAH (17.2 ug/L) and TAqH (21 ug/L) seawall subsurface water were elevated above cleanup levels, but not significantly. R&M stated that suspending future sampling monitoring and site closure was appropriate for the site.

Cumulative Health Risk Calculation

Pursuant to 18 AAC 75.325 (g), when detectable contamination remains on-site following a cleanup, a cumulative risk determination must be calculated. The risk from hazardous substances must not exceed a cumulative carcinogenic risk standard of 1 in 100,000 across all exposure pathways and does not exceed a cumulative non-carcinogenic risk standard at a hazard index of one across all exposure pathways. A chemical that is detected at one-tenth or more of the Table B1 inhalation or ingestion values set out in 18 AAC 75.341(c) or the Table B2 values set out in 18 AAC 75.341(d) must be included when calculating cumulative risk under 18 AAC 75.325(g). Cumulative risk from petroleum contamination of environmental media at the site is addressed using the BTEX and PAH analyte concentration data. Based on a review of the environmental record, DEC has determined that residual contaminant concentrations do not pose a cumulative human health risk.

Exposure Pathway Evaluation

Following investigation and cleanup at the site, exposure to the remaining contaminants was evaluated using DEC's Exposure Tracking Model (ETM). Exposure pathways are the conduits by which contamination may reach human or ecological receptors. ETM results show all pathways to be one of the following: De Minimis Exposure, Exposure Controlled, or Pathway Incomplete. A summary of this pathway evaluation is included in Table 1 as Attachment A to this letter.

DEC Decision

Petroleum contaminated soil stockpiles have been fertilized and land spread on-site within the containment area at the upper tank farm. Although cleanup levels are not met, petroleum levels will continue to attenuate in the future and any surface water runoff is treated in the facility oil water

separator. Site investigation found the subsurface limits of contamination on the lower tank farm where benzene, GRO and DRO contamination remains present to a de minimis extent beneath asphalt and concrete in the piping corridor. Migration from soil in the groundwater zone is minimal and petroleum concentrations in soil are below ingestion levels.

Contamination remains in the groundwater surface water interface at levels exceeding State Water Quality Criteria. However, the contamination is in pockets and inaccessible behind a seawall, and in-situ treatment is not appropriate or feasible due to the proximity of sensitive marine receptors. As a result, long term monitoring is required to ensure that levels are declining over time, as a condition of this closure determination.

The objective of the DEC approved Site Monitoring Plan (Plan) prepared by R&M for PM in 2011 is to ensure a third party qualified professional collects representative samples to monitor seawater intrusion of the north and west seawalls to track those waters for the presence of contaminants of concern (COCs) identified at this site. As an Institutional Control (IC) for this site, PM will begin monitoring COC concentrations in seawall subsurface water quarterly to indicate whether further remediation or control measures are necessary to protect water quality of the receiving waters in Tongass Narrows. At least four sampling events with COC concentrations below regulatory levels stated in this letter are necessary to suspend periodic sampling and analysis under this IC Management Plan.

With information currently available, DEC has determined there is no unacceptable risk to human health or the environment as long as any remaining contamination is properly managed. The list of conditions below are necessary for this site closure determination and must be closely adhered to by PM. Non-compliance with this determination may result in an 18 AAC 75 Notice of Violation for the PM facility.

Institutional Controls:

1. Monitoring is required to ensure that contaminant of concern (COC) concentrations previously detected above regulatory levels in seawall subsurface waters have declined and are not increasing. Once COC concentrations are, by sampling and analysis monitoring and trend analysis reporting in accordance with the approved Site Monitoring Plan (Plan) by a third party qualified professional, determined to be consistently below regulatory levels for four sampling events, monitoring will be reduced to visual observation as a precautionary measure and ICs 1 and 2 listed in this determination letter will be suspended.

2. A monitoring record tracking sampling events and the associated laboratory results will be presented in an annual report which will include comparison of current data with historical data for trends in concentrations of the contaminants of concern to demonstrate compliance with the monitoring plan. The annual report will also include analytical results presented in a tabulated and graph formats similar to those displayed in the R&M letter report dated October 16, 2012 and shall be submitted to DEC in both digital and hard copy format.

3. Any future change in land use may impact the exposure assumptions cited in this document. If land use and/or ownership changes, these management conditions may not be protective and DEC may require additional remediation and revised conditions. Therefore Petro Marine shall report to DEC every five years to document land use is unchanged, or report as soon as Petro Marine becomes aware of any change in land ownership and/or use, if earlier, with a written

description and photographs of the condition of ground surfaces overlying the contamination with notation of any changes since the last report. The report can be sent to the local DEC office or electronically to DEC.ICUnit@alaska.gov.

