U.S. Department of the Interior
Bureau of Land Management

BLM

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ENVIRONMENTAL ASSESSMENT

Proposed Modification of the Ballast Water Treatment Facility for the Trans-Alaska Pipeline System at the Valdez Marine Terminal

Port Valdez, Alaska

It is the mission of the Bureau of Land Management (BLM) sustains the health, diversity and productivity of the public lands for the use and enjoyment of present and future generations.

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BLM Serial Nos. AA-5847 and FF12505

Proposed Modification of the Ballast Water Treatment Facility for Trans-Alaska Pipeline System at the Valdez Marine Terminal

Port Valdez, Alaska

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BLM Serial Nos. FF-12505 & AA-5847
Federal Grant Stipulation 1.7

FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD

Environmental Assessment No. EA-AK-993-06-020

Proposed Modification of the TAPS Ballast Water Treatment Facility at the Valdez Marine Terminal

BLM Office: Joint Pipeline Office, Anchorage, Alaska

Proposed Action: Alyeska Pipeline Service Company and the Trans-Alaska Pipeline System (TAPS) Owners are seeking notice to proceed approvals from the Joint Pipeline Office, Bureau of Land Management, to implement a series of modifications to the Ballast Water Treatment Facility between 2006 and 2011 within the Valdez Marine Terminal located at Port Valdez, Alaska.

Location of Proposed Action: The entire proposal will be within the Valdez Marine Terminal on the southern shore of Port Valdez, at the northeastern end of Prince William Sound, Alaska.

Applicant: Alyeska Pipeline Service Company (APSC)

Conformance with Applicable Land Use Plans: The proposal for modifying the TAPS Ballast Water Treatment Facility (BWTF) at the Valdez Marine Terminal is in conformance with all applicable land use plans that encompass portions of the Trans-Alaska Pipeline System.

Need for Proposed Action: The primary underlying need of the proposed action is to downsize the BWTF system to accommodate less ballast water flow from marine oil tankers. The proposed action is a renovation of the BWTF that would significantly reduce the physical structure of the 3-tier wastewater treatment process, incorporate new technologies, reduce the flammability of the storage tanks, improve operational efficiency, reflect operational changes due to lower ballast water flow rates and changing tanker fleet characteristics.

Description of Proposed Action:

- *Primary System: 1) Ballast Water Storage (90s) Tanks* – Install and connect Tanks 93 and 94 to the VMT vapor control system, and remove Tank 92 from service and place it in a standby mode. 2) *Recovered Crude Oil Storage (80s) Tanks* – Mitigate a flammable atmosphere risk inside the recovered crude oil tanks by adding a temporary inert nitrogen gas blanket system for the short term. For the long term, pipe will be installed to connect the 90s tanks directly to the main VMT storage tanks, instead of piping recovered crude to the 80s tanks. The two 80s tanks will then be removed from service.

- *Secondary System: Dissolved Air Flotation System* – Remove two dissolved air flotation (DAF) cells from service to accommodate reduced ballast water flow. For the long term, APSC plans to replace the current DAF cell system with an enclosed Induced Gas Flotation (IGF) system that would contain current fugitive air emissions.

- *Tertiary System: Biological Treatment Tanks* – The tertiary water treatment system is a biodegradation process using aerobic bacteria to consume aromatic hydrocarbons not removed from the secondary process. APSC proposes to remove one water treatment tank from service to accommodate less ballast water flow and completely enclose the BTT splitter box. For the long term, APSC plans to replace the biological with a chemical system, an enclosed air stripper-carbon absorption process that would contain hazardous air pollutants.

Description of Environmental Impacts: The proposed changes to the BWTF are expected to reduce overall environmental impacts in the short and long term, compared to current impacts of the BWTF in its existing configuration. The long term impacts are beneficial and positive, however some short-term air quality impacts may occur due to emissions released from construction-related activities associated with the BWTF modifications. These short term impacts would be local, minor, and expected to remain within federal permit requirements. Other than possible beneficial air and water quality effects, the proposed action would have no different environmental effects than it does in its current operating capacity.

In both the short and long term, fugitive air emissions would be reduced by removing two dissolved air flotation cells from operation in the secondary system and enclosing the biological treatment tanks splitter box and removing one tank from service in the tertiary system. Under the proposed action, effluent volumes released from the terminal to Port Valdez would be expected to continue operating within current NPDES permit limits as water discharge would remain unchanged. EPA does not plan to modify the current NPDES permit due to the proposed action. The Alaska Department of Environmental Conservation plans to review the proposed action to ensure compliance with State air and water quality requirements.

Small areas of vegetation that have colonized previously disturbed areas adjacent to the BWTF may be affected by surface disturbance where pipe may be installed underground. However, no wetlands are expected to be impacted. Other short-term and minor impacts include increases in noise and domestic waste generation during some modification activities. Potential impacts to terrestrial and marine wildlife would be negligible due to the localized nature of the proposed action on an already developed site and the short duration of individual project activities. Birds and mammals that inhabit the facility may be disturbed during construction activities. BLM determined the proposed action would not adversely affect any threatened or endangered species, either terrestrial or marine, nor would the action be expected to adversely affect essential fish habitat. No threatened and endangered species are known or expected to use the facility, therefore no impacts are expected.

No changes are expected in the volume or composition of domestic sanitary sewage or storm-water runoff as a result of the proposed action. Hazardous and non-hazardous waste generation and processing would remain unchanged. No impacts on cultural resources or land use would occur as the footprint will decrease rather than increase. The socioeconomic impact would be positive at the local level from increased employment during the projects, and positive at the state and national levels because the useful life of a critical TAPS component would be extended. No long-term effects on subsistence resources are expected and no high or disproportionate impacts on minority or low-income populations were identified.

MITIGATION MEASURES

The mitigation measures presented below are designed to reduce the potential environmental consequences specifically associated with the modification of the Ballast Water Treatment System as identified in the EA, Chapter 4.0, Environmental Consequences. These measures are in addition to existing applicable federal, state, and local laws and regulations, the requirements of the Federal Agreement and Grant of Right-of-Way, the National Environmental Policy Act, and existing Alyeska Pipeline Service Company (APSC) environmental protection plans and procedures.

Geology and Soils

1. If suspected contaminated soils are encountered during and after BWTF modification activities, Alyeska Pipeline Service Company (APSC) will undertake remediation in accordance with a remediation plan approved by the appropriate Joint Pipeline Office authorities.

Air and Water Quality

2. In addition to effluent monitoring, APSC will continue to implement procedures designed to limit hydrocarbon releases from normal operation to the marine waters of Port Valdez and Prince William Sound. These procedures require activities such as completely surrounding oil tankers with containment booms before any off-loading or on-loading activities begin, conducting surveillance to identify oil sheens, and other

measures to quickly identify and respond to any release of hydrocarbons to marine waters.

3. APSC will remain in compliance with all State and Federal air and water quality regulations, including current NPDES permit requirements governing the Ballast Water Treatment Facility during all phases of the proposed projects, and conduct environmental monitoring, recording and reporting as required.

4. APSC shall request ADEC plan approval under 18 AAC 72.600 in advance of any alterations, modifications, and major changes in operating procedure to the wastewater treatment systems at the Ballast Water Treatment Facility. ADEC also requires a review of the mixing zone when changes are made to the wastewater treatment system.

5. Fugitive emissions will be controlled during BWTF modification activities by properly operating and maintaining equipment and by watering roads and disturbed areas as needed.

6. Under the Best Management Practices Plan and Pollution Prevention Requirements, APSC shall continue to ensure proper operation and maintenance of the Ballast Water Treatment Facility.

Health and Safety

7. APSC will be expected to continue injecting hydrogen peroxide into the 90s tanks to counteract high H2S levels to maintain a safe operating environment for worker health and safety.

Reporting Condition Upsets

8. In addition to reporting to the Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC), APSC will report all upset conditions to JPO during and subsequent to completion of Ballast Water Treatment Facility projects.

Oil Spill Prevention and Response

9. APSC will revise spill prevention and contingency plans to reflect changes in the number and capacity of BWTF storage tanks and any changes in the number of on-site employees for spill response activities.

Consultation: BLM consulted the National Marine Fisheries Service (NMFS) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act and determined the proposed action would not affect any ESA listed species or critical habitat for which the NMFS has responsibility and which may occur in the action area. BLM also consulted the USFWS, who concluded the requirements of Section 7(a)(2) of the Endangered Species Act were satisfied, no biological assessment was necessary, and no

further consultation pursuant to the Endangered Species Act would be required for the proposed project.

Agency Coordination. BLM consulted the Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC) for analysis of specific data and information related to fugitive air emissions and wastewater treatment and discharge as a result of the proposed action. EPA indicated it does not plan to modify the current NPDES permit due to expire in 2009, as a result of the proposed action. ADEC plans to review the proposed action to ensure continued compliance with State air and water quality requirements. BLM also requested informal consultation with the Alaska Office of History and Archaeology State Historical Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act, and no substantial concerns were identified.

ANILCA Section 810 Summary

Section 810(a) of ANILCA requires that an evaluation of subsistence uses and needs be completed for any federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands." As part of the NEPA analysis, an evaluation of potential impacts to subsistence under ANILCA § 810 must be completed for the modification of the Ballast Water Treatment Facility of the Trans-Alaska Pipeline System, Valdez Marine Terminal. ANILCA requires that this evaluation include findings on three specific issues:

1. The effect of such use, occupancy, or disposition on subsistence uses and needs;
2. The availability of other lands for the purpose sought to be achieved; and
3. Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 U.S.C. § 3120).

This section sets out the evaluation and findings required by ANILCA § 810 for the proposed modification of the Ballast Water Treatment Facility based upon the information detailed in the Environmental Assessment. Section 3.13, Affected Environment, provides information regarding areas and resources important for subsistence use. Section 4.1.12, Environmental Consequences analyzes impacts on resource populations and access by subsistence users, and was used to determine whether the level of effects from the modification of the Ballast Water Treatment Facility is extensive enough to cause a possible significant restriction to subsistence. In determining whether the proposed modification of the Ballast Water Treatment Facility, including cumulative effects, may significantly restrict subsistence uses, the following three factors in particular are considered:

1. The reduction in the availability of subsistence resources caused by a decline in the population or amount of harvestable resources;
2. Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations and distribution patterns; and
3. Limitations on access to subsistence resources, including from increased competition for the resources.

A significant restriction to subsistence may occur when an action substantially may reduce populations or their availability to subsistence users, and when an action may substantially limit access by subsistence users to resources. If the preliminary evaluation and findings were to conclude that the proposed action may significantly restrict subsistence uses, then additional requirements are established in the statute. These include notice to the State and appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, and the making of certain determinations as required by Section 810(a)(3). For the proposed action to proceed, the Federal land manager would be required to determine that:

A. Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands;

B. The proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition; and

C. Reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

Evaluation and Findings The TAPS FEIS Section 3.13 describes subsistence uses of Tatitlek, Valdez, Chenega Bay, and Cordova, communities found in the vicinity of the Valdez Marine Terminal. Since Valdez is not a rural community, the local harvest activities of that community are not technically subsistence uses as defined in Title VIII of ANILCA. Tatitlek, Chenega Bay, and Cordova residents harvest subsistence resources throughout extensive subsistence uses areas centered on their communities. Subsistence uses by these three communities in the Valdez Arm area exist, but these represent a small and remote portion of the uses areas for these communities. BLM conducted an analysis of subsistence impacts associated with the proposed action under requirements of Section 810 of ANILCA (see Chapter 5) and concluded that the effects of the BWTF modification on subsistence uses fall below the level of significantly restricting subsistence uses and needs. BLM also determined the proposed action would not substantially reduce subsistence resource populations or their availability to subsistence users and would not substantially limit access by subsistence users to resources.

Concerning the availability of alternative lands, the proposed BWTF modification is intrinsically linked to the existing Valdez Marine Terminal. As a result, no alternative lands for the proposed activity are relevant. Finally, as noted, modification of the BWTF would somewhat reduce the existing infrastructure at the Valdez Marine Terminal, relevant to the efficient treatment of ballast water and storage of recovered crude oil. No alternatives that further reduce the land use are feasible. Considering the three factors together, the effects of the BWTF modification on subsistence uses fall below the level of significantly restricting subsistence uses and needs. The proposed action would not substantially reduce subsistence resource populations or their availability to subsistence users, nor would it substantially limit access by subsistence users to resources.

Cumulative Impact Analysis. Section 4.3 of the EA examines cumulative impacts, noting that in the Trans Alaska Pipeline Final Environmental Impact Statement, the BLM found that operations and maintenance changes, such as the modification of the Ballast

Water Treatment Facility were "not significantly distinguishable" from existing operations for the purposes of environmental review. Thus, the cumulative impacts analysis provided for the TAPS FEIS had examined and reached conclusions on cumulative impacts, of which the BWTF modification at the Valdez Marine Terminal is an indistinguishable part. The current EA is tiered from, and incorporates by reference the cumulative effects analysis of the previous TAPS FEIS (2002), and the EA for Reconfiguration of the VMT (2004). As a result, cumulative impacts to subsistence uses have already been identified, and compliance with the notice, hearings, and determinations requirements of Section 810 have already been assured (BLM 2004).

Further Compliance With ANILCA Section 810. With the conclusion that the proposed BWTF modification would not significantly restrict subsistence uses, no further steps are required for compliance with Section 810. Specifically, the BLM is not required to provide notice and hearings, under Section 810 (a)(1) and (2). Similarly, the BLM is not required to reach the determinations required under Section 810 (a)(3).

DECISION

Finding of No Significant Impact (FONSI)

Based on an analysis of the environmental impacts contained in the attached environmental assessment, I have determined that overall impacts to the human environment are not expected to be significant and an environmental impact statement is not required for the reasons stated below under Rationale.

The attached environmental assessment is tiered off of 1) the Final Environmental Impact Statement (FEIS), *Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way*, BLM-AK-PT-03-005+2880+990, November 2002, which concluded there would be no significant adverse environmental impacts from reconfiguration of the Trans-Alaska Pipeline System facilities, and 2) the *Environmental Assessment of the Proposed Reconfiguration of the Trans-Alaska Pipeline System, Valdez Marine Terminal,* November 2004, that resulted in a Finding of No Significant Impact (FONSI) and an environmental impact statement was not required.

BLM evaluated two alternatives in this environmental assessment, 1) the proposed action of modifying the Ballast Water Treatment Facility, and 2) no action. The preferred alternative is the proposed action of TAPS reconfiguration at the Terminal. BLM has determined long-term environmental impacts from the proposed action of modifying the Ballast Water Treatment Facility will not be significant, nor will they affect the safety, integrity, and security of TAPS. The long-term impacts are expected to be beneficial, especially to air and water quality. Therefore, no Environmental Impact Statement (EIS) will be prepared for the proposed modification of the Trans-Alaska Pipeline System Ballast Water Treatment Facility at the Valdez Marine Terminal.

Rationale for Decision: Both Environmental Assessments for 1) Reconfiguration of the TAPS at the Valdez Marine Terminal, and 2) Modification of the Ballast Water

Treatment Facility were prepared and tiered off of the 2002 TAPS FEIS, to identify and evaluate any additional or probable environmental impacts of the Ballast Water Treatment Facility modification project. Both Environmental Assessments analyzed the overall environmental impacts of modifying different components of Valdez Marine Terminal facilities. The probable environmental impacts of the TAPS Right-of-Way renewal were initially analyzed in the TAPS FEIS, which provides a thorough environmental analysis. The Environmental Assessment for Modification of the Ballast Water Treatment Facility incorporates by reference relevant sections of both the FEIS, and the Reconfiguration EA, which concluded impacts from modifying the Ballast Water Treatment Plant would not be significant.

1.0 CONTEXT AND INTENSITY

The Environmental Assessment was analyzed in several contexts such as society as a whole in terms of the affected region, the affected interests, and the community of Valdez, Alaska; the affected region at the Valdez Marine Terminal and the Valdez area, affected interests such as the City of Valdez and Alaskan Native interests in the Valdez area and the local community of Valdez itself.

1. Impacts that may be both beneficial and adverse.
The proposed changes to the BWTF are expected to reduce overall environmental impacts in the short and long term, compared to current impacts of the BWTF in its existing configuration. The long term impacts are beneficial and positive, however some short-term air quality impacts may occur due to emissions released from construction-related activities associated with the BWTF modifications. These short term impacts would be local, minor, and expected to remain within federal permit requirements. Other than possible beneficial air and water quality effects, the proposed action would have no different environmental effects than it does in its current operating capacity.

2. The degree the proposed actions affect public health and safety.
The proposed changes to the BWTF are expected to reduce overall fugitive air emissions in the short and long-term, compared to current impacts of the BWTF in its existing configuration. The long-term impacts are beneficial and positive, however, some short-term air quality impacts may occur due to emissions released from construction-related activities associated with the BWTF modifications. These short-term impacts would be local, minor, and expected to remain within federal permit requirements. In both short and long term, air emissions would be reduced by enclosing the biological treatment tanks splitter box in the tertiary system, and removing two dissolved air flotation cells from operation in the secondary system. The largest hazardous air pollutant reductions will occur as a result of 1) installing emission controls on the 90s tanks and eliminating the 80s tanks, 2) replacing the secondary treatment system of dissolved air flotation cells with enclosed induced gas flotation units, and 3) replacing the tertiary biological wastewater treatment system with an enclosed chemical treatment system. Since the NPDES permit will not be modified and APSC is anticipated to remain in compliance with the NPDES permit, the BWTF modifications are not expected to have negative impacts on air quality.

3. Unique characteristics of the area; proximity to ecologically critical areas, etc.
The Ballast Water Treatment Facility discharges treated wastewater into the ocean at Port Valdez. EPA has determined that Alyeska Pipeline Service Company is in compliance with their current NPDES permit authorizing wastewater discharge. The Alaska State of Environmental Conservation reviewed the NPDES permit and issued a Certificate of Reasonable Assurance to ensure protection with State waters. Mitigation measures in the NPDES permit include rigorous effluent testing and environmental monitoring to ensure permit levels are not exceeded.

4. Effects on quality of human environment with potential to be controversial.
BLM has determined that the environmental impacts will be beneficial in the long-term, especially for air and water quality, which have been controversial in the past. Plans to replace and enclose the dissolved air flotation and biological treatment tanks of the BWTF will greatly reduce fugitive air emissions and improve water quality in the long term, which will improve the quality of the human environment at the Valdez Marine Terminal, the City of Valdez, and Port Valdez.

5. Effects on human environment that could be uncertain or involve unknown risks.
No uncertain or unknown risks are expected to occur, that would have an affect on the human environment. The proposed modifications are expected to improve operating efficiency, reduce fugitive air emissions, and improve water quality in Prince William Sound and Port Valdez for the long term. The intended outcome is to reduce environmental impacts and risks associated with normal TAPS operations through long term reductions in air emissions, water use, wastewater generation, energy consumption, and the risk of oil spills.

6. The degree which the action establishes a precedent for future actions.
This environmental assessment will be a precedent for future NEPA analyses on other Valdez Marine Terminal projects requiring Notice to Proceed approvals from BLM.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.
Cumulative impacts for this proposed action and other reasonably foreseeable actions would be minor and local, with no significant synergistic effects. The primary unavoidable disturbances resulting from the proposed action would be related to construction activities occurring within the boundaries of the terminal. The impacts would be short-term, confined to the Valdez Marine Terminal, minor, and readily mitigated. Mitigation measures for unavoidable impacts are suggested.

8. Adverse effects on highways or other structures, scientific, cultural or historical resources.
No substantial concerns related to historic properties or cultural resources were identified as being affected by the proposed projects.

9. Degree of adverse effect on T&E species.
BLM consulted with the U.S. Wildlife Service and USF&WS concurred with BLM's determination that approval of the proposed action is not likely to adversely affect threatened and endangered species and critical habitat. BLM also consulted the National Marine Fisheries Service (NMFS) and NMFS concurred with BLM's determination that the proposed action is not expected to adversely affect Essential Fish Habitat (EFH) in Prince William Sound.

10. Whether the action threatens violation of Federal, State or local law or requirements for protection of the environment.
The action does not threaten violation of any Federal State or local laws protecting the environment.

Jerry L. Brossia 30 NOV 2006
(Signature) (Date)

Jerry Brossia
Authorized Officer
U.S. Bureau of Land Management
Joint Pipeline Office

BLM EA-AK-993-06-020

Overview of Ballast Water Treatment Facility (Courtesy Alyeska Pipeline Service Company)

BLM ROW Grant Case Files

AA-5847 and FF-12505

EXECUTIVE SUMMARY

BLM proposes to grant Notice to Proceed approval to Alyeska Pipeline Service Company (APSC) to authorize modification of their three-step Ballast Water Treatment Facility (BWTF), an integral component of the Trans-Alaska Pipeline System (TAPS) at the Valdez Marine Terminal at Port Valdez, Alaska. APSC and the TAPS owners are seeking Notice to Proceed approvals from the BLM Joint Pipeline Office in accordance with the requirements of the Federal Agreement and Grant of Right-of-Way, authorized by the Mineral Leasing Act and the amendments to the Trans-Alaska Pipeline Authorization Act of 1973. The Notice to Proceed process under the Federal Agreement and Grant of Right-of-Way for TAPS, Stipulation 1.7, requires the Permittees to submit design documentation, project timelines, environmental reports and studies, and other required information for the JPO review for compliance with Grant stipulations.

Alyeska proposed these projects after recognizing the need to downsize the BWTF to accommodate reduced ballast water flow due to the use of double hulled marine tankers required by the Oil Pollution Act of 1990 (OPA 90) and less throughput of oil in TAPS. The reduction in ballast water flow prompted APSC to take a close look at the effectiveness of each of the three water treatment systems in the BWTF. The current proposal consists of a plan to modify the three-step BWTF wastewater treatment system

The purpose of the proposed action is to renovate the BWTF to incorporate new technologies, reduce flammability in the recovered crude and ballast water storage tanks, and improve water treatment efficiency due to lower ballast flow rates and changing tanker fleet characteristics. The projects would take place within the Valdez Marine Terminal, beginning in late 2006 with targeted completion in 2010. The short-term objective is to increase safety by reducing flammability in the ballast water and recovered crude oil tanks. The long-term objective is to completely enclose the secondary and tertiary water treatment systems in the BWTF. These modifications would provide the benefit of reduced fugitive air emissions for the long term.

BLM evaluated two alternatives in the EA, the proposed action of modifying the Ballast Water Treatment Facility at the Valdez Marine Terminal, and 2) no action. The first alternative is preferred. In 2004, BLM conducted a more in-depth environmental analysis of a proposed reconfiguration of the Valdez Marine Terminal (VMT) that addressed the BWTF projects as a cumulative impact. BLM committed to do a future analysis of environmental effects of planned BWTF modifications when the proposal would be submitted. This EA was prepared in accordance with that commitment and compliance with NEPA and BLM guidelines in response to APSC's Notice to Proceed application for their BWTF projects.

The proposed changes to the BWTF are expected to reduce environmental impacts in the short and long term, compared to current impacts of the BWTF in its existing configuration. The long term impacts are beneficial and positive, especially for air and water quality. In both the short and long term, fugitive air emissions are expected to be reduced by removing two dissolved air flotation cells from operation in the secondary system and enclosing the biological treatment tanks splitter box and removing one tank from service in the tertiary system. The reasonably foreseeable scenario of installing closed secondary and tertiary water treatment systems would be beneficial to the human and physical environment by containing current fugitive air emissions in a closed system and improving air quality at the BWTF for the long-term.

Under the proposed action, effluent volumes released from the terminal to Port Valdez would be expected to continue operating within current NPDES permit limits as water discharge would remain unchanged. EPA does not plan to modify the current NPDES permit due to the proposed action. The Alaska Department of Environmental Conservation plans to review the proposed action to ensure compliance with State air and water quality requirements. The impacts of the BWTF modification are not expected to have any adverse synergistic impact on species or ecosystems that may be affected by non-indigenous species in the future.

BLM continues to monitor TAPS facilities for safety, integrity, security and environmental protection for Permittee compliance with the terms, conditions and stipulations of the Federal Grant of Right-of-Way. Other than possible beneficial air and water quality effects, the proposed action would have no different environmental effects than it does in its current operating capacity.

Work during all phases of the proposed BWTF projects will be conducted in collaboration with EPA and ADEC Industrial Wastewater Program staff and other agencies as required to ensure APSC will remain in compliance with applicable regulatory and permitting requirements. Due to the nature of the project, work will be done over a several year time frame. The JPO expects APSC will remain in compliance with all State and Federal regulations governing the BWTF during all phases of the proposed projects.

TABLE of CONTENTS

EXECUTIVE SUMMARY……II

TABLE OF CONTENTS…… iv

LIST OF TABLES AND FIGURES…….…viii

LIST OF APPENDICES……...viii

LIST OF ACRONYMS AND ABBREVIATIONS……ix

1.0 PURPOSE AND NEED FOR ACTION……..1-1

1.1 Purpose……1-1

1.2 Need for the Proposed Action……1-1

1.3 Scope of the Analysis……..1-2

1.4 Conformance with BLM Land Use Plans……...1-3

1.5 Laws, Regulations, Policies, and Guidance……1-3

1.5.1 Other Environmental Analyses……..1-3

1.5.2 Relationships to Laws and Regulations……1-4

1.5.3 Federal and State Permits Needed to Implement the Proposed Action…….1-4

2.0 PROPOSED ACTION AND ALTERNATIVES……2-1

2.1 No Action Alternative……2-1

2.2 Description of the Existing Ballast Water Treatment Facility……...2-1

2.2.1 Primary Water Treatment - 80s and 90s Tanks……2-3

2.2.2 Secondary Water Treatment - Dissolved Air Flotation……2-4

2.2.3 Tertiary Water Treatment - Biological Treatment Tanks…….…2-4

2.2.4 Air Stripper Process……..2-6

2.2.5 Effluent Discharge……..2-6

2.2.6 Influent……..2-7

2.3 Description of Related Facilities……2-8

2.3.1 Vapor Control System……..2-8

2.3.2 Tanker Berths and Ballast Unloading……...2-8

2.3.3 Fire Protection Systems……2-8

2.4 Proposed Action: Modification of the Ballast Water Treatment Facility……2-8

2.4.1 Primary Water Treatment System - 80s and 90s Tanks…….2-9

2.4.2 Secondary Water Treatment System - Dissolved Air Flotation……..…..2-10

2.4.3 Tertiary Water Treatment System - Biological Treatment Tanks……2-10

2.5 Alternatives Considered but Eliminated from Detailed Analysis…….2-12

3.0 AFFECTED ENVIRONMENT……....3-1

3.1 Geology and Soils……...…3-1

3.2 Marine Water Resources……3-1

3.2.1 Existing Water Quality……...3-1

3.2.3 Wastewater Discharge to Port Valdez……3-3

3.3 Atmospheric Environment……...3-5

3.3.1 Existing Air Quality……3-5

3.3.2 Hazardous Air Pollutant Emissions……3-5

3.4 Noise……3-5

3.5 Terrestrial Vegetation, Wetlands, and Riparian Zones……3-6

3.6 Aquatic Resources and Essential Fish Habitat……3-6

3.7 Marine Mammals…….3-7

3.8 Birds…….3-7

3.9 Terrestrial Mammals……3-7

3.10 Threatened and Endangered Species……3-7

3.11 Economics……...….3-8

3.12 Subsistence……...3-8

3.13 Environmental Justice……..3-9

3.14 Cultural Resources……...3-9

3.15 Land Use, Coastal Zone Management, Recreation, Visual Resources……3-9

3.16 Transportation…….3-10

3.17 Hazardous Materials and Waste Management……...……3-10

3.17.1 Recovered Crude Oil…….3-11

3.17.2 Contaminated Soil…….3-11

3.18 Critical Elements Not Affected……..3-11

4.0 ENVIRONMENTAL CONSEQUENCES……....4-1

4.1 Proposed Action and No Action Alternatives…….….4-1

4.1.1 Geology and Soils……4-1

4.1.2 Marine Water Resources……....4-1

4.1.3 Air Quality……...4-3

4.1.4 Noise……4-5

4.1.5 Terrestrial Vegetation, Wetlands, and Riparian Zones……...4-5

4.1.6 Aquatic Resources and Essential Fish Habitat……4-6

4.1.7 Marine Mammals……4-7

4.1.8 Birds……4-7

4.1.9 Terrestrial Mammals…….……..4-7

4.1.10 Threatened and Endangered Species……..……4-7

4.1.11 Economics……..4-8

4.1.12 Subsistence ……4-8

4.1.13 Environmental Justice……4-8

4.1.14 Cultural Resources……..4-9

4.1.15 Land Use, Coastal Zone Management, Recreation, Visual Resources……...4-9

4.1.16 Transportation……....4-10

4.1.17 Hazardous Materials and Waste Management……..4-10

4.2 Cumulative Impacts……4-11

4.2.1 TAPS FEIS Analysis……4-11

4.2.2 Past Actions……..4-11

4.2.3 Future Ballast Water Treatment Facility Projects……4-12

4.2.4 Non-Indigenous Species……..4-14

4.2.5 Resource Protection Measures Considered……4-14

4.3 Mitigation……4-14

4.4 Unavoidable Impacts and the Effectiveness of Mitigation……..4-15

5.0 ANILCA SECTION 810 ANALYSIS of SUBSISTENCE IMPACTS……….....5-1

5.1 Subsistence Evaluation Factors…….…5-1

5.2 Evaluation and Findings……5-2

5.3 Cumulative Impacts Analysis……5-2

5.4 Further Compliance With ANILCA Section 810……5-2

6.0 CONSULTATION AND COORDINATION……...6-1

6.1 Endangered Species Act Section 7 Consultation……6-1

6.2 Essential Fish Habitat Consultation……6-1

6.3 State and Federal Agency Consultation……...6-1

6.4 List of JPO/BLM Preparers and Contributors……..6-2

7.0 REFERENCES……..……..7-1

LIST OF TABLES

Table 3-1 Modeled DAF and BTT BTEX Fate Path Summary for Calendar Year 2003

Table 3-2 Effluent Limits and Monitoring in Existing NPDES Permit

LIST OF FIGURES

Figure 2-1 Diagram of the Valdez Marine Terminal

Figure 2-2 Aerial Photograph of the Ballast Water Treatment Facility

Figure 2-3 Historical and Projected Flows from BWTF Discharge and TAPS Throughput

Figure 2-4 Schematic Diagram of Valdez Marine Terminal Ballast Water Treatment Facility

Figure 2-5 Average Biological Treatment Tank (BTT) Water Temperature, 1991-2003

Figure 3-1 DAF and BTT 2003 Modeled BTEX & Forecast BTEX Air Emissions 2004-2009

Figure 4-1 Calculated DAF and BTT BTEX Fate Paths

LIST OF APPENDICES

A. Current Ballast Water Treatment Facility Diagram

B. Comparison of Existing BWTF and 2006 Right-Sized Plant Without 80s Tanks

C. Conceptual 2010 Transition

D. Conceptual 2010 Transition

E. Potential Affect on HAPS Air Emissions (Source: Alyeska Pipeline Service Company)

F. APSC Ballast Water Treatment Facility Status Update Newsletter August 2006

G. Consultation Letter, U.S. Fish and Wildlife Service

H. Consultation Letter, U.S. National Oceanic and Atmosphere Administration

LIST OF ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ACMP	Alaska Coastal Management Plan
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
ANILCA	Alaska National Interest Lands Conservation Act
APSC	Alyeska Pipeline Service Company
bbl	Barrel or barrels
BLM	Bureau of Land Management
BTT	Biological treatment tanks
BTEX	Benzene, toluene, ethyl-benzene, xylene
BWTF	Ballast Water Treatment Facility
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO_2	Carbon dioxide
CZM	Coastal Zone Management
DAF	Dissolved Air Flotation Unit
DOT	U.S. Department of Transportation
EA	Environmental assessment
EFH	Essential fish habitat
EPA	Environmental Protection Agency
ESA	Endangered Species Act
gal	Gallon
gpd	Gallons per day
HAP	Hazardous air pollutant
JPO	Joint Pipeline Office
mgd	Million gallons per day
MP	Milepost
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service

LIST OF ACRONYMS AND ABBREVIATIONS (Cont.)

NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NTP	Notice to Proceed
PAH	polycyclic aromatic hydrocarbon
PWS	Prince William Sound
RC	Recovered crude
RCAC	Regional Citizens' Advisory Council
RMP	Resource Management Plan
ROW	Right-of-way
SCADA	Supervisory control and data acquisition
SO_2	Sulfur dioxide
TAPS FEIS	Final Environmental Impact Statement for the Renewal of the Federal Grant for the Trans-Alaska Pipeline System Right-of-Way
TAPS	Trans-Alaska Pipeline System
tpy	Tons per year
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VMT	Valdez Marine Terminal
VOC	Volatile organic compound
80s Tanks	Recovered crude oil storage tanks (primary wastewater treatment)
90s Tanks	Ballast water separation tanks (primary wastewater treatment)

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1.0 PURPOSE AND NEED FOR ACTION

1.1 PURPOSE

BLM proposes to grant Notice to Proceed approval to Alyeska Pipeline Service Company (APSC) to authorize a modification of their three-step Ballast Water Treatment Facility, an integral component of the Trans-Alaska Pipeline System at the Valdez Marine Terminal at Port Valdez, Alaska. APSC and the Trans-Alaska Pipeline System (TAPS) Owners plan to seek several Notice to Proceed approvals from the Joint Pipeline Office, Bureau of Land Management (JPO-BLM) to implement a set of modifications to the Ballast Water Treatment Facility (BWTF) from 2006-2010 at the Valdez Marine Terminal (VMT), located in Township 9 South, Range 6 West, Sections 17 through 20 and Township 9 South, Range 7 West, sections 13 and 24, Copper River Meridian, Alaska.

The purpose of the proposed action is to increase safety in the short term by reducing vapor flammability in the ballast water and recovered crude oil tanks in the BWTF, reduce fugitive air emissions for the short and long term, and increase overall BWTF system efficiency by modifying the three water treatment systems to accommodate less ballast water flow as a result of double-hulled tankers and less throughput of oil in TAPS. This Environmental Assessment (EA) discusses the potential environmental impacts of the proposed modification of the BWTF.

1.2 NEED FOR THE PROPOSED ACTION

The primary underlying need of the proposed action is to downsize the BWTF system to accommodate less ballast water flow from marine tankers and wastewater flow from TAPS operations. The proposed action is a redesign of the BWTF that would significantly reduce the physical structure of the 3-step wastewater treatment process, incorporate new technologies, reduce the flammability of the storage tanks, improve operational efficiency, reflect operational changes due to lower ballast water flow rates and changing tanker fleet characteristics, and less oil throughput in TAPS.

The BWTF was originally designed in the 1970's to treat and process an average daily flow of 30 million gallons of ballast water per day. In 2006 the average daily flow has dropped to 5 million gallons per day (APSC 2006b). In addition, the Oil Pollution Act of 1990 requires that all marine tankers change from single to double hulls, and beginning in 2014, the fleet must consist entirely of double-hulled tankers. The double-hulled tankers servicing the VMT use an offshore segregated de-ballasting system. This tanker fleet change will reduce the need for onshore ballast water treatment, therefore the BWTF is currently treating and will continue to treat less ballast water.

Another equally important need for the proposed action is to increase safety by reducing the explosive environment potential in the primary treatment tanks. APSC plans to reduce the flammability of the 80s recovered crude tanks, and the 90s gravity separation tanks by connecting the tanks directly to the main VMT vapor control system. Tank vapor would be piped from the tanks directly to the Power Vapor Plant facility for incineration. Vapor space and tank combustibility in the BWTF primary system has been a long-standing concern.

Another need for the proposed action is to downsize the secondary and tertiary wastewater treatment systems to accommodate less ballast water flow. APSC proposes to scale back the secondary wastewater treatment system by removing two dissolved air flotation cells from service to adjust to the reduced ballast water flow. Modification of the tertiary biological treatment system is necessary to allow an

uninterrupted biodegradation process to continuously lower BTEX[1] to required permit levels in the water before it is discharged to Port Valdez. One result of less ballast water flow is the starvation of aerobic bacteria in the tertiary process of the biological treatment tanks. Lower ballast water flow rates cause lower temperatures and less oxygen in the biological treatment tanks, which, in turn causes starvation of the aerobic bacteria that consumes the BTEX.

1.3 SCOPE OF ANALYSIS

This EA assesses potential environmental impacts associated with changes to the Ballast Water Treatment System Facility proposed by APSC requesting Notices to Proceed from the BLM Joint Pipeline Office. BLM acknowledges the reasonably foreseeable scenario for future projects as part of the long-term modification of the BWTF to accommodate less ballast water flow.

In 2004 BLM completed an Environmental Assessment of the Proposed Reconfiguration of the Trans-Alaska Pipeline System at the Valdez Marine Terminal, in response to APSC's proposal to reconfigure TAPS facilities at the VMT. The VMT Reconfiguration EA resulted in an unchallenged Finding of No Significant Action (FONSI). The EA stated, "…none of the changes is expected to result in adverse environmental or synergistic impacts, and accordingly the cumulative effects are expected to be undetectable and, at most, negligible." APSC did not seek federal authorization for the BWTF project at that time because the project was in early conceptual planning stages. The VMT Reconfiguration EA concluded that to the extent appropriate future modifications of the BWTF would likely be subject to a project specific NEPA analysis at such time as the TAPS Owners may seek federal authorization (BLM 2004). This EA was prepared in accordance with BLM's public commitment made in the VMT Reconfiguration EA to analyze environmental effects of future BWTF modifications.

BLM issued the original Federal Agreement and Grant of Right-of-Way for TAPS, January 23, 1974, for a 30-year period, set to expire in 2004. Before renewing the TAPS Right-of-Way (ROW) for another 30 years, the BLM completed a Final Environmental Impact Statement (FEIS) addressing environmental impacts associated with the continued operations and maintenance of the TAPS for another 30 years. The resulting Record of Decision dated January 8, 2003 renewed the TAPS Right-of-Way based on these findings: 1) the current TAPS operation including the Valdez Marine Terminal (VMT) was in compliance with the terms of the original 1974 TAPS Right-of-Way Grant and all applicable statues and regulations, and 2) A continued need still exists for the transport and delivery of crude oil for U.S. consumption. Since this is a recent, unchallenged Secretarial decision, this environmental assessment (EA) assumes the existing environmental impacts and mitigations of those impacts at the VMT are accepted.

This EA summarizes information presented in the TAPS Final Environmental Impact Statement (FEIS)[2] (BLM 2002a). This EA is tiered to and incorporates by reference the TAPS FEIS, including the relevant analyses and conclusions, and also includes more detailed information that has become available since the FEIS Record of Decision became final January 8, 2003. The TAPS FEIS also acknowledges that additional upgrades and modifications, precipitated by factors such as reduced throughput, would likely

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[1] BTEX - Benzene, toluene, ethyl-benzene, and xylene

[2] A copy of the TAPS FEIS may be obtained through the Joint Pipeline Office web site at http://www.jpo.doi.gov/ by clicking on Right-of-Way Renewal, Argonne National Laboratory, EIS Documents.

continue over the 30-year renewal period and discusses impacting factors associated with potential upgrades such as modification of the Ballast Water Treatment facility at the Valdez Marine Terminal.

The JPO is responsible for issuing most of the necessary permits and authorizations to operate and maintain the TAPS and the BLM has general oversight and monitoring responsibilities and authorities. The Renewal of the Agreement and Grant of Right-of-Way for TAPS and Related Facilities, Stipulation 1.7, Notice to Proceed (NTP) requires the Permittee to obtain NTP approval when the BLM Authorized Officer determines an NTP is necessary for major projects affecting the TAPS. The Authorized Officer considers NTP approval of the BWTF modification a major federal action because the BWTF is a critical system, thereby requiring NEPA compliance. NEPA analysis is required for major federal actions that can affect the quality of the human environment. This EA presents information that encompasses the probable range of proposed Ballast Water Treatment Facility changes. Further environmental analysis may be necessary if the proposed action substantially changes or additional actions are proposed that are not addressed by this EA.