4. Any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325. A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. **This is a standard condition.**

5. Movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. **This is a standard condition.**

6. Groundwater in the state of Alaska is protected for aquaculture use. In the event that an aquaculture facility uses groundwater from this site in the future, additional treatment may be required to meet aquatic life criteria under 18 AAC 70. **This is a standard condition.**

The DEC Contaminated Sites Database will be updated to reflect the change in site status as detailed above, and will include a description of the contamination remaining at the site. Institutional controls will be removed in the future if documentation can be provided that shows cleanup levels have been met. Management conditions 4 through 6 remain in effect after ICs are removed.

This determination is in accordance with 18 AAC 75.380 and does not preclude DEC from requiring additional assessment and/or cleanup action if future information indicates that this site may pose an unacceptable risk to human health or the environment.

Appeal

Any person who disagrees with this decision may request an adjudicatory hearing in accordance with 18 AAC 15.195 -18 AAC 15.340 or an informal review by the Division Director in accordance with 18 AAC 15.185. Informal review requests must be delivered to the Division Director, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 15 days after receiving the department's decision reviewable under this section. Adjudicatory hearing requests must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, Juneau, Alaska 99801, within 30 days after the date of issuance of this letter, or within 30 days after the department issues a final decision under 18 AAC 15.185. If a hearing is not requested within 30 days, the right to appeal is waived.

James Beckham
Petro Marine Ketchikan

June 3, 2014

Please sign and return *Attachment B* to DEC <u>within 30 days of receipt of this letter</u>. If you have questions about this closure decision, please contact the DEC project manager, Bruce Wanstall at (907) 465-5210.

Sincerely,

Bruce Wanstall

Bruce Wanstall
Project Manager
State & Private Contaminated Sites Program

Attachment A: Table 1 – Exposure Pathway Evaluation
Attachment B: Cleanup Complete-ICs Agreement and Signature Page

cc: Bob Bloom, Petro Marine Ketchikan, via email
Karl R. Amylon, City Manager, City of Ketchikan, via email karla@city.ketchikan.ak.us
Bob Fultz, DEC PERP SART, via email
Sally Schlichting, DEC CS Unit Manager, via email
DEC Cost Recovery Unit, via email

Attachment A: Exposure Pathway Evaluation

Table 1 – Exposure Pathway Evaluation

Pathway	Result	Explanation
Surface Soil Contact	De minimis exposure	Surface soil contamination has been removed to an on-site location and remediated. Any remaining contamination is beneath asphalt or concrete and is below the direct contact cleanup levels.
Sub-Surface Soil Contact	De-minimis exposure	Soil contamination remains inaccessible in the subsurface at levels between Method Two Table B2 migration to groundwater and human health ingestion levels and future excavation is not planned.
Inhalation – Outdoor Air	Pathway Incomplete	Contamination remains in the subsurface, but no volatile compounds are present in concentration above outdoor inhalation screening levels
Inhalation – Indoor Air (vapor intrusion)	Pathway Incomplete	Benzene in remaining soil is capped and groundwater is not present to facilitate migration. Investigation found at least 30 feet of clean subsurface soil between the building and the source area.
Groundwater Ingestion	Pathway Incomplete	Shallow groundwater dissipates quickly and is not available to characterize for contamination.. The facility and surrounding area do not use groundwater as a drinking water source.
Surface Water Ingestion	Pathway Incomplete	Surface water hydraulically connected to the site is not of sufficient quality or quantity for a potable water source.
Wild Foods Ingestion	Pathway Incomplete	None of the contaminants have potential to bioaccumulate in flora or fauna.
Exposure to Ecological Receptors	Pathway Incomplete	Phreatic water influenced by tidal waters from a busy shipping lane mixed with intermittent groundwater zone runoff water is processed through an oil/water separator and filtration before release into Tongass Narrows.

Notes to Table 1: "De-minimis exposure" means that in DEC's judgment receptors are unlikely to be affected by the minimal volume of remaining contamination. "Pathway incomplete" means that in DEC's judgment contamination has no potential to contact receptors. "Exposure controlled" means there is an administrative mechanism in place limiting land or groundwater use, or a physical barrier in place that deters contact with residual contamination.

James Beckham
Petro Marine Ketchikan

June 3, 2014

Attachment B: Cleanup Complete-ICs Agreement and Signature Page*

Petro Marine agrees to the terms and conditions of this Cleanup Complete Determination, as stated in decision letter for the Petro Marine Ketchikan, dated May 30, 2014. Failure to comply with the terms and conditions of the determination may result in DEC reopening this site and requiring further remedial action in accordance with18 AAC 75.380.

_____ _____

Signature of Authorized Representative, Title
Petro Marine Services

Date

_____

Printed Name of Authorized Representative, Title
Petro Marine Services

Note to Responsible Person (RP):

After making a copy for your records, please return a signed copy of this form to the ADEC project manager at the address on this correspondence within 30 days of receipt of this letter.