1.4 CONFORMANCE WITH BLM LAND USE PLANS

The BLM has three multiple-use Resource Management Plans (RMP) that encompass portions of the TAPS: The South-central Management Framework Plan (BLM 1980), the Fort Greely Resource Management Plan (BLM 1994), and the Utility Corridor Resource Management Plan (BLM 1991). In late fall of 2006, BLM plans to finalize a draft RMP for eastern Alaska that addresses management of Federal lands. This RMP will update and replace the South-central Management Framework Plan. The proposed action is in conformance with the BLM draft plan for eastern Alaska.

The South-central Management Framework Plan covers portions of the TAPS Right-of-Way on BLM lands south of the Alaska Range but does not address management decisions affecting TAPS. The Fort Greely Resource Management Plan acknowledges the prior existence of TAPS on BLM where it traverses the military installations. The Utility Corridor Resource Management Plan includes TAPS on BLM lands north of the Yukon River, but does not include the Valdez Marine Terminal. BLM has reviewed the proposal for the proposed action at the Valdez Marine Terminal and determined it to be in conformance with the applicable land use plans.

1.5 LAWS, REGULATIONS, POLICIES, AND OTHER ENVIRONMENTAL ANALYSES

1.5.1 Other Environmental Analyses

TAPS Final Environmental Impact Statement for Right-of-Way Renewal. In 2002, the BLM completed the TAPS FEIS (BLM 2002a), which identified and analyzed the probable direct, indirect, and cumulative environmental impacts associated with renewal of the TAPS right-of-way, including operations and maintenance changes and upgrades reasonably expected to occur over the 30-year renewal period (BLM 2002a). The TAPS FEIS stated that there were no probable significant adverse environmental impacts from TAPS right-of-way authorization for an additional 30 years. The BLM concluded that operations and maintenance changes, such as the BWTF modifications, were not expected to result in adverse environmental impacts different in context or intensity from those occurring under existing operations. This EA expands on information in the TAPS FEIS, but also incorporates by reference much of the baseline information, analyses, and conclusions of the FEIS and is therefore tiered to it.

The Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal. In 2004, the BLM completed an environmental assessment of APSC's proposed strategic reconfiguration of Valdez Marine Terminal facilities and operations. BLM identified and analyzed the probable direct, indirect, and cumulative environmental impacts associated with reconfiguring the VMT (BLM 2004a). BLM's Finding of No Significant Impact (FONSI) stated there were no probable significant adverse environmental impacts from the proposed reconfiguration of the VMT and an EIS was not necessary. This EA incorporates by reference the analyses and conclusions of the VMT Reconfiguration EA, and is therefore tiered to it.

1.5.2 Relationship to Laws and Regulations

Under either the proposed action or the no action alternative, BLM would comply with the planning constraints and processes imposed by laws, policies, and legal and regulatory agreements. The proposed project and the JPO/BLM in the authorization and National Environmental Policy Act (NEPA) analysis must comply with federal laws, including:

- Clean Air Act as amended, (42 USC 7401 et seq.)
- Clean Water Act of 1977 (33 USC 1251 et seq.)
- Safe Drinking Water Act as amended, (42 USC 300 et seq.)
- Endangered Species Act of 1973 as amended (16 USC 1531 et seq.)
- Magnuson-Stevens Fishery Conservation and Management Act as amended (16 USC 1801-1882)
- Resource Conservation and Recovery Act of 1976 (42 USC 6901 et seq.)
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9615)
- Fish and Wildlife Coordination Act as amended (16 USC 661-664)
- Coastal Zone Management Act (16 USC 1451-1464)
- Coastal Barrier Resources Act of 1982 (16 USC 3501-3509)
- National Environmental Policy Act of 1969 as amended (42 USC 44321 et seq.)
- The Trans-Alaska Pipeline Authorization Act of 1973 (43 U.S.C. § 1652)
- National Historic Preservation Act of 1966 as amended (16 USC 470)
- Archaeological Protection Act of 1979 (16 USC 470)

1.5.3 Federal and State Permits Needed to Implement the Proposed Action

Work during all phases of the proposed action will be coordinated with the Alaska Department of Environmental Conservation (ADEC) industrial wastewater program staff and other agencies as required to ensure APSC remains in compliance with applicable regulatory and permitting requirements. BLM expects APSC to remain in compliance with all State and Federal regulations governing the BWTF during all phases of the proposed projects. The following is a list of permits and approvals required from state and federal agencies related to different components of the proposed action:

- Federal NPDES Permit – 40 CFR 122 requires the U.S. Environmental Protection Agency (EPA) to issue a National Pollutant Discharge Elimination System (NPDES) permits for certain activities that disturb minimum surface areas of ground (storm water construction) or result in discharges to waters of the United States.
- Federal Notice to Proceed (NTP) – Stipulation 1.7 of the Renewal of the Federal Agreement and Grant of Right-of-Way for TAPS requires the BLM to grant a Notice to Proceed when the BLM Authorized Officer deems it necessary when projects involve construction or changes to the TAPS Design Basis.
- Federal Electrical Requirements - 29 CFR 1910 Sub 3, requires compliance with OSHA Electrical Requirements and NFPA-70, the National Electric Code, Appendix E, when modifying electrical components at the VMT.
- Federal Performance Standards for Tanks – 40 CFR 60, subpart kb requires compliance with New Source Performance Standards (NSPS) when modifying tank systems.
- State Water Quality Certification – Alaska State Statute 18 AAC 70, Water Quality Standards requires the ADEC to review EPA's NPDES permit and provide EPA with a preliminary 401 Certification of Reasonable Assurance for the NPDES permit to ensure State waters are protected. The State certification process incorporates State standards and site specific requirements.
- State Wastewater Disposal – Alaska State Statute 18 AAC 72, Wastewater Disposal requires ADEC to permit wastewater disposal at the VMT.
- State Air Quality Permit – ADEC has primacy for issuance of air quality permits for certain activities that emit minimum levels of criteria air pollutants.
- State ACMP Consistency Determination – Alaska Department of Natural Resources (ADNR) issues Consistency Determinations when projects are in conformance with the Alaska Coastal Management Plan (ACMP). EPA determined that the water discharge authorized by the current NPDES permit was consistent with local and state Coastal Management Plans. ADNR considers BLM's required Notice to Proceed process as a federal license or permit according to 15 CFR 930.51(a). When the state reviews a federal license or permit for consistency under the ACMP, it must be listed under 15 CFR 930.53 and 11 AAC 110.400(b). ADNR determined the proposed action is not subject to a consistency review under the ACMP.
- State Oil Discharge Prevention and Contingency Plan – Alaska State Statute 18 AAC 75 requires ADEC to review and approve oil spill contingency plans for marine terminals.

2.0 PROPOSED ACTION AND ALTERNATIVES

The TAPS FEIS (BLM 2002a) contains a thorough description of the Ballast Water Treatment Facility (BWTF) at the VMT and the environmental impacts of operations and maintenance of the facility in its current configuration. This chapter describes the No Action Alternative (continuation of operating existing Ballast Water Treatment Facility) and the Proposed Action of modifying the system components to accommodate less ballast water flow and improve the safety and efficient of the wastewater treatment system.

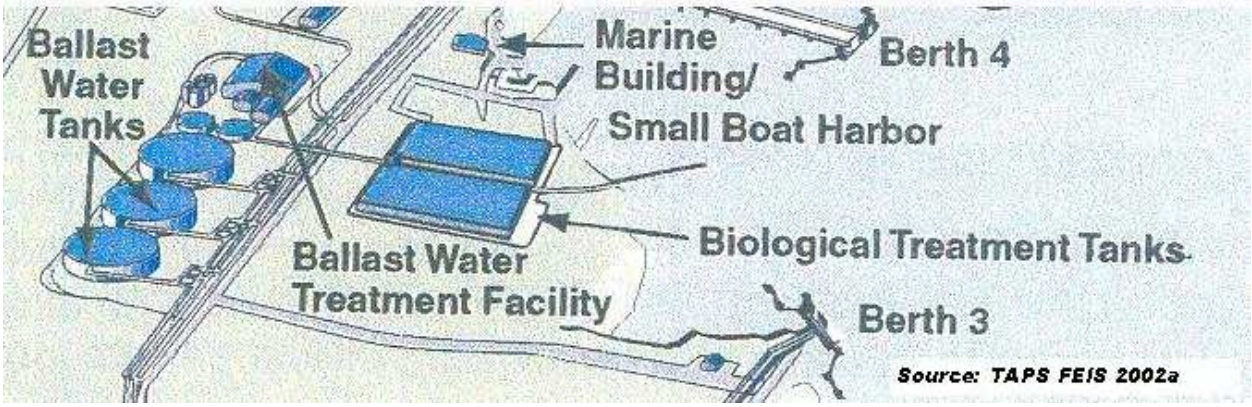
2.1 NO ACTION ALTERNATIVE

The no action alternative to the proposed BWTF modification would consist of continued operation of the BWTF in its current configuration. Less ballast water flowing through the three BWTF units would continue to decrease the efficiency of the overall wastewater treatment system since it was originally designed for a much higher volume of flow. Declining BWTF influent will eventually result in the inability for the BWTF to process ballast water and possible permit violations in its current configuration. Declining ballast water flow rates would present sporadic starvation events in the tertiary biological treatment process by disrupting the aerobic microbial consumption of BTEX. This could potentially lead to an increase in fugitive air emissions and affect BTEX concentration in water discharge to Port Valdez. Not taking measures to reduce flammability in the 80s and 90s tanks would present a continued safety risk of an explosive atmospheric tank environment.

2.2 DESCRIPTION OF THE EXISTING BALLAST WATER TREATMENT FACILITY

Background. TAPS consists of an 800-mile crude oil pipeline designed to transport crude oil from the North Slope of Alaska to the VMT, which provides facilities for storage of crude oil and for loading crude oil onto marine tankers for shipment to various markets. The VMT occupies approximately 1,000 acres on land owned by the TAPS Owners on the southern shore of Port Valdez, at the northeastern end of Prince William Sound. The VMT, with four tanker loading berths and a working storage capacity of 8.78 million barrels (bbl) of crude oil, is designed to allow production on the North Slope to continue un-impacted by delays in the marine transportation system (BLM 2004a).

Figure 2-1 Diagram of the Ballast Water Treatment Facility at the VMT



Overview of System Process. The BWTF system has two purposes, 1) to recover crude oil from the ballast water offloaded from marine tankers, and 2) separate the oil and treat the seawater for return to the sea. The BWTF water treatment system is a three-step process of gravity separation, dissolved air flotation, and biological treatment. An additional back-up process contains an on and off air stripper system to further decrease BTEX if necessary. Crude oil recovered from the ballast water is mixed with the pipeline oil supply and loaded as cargo onto marine tankers for transport to market. Oily ballast water from incoming tankers is piped to the BWTF for treatment before it is discharged into Port Valdez in accordance with state and federal water discharge permits (TAPS Owners 2001).

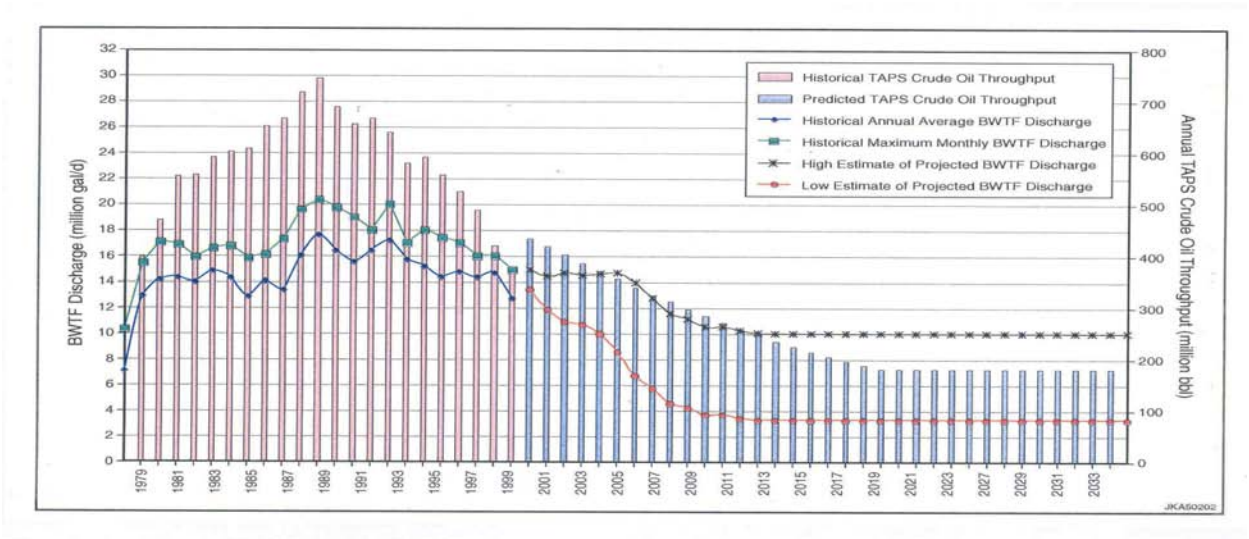
The ballast water carried in the tanker's empty oil tanks mixes with oil residues remaining from crude oil previously carried in the ship's tanks. These residues contain hydrocarbons that must be removed from the water before it can be discharged into Port Valdez (RCAC 2006a). The BWTF system treats dirty ballast water containing hydrocarbons to remove them with a three-step oil and water separation and treatment process before discharging the water into the ocean. An average water treatment cycle takes about 21 hours and consists of gravity separation, dissolved air flotation, and biological treatment. An on and off air stripper system is used as a fourth back-up treatment on rare occasions when abnormal events occur that require a further reduction in the BTEX concentration prior to discharge.

Wastewater Processing. Although the facility is primarily designed to treat ballast water from incoming tankers, it also processes wastewater from a variety of waste streams collected at the VMT, such as water from oily sumps, oily wastewaters, and the Industrial Wastewater Sewer System. Facilities that discharge to the Industrial Wastewater Sewer System include tank farm containment areas, power vapor plant areas, fuel storage and loading areas, emergency response building area, sludge tank area, transformer dike areas, berths, fire pump buildings, west metering facilities, and the maintenance/warehouse area. Vessel bilge waters and oil spill waters are also put in the system. Vessel discharges of ballast and bilge water are by far the largest volume wastewater stream at the VMT and account for approximately 93 percent of the total wastewater volume processed by the Ballast Water Treatment Facility (TAPS Owners 2001).

Ballast Flow. The Ballast Water Treatment Facility has a capacity to treat a monthly average of 21 million gallons per day (mgd) and a daily maximum of 30 mgd. In 2003, the monthly average Ballast Water Treatment Facility effluent flow was 10.2 mgd (OASIS 2004). Currently it has dropped to 5 mgd (APSC 2006b). Treated ballast water is discharged from the Fan/Meter Building into Port Valdez through a submerged 48-inch-diameter outfall line designed to maximize the mixing of effluents with Port Valdez waters. All three BWTF system units are controlled by a Supervisory Control and Data Acquisition (SCADA) computer system in a central control room at the west end of the facility complex.

Effects of Marine Tanker Fleet Changes on the BWTF. The BWTF system operates year round with seasonal differences in system loading and water temperatures. Crude oil marine tankers arriving at the VMT routinely contain ballast water for ship stability. The latest generation of tankers normally keeps the seawater ballast segregated from the oil tanks, but complete segregation is not always possible for safety reasons. In addition, some of the older tankers do not have the ability to segregate the ballast. In those cases the dirty ballast must be processed at the BWTF (APSC 2006b).

Figure 2-2 Historical and Projected Flows from the Ballast Water Treatment Facility Discharge and TAPS Throughput (Source: TAPS FEIS 2002a)



APSC and the TAPS owners have evaluated possible modifications to the BWTF as a consequence of changes in the shipping fleet. As a result of the retirement of single-hull tankers mandated by the Oil Pollution Act of 1990 (OPA 90), new double-hull tankers have gradually entered the marine tanker fleet servicing the VMT. A common feature of the new tankers is the segregated ballast holds that allow the vessels to bring segregated clean ballast water on the return trip to Prince William Sound and discharge it directly from the tanker to the ocean. As more tankers exchange their ballast at sea, there will be less dirty ballast water needing onshore treatment for discharge into Port Valdez. The changes to BWTF operations are partly in response to the tanker fleet modifications that have and will continue to reduce most of the ballast water flows to the BWTF over the next several years. Changes in air emissions regulations and problems with floating skimmers used for oil recovery led to proposed changes to the 80s and 90s tanks. These changes are not expected to result in adverse environmental impacts.

Work at the BWTF focuses on skimming recovered crude oil in the tanks and reducing hydrocarbon emissions, and modifying the water treatment system with one that is safer and right-sized for future volumes. APSC intends to put safety measures in place until all of the planned BWTF modifications are completed between 2006 and 2010 (APSC 2006b).

2.2.1 Primary Water Treatment - 80s and 90s Tanks

Oily ballast water is unloaded from marine tankers by loading arms attached to the berths. The berth loading arms connect to pipes that send oily water to the first unit of the BWTF, containing three gravity separation or settling tanks, called the 90s tanks. The ballast water enters the tank, where it takes an average of four hours for the settling and separation process to occur. Each of the 90s tanks has a fixed cone roof design and a holding capacity of 430,000 barrels. The tanks have a height of 53.5 ft. and a diameter of 250 ft. They reside in a containment area with an asphalt basal liner and synthetically lined sidewalls (SLR 2005). The crude floats to the surface while the water sinks to the bottom. APSC uses oil skimmers that float on the surface of the 90s tanks to remove the separated crude. Skimmer brushes gather the crude where it is piped to one of two recovered crude oil storage tanks called 80s tanks. The recovered crude is then piped to storage or returned to the marine tankers as cargo. The separated water is

piped to the secondary treatment unit where it undergoes a dissolved air flotation process. Flammable vapors occur in the space between the oil/water surface and the roof of the tanks because no vapor control systems are in place, and the tanks are frequently in the flammable range.

2.2.2 Secondary Water Treatment - Dissolved Air Flotation

The Dissolved Air Flotation (DAF) system is the second step of recovering more grease and crude oil from the ballast water. Water received from the primary treatment 90s tanks flows through six dissolved air flotation cells to remove residual oil by a pressurized air and water dissolving process. Air and polymers (long chain molecules) are injected and dissolved in the ballast water under pressure as it is piped to the DAF cells. Release of the pressure as the water enters the DAF cells causes the formation of tiny bubbles that accelerate the process of separating the remaining suspended oil droplets from the water. The polymer binds the oil together, while tiny air bubbles float the polymerized oil to the surface. Oil recovered from the DAF cells is piped to the recovered crude oil 80s tanks, and then returned as cargo to the tankers (RCAC 2006a). The treated water is then piped to the tertiary treatment unit containing the biological treatment tanks.

2.2.3 Tertiary Treatment - Biological Treatment Tanks

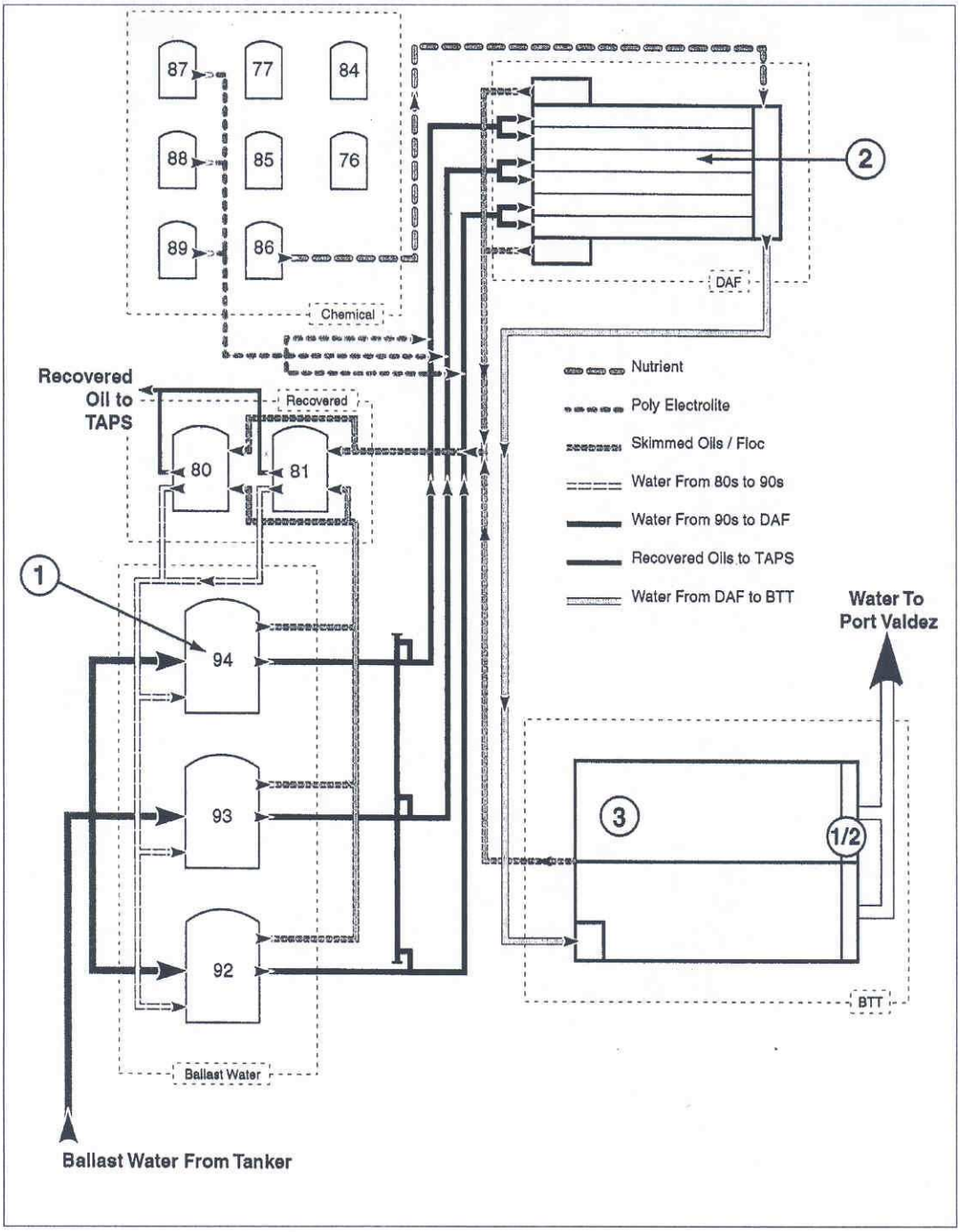
The biological water treatment process is the third step where more hydrocarbons are removed before the ballast water is discharged to Port Valdez in accordance with permit requirements.

When the BWTF was originally built in 1976, as required by Section 23B of the Federal Grant of ROW, the BWTF used three 18,000,000 gallon steel primary gravity separator tanks and six 240,000 gallon secondary dissolved air flotation cells to remove oil before discharging the saline ballast water to Port Valdez under the terms of an EPA-issued NPDES permit. The waste discharge limitations imposed on the BWTF in the NPDES permit were later revised to include a limit on BTEX. In response, two aerated impound basins were replaced in 1990 by a permanent biological treatment facility consisting of two 5,500,000 gallon concrete aeration tanks equipped with a submerged jet aeration and mixing system (BLM 2002a).

This tertiary treatment unit consists of two large, concrete rectangular open-air tanks where the biological water treatment process occurs. The goal of the biological treatment is to remove the BTEX before the water is discharged into Port Valdez. The biological treatment tanks (BTT) contain aerobic microbial bacteria that consume most of the remaining BTEX-dissolved aromatic hydrocarbons, converting them to less harmful compounds. Each tank capacity can hold 5.8 million gallons of water. Under normal, routine conditions, the BTT operates efficiently to remove the BTEX. However, lower ballast water flow rates cause lower temperatures in the biological treatment tanks which, in turn cause starvation of the aerobic bacteria that consumes the BTEX. These starvation events cause the microbial organisms to die and the non-consumption of BTEX, upsetting the balance of the BTT system. Modifying the biodegradation system is necessary to improve and maintain the biological process so it operates efficiently to reduce BTEX levels. After the water undergoes a complete biological treatment cycle and BTEX levels are reduced in accordance with NPDES permit requirements, it is then discharged 700 ft. offshore into Port Valdez, at maximum depth of 300 ft (APSC 2006d).

During routine operation of the BWTF, the biological treatment component operates efficiently, and the effluent is well within permit limits. Fluctuating conditions in the biological treatment, caused by interruptions in ballast water flow, are problematic, however and require special management. Efficiency

Figure 2-3 Schematic Diagram of the VMT Ballast Water Treatment Facility (Source: Imperial Oil Research 2005)



of the biological processing requires a nearly constant supply of oily, relatively warm input water. Disruptions to the flow occur when severe winter storms temporarily shut down tanker loading operations. Such interruptions may increase in the future as oil throughput decreases or ballast water volume is reduced for other reasons (JPO 2000b).

EPA and ADEC both require APSC to continuously monitor the dissolved oxygen levels in the BTT system. APSC is also required to monitor BTT temperature at the effluent sampling location and analytical results are made available to EPA or ADEC as requested (USEPA 2004).

2.2.4 Air Stripper Process

On rare occasions after BTT processing, BTEX levels are sometimes not low enough to meet NPDES permit requirements for discharge into Port Valdez (APSC stated the last occurrence was in 2004). For additional reliability, a fourth unit downstream of the BTT aeration tanks contains an on and off air stripper system to further treat the effluent from the BTT. The air stripper process is essentially a back-up treatment when the BTT undergoes an upset or a starvation event. The air strippers remove occasional spikes of BTEX when the BTT effluent requires additional treatment to ensure that BTEX concentration in the final discharge is maintained within allowable discharge limits in the NPDES permit (Imperial Oil Research 2005).

2.2.5 Effluent Discharge

Ballast water from tankers is treated in the BWTF and discharged under an NPDES permit into the waters of Port Valdez. Treated water is discharged through a series of ports in a 63-m-long diffuser positioned at a depth of 62 to 82 m. Low concentrations of polycyclic aromatic hydrocarbons are present in untreated ballast water but have rarely been found above detection limits in the treated effluent. The soluble BTEX pollutants are the ones found in the highest concentrations in the BWTF effluent (BLM 2002b).

APSC is authorized to discharge the treated BWTF effluent into Port Valdez under the current NPDES Permit No. AK-0002324-8, effective August 1, 2004. The NPDES permit authorizes two outfalls and expires July 31, 2009. Outfall 001 applies to the BWTF. During the effective period of the current permit relative to the BWTF, APSC is authorized to discharge treated ballast and bilge water, storm water, and other wastewater from Outfall 001. The permit does not authorize the discharge of any waste streams, including spills and other unintentional or non-routine discharges of pollutants not consistent with the operation of the VMT (EPA June 2004). The ADEC also issues a mixing zone permit for treated ballast water discharge. ADEC requires the discharge to meet established criteria of the mixing zone as defined in the NPDES Permit. Both permits must be renewed every five years (RCAC 2006b).

The NPDES permit limits the BWTF discharge effluent for BTEX to release no more than 0.3 million gallons per liter (mg/l) for a monthly average, and no more than 1.0 mg/l as a daily maximum discharge. BTEX concentration levels are measured by a gas chromatograph, or BTEX analyzer prior to entry into Port Valdez. The NPDES permit requires testing and monitoring of whole effluent toxicity on ballast water effluent and requires APSC to follow specific procedures for reviewing incoming ballast water to determine whether it requires treatment, influent sampling per ADEC requirements, and the handling of sludge. Environmental monitoring is also required at several designated sampling stations in Port Valdez (USEPA 2004).

The BWTF removes most of the floating and dispersed oil; however, some of the more soluble constituents remain in the effluent. These pollutants consist primarily of compounds known as hydrocarbons, which are the predominant constituents of crude oil. Hydrocarbons consist of groups of compounds that can be described as straight-chained or branched (including the alkanes and alkenes) cyclic or aromatic. Those with a single ring include benzene, toluene, ethylbenzene, and xylene (BTEX). They are among the most acutely toxic components of crude oil. They are also among the most water soluble aromatic hydrocarbons and therefore comprise over 90% of the aromatic hydrocarbons in Alyeska's effluent. Aromatic hydrocarbons containing multiple rings are called polynuclear or polycyclic aromatic hydrocarbons (PAHs). They are much less water soluble than the BTEX compounds and are present in much lower concentrations in the effluent (USEPA 2003).

An evaluation of human health risk associated with the BWTF discharge found that the only likely exposure pathway for humans is through consumption of fish or shellfish from affected waters. The propensity of metal and volatile organic constituents of the effluent to bioaccumulate was considered in the risk assessment. Human subsistence consumption levels of 180 g/d of fish and 20 g/d of shellfish were assumed. On this basis, the evaluation concluded that human carcinogenic risk from consumption of fish and shellfish does not exceed 1 in 100,000 and that it does not exceed thresholds for mutagenic or teratogenic risks (APSC 1995). This risk is within the range used by the EPA as an indicator of increased cancer risks generally not requiring mitigating actions (USEPA 1990).

2.2.6 Influent

Crude oil arriving at the Valdez Marine Terminal may contain minor quantities of water. Over time, the water settles to the bottom of the large crude oil storage tanks due to gravity. This water is routinely drawn from the storage tanks in the VMT tank farms and routed to the BWTF for treatment. Other water sources contaminated with small concentrations of oil are pumped to the BWTF as part of the terminal's industrial wastewater sewer system (spills) oily water, contaminated storm water, or process wastewater (RCAC 2006a). Storm water runoff generated within the tank farms is discharged to the Industrial Wastewater Sewer System and also treated in the Ballast Water Treatment Facility.

Figure 2-4 Aerial Photograph of the Valdez Marine Terminal

2.3 DESCRIPTION OF RELATED FACILITIES

2.3.1 Vapor Control System

The purpose of the vapor control system for the VMT is to capture combustible vapors and control the atmospheric emissions inside the crude oil storage tanks. The primary objective is to reduce the flammability inside the tanks. The vapor control system provides inert, or oxygen-deficient blanket gas to the crude oil storage tanks, thus maintaining a safe operating condition by preventing the hydrocarbon vapor in the storage tanks from becoming combustible. Since a fire cannot sustain itself without oxygen, limiting the amount of oxygen in the tanks is an effective fire prevention measure. An efficient vapor control system maintains an inert vapor space environment inside the crude oil storage tanks (BLM 2002a). The VMT Power Vapor Plant facility generates the inert blanket gas for the crude oil storage tanks and it also incinerates captured combustible vapors from all VMT tanks and marine tankers in one of three incinerators. Part of the proposed action is to connect the BWTF tanks to the main VMT vapor control system to reduce vapor space flammability. The vapor is either used for power generation or it is incinerated (BLM 2002a).

2.3.2 Tanker Berths and Ballast Unloading

The VMT has four tanker loading berths with associated crude oil piping (Figure 2-1). Berth 1, which is a floating berth with a capacity of up to 80,000 bbl per hour, is not being used and the piping has been drained and isolated. The other three berths (3, 4, and 5; Berth 2 was never built) are fixed berths with up to 110,000 bbl per hour loading capacity each. Berth 3 is no longer being used for crude and ballast transfers. Berths 4 and 5 are the primary loading berths, and are connected to the tanker vapor control system. Vapors recovered from tankers are piped to the Power/Vapor Plant for incineration. Controlled loading on Berths 4 and 5 is regulated by EPA under the 40 CFR 63, Subpart Y, Maximum Achievable Control Technology Standards for Marine Vessel Tank Loading Operations. The same loading arm used for loading crude oil is used to unload ballast water (BLM 2002a).

2.3.3 Fire Protection Systems

The Alaska State Fire Marshall requires APSC to have a fire protection plan for the tanks in the BWTF. The VMT is equipped with fire detection and suppression systems, including the firewater protection system, portable fire extinguishers, water and foam systems, Halon, and carbon dioxide (CO_2). The VMT has fire trucks and tugboats equipped with firefighting equipment to supplement the firewater protection system. The 80s and 90s tanks are protected with foam equipment that can quickly dispense foam on the oil surface inside the tanks (BLM 2004).

2.4 PROPOSED ACTION: MODIFICATION OF THE BWTF

APSC is proposing to modify the BWTF to accommodate throughput that has declined from 2 million barrels per day to less than 1 million barrels per day currently and is likely to decline further. The focus of the BWTF modification is to provide a permanent resolution to tank flammability, skimming recovered crude oil in tanks, reducing hydrocarbon emissions, and replacing the water treatment system with one that is safer and right-sized for future volumes. Administrative safety measures are currently in place until permanent solutions are implemented between 2006 and 2010 (APSC 2006b). See Appendix for a

comparison of the BWTF before and after modification. Figure 2-2 shows the existing BWTF on an aerial photograph.

The scope of work for the proposed action includes 1) modifications to the water treating portion of the Ballast Water Treatment System, and 2) modifying the recovered crude system to mitigate flammability in the tanks. Some work would be completed on all three systems, such as installation of salinity probes. APSC BWTF project time frame is as follows:

- 2006-2007 – BWTF Tank Flammable Vapor Mitigation, BTT and DAF downsize, piping, pumps, probes and analyzer installation. Connect 90s tanks to Vapor Control System, connect recovered crude piping to East Tank Farm Tanks 13 and 14; Remove Tanks 80 and 92 from service and place in standby mode.

- 2008 – Replace DAF system with two enclosed Induced Gas Flotation Systems (IGF).

- 2009 – Replace BTT biological system with enclosed chemical air stripper with carbon adsorption system.

2.4.1 Primary Water Treatment System - 80s and 90s Tanks

Ballast Water Storage 90s Tanks – Three ballast water storage tanks called the 90s tanks, are used for gravity separation of oil from water. They are fixed roof tanks, constructed in the 1970's to serve as settling tanks for ballast water offloaded from marine tankers and from the industrial wastewater sewer system. Oil skimmers float on the liquid surface of the tanks to remove crude for injection back into the TAPS crude oil system. APSC proposes to install and connect Tanks 93 and 94 to the VMT vapor control system, and remove Tank 92 from service and place it in a standby mode. Salinity probes will also be installed in the inlet and outlet of Tanks 93 and 94. This will provide salinity readings on the ballast water entering the tanks and on water exiting the tanks to the tertiary DAF cells system (APSC 2006b; APSC 2006c).

Recovered Crude Oil Storage 80s Tanks – Two recovered crude oil storage tanks, called the 80s Tanks, store recovered crude piped after oil and water separation from the 90s tanks. APSC proposes to mitigate a flammable atmosphere risk inside the recovered crude oil tanks by adding a temporary inert nitrogen gas blanket system for the short term; And for the long term, pipe will be installed to connect the 90s tanks directly to the main VMT storage tanks instead of piping recovered crude to the 80s tanks. The two 80s tanks would then be removed from service (APSC 2006b).

The existing pumps are oversized for the amount of water being separated in the recovered crude process. APSC plans to install a flow meter, flow valve and new piping to route water back to the 90s tanks. Piping is also being installed between the tertiary system biological treatment tanks (BTT) and the 90s tanks to route skim. Currently the skim from the BTT is being routed to the 80s tanks. It is being re-routed to the 90s tanks because APSC plans to eventually remove the 80s tanks from service. The original motor driven centrifugal pumps will recover water from Tank 80 and return it back to the 90s tanks. Each pump's capacity will be reduced to the range of 150-230 gpm and one pump will continue to spare the other. The pumps are not intended to be operated in parallel due to limitations of the Tank 80 nitrogen blanketing system (APSC 2006b).

Tank Flammability Mitigation – This proposal consists of re-designing the recovered crude oil transport system as a result of reduced ballast water influent. The general scope of the project consists of control system changes, piping changes, pump and motor additions and civil and structural modifications. Specific projects include installation of a recovered crude macerator, shipping pump and strainers; and installing a temporary nitrogen blanket system for Tank 80, until such time as the 80s tanks are removed from service. Installation of pipe to route 90s skim and DAF skim directly to the recovered crude pump suction and route hydrogen peroxide to the 90s tanks. APSC also plans to install an inert nitrogen gas blanket system in the tanks in the short term, and connect the tanks to the VMT Vapor Control System for the long term, which would better control hazardous air pollutant emissions (APSC 2006b; APSC 2006c).

2.4.2 Secondary Water Treatment System - Dissolved Air Flotation

Six Dissolved Air Flotation (DAF) cells use a pressurized dissolved air flotation process of oil suspended in the water sent from the primary treatment system. The existing DAF system is oversized for the amount of effluent currently being processed in the system. APSC proposes to remove two DAF cells from service to scale back to meet the reduced ballast water flow and less oil throughput in TAPS. APSC plans to replace the current DAF cell system with an enclosed Induced Gas Flotation (IGF) system that would contain current fugitive air emissions in a closed system. Specifically, APSC has proposed to:

- Place DAF cells 5 and 6 in standby. Skimmed oil is being rerouted through the DAF system to allow DAF Cells 5 and 6 to be removed from service and placed in a standby mode, and for the south DAF sump to be used for oily water disposal and treating.

- Modify the DAF cell oil skimmer collection system by installing piping to route BTT skim to the 90s tanks.

- Install new, lower capacity DAF sump scum pumps, an oil/water analyzer and oil/water diverter valves for the DAF effluent from the DAF sumps. The existing pumps currently return oil and water from the DAF sumps to Tank 80. Two new pumps will deliver water and oil from the DAF sumps to the 90s tanks and Tank 80. The oil and water in the sumps will separate layers with the oil on top. An oil/water analyzer will be installed in the discharge line to determine when water has been removed from the DAF sump and oil is being pumped. A flow meter and two diverter valves will also be installed. When the analyzer senses the discharge stream is mostly water, the diverter valves will route the water to the 90s tanks. When the analyzer is sensing a high oil percentage, the diverter valves will route the oil to the recovered crude tanks. The objective is to concentrate the water in the 90s tanks and the oil in Tank 80.

- Install a new BTEX analyzer, salinity and dissolved oxygen probes to monitor BTEX levels in the DAF outfall to the BTT tanks. To process the DAF effluent samples, the BTEX analyzer will use bottle hydrogen to make continuous samples from the DAF recycle pump discharge and drain into the DAF pump room sump (APSC 2006b).

2.4.3 Tertiary Water Treatment System - Biological Treatment Tanks

The tertiary water treatment system is a biodegradation process using aerobic bacteria to consume the BTEX. APSC uses two Biological Treatment Tanks (BTT) for aerobic microbial consumption of dissolved hydrocarbons remaining in the water from the secondary system. APSC proposes to remove one water treatment tank from service to accommodate less ballast water flow and completely enclose the

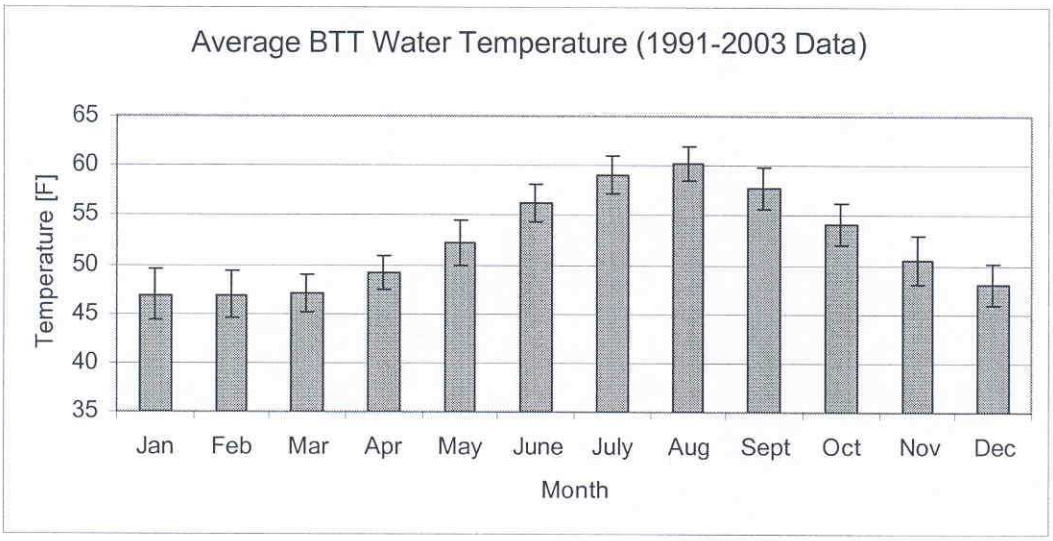
BTT splitter box. In the longer term, APSC plans to replace the Biological Treatment Tank system with an enclosed chemical air stripper-carbon absorption process that would contain current fugitive air emissions. APSC has taken steps to reduce hazardous air pollutant emissions in their DAF processing by raising water levels in the DAF cell weir system to reduce turbulence. The current proposed action also includes:

- Replacing the remaining BTT sump pump with a new higher capacity pump. Lower ballast water flow rates cause lower temperatures that kill microbial bacteria. This limits the effectiveness of the biological process of the biological treatment tanks. Replacing the existing sump pump with a new continuous recycle pump will resolve this situation by mitigating the microbial starvation events in the tanks. The new recycle pump will facilitate recycling effluent water to improve the overall effectiveness of the biological treatment process. The pump will recycle BTT effluent water back to the 90s tanks during upset conditions and will better drain the tanks for required cleaning and maintenance.

- BTT skim is currently routed to Tank 80. However the skim contains mostly water. Piping will be installed to reroute it to the 90s tanks. This will keep with the interim objective of routing water to the 90s tanks and oil to Tank 80.

- New dissolved oxygen sensors will also be installed in strategic locations in the BTTs to monitor the dissolved oxygen content in the tanks (APSC 2006b).

Figure 2-5 Monthly Average of Daily BWTF Temperatures (Source Imperial Oil Research Fate Study 2005)



2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

BLM evaluated two alternatives in this Environmental Assessment. They consist of 1) the proposed action of the modification of the Ballast Water Treatment Facility at the Valdez Marine Terminal as described and, 2) no action.

In the process of analyzing a full range of actions, BLM considered other alternatives consisting of modifying one or two units of the overall BWTF system. However analyzing other alternatives was not feasible because the Ballast Water Treatment system is an interconnected system, and when a major system change is made to one unit, the other units may undergo negative affects and may not operate efficiently. For this reason BLM did not analyze other alternatives, but instead considered the proposed action in its entirety.

3.0 AFFECTED ENVIRONMENT

The following sections include information regarding the environment potentially affected by the proposed BWTF modification. In many instances, sections of the TAPS FEIS (BLM 2002a) remain fully applicable to the proposed action and are incorporated in this EA by reference.

3.1 GEOLOGY AND SOILS

The VMT is located on north-facing slopes of the Chugach Mountains. The region is underlain by late-Cretaceous meta-sedimentary rocks of the Valdez Group. These rocks consist of steeply dipping and thickly interbedded meta-graywacke and phyllitic argillite, with minor amounts of greenstone, arkosic sandstone, and conglomerate (Moffitt 1954). Due to glaciation, glacial till mantles the bedrock over most of the VMT. The thickness of this till, an unsorted mixture of clay to boulder-sized material, varies from 1 to 120 feet. At the upper terminal, steeper areas typically show bedrock outcrops without significant soil cover, while on less steep slopes, the soil layer is typically thin and overlays weathered bedrock. Engineered fill material was provided for construction of many VMT facilities, and soil conditions can be variable. Saturated water table conditions are generally encountered in localized man-made or natural depressions in the bedrock surface. If the bedrock surface is sloped sufficiently, groundwater may not be encountered above the bedrock surface (BLM 2004a).

3.2 MARINE WATER RESOURCES

The TAPS FEIS Section 3.9, Physical Marine Environment, describes the location, description, hydrography, and circulation of Port Valdez. Section 3.10, Marine Water Chemistry describes the chemical composition and nutrients of the marine waters of Port Valdez (BLM 2002a). These descriptions remain fully applicable to the proposed action and are incorporated in this EA by reference. Port Valdez is a narrow, deep (755 to 820 feet), glaciated, flat-bottomed fjord with steep rocky shores in the Chugach Mountains. The Lowe and Robe Rivers, Mineral Creek, and the Valdez Glacier Stream empty into the head of Port Valdez and have formed extensive outwash plains on the northern shore. Large amounts of fine sediments are deposited in the fjord from local streams and rivers. Hydrography and circulation in Port Valdez depend on tides, precipitation, freshwater inflows, winds, air temperatures, and mixing with the waters of Prince William Sound. Between May and October when freshwater runoff is high, salinity and temperature are generally layered. Dissolved oxygen is high all year, indicating complete replenishment. Other parameters vary with season (BLM 2004a).

3.2.1 Existing Water Quality

Hydrocarbons present in the waters of Port Valdez come from a number of sources, including natural background from oil seeps, oily shales, and coal; historic TAPS operations and related facilities; past anthropogenic sources, such as spills and industrial operations; ongoing TAPS operations and related activities; and ongoing human activities not related to TAPS, such as boating, fishing, and atmospheric fallout (BLM 2004a).

In a study conducted for the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC), petroleum hydrocarbons associated with the Ballast Water Treatment Facility (BWTF) effluent were found in Port Valdez outside the mixing zone over a wide area at concentrations in the low part-per-

trillion range. Plastic membrane devices and mussel tissues accumulated polycyclic aromatic hydrocarbons (PAHs) in the high part-per-billion to low part-per-million range. These low concentrations have not been associated with adverse effects in other studies where the primary route of exposure was to dissolved hydrocarbons present in true solution (RCAC 2002). The University of Alaska Fairbanks, Institute of Marine Science has conducted extensive environmental monitoring studies in Port Valdez under the terminal's National Pollutant Discharge Elimination System (NPDES) Permit AK-002324-8 (Feder and Shaw 1988, 1990-2000; Feder and Blanchard 1992-1995; Feder et al. 2001, 2002). A June 2001 Environmental Study Report presented an analysis of both current and historical data collected by the IMS (Feder et al. 2002). The EPA Fact Sheet and Technical Evaluation for reissuance of NPDES Permit AK-002324-8 summarized the results of the 2001 report and other studies in Port Valdez; selected information from the fact sheet (USEPA 2004) is presented below:

- Fluctuations in the number of taxa, biomass, and abundance of benthic infauna have been observed in Port Valdez but the causes of the fluctuations are uncertain. It has been speculated that the fluctuations may be the function of changes in the organic carbon levels and unrelated to the VMT.

- Statistical analysis of the associations between benthic infauna community structure and hydrocarbon concentrations in Port Valdez sediments have demonstrated that effluent from the BWTF does not negatively affect benthic organisms in the Deep Basin and rarely influences Shallow-Shelf stations.

- Hydrocarbon concentrations in Port Valdez sediments have generally shown steady or declining values in the 1990s. Concentrations tended to decline until about 1993 and fluctuate or remain low thereafter. Hydrocarbon concentrations are lower by a factor of ten than the marine sediment quality standard developed by the State of Washington (WAC 1991); this is true even for the station closest to the outfall.

- Acute sediment tests conducted in the early 1990s using the marine amphipod *Rhepoxinius absonius* or alternative species indicated that Port Valdez sediments do not cause statistically significant mortality relative to the Heather Bay reference sediments (Karle et al. 1994).

- Tissue hydrocarbon monitoring was conducted annually using the mussel *Mytilus edulis* collected at stations in Port Valdez between 1989 and 1995. Feder and Shaw (1996) reported that the types and concentrations of hydrocarbons detected in Port Valdez mussels indicated that biogenic rather than petroleum hydrocarbons are the major contributor (BLM 2004a).

3.2.2 Wastewater Discharge to Port Valdez

Discharge Authorizations. Alyeska has been discharging treated ballast water into Port Valdez under an NPDES permit since December 30, 1974 (EPA 2005). Two outfalls from the VMT discharge into Port Valdez and are covered by NPDES permit AK-002324-8. The EPA renewed the current NPDES permit August 1, 2004 and modified the permit effective March 1, 2005, with an expiration date of July 31, 2009. The two outfalls are from the BWTF (Outfall 001) and the VMT sanitary water treatment plant (Outfall 2). The NPDES permit establishes a mixing zone and effluent monitoring requirements. During the effective period of the current permit, APSC is authorized to discharge treated ballast and bilge water, storm water, and other wastewater from Outfall 001. Effluent limitations for the BWTF outfall are established for flow rate, total suspended solids. Effluent limitations are shown in Table 3-5 (EPA 2005).

EPA reviewed the NPDES renewal application in 2003, including APSC's monthly and annual monitoring reports required by the old permit. EPA stated the effluent limitations, monitoring requirements and other conditions of the permit were deemed to be sufficient (EPA 2005).

Also, in accordance with Section 401 of the Clean Water Act and provisions of the Alaska Water Quality Standards (18 AAC 70), the Department of Environmental Conservation issued a Certificate of Reasonable Assurance for the current NPDES permit for discharges of wastewater from the Valdez Marine Terminal, including the Ballast Water Treatment Facility. The NPDES permit certification covers the disposal of treated ballast water from the BWTF, treated sanitary wastewater, discharges from berth construction and maintenance activities, jockey pump, firewater pump testing and maintenance, berth fire foam system testing and hydrant testing and maintenance from the VMT into surface waters and the Port of Valdez, Alaska. The permit certification expires July 31, 2009 (ADEC 2005).

Discharge System. The treated ballast water and other operational wastes are discharged through a 200 ft. long 48-inch diameter diffuser connected to the end of a 1,100 ft. long outfall pipe, called Outfall 001. The diffuser lies along a slope, and the shallow end is located at a water depth of 200 ft. The offshore end is at a depth of 270 ft. Port Valdez is classified by the Alaska Water Quality Standards as Classes IIA(I)(ii)(iii), C and D. The waters are designated for all uses, i.e., aquaculture, seafood processing, industrial water supply, water contact, secondary recreation, growth and propagation of fish, shellfish, and aquatic life (EPA 2005).

Discharge Composition. APSC reported to EPA the following pollutants were present in the BWTF discharge: Conventional pollutants such as biochemical oxygen demand, oil and grease, total suspended solids and ph; Toxic pollutants such as cadmium, chromium, copper, lead, nickel, selenium, zinc, phenols, benzene, ethyl-benzene, toluene, and xylene. Non-conventional pollutants include chemical oxygen demand, total organic carbon, temperature, ammonia, nitrate-nitrite, total organic nitrogen, total phosphorus, sulfate, sulfide, surfactants, and iron. EPA evaluated the concentrations of these pollutants relative to the levels allowed under federal regulations and the Alaska Water Quality Standards. EPA'S Technical Evaluation indicated APSC has an excellent record of compliance with the terms of the existing permit, and that compliance with the BTEX, flow, pH and TSS limits for Outfall 001 has been absolute since the reissuance of the NPDES permit in 1997 (EPA 2005).

Table 3-1 Effluent Limitations from NPDES Permit No. AK-002324-8. Discharges from Outfall 001 are limited as specified in Table 1 of the permit (Source: NPDES Permit No. AK-002324-8, March 1, 2005)

Table 1: BWT Discharge (Outfall 001) Effluent Limitations			
Parameter	Daily Maximum	Monthly Average	Units
BETX[1]	1.0	0.3	mg/l
Total Suspended Solids, TSS (except for the 24-hour composite samples collected on the day of and the day after stripper activation)	40	25[2]	mg/l
Total Suspended Solids, TSS (on the day of and the day after stripper activation)	170	NA	mg/l
Flow[3]	30	21	mgd
pH[4]	Between 6.0 - 8.5 SU at all times		Standard Units

Notes:
1/ BETX is the sum of the measured concentrations of benzene, ethylbenzene, toluene, and the xylene isomers. Each aforementioned component shall be separately quantified using test procedures approved under 40 C.F.R. Part 136, and the total reported as BETX on the DMR.
2/ TSS measured on the day of and the day after stripper activation shall not be included in the calculation of the monthly average.
3/ Flow shall be measured using the existing continuous flow meter or other methods of similar accuracy (at least ± 5%), as approved in advance by EPA, in consultation with ADEC.
4/ Indicates the range of permitted values. When pH is continuously monitored, excursions between 5.0 and 6.0, or 8.5 and 9.5 shall not be considered violations provided no single excursion exceeds 60 minutes in length and total excursions do not exceed 7 hours and 26 minutes per month. Any excursions below 5.0 and above 9.5 are violations. The instantaneous maximum and minimum pH shall be reported monthly.

3.3 ATMOSPHERIC ENVIRONMENT

3.3.1 Existing Air Quality

The TAPS FEIS Section 3.13, Air Quality and Section 3.4.2 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal describe the existing emissions, criteria pollutants, and hazardous air pollutants at the Valdez Marine Terminal. This description remains fully applicable to the proposed action and is incorporated in this EA by reference. The VMT is the largest contributor of criteria pollutant[3] and volatile organic compound (VOC) emissions to the Valdez airshed. Hazardous air pollutants (HAPs) are included in the VOC emissions and include sources such as combustion of the displacement vapors from the vapor recovery system in the power boilers, incineration of excess vapors in the vapor incinerators, releases from crude oil storage tanks, releases from the BWTF, exhausts from combustion equipment, and leaks from various pieces of equipment. The largest HAP emitter among all TAPS facilities is the VMT (123 tons/year). The single HAP with the largest potential emission rate is benzene, followed by hexane and toluene (BLM 2004a).

3.3.2 Hazardous Air Pollutant Emissions

The BWTF contains concentrations of benzene, toluene, ethyl-benzene, and xylene (BTEX), which are all discrete polar organic compounds routinely present in crude oil as well as refined petroleum products. Collectively, these four compounds make up what is referred to as the BTEX fraction of the petroleum substance. The BTEX fraction normally exhibits the greatest mobility in the environment. Consequently, environmental media are often sampled for the presence of BTEX as an indication of the extent to which spilled petroleum has migrated from a spill site. Potential carcinogenic and other health effects from exposures to BTEX compounds are described in the TAPS FEIS Sections 3.17.2.4 and 4.3.13.2.2 (BLM 2002a).

Alyeska commissioned a Ballast Water Treatment BTEX Fate Study (April 2005) to establish the fate of BTEX entering the BWTF dissolved air flotation system that removes residual oil from the water. This study updated information from a previous study done ten years ago and included field sampling of BTEX air emissions, liquid phase BTEX concentrations, and biological BTEX consumption in the biological treatment tanks. The study results were used to develop a BTEX fate model, which was used to estimate the bio-oxidation and annual air emissions at the BWTF.

3.4 NOISE

Background noise in the Valdez area is generally quite low, with road and aircraft the most significant sources. The VMT is the only other major noise source with the highest levels emanating from the power/vapor operations; VMT noise is generally not audible beyond the site boundary. Noise from the BWTF is completely enclosed inside the BWTF control building with pumps and motors generating most of the noise. The open DAF cell and BTT areas do not generate high noise levels. There are no residences or other noise-sensitive receptors within 2 miles of the VMT site; the City of Valdez is the nearest

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[3] National Ambient Air Quality Standards are established by EPA for criteria pollutants for the purpose of protecting public health and welfare as required by the Clean Air Act.

residential community, approximately 4 miles to the north across Port Valdez. There are no barriers to affect noise transmission between the VMT and the community. There are no adopted regulations governing noise in the VMT site area (BLM 2004a).

3.5 TERRESTRIAL VEGETATION, WETLANDS, AND RIPARIAN ZONES

Section 3.18.3 of the TAPS FEIS and Section 3.6 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal provides a comprehensive identification of terrestrial vegetation and wetlands in the area of Prince William Sound, including Port Valdez and the proposed action area. This description remains fully applicable to the proposed action and is incorporated in this EA by reference. During initial construction, much of the VMT was cleared of typical coastal forest vegetation except for isolated stands of Sitka spruce (*Picea sitchensis*). Today, alder (*Alnus* species) communities dominate the terminal and cover most open areas that have been left to revegetate after initial construction. Wetlands occur sporadically along the shoreline of Port Valdez and include estuarine intertidal flats, intertidal emergent persistent and beach/bar wetlands, palustrine scrub/shrub wetland, and emergent persistent wetlands. The estuarine intertidal flats and beach/bar wetlands are the most common wetland type. There are also isolated local wetlands adjacent to the VMT (BLM 2004a).

3.6 AQUATIC RESOURCES AND ESSENTIAL FISH HABITAT

Section 3.19.1.3 of the TAPS FEIS provides an extensive, comprehensive identification of aquatic resources in Prince William Sound. This description remains fully applicable to the proposed action and is incorporated in this EA by reference. Prince William Sound supports large populations of marine and anadromous fish that form the basis of major commercial, subsistence, personal use, and sport fisheries. Sockey, pink, coho, chinook, chum salmon and Pacific herring have provided the greatest commercial harvest in recent years. Pacific halibut, sablefish, and other marine species are also harvested. Sockeye salmon are the most harvested species in the subsistence and personal use fisheries, with other salmon species also providing important harvests (BLM 2002b). Adult salmon return to spawn during July and August, with the pink salmon returning first. Pink salmon fry out-migration begins in April followed by chum salmon. The life cycles of the fish differ slightly in that pink salmon fry do not spend any time in fresh water; they emerge from the gravel and immediately migrate to the ocean. However, chum salmon fry generally spend a few months in fresh water feeding on small insects before forming schools and migrating to the ocean (BLM 2002b).

The consultation requirements of Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA;16 U.S.C. 1855(b)) provide that federal agencies must consult with the Secretary of Commerce on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). EFH as defined in the MSA means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity; Can include fresh and saltwater habitats and applies to commercially-fished species. The intent of the MSA is to ensure federal actions sustain populations to be fished. An EFH Assessment (50 CFR Part 600.920) is required to discuss any adverse effects on EFH, if so determined.

The North Pacific Fishery Management Council has prepared fishery management plans that designate EFH in Alaska. As addressed in greater detail in Section 3.19 of the TAPS FEIS and in the associated Essential Fish Habitat Assessment (BLM 2002b), EFH for salmon fisheries in the Exclusive Economic Zone off the coast of Alaska, groundfish of the Gulf of Alaska, and scallop fisheries off Alaska are

relevant to the full breadth of TAPS operations, including the VMT. Information regarding EFH within the action area is detailed in both Section 3.19.1 of the TAPS FEIS and the EFH Assessment, as well as Section 3.7.1 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal This description remains fully applicable to the proposed action and is incorporated in this EA by reference. Designated EFH for salmon fisheries in Alaska includes all estuarine and marine areas used by Pacific salmon of Alaska origin. The designated habitat would extend from the area of tidal influence in stream habitat and tidally submerged habitats to the oceanic limits of the Economic Exclusion Zone for the United States (North Pacific Fishery Management Council 1998). EFH has also been designated for scallops and Gulf of Alaska ground fish in Port Valdez (BLM 2004a).

3.7 MARINE MAMMALS

Section 3.22 of the TAPS FEIS provides a more comprehensive identification of marine mammal resources located near the BWTF. This description remains fully applicable to the proposed action and is incorporated in this EA by reference. Several species of marine mammals are abundant or common in Prince William Sound that include sea otters (*Enhydra lutris*), harbor seals (*Phoca vitulina*), killer whales (*Orcinus orca*), Steller sea lions (*Eumetopias jubatus*), humpback whales (*Megaptera novaeangliae*), and fin whales (*Balaenoptera physalus*) (BLM 2004a).

3.8 BIRDS

Section 3.20.3 of the TAPS FEIS and Section 3.9 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal provides a comprehensive identification of bird resources near the VMT and BWTF action area. This description remains fully applicable to the proposed action and is incorporated in this EA by reference.

3.9 TERRESTRIAL MAMMALS

Section 3.21 in the TAPS FEIS and Section 3.10 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal provides a comprehensive identification of terrestrial mammals near the VMT and BWTF action area. This description remains fully applicable to the proposed action and is incorporated in this EA by reference.

3.10 THREATENED AND ENDANGERED SPECIES

Section 3.22 of the TAPS FEIS provides a comprehensive identification of threatened and endangered species in Prince William Sound, including Port Valdez and the BWTF. This description remains fully applicable to the proposed action and is incorporated in this EA by reference. Section 7(a)(2) of the Endangered Species Act (ESA) requires all federal agencies to consult with the U.S. Fish and Wildlife Service on all proposed actions undertaken by the agency that may affect threatened and endangered species. The intent of the ESA is to ensure conservation, survival, and recovery of species and their habitat to a point where the protections of the Act are no longer necessary.

While no federally listed threatened or endangered species or their designated critical habitats are known to occur within the terminal area, Prince William Sound does support several marine mammals that are listed under the ESA. The Steller sea lion (*Eumetopias jubatus*: endangered), humpback whale (*Megaptera novaeangliae*: endangered), and fin whale (*Balaenoptera physalus*: endangered) occur in

Prince William Sound. Both the Steller sea lion and humpback whale have been occasionally observed in Port Valdez (BLM 2004a).

There are an estimated 3,500 to 4,000 Steller sea lions in and near Prince William Sound (Merrick et al. 1991). Designated critical habitat for the Steller sea lion includes haulout areas in Prince William Sound; but none of these critical habitat areas occur within Port Valdez (BLM 2004a).

Humpback whales are probably the most abundant whales in Prince William Sound, and 60 to 100 individuals feed there during the summer (von Ziegesar et al. 1994). In a 3-year study of humpback whales in Prince William Sound, von Ziegesar et al. (1994) found whales primarily in Knight Island Passage, the southern end of Chenega Island, and the entrances of Icy and Whale Bays. These areas are all in the southwestern portion of Prince William Sound and away from the VMT (BLM 2004a).

Fin whales occur in deep water portions of Prince William Sound for a few days each year from April to June during their summer migration to their Bering Sea feeding grounds (Hall 1979). Their distribution in Prince William Sound appears to be limited to the area near the Hinchinbrook Entrance. Steller's eiders (*Polysticta stelleri*: threatened) spend most of the year in shallow, nearshore marine waters where they feed by diving and dabbling for benthic organisms (USFWS 1999). A few Steller's eiders winter in portions of Prince William Sound, including Port Valdez (BLM 2004a).

The State of Alaska maintains lists of endangered species and species of special concern from the State's perspective. Four Alaskan species of special concern may occur along the TAPS: the olive-sided flycatcher, the gray-cheeked thrush, Townsend's warbler, and the blackpoll warbler. However, there are no known observations of any of these birds on the VMT, and based on the species accounts in Isleib and Kessel (1992), none of these birds is likely to nest at the VMT or migrate through the area (BLM 2004a).

3.11 ECONOMICS

Sections 3.23 and 3.25 of the TAPS FEIS and Section 3.12 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal provide a comprehensive discussion of the existing economics and socio-cultural systems within the TAPS operations area, including the BWTF and the VMT. This description remains fully applicable to the proposed action and is incorporated in this EA by reference. As emphasized in the TAPS FEIS, the economic and social effects of the TAPS are inextricably interconnected with North Slope oil production and marine transportation, which provide important benefits to the State of Alaska and the Nation, as well as related fiscal benefits at the state and local levels (BLM 2004a).

3.12 SUBSISTENCE

Section 810 of the Alaska National Interest Lands Conservation Act requires that an evaluation of subsistence uses and effects be completed. Subsistence uses in the vicinity of the BWTF at the VMT are documented for the communities of Tatitlek, Valdez, Chenega Bay, and Cordova (BLM 2002a; Fall and Utermohle 1995; Stratton 1989, 1990, 1992). These uses predate and postdate the *Exxon Valdez* oil spill of 1989. Resources harvested by these communities include eulachon (smelt), all species of salmon, seals, sea lions, crab, gumboots, some terrestrial mammals, and a variety of plants (BLM 2002a; Fall and Utermohle 1995, 1999; Fall et al. 2001; Stratton 1989, 1990, 1992; Stratton and Chisum 1986; Stratton et al. 1996). Migratory waterfowl, terrestrial mammals, anadromous fish, and fish that spawn in nearshore

waters such as herring (*Clupea harengus*) and eulachon may use the area of the VMT and could be affected or perceived to be affected by activities taking place on site (BLM 2004a).

For the communities of Chenega Bay and Tatitlek, the most harvested subsistence resource groups are fish (salmon and non-salmon) and marine mammals, and for the communities of Cordova and Valdez, the most harvested subsistence resource groups are fish (salmon and non-salmon) and large land mammals. The subsistence use areas for these communities are widespread, including areas around each community and other traditionally used locations. While there are limited data depicting harvest amounts by location specific to Valdez Arm, documented use for this area exists. For example, Tatitlek subsistence areas include several parts of Prince William Sound in the immediate vicinity of the VMT (BLM 2002a). Valdez residents reported use of the Port Valdez for subsistence harvests of shellfish, fish, and birds; however, these residents reported decreased use following the *Exxon Valdez* oil spill due to the reduced presence of resources in the area and residents' perceptions regarding contamination of the resources (Fall and Utermohle 1995).

3.13 ENVIRONMENTAL JUSTICE

See Section 3.29 of the TAPS FEIS (BLM 2002a) and Section 3.14 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal for a detailed discussion on environmental justice applicable to the BWTF as part of the VMT. This description remains fully applicable to the proposed action and is incorporated in this EA by reference.

3.14 CULTURAL RESOURCES

Cultural resources in the vicinity of the VMT include a number of prehistoric and historic sites (AHRS 2004). No all-encompassing cultural resource survey has been conducted in the area of the VMT, and no known prehistoric resources are located at the VMT (AHRS 2004; Wooley 1994). A prehistoric midden at the mouth of the Lowe River was reported, but it is presumed to have been submerged by tectonic effects of the 1964 earthquake (AHRS 2004). The VMT location encompasses two known historic sites: Fort Liscum and Dayville. Fort Liscum was an Army base from 1900 to 1925, when the Army closed the base and either sold the buildings or left them to decay (AHRS 2004; Brown 1975). No surface evidence of the Fort Liscum structures remains, but associated deposits such as middens and latrine pits, which could hold significant historical period deposits, have not been located or examined by archaeologists. The Day family bought many of the Fort Liscum buildings, homesteaded and prospected at the former Army base location, and founded Dayville in 1929 at the site, which included a salmon cannery, a sawmill, a school and a store, parts of which may remain in place (AHRS 2004; Wooley 1994).

The TAPS, including the pipeline and associated facilities such as the VMT, may qualify for inclusion on the National Register of Historic Places under criterion A for its contribution on state and national levels to industry and oil exploration and under criterion C for its importance in engineering, the Historic American Building Survey, and the Historic American Engineering Record (BLM 2002a).

3.15 LAND USE, COASTAL ZONE MANAGEMENT, RECREATION, VISUAL RESOURCES

Land Use. The VMT is located on approximately 1,000 acres of land owned in fee simple by the TAPS owners. It is located within the corporate limits of the City of Valdez. Surrounding lands are in mixed ownership with federal, state, and private landowners. The City of Valdez Comprehensive Plan provides

guidance for use of private lands in the city. The State of Alaska has adopted the Prince William Sound Area Plan for state lands in the area, which surround three sides of Prince William Sound. Currently the BLM Glennallen Field Office is in the process of developing the East Alaska Resource Management Plan (RMP) for federal lands that include the southern portion of the Trans-Alaska Pipeline and federal lands north of Valdez. The Record of Decision for this plan is expected in late 2006. The East Alaska RMP replaces the South-central Management Framework Plan completed in 1980. This is the only applicable BLM RMP adjacent to the proposed action area (BLM 2004a).

Several State and Federal Conservation System Units have been designated near the VMT, including: Sawmill Bay State Marine Park, eighteen miles to the west; Shoup Bay State Marine Park, eight miles northwest; Jack Bay State Marine Park, fifteen miles south; and Chugach National Forest, one-quarter mile southwest (BLM 2004a).

Coastal Zone Management. The BWTF and the greater terminal area are located within the boundaries of the Valdez Coastal Management Plan (CMP) district. Activities that occur within the coastal district must be consistent with the Valdez CMP and with statewide Alaska Coastal Management Program (ACMP) requirements. The Valdez plan allows for a variety of development activities but gives a higher priority to activities that are water-related and/or water-dependent. Consistency reviews are conducted on proposed activities and existing projects within the coastal zone to determine whether activities comply with the Coastal Zone Management (CZM) standards (BLM 2004a).

Recreation. Section 3.16.3 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal Many provides a comprehensive discussion of recreation adjacent to the Valdez Marine Terminal and action area. This description remains fully applicable to the proposed action and is incorporated in this EA by reference.

Visual Resources. Section 3.16.4 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal Many provides a comprehensive discussion of the visual resources adjacent to the Valdez Marine Terminal and proposed action area. This description remains fully applicable to the proposed action and is incorporated in this EA by reference.

3.16 TRANSPORTATION

Section 3.17 of the Environmental Assessment of the Proposed Reconfiguration of the TAPS Valdez Marine Terminal Many provides a comprehensive discussion of the aviation, marine and highway and road systems adjacent to the Valdez Marine Terminal and proposed action area. This description remains fully applicable to the proposed action and is incorporated in this EA by reference.

3.17 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

The TAPS Environmental Protection Manual: Pollution Prevention, Waste Management, and Used Oil, EN-43-006 describes controls to identify hazardous waste generated and to assure compliance with regulatory requirements. EN-43-006 established APSC standards for containerization and labeling of hazardous waste, storage of hazardous waste at designated satellite areas and central accumulation areas, inspection and recordkeeping for accumulation areas, training and emergency preparedness requirements, and pickup and transportation of hazardous waste to permitted disposal facilities (BLM 2004a).

The largest quantity of hazardous waste generated at the terminal has been solids associated with cleaning the bottoms of crude oil storage tanks. Tank bottoms and "materials in process" that are periodically removed from equipment and bulk crude-oil storage tanks often exhibit a hazardous waste characteristic, typically benzene. In 2003, tank bottoms were processed to remove oil, which was returned to the crude oil system. The BWTF disposes of oily sludge when the 80s and 90s tanks are drained and cleaned in accordance with tank cleaning schedules specified by 18 AAC 75 and API 653. At that time APSC collects the bottom sludge solids, processes the sludge through a centrifuge process to separate the water and oil, then sludge is disposed of either as a hazardous or non-hazardous waste and sent to a disposal facility (APSC 2006b).

3.17.1 Recovered Crude Oil

When ballast water undergoes the three phases of treatment in the BWTF, water is separated from the crude oil. This is called recovered crude, which APSC removes and cycles back into the crude oil system for transport to market. The recovered crude from the BWTF has historically been stored in the 80s tanks once it is recovered. However, future plans are to install piping from the 90s tanks directly to the main VMT East Tank Farm, where the recovered crude will be stored then sent to the tankers for transport (APSC 2006b).

3.17.2 Contaminated Soil

Contaminated soil excavated from spill sites is hauled to a contaminated soil stockpile at the VMT. The stockpile is managed in accordance with a plan approved by ADEC. The contaminated soil is periodically thermally remediated by a permitted mobile soil incinerator brought to the terminal, or the soil is transported off site to an approved soil incinerator. The volume of contaminated soils typically stockpiled at the terminal awaiting remediation varies depending on the number and magnitude of spill events as well as the circumstantial factors at spill sites that govern subsequent remediation. Amounts of contaminated soils stockpiled at the VMT have ranged from 237.4 tons in 1996 to 1,561.9 tons in 2001 (BLM 2004a).

3.18 CRITICAL ELEMENTS NOT AFFECTED

Analysis of environmental impacts of critical elements of the human environment are subject to requirements specified by CEQ regulations and must be considered in all BLM environmental assessments. However, 6 of the 15 critical elements are either not relevant to either Alaska or the VMT. These critical elements include 1) Areas of Critical Environmental Concern, 2) Farm Lands, 3) Floodplains, 4) Native American Religious Concerns, 5) Wild and Scenic Rivers, and 6) Wilderness.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 PROPOSED ACTION AND NO ACTION ALTERNATIVES

This chapter describes the environment to be affected by the alternatives and environmental impacts of the alternatives. For the purpose of this analysis, the affected environment is the area within and adjacent to the Valdez Marine Terminal containing the Ballast Water Treatment Facility.

Proposed Action. The proposed changes to the BWTF are expected to reduce overall environmental impacts in the short and long term, compared to current impacts of the BWTF in its existing configuration. The long term impacts are beneficial and positive, however some short-term air quality impacts may occur due to emissions released from construction-related activities associated with the BWTF modifications. These short term impacts would be local, minor, and expected to remain within federal permit requirements. Other than possible air and water quality effects, the proposed action would have no different environmental effects than it does in its current operating capacity.

No Action. The key differences between the No Action and the Proposed Action Alternatives are the environmental effects of Air and Water Quality. Otherwise, both alternatives would have the same environmental effects. With the no action alternative, the proposed BWTF modification would continue operating in its current configuration. Refer to Chapter 2, Section 2.1 for the discussion on the No Action Alternative. As a result of the No Action Alternative, declining BWTF influent would eventually result in the inability for the BWTF to efficiently process dirty ballast water, which could have negative impacts on air and water quality. Fugitive air emissions would not decrease under the no action alternative.

4.1.1 Geology and Soils

Soil disturbance is expected to be short-term, minor, and contained on the existing industrial site. With the exception of some proposed activities associated with pipe installation for the vapor control system and for sending recovered crude oil from the 90s tanks to the East Tank Farm, activities would take place in previously disturbed areas and have negligible environmental impact. Soils could be contaminated by spills of oil and/or chemicals; however, modification of the BWTF is intended to reduce the components of the wastewater treatment system, thereby reducing spill potential. There would be no long-term impacts to geology or soils caused by the new and/or modified equipment and facilities installed during modification of the BWTF.

4.1.2 Marine Water Resources

Spill Risk. The primary concern for impacts to marine waters from the operation of the BWTF is the amount of BTEX in the effluent discharging to Port Valdez. With the reduction in the numbers of tanks in the three wastewater treatment systems, there would be less risk of spills to marine waters.

Water Quality and Wastewater Discharge. EPA issued the current National Pollutant Discharge Elimination System (NPDES) Permit No. AK-002324-8, August 1, 2004 and modified it March 1, 2005. The current permit expires July 31, 2009. EPA stated the effluent limitations, monitoring requirements and other conditions of the permit were deemed to be sufficient upon permit renewal (EPA 2005). Under

the proposed action the wastewater discharge into Port Valdez is not expected to change and therefore no change in environmental effects are expected.

State Water Quality Requirements. The Alaska Department of Environmental Conservation issued a Certificate of Reasonable Assurance for EPA's issuance of NPDES Permit No. AK-002324-8 January 18, 2005. Section 18 AAC 70.020(b) of the Alaska Water Quality Standards requires the use of EPA Method 602 or 624 in the analysis of total aromatic hydrocarbons, which includes benzene, toluene, ehtylbenzene and xylene (BTEX). Both of these methods are also approved in 40 CFR Part 136, which lists approved analytical methods for the analysis of water quality in NPDES permits and is referenced in 18 AAC 70.020(c), which governs approved water quality analysis methods for compliance with State of Alaska water quality standards. ADEC determined that the use of EPA Method 602 and 624 for analysis of BTEX in the wastewater discharged from the BWTF is adequate for determining compliance with the permitted effluent limit and for characterization of the wastewater in assessing potential impacts to the receiving water (ADEC 2005).

Pollution Reduction Actions. During the last NPDES cycles, Alyeska made significant investments in the BWTF to improve the performance of the treatment system and reduce pollutant loading in the effluent. The existing permit required Alyeska to prepare and submit a framework document for incorporating pollution prevention into VMT activities. This document was submitted as specified by the permit. Key projects implemented during the 1990's include the following:

- Installation of the new ballast water treatment tanks (BTTs) and associated on and off air strippers have produced a significant reduction in effluent BTEX concentration and pollutant loading to Port Valdez.
- Installation of an on-line BTEX monitor which resulted in improved control of the BTTs and significant reduction in the use of the on and off air strippers.
- Improved control of nutrient injection to the biological treatment system.
- Improvements and refinements to the Best Management Practices (BMP) Plan and Ballast Water Survey Form which resulted in the reduced transfer of tanker wastes and eliminated transfer of halogenated tank cleaning agents from tanker vessels.
- Improves sludge handling which reduced the amount of material requiring disposal.
- Increased training of VMT personnel on proper waste handling procedures (e.g., proper disposal of waste oil and other chemicals), treatment plan operation, and NPDES permit and BMP Plan requirements.
- Installation of an online Turner fluorometer to monitor the effluent to improve detection of sheen events.
- Installation of vapor controls on berths four and five (USEPA 2003).

Environmental Effects. Ballast water discharges into the Industrial Wastewater Sewer System and the BWTF may gradually and eventually be reduced. It is anticipated that the BWTF effluent flow and pollutants discharged would decrease over time because of lower influent contributions from VMT sources and lower ballast-water flows from tankers. Materials discharged to the water during the continued operation of the VMT and its associated tanker operations for the next 30 years could impact physical marine resources. Impacts from the VMT releases resulting from normal operations under the proposed action would not be expected to be different from historical impacts and could decrease with decreasing throughput (BLM 2002b). The NPDES permit requires substantial environmental monitoring in Port Valdez. The monitoring program has not demonstrated to date that Port Valdez ecosystem is being altered by the BWTF discharge (USEPA 2003). The NPDES permit will not be modified and APSC is anticipated to remain in compliance with the NPDES permit. Therefore BLM does not anticipate that the BWTF modifications are expected to have negative impacts on water quality.

4.1.3 Air Quality

Fugitive Air Emissions. Alyeska commissioned a Ballast Water Treatment BTEX Fate Study (April 2005) to establish the fate of BTEX (benzene, toluene, ethyl-benzene, and xylenes) entering the BWTF dissolved air flotation system that removes residual oil from the water. This study updated information from a previous study done ten years ago and included field sampling of BTEX air emissions, liquid phase BTEX concentrations, and biological BTEX consumption in the biological treatment tanks. The study results were used to develop a BTEX fate model, which was used to estimate the bio-oxidation and annual air emissions at the BWTF. A testing protocol was developed and distributed for review by APSC, EPA, and the Prince William Sound Regional Citizens' Advisory Council (PWSRCAC).

The study results indicated that the BWTF is performing with high biological efficiency, meaning 97-99 per cent of the BTEX entering the biological treatment tanks from the splitter box are being consumed biologically. Based on the fate model results and assumptions, 75% of the BTEX entering the DAF in 2003 was show to be biologically consumed in the DAF and the BTT. The biological treatment tanks are able to consistently produce a final effluent with very low BTEX concentrations. The BTEX fate model and estimated BTEX loading, based on ballast water flows from an independent ballast water hydraulic forecasting model, were used to forecast annual BTEX air emissions through 2009. The ongoing modifications to the VMT tanker fleet ship design of segregating ballast water from the BTEX-laden crude, has resulted in an estimated 40% reduction in BTEX air emissions between 2003 and 2005.

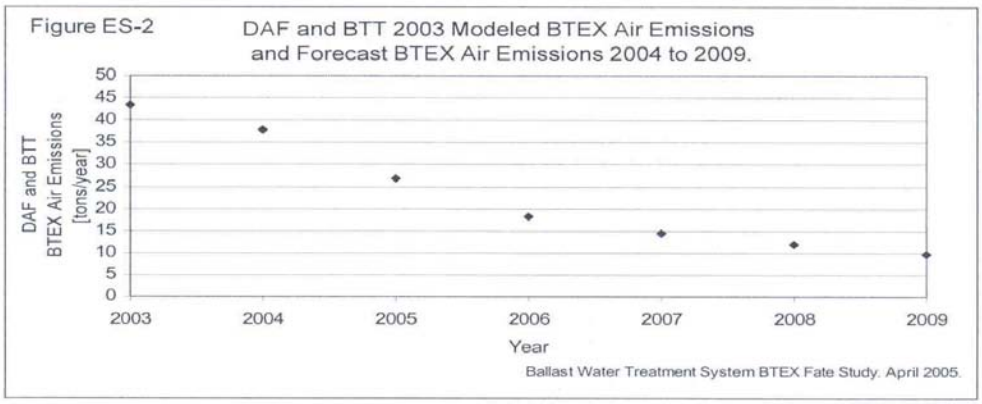
As additional fleet modifications are made, 77% overall reduction in BTEX air emissions is forecasted by 2009. The forecast assumes that the key BWTF process variables associated with BTEX fate will continue to be controlled within the existing BWTF operating capability. The results of the study also confirmed that the BWTF is meeting its NPDES permit water treatment requirements The forecasted reductions in BTEX loading to the BWTF are quite significant and a study is in progress to ensure that methods to maintain the current system viability are developed and implemented as the ballast volumes and BTEX loading reduce (Imperial Oil 2005).

HAP Emission Estimates. The BTEX fate model was expanded to generate estimates for Hazardous Air Pollutants (HAP). This involved adding estimates for hexane and naphthalene to the BTEX estimates. In 2003, the hexane and naphthalene emissions from the DAF and the BTT were estimated at 1.43 tons/year. Adding this to the BTEX emission estimate of 43.43 tons/year brings the total DAF and BTT HAP air emission estimate to 44.86 tons/year (Imperial Oil 2005).

Table 4-1 Modeled DAF and BTT BTEX Fate Path Summary for Calendar Year 2003 (Imperial Oil 2005)

Fate Path	Total BTEX	Benzene	Ethylbenzene	Toluene	Xylene
	tons/year	tons/year	tons/year	tons/year	tons/year
DAF Air Emissions	6.54	2.69	0.21	2.65	1.00
DAF Weir Air Emissions	27.01	11.42	0.87	10.55	4.17
Splitter Box Air Emissions	8.64	3.65	0.28	3.38	1.33
BTT Air Emissions	1.23	0.46	0.08	0.48	0.22
Total Air Emissions	*43.43*	*18.21*	*1.43*	*17.06*	*6.72*
DAF Bio and Float	29.99	14.00	0.60	11.49	3.90
BTT Bio	97.94	41.51	3.06	38.31	15.06
Total Biological	*127.92*	*55.51*	*3.66*	*49.80*	*18.96*
BTT Outlet Water	0.17	0.04	0.05	0.04	0.04
Total Water Effluent	*0.17*	*0.04*	*0.05*	*0.04*	*0.04*
Total	***171.52***	***73.76***	***5.14***	***66.90***	***25.72***

These emission rates are not applicable to future years' emissions as those emissions will be lower than in 2003.
Ballast Water Treatment System BTEX Fate Study. April 2005.



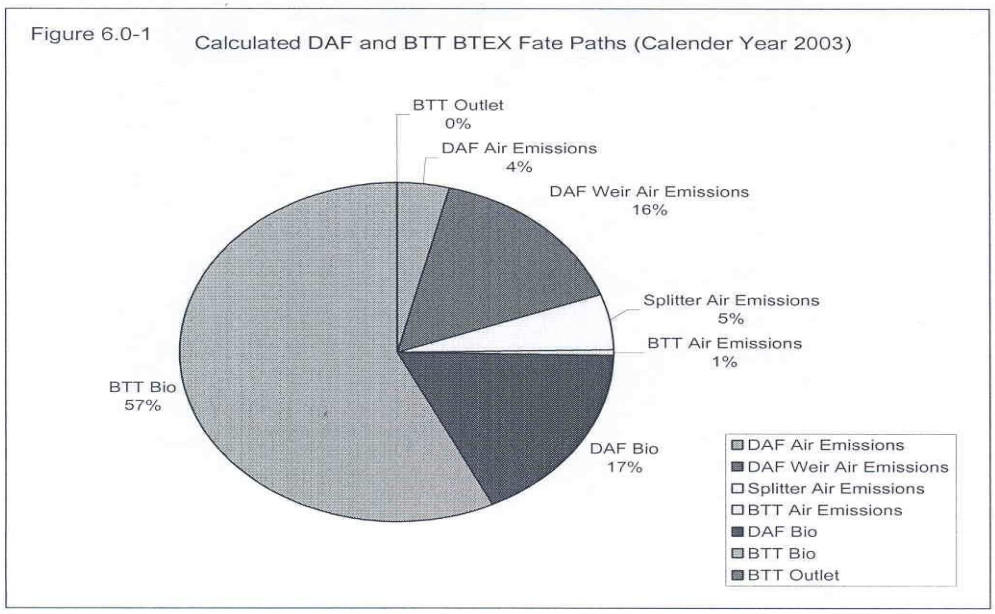


Figure 4-1 Calculated DAF and BTT BTEX Fate Path Calendar Year 2003 (Imperial Oil 2005)

APSC has been working with EPA wastewater staff to reach a consensus on estimates of hazardous air pollutant emissions from the BWTF. APSC's estimates of total HAP emissions differ from EPA's Water 9 Model HAP estimates from the three wastewater treatment systems. APSC's estimates are lower emission levels than EPA Water 9 Model Estimates. EPA and APSC continue to work on this issue, however no resolution had been reached at the time this EA was prepared (APSC 2006). While no agreement on the estimates of hazardous air pollutant emissions has yet been reached, APSC remains in compliance with the current NPDES permit issued by EPA (APSC 2006a).

Environmental Effects. The proposed changes to the BWTF are expected to reduce overall fugitive air emissions in the short and long-term, compared to current impacts of the BWTF in its existing configuration. The long-term impacts are beneficial and positive, however, some short-term air quality impacts may occur due to emissions released from construction-related activities associated with the BWTF modifications. These short-term impacts would be local, minor, and expected to remain within federal permit requirements. In both short and long term, air emissions would be reduced by enclosing the biological treatment tanks splitter box in the tertiary system, and removing two dissolved air flotation cells from operation in the secondary system. The largest hazardous air pollutant reductions will occur as a result of 1) installing emission controls on the 90s tanks and eliminating the 80s tanks, 2) replacing the secondary treatment system of dissolved air flotation cells with enclosed induced gas flotation units, and 3) replacing the tertiary biological wastewater treatment system with an enclosed chemical treatment system. Since the NPDES permit will not be modified and APSC is anticipated to remain in compliance with the NPDES permit, the BWTF modifications are not expected to have negative impacts on air quality.

4.1.4 Noise

Implementation of the proposed action would generate short-term increases in noise levels due to minor construction activities. While noise emission levels from these sources would occasionally be high, they would be of short duration and would not likely be obtrusive at any of the residences or other sensitive receptors in the vicinity, all of which are at least 4 miles from the VMT. Slant drilling of a hole to install pipe from the 90s tanks to the East Tank Farm will generate noise in the short term. Installation of enclosed secondary and tertiary systems would contain the noise from existing levels. Noise levels are not anticipated to increase as a result of the BWTF modification.

4.1.5 Terrestrial Vegetation, Wetlands, and Riparian Zones

Potential impacts to terrestrial vegetation are greatest from oil and/or chemical spills that could occur as a result of increased activities during BWTF modification and operation. Spilled substances could be toxic to plants, and cleanup activities could disturb large areas. Wetland areas along the shoreline of Port Valdez are sporadic and scattered. National Wetlands Inventory (NWI) maps indicate there are no wetlands on the VMT, however wetlands may exist at any presently undeveloped location. Because of the scarce amount of wetlands within the area, it is unlikely any wetlands would be disturbed. Potential and accidental impacts to wetlands could be mitigated by conducting wetland delineations prior to any ground-disturbing activities on previously undisturbed ground. Potential wetland impacts could also be mitigated by the installation of silt fences or other pollution control devices prior to such activities. The BWTF modification is not expected to have any significant impacts on terrestrial vegetation, wetlands, or riparian zones.

4.1.6 Aquatic Resources and Essential Fish Habitat

Pink salmon are considered particularly vulnerable to contamination from the VMT and from oil spills, such as the *Exxon Valdez* oil spill, in Prince William Sound because a large portion of the wild population spawns in the intertidal region of the spawning streams (Noerenberg 1963; Helle et al. 1964; Helle 1970). The BWTF proposal is not expected to affect fish resources in Port Valdez, however there is a potential for discharges from the BWTF and the sanitary water treatment plant at the VMT to affect fish in Prince William Sound. The resulting pollutant concentrations from normal operations are unlikely to have significant impacts on fish (BLM 2002b). Fish resources could receive less impact as treated ballast water volume decreases in the future. Since the NPDES permit will not be modified and APSC is anticipated to remain in compliance with the NPDES permit, the BWTF modifications are not expected to have any significant impacts on fish in Port Valdez.

Essential Fish Habitat. Section 305(b) of the Magnuson-Stevens Act (16 USC 1855(b)) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) when any proposed activity may have an adverse effect on designated Essential Fish Habitat (EFH). BLM consulted the National Marine Fisheries Service (NMFS) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. NMFS concurred with BLM's determination that the action is not expected to adversely affect Essential Fish Habitat (EFH) in Prince William Sound. No further EFH assessment or consultation is required and NMFS did not offer any EFH conservation recommendations. BLM determined the proposed action is not expected to have any significant impacts on Essential Fish Habitat (See Appendix).

EPA's assessment of EFH in the technical evaluation of the NPDES permit includes a listing of EFH species in the facility area, characterization of the discharge, and evaluation of potential effects. EPA identified salmon, herring, halibut, Tanner crab, Dungeness crab, spot shrimp, coon-striped shrimp, and several species of rock fish as species that occur in Port Valdez. EPA stated that since the existing permits were developed to protect aquatic life species in Port Valdez in accordance with the Alaska water quality standards and the BWTF has consistently been in compliance with the requirements of the existing permit, the EPA determined the reissuance of the current NPDES permit would not likely to adversely affect any EFH in the vicinity of the discharge. EPA also stated that environmental monitoring suggests that the ecosystem was not being adversely impacted by the water discharge (EPA 2005).

Environmental Effects. EFH consultation with NOAA Fisheries regarding the broader TAPS right-of-way (ROW) reauthorization was completed in 2002 and included preparation of an EFH Assessment (BLM 2002b). The EFH Assessment concluded that reauthorization of TAPS may result in short-term adverse effects to essential habitat for salmon and Gulf of Alaska groundfish. However, the EFH Assessment also concluded that these effects would be adequately minimized by the associated conservation measures, therefore there would be no significant adverse effects to EFH. Section 4.3.16.1 of the TAPS FEIS and the related administrative record document National Marine Fisheries Service (NMFS) concurrence in this finding. The proposed BWTF modification falls within the range of activities anticipated in the TAPS FEIS and the related EFH consultation. Accordingly, the findings of the EFH Assessment and TAPS FEIS remain applicable for this EA. Since the NPDES permit will not be modified and APSC is anticipated to remain in compliance with the NPDES permit, the BWTF modifications are not expected to have any significant impacts on fish resources or EFH.

4.1.7 Marine Mammals

Marine mammals that frequent the marine waters near the BWTF are acclimated to terminal operations. The BWTF modification activities are not expected to affect marine mammals as all actions would occur on land at the VMT. Future removal of the recovered crude oil storage (80s) tanks from service would reduce the potential for oil to reach Port Valdez and affect marine mammals. Since the NPDES permit would not be modified as a result of the proposed action and APSC is anticipated to remain in compliance with the NPDES permit, the BWTF modifications are not expected to have any significant impacts on marine mammals.

4.1.8 Birds

Environmental consequences to birds as a result of the BWTF modification could include disturbance or destruction of nesting and roosting habitat as a result of the removal of structures and disturbance of nesting as a result of noise. Birds nest on several of the structures at the BWTF. The proposed action should have little impact on the birds unless these nesting/roosting facilities are removed. Should birds establish their nests prior to the commencement of BWTF modification activities, and if these activities could disturb or remove an active nest, the Migratory Bird Treaty Act protects the birds until they have finished nesting. While the proposed action may affect individual birds, they are not likely to affect bird populations. The BWTF modification would decrease the risk of a large oil spill, which would reduce the risk of impacts to birds from oiling. The BWTF modification is not expected to have any significant impacts on birds.

4.1.9 Terrestrial Mammals

Short-term increases in wildlife interactions could occur during modification activities. Bears are the biggest concern because they represent the greatest potential harm to humans and property and because problem bears are sometimes killed. However, APSC provides extensive wildlife interaction and avoidance training for APSC and contractor employees that work on the VMT. Current operation of the BWTF does not obstruct movements of large animals, nor is it expected to occur during modification activities. Short-term disturbance of mammals could occur during modification activities, but would be minor. After BWTF modification, the reduced risk of a large oil spill would reduce the risk of impacts to terrestrial mammals from oiling. Modification of the BWTF is not expected to have any significant impacts on terrestrial mammals.

4.1.10 Threatened and Endangered Species

No federally listed threatened or endangered species, or designated critical habitat occur within the VMT. As documented in the TAPS Environmental Report (TAPS Owners 2001), FEIS (BLM 2002a), and the USFWS Biological Assessment (USFWS 2002), no evidence indicates that the TAPS as a whole has adversely affected endangered or threatened species or critical habitat during its nearly three decades of operation.

BLM requested informal consultation with the U.S. Fish and Wildlife Service (USFWS) in accordance with the Endangered Species Act (ESA). The USFWS stated the Steller's eider (*Polysticta stelleri*), listed as threatened in 1997, rarely occurs in Prince William Sound waters during winter, and are not likely to occur in Valdez Harbor. USFWS also stated that the Kittlitz's murrelets (*Brachyramphus brevirostris*)

have not been observed in Valdez Arm since the mid-1990's, and agreed with BLM's determination that approval of the proposed action is not likely to adversely affect these species and critical habitat. USFWS concluded the requirements of Section 7(a)(2) of the Endangered Species Act were satisfied, no biological assessment was necessary, and no further consultation pursuant to the Endangered Species Act would be required for the proposed project (See Appendix).

Environmental Effects. BLM also consulted the National Marine Fisheries Service (NMFS) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. BLM determined the proposed action would not affect any ESA listed species or critical habitat for which the NMFS has responsibility and which may occur in the action area. NMFS concurred with BLM's determination that the proposed action would not affect the Steller sea lion (*Eumetopias jubatus*), the fin whale (*Balaenoptera physalus*), and the humpback whale (*Megaptera novaengliae*). The proposed action is not expected to have any significant impacts on threatened and endangered species.

4.1.11 Economics

The proposed BWTF modification would be expected to create direct employment in the Valdez area from activities during the modification stage, which is anticipated to begin in late 2006. Theoretically, this increased activity would create additional local jobs between 2006 and 2010, and would provide local benefits.

4.1.12 Subsistence

The proposed BWTF modification could have some effects on subsistence uses and harvest activities. Subsistence users from Valdez and Tatitlek have been documented using the area near the VMT (BLM 2002a; Fall et al. 1996). Tatitlek use areas for salmon occur in the vicinity of the VMT (BLM 2002a). One potential effect could include decreased short-term access and availability of subsistence resources from the VMT area due to perceived or actual contamination resulting from changing some of the BWTF facilities. However, the removal of some BWTF components or changing some structures may result in lower noise levels and fewer visual impediments on shore that could result in increased availability of subsistence resources and access to the VMT area. In addition, the proposed action should reduce the chances for oil spills through simplification of operations and potential removal of facilities, and thus reduce the potential impacts to subsistence resources.

BLM analyzed subsistence impacts associated with the proposed action under requirements of Section 810 of ANILCA (see Chapter 5) and concluded that the effects of the BWTF modification on subsistence uses fall below the level of significantly restricting subsistence uses and needs. BLM has also determined the proposed action would not substantially reduce subsistence resource populations or their availability to subsistence users and would not substantially limit access by subsistence users to resources.

4.1.13 Environmental Justice

No high or disproportionate impacts on minority or low-income populations have been identified as a result of the proposed BWTF project. Accordingly, environmental justice considerations do not require further assessment.

4.1.14 Cultural Resources

Any ground-disturbing activities undertaken on previously undisturbed ground at the site of the BWTF could affect documented, as well as undocumented, prehistoric and historic cultural resources. Two historic sites are located within the VMT area (Fort Liscum and Dayville), and remains from these sites may occur at the VMT site (AHRS 2004; Brown 1975; Wooley 1994). In addition, a determination of eligibility for inclusion on the National Register of Historic Places (NRHP) has yet to be conducted for the TAPS, including the pipeline and associated facilities such as the VMT.

Potential impacts would be minimized as a result of adherence to state and federal regulations that would require identification of, as well as determination of NRHP eligibility for, cultural resources in the project area prior to the new undertaking. If new land is disturbed, APSC is required under the Stipulation 1.9.1 of the Federal Grant to consult with an archaeologist before any ground-disturbing activities in areas that have not been modified by previous TAPS-related activities. Under Stipulation 1.9.2, notification is also required if previously unrecorded archaeological or historical resources are encountered. Potential impacts to cultural resources could be further minimized and mitigated by seeking clearance from the SHPO prior to any such activities. The BWTF modification is not expected to impact cultural resources at the VMT.

4.1.15 Land Use, Coastal Zone Management, Recreation and Visual Resources

Land Use. The proposed action would not change the historic land use of the VMT. No conflicts have been identified between the proposed action and the objectives of Federal, regional, State, and local land use plans, policies, and controls for the area concerned. For these reasons, it is not expected the BWTF modification would interfere with adjacent land uses. No effects on conservation units in Port Valdez have been identified.

Coastal Zone Management. The Alaska Department of Natural Resources reviewed the proposed action and determined that an ACMP consistency review is not required as long as certain conditions are met as the project is eligible for a General Concurrence. The proposed action has been found consistent with the ACMP and Valdez CMP, and the land use would remain essentially the same so no conflicts related to coastal management plans would be anticipated.

Recreation and Visual Resources. Implementation of the proposed action would not cause any substantive adverse effects on recreation resources in the vicinity. The proposed removal of VMT facilities would reduce the degree of visual contrast between the industrial character of the VMT and the natural landscape in the area. There would be short-term negative effects to the aesthetics of the site during removal of facilities and shortly afterward. However, reducing the number of industrial facilities, especially the large, high-contrast, crude oil storage tanks, would improve the visual environment over the long term. The change would be apparent to casual observers, but the net effect would be minor because most of the facilities of the VMT would remain. The VMT would continue to be the dominant visual feature on the south side of Port Valdez. The BWTF modification is not anticipated to have any significant impacts on land use, coastal zone management, recreation or visual resources.

4.1.16 Transportation

The BWTF modification is not expected to affect general aviation and marine transportation. Tanker traffic is proportional to North Slope oil production, which is a partial cause for the proposed changes to the BWTF, not an effect of it. Less tanker visits to the terminal and the changing tanker fleet are the result of less oil throughput in TAPS, which will continue to decrease dirty ballast water flow requiring treatment at the BWTF.

4.1.17 Hazardous Materials and Waste Management

The amount and handling of hazardous waste is not expected to change as a result of the BWTF modification. Following BWTF modification, the major source of hazardous waste would continue to be from the cleaning of tanks, processing of tank bottoms, and cleaning of associated piping. However, if Tank 92 and the 80s recovered crude storage tanks are removed from service in the future, the overall quantity of tank-related wastes would decrease. Other hazardous wastes should also decrease significantly following the BWTF modification because there would be less equipment to be maintained. Therefore, no adverse impacts to human health or the environment would be expected from BWTF modification activities.

Recovered Crude Oil. When ballast water undergoes the three phases of treatment in the BWTF, water is separated from the crude oil. The recovered crude is "marketable oil" that is removed and cycled back into the crude oil system for transport to market. Future plans are to send the recovered crude from the 90s tanks directly to the main VMT East Tank Farm for storage or to marine tankers for transport. The process of recovering crude oil is not expected to have any impacts to the human environment.

Sludge Handling. ADEC provides for the handling of sludge in their Certificate of Reasonable Assurance, that specifies sludge removed from the BWTF during cleaning of the treatment units shall not be reintroduced into the treatment system or discharged to waters of the State; And the Permittee shall notify ADEC 24 hours in advance of any sludge removal activity and shall provide EPA and ADEC on request with information on the processing of sludge and disposal of solids (ADEC 2005).

Contaminated Soil. If suspected contaminated soils are encountered during construction activities, APSC would be required to remediate in accordance with a remediation plan approved by ADEC. The BWTF modification is not expected to result in any soil contamination at the VMT.

Oil Spill Potential and Response. APSC would be expected to maintain the oil spill response capabilities specified in the current Valdez Marine Terminal Oil Discharge Prevention and Contingency Plan during and subsequent to BWTF modification activities (APSC 2003a). The BWTF modification is not expected to result in a significant change in spill response capability. Similarly, the BWTF modification is not expected to impact the Prince William Sound Tanker Oil Discharge Prevention and Contingency Plan (PWS Tanker Plan Holders 2002), including the response capabilities required by that plan. Revisions to the VMT's Spill Prevention, Control, and Countermeasures (SPCC) Plan (SP-77-VZ) may be required after removal of some BWTF tanks from service. No significant impacts are anticipated, although the number and quantity of potential spills would be reduced.

4.2 CUMULATIVE IMPACTS

NEPA and its implementing regulations define cumulative impact as the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period to time (40 CFR 1508.7).

4.2.1 TAPS FEIS Analysis

Cumulative impacts of TAPS, including continued operation of the VMT for 30 years, were identified and evaluated in both the TAPS FEIS (BLM 2002a) and the related environmental report prepared by the TAPS Owners (TAPS Owners 2001). The BLM concluded in the TAPS FEIS that operations and maintenance changes and upgrades, such as the BWTF modification are not expected to result in adverse environmental impacts different in context or intensity from those occurring under existing operations. The BLM also found that such modifications were "not significantly distinguishable" from existing operations to constitute a separate alternative action. The analyses and conclusions in the cumulative impacts section of the TAPS FEIS and the EA for Strategic Reconfiguration of the VMT, although focused on a broader action and action area, are both applicable to the proposed BWTF action. As a result, this cumulative impacts analysis is both tiered to and incorporates by reference Section 4.3 of the TAPS FEIS. In general, the TAPS FEIS analysis concluded that cumulative impacts would be minor and local, with no significant synergistic effects (BLM 2002a).

4.2.2 Past Actions

The cumulative impacts of past actions at the BWTF have resulted in beneficial impacts to air and water quality over time. The Prince William Sound Regional Citizens Advisory Council (PWSRCAC) has closely monitored the wastewater discharge and fugitive air emissions from the Ballast Water Treatment Facility since 1989. The PWSRCAC was organized after the Exxon Valdez Oil Spill in 1989 to provide a voice for communities affected by oil industry decisions in Prince William Sound, the Gulf of Alaska, and Cook Inlet. The council is an independent non-profit organization whose mission is to promote environmentally safe operation of Alyeska Pipeline's Valdez Marine Terminal and associated oil tankers (PWSRCAC 2006d). RCAC closely monitors activities at the Valdez Marine Terminal, including the BWTF.

APSC and RCAC studies have indicated the turbulent water flowing into the weirs at the end of the secondary wastewater treatment unit, the Dissolved Air Flotation (DAF) cells, were significant sources of fugitive air emissions. In December 2005, APSC installed a dam in the bottom weir of the DAF cells to raise water levels to reduce the turbulence and in turn reduce the emission of hazardous vapors. Although there have been problems maintaining the water levels, this effort has been partially successful. The weir turbulence is reduced, but not eliminated (PWSRCAC 2006e). The result of this effort was less fugitive air emissions.

In 2002, RCAC noticed the BWTF effluent being discharged into Port Valdez exhibited an increasing total recoverable oil and grease (TROG) trend starting in 2000. This trend was viewed with concern because total ballast throughput had been decreasing since 1994, and continued to decrease. RCAC's contention was that both ballast throughput and TROG in the effluent should trend in the same direction,

unless changes had occurred in the BWTF operating process. RCAC obtained data directly from APSC's Discharge Monitoring Reports, which confirmed the existence of these statistically valid trends: 1) Ballast water throughput declined through the period 1994-2002, 2) TROG in the effluent and TROG concentrations declined from 1994-1999, and 3) both TROG and TROG concentrations in the effluent exhibited increasing trends during the period 2000-2002. RCAC recently did another TROG data analysis from 2003 and 2004 data to determine if the 2002 trends had continued through 2004. Ballast water continued its declining trend from 11 million gallons per day (gpd) down to 8.5 million gpd at the time of analysis. RCAC observed that the increasing trend in TROG concentrations in 2002 flattened out to approximately 4 parts per million, and concluded the total TROG being discharged into Port Valdez may be declining along with declining ballast throughput. RCAC continues to monitor and trend the TROG data (PWSRCAC 2006a). RCAC has and continues to conduct multiple studies on Valdez Marine Terminal activities related to air and water quality (PWSRCAC 2006d). BLM's analysis of the cumulative impacts of past BWTF projects are determined to have been beneficial to the environment.

4.2.3 Future Ballast Water Treatment Projects

BLM made a commitment in a previous NEPA document, the VMT Strategic Reconfiguration EA, to analyze environmental effects of future BWTF modifications. The VMT Strategic Reconfiguration EA discussed the BWTF modification as a cumulative impact and concluded the changes were not expected to result in adverse environmental or synergistic impacts, and that the cumulative effects were expected to be undetectable and negligible (BLM 2004). BLM prepared this EA in accordance with that commitment.

The cumulative impacts of reasonably foreseeable future BWTF modifications remain of the same character, likelihood, and intensity as identified in the TAPS FEIS, except that in some instances the contribution of future BWTF operations to cumulative impacts would be reduced. For example, cumulative impacts to air quality would decrease.

Routine operations and maintenance activities to maintain the existing and future infrastructure of the BWTF will continue as long as TAPS and the VMT are operating. Consistent with the conclusion of the BLM in the TAPS FEIS, environmental consequences associated with the reasonably foreseeable future upgrades and modifications are not anticipated to be significantly distinguishable from existing operations. This EA analyzes the cumulative impacts of future BWTF modifications that BLM considers as reasonably foreseeable scenarios.

APSC has informed BLM of other future changes to the Ballast Water Treatment Facility over the next several years. Plans are to replace the DAF cell system with two enclosed induced gas flotation systems for secondary treatment; And for the tertiary system, APSC plans to replace the biological system with a chemical water treatment process, an enclosed air stripper system using carbon adsorption. The secondary and tertiary systems are the highest contributors to the BWTF fugitive air emissions (Imperial Oil 2005). By enclosing both the secondary and tertiary systems, fugitive air emissions would be substantially reduced. However, when consideration was given to whether these actions could have cumulatively significant impacts BLM determined that completion of planned future projects would present the most reduction in environmental impacts.

4.2.4 Non-Indigenous Species

Ballast is any solid or liquid placed in a ship to increase the depth of submergence of the vessel in the water to change the trim, to regulate stability, or to maintain stress loads within acceptable limits. Proper ballasting reduces stress on marine tankers and compensates for weight lost from loading and unloading cargo and from fuel and water consumption. Ballast water is taken on in order to lower the tanker to a more safe and efficient position in the water. It is carried by ships to provide stability and adjust a vessel's trim for optimal steering and propulsion. The use of ballast water varies among vessel types, among port systems, and according to cargo and sea conditions. Ballast water often originates from ports and other coastal regions, which are rich in planktonic organisms. It is released at sea, usually along coastlines, and in port systems. As a result, a diverse mix of organisms is transported and released around the world with the ballast water of ships. Although the effects of many introductions remain unmeasured, it is clear that some invaders are having significant economic and ecological impacts as well as human health consequences (SERC[4] 2006).

The segregated ballast water exchange used by double-hulled tankers at sea is an offshore process under the jurisdiction of the U.S. Coast Guard. As the tanker fleet servicing Valdez changes to double hull tankers, use of segregated ballast water systems are becoming more common. Segregated ballast water often carries organisms drawn into ballast water tanks at the point of origin that are not indigenous to the region where the ballast is discharged. As more double-hulled tankers exchange their ballast at sea and lessen the need for onshore ballast treatment, the potential of introduction of non-indigenous species could increase in Prince William Sound.

As discussed in Section 4.7.7.2.1 of the TAPS FEIS (BLM 2002a), the introduction of non-indigenous species at Port Valdez and into Prince William Sound has uncertain but potentially adverse consequences for native species and local ecosystems. The Prince William Sound Regional Citizens Advisory Council (PWSRCAC) identified fifteen non-indigenous species in Prince William Sound in collaboration with NIS experts and government agencies, as of 2000. However there currently is no evidence that the non-indigenous aquatic species found so far in Prince William Sound are considered invasive at this time (RCAC 2006c).

RCAC closely monitors non-indigenous species activity. The potential for invasion by non-indigenous species into Prince William Sound and other Alaska waters from oil tanker ballast water discharges has been a priority issue for PWSRCAC since 1996. PWSRCAC, in collaboration with the U.S. Fish & Wildlife Service, NOAA National Sea Grant Program through Oregon State University, and the University of Alaska Fairbanks, funded a series of studies to assess the potential for invasion of Prince Williams Sound by non-indigenous marine species. Studies include a 1997 Smithsonian Pilot Study that showed plankton are abundant and diverse in the arriving ballast water and some are not indigenous to Prince William Sound, however, the study concluded the Sound is at risk of invasion (PWSRCAC 2006f).

According to the PWSRCAC website, studies include *Biological Invasions of Cold-Water Coastal Ecosystems in Port Valdez and Prince William Sound, Marine Invasive Species and Biodiversity of*

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[4] The National Invasive Species Act of 1996 directed the U.S. Coast Guard in conjunction with the Smithsonian Environmental Research Center (SERC) to develop a clearinghouse for the synthesis, analysis, and interpretation of national data concerning ballast water management and ballast-mediated invasion. As a result, the National Ballast Water Information Clearinghouse was established in 1997 at SERC.

Southcentral Alaska, and others. Numerous other studies are underway and are being planned (PWSRCAC 2006f).

The proposed action of downsizing the BWTF would not impact tanker traffic nor would it cause or contribute to the introduction of non-indigenous species. The proposed action is a response to less tanker activity, not a cause of it. The impacts of the BWTF modification are not expected to have any adverse synergistic impact on species or ecosystems that may be affected by non-indigenous species in the future.

4.2.5 Resource Protection Measures Considered

Numerous federal and state resource management and monitoring programs have been established to protect environmental resources and to effect restoration. The assessment of cumulative impacts must recognize the existence of these programs and assume that the mandate under which each program was established will continue. These programs require avoidance or mitigation of environmental impacts to the resources they are designed to protect. Section 4.6.4 of the NE NPRA DEIS, which is incorporated here by reference, identifies such resource protection measures with respect to air quality, water quality, wetlands and floodplains, EFH, marine mammals, threatened and endangered species, environmental justice, and consultation and coordination with Indian tribal governments. Section 4.1 of the TAPS FEIS also identifies an extensive array of resource protection and mitigation measures applicable to TAPS operations through the Federal Grant. The following sections reflect supplemental considerations regarding past, present, and reasonably foreseeable future projects adjacent to the action area for the proposed BWTF action.

4.3 MITIGATION

BLM has determined the mitigation measures presented below will reduce the potential environmental consequences specifically associated with the BWTF modification identified in Environmental Consequences, Chapter 4.0. These measures are in addition to existing applicable federal, state, and local laws and regulations, the requirements of the Federal Grant, and existing APSC environmental protection plans and procedures.

Geology and Soils

1. If suspected contaminated soils are encountered during and after BWTF modification activities, Alyeska Pipeline Service Company (APSC) will undertake remediation in accordance with a remediation plan approved by the appropriate Joint Pipeline Office authorities.

Air and Water Quality

2. In addition to effluent monitoring, APSC will continue to implement procedures designed to limit hydrocarbon releases from normal operation to the marine waters of Port Valdez and Prince William Sound. These procedures require activities such as completely surrounding oil tankers with containment booms before any off-loading or on-loading activities begin, conducting surveillance to identify oil sheens, and other measures to quickly identify and respond to any release of hydrocarbons to marine waters.

3. APSC will remain in compliance with all State and Federal air and water quality regulations, including current NPDES permit requirements governing the Ballast Water Treatment Facility during all phases of the proposed projects, and conduct environmental monitoring, recording and reporting as required.

4. APSC shall request ADEC plan approval under 18 AAC 72.600 in advance of any alterations, modifications, and major changes in operating procedure to the wastewater treatment systems at the Ballast Water Treatment Facility. ADEC also requires a review of the mixing zone when changes are made to the wastewater treatment system.

5. Fugitive emissions will be controlled during BWTF modification activities by properly operating and maintaining equipment and by watering roads and disturbed areas as needed.

6. Under the Best Management Practices Plan and Pollution Prevention Requirements, APSC shall continue to ensure proper operation and maintenance of the Ballast Water Treatment Facility.

Health and Safety

7. APSC will be expected to continue injecting hydrogen peroxide into the 90s tanks to counteract high H2S levels to maintain a safe operating environment for worker health and safety.[5]

Reporting Condition Upsets

8. In addition to reporting to EPA and ADEC, APSC will report all upset conditions to JPO during and subsequent to completion of Ballast Water Treatment Facility projects.

Oil Spill Prevention and Response

9. APSC will revise spill prevention and contingency plans to reflect changes in the number and capacity of BWTF storage tanks and any changes in the number of on-site employees for spill response activities.

4.3 UNAVOIDABLE IMPACTS AND THE EFFECTIVENESS OF MITIGATION

TAPS, including the VMT, has existed for over 30 years and is now part of the affected environment. For this reason, major construction-related impacts to landforms, soil, vegetation, water bodies, habitat, and cultural resources have already occurred. Because of the small scale nature of the proposed operations and maintenance actions, the BWTF modification does not change this basic circumstance. The VMT will continue to operate, with potentially less infrastructure to maintain fewer on-site personnel, which will result in long-term beneficial impacts to the environment.

BLM's discussion in Section 4.8 of the TAPS FEIS of unavoidable adverse impacts, the relationship between local short-term uses of the environment and long-term productivity, the irreversible and irretrievable commitment of resources, and mitigation of adverse effects remains applicable and is adopted here by reference. The primary unavoidable disturbances resulting from the proposed action will be the actual project activities occurring within the boundaries of the existing VMT. The impacts of these activities are expected to be short-term, confined to the VMT, minor, and readily mitigated. Water discharge to Port Valdez will remain unchanged as a result of the proposed action and will not increase

[5] Alyeska Pipeline Service Company letter to J. Hughes, Joint Pipeline Office, Re: Hydrogen Peroxide Injection System Modifications, Letter No. 9139, dated July 18, 2006, authorization request to modify existing hydrogen peroxide injection system at the BWTF.

impacts to the marine environment. The BWTF modification is a mitigation measure as it is expected to reduce long-term air and water quality environmental impacts.

The JPO is responsible for ensuring that BLM's mitigation measures are properly implemented and they are environmentally effective over time because they minimize potential environmental impacts associated with the proposed action. The JPO has discretion in scheduling effectiveness monitoring activities, determining monitoring approaches or methodologies, and establishing monitoring standards, but the level and intensity of monitoring will vary according to the potential impact being mitigated. It is important that the monitoring effort result in sufficient data and observations to make a meaningful analysis of the effectiveness of the mitigation.

Work during all phases of the proposed BWTF projects will be conducted in collaboration with EPA and ADEC Industrial Wastewater Program staff and other agencies as required to ensure APSC will remain in compliance with applicable regulatory and permitting requirements. Due to the nature of the project, work will be done over a several year time frame. The JPO expects APSC will remain in compliance with all State and Federal regulations governing the BWTF during all phases of the proposed projects (JPO 2006).

The NPDES permit specifies effluent limitations and requires rigorous environmental monitoring, recording and reporting to the Environmental Protection Agency and the Alaska Department of Environmental Conservation, along with a best management practices plan and pollution prevention requirements, and therefore mitigative in nature.

APSC will have a legal obligation to fully implement and monitor the effectiveness of BLM's mitigation measures. For example, environmental effluent monitoring during and subsequent to BWTF modification activities relating to discharge into Port Valdez will provide information about the effectiveness of measures to mitigate potential environmental impacts to water quality and fish resources. Demonstrated compliance with effective mitigation measures and other project conditions will allow the BLM to have the BWTF modified in an environmentally sound manner. Should mitigation actions not prove adequately effective, modifications to the mitigations or to BWTF modification activities may be necessary. With implementation of the suggested mitigation measures, the proposed action should not result in any significant environmental impacts.

5.0 ANILCA SECTION 810 ANALYSIS OF SUBSISTENCE IMPACTS

5.1 SUBSISTENCE EVALUATION FACTORS

Section 810(a) of ANILCA requires that an evaluation of subsistence uses and needs be completed for any federal determination to "withdraw, reserve, lease, or otherwise permit the use, occupancy or disposition of public lands." As part of the NEPA analysis, an evaluation of potential impacts to subsistence under ANILCA § 810 must be completed for the modification of the Ballast Water Treatment Facility of the Trans-Alaska Pipeline System, Valdez Marine Terminal. ANILCA requires that this evaluation include findings on three specific issues:

1. The effect of such use, occupancy, or disposition on subsistence uses and needs;
2. The availability of other lands for the purpose sought to be achieved; and
3. Other alternatives that would reduce or eliminate the use, occupancy, or disposition of public lands needed for subsistence purposes (16 U.S.C. § 3120).

This section sets out the evaluation and findings required by ANILCA § 810 for the proposed modification of the Ballast Water Treatment Facility based upon the information detailed in the Environmental Assessment. Section 3.13, Affected Environment, provides information regarding areas and resources important for subsistence use. Section 4.1.12, Environmental Consequences analyzes impacts on resource populations and access by subsistence users, and was used to determine whether the level of effects from the modification of the Ballast Water Treatment Facility is extensive enough to cause a possible significant restriction to subsistence. In determining whether the proposed modification of the Ballast Water Treatment Facility, including cumulative effects, may significantly restrict subsistence uses, the following three factors in particular are considered:

1. The reduction in the availability of subsistence resources caused by a decline in the population or amount of harvestable resources;
2. Reductions in the availability of resources used for subsistence purposes caused by alteration of their normal locations and distribution patterns; and
3. Limitations on access to subsistence resources, including from increased competition for the resources.

A significant restriction to subsistence may occur when an action substantially may reduce populations or their availability to subsistence users, and when an action may substantially limit access by subsistence users to resources. If the preliminary evaluation and findings were to conclude that the proposed action may significantly restrict subsistence uses, then additional requirements are established in the statute. These include notice to the State and appropriate regional and local subsistence committees, a hearing in the vicinity of the area involved, and the making of certain determinations as required by Section 810(a)(3). For the proposed action to proceed, the Federal land manager would be required to determine that:

A. Such a significant restriction of subsistence uses is necessary, and consistent with sound management principles for the utilization of the public lands;
B. The proposed activity will involve the minimal amount of public lands necessary to accomplish the purposes of such use, occupancy, or other disposition; and
C. Reasonable steps will be taken to minimize adverse effects upon subsistence uses and resources resulting from such actions.

5.2 EVALUATION AND FINDINGS

The TAPS FEIS Section 3.13 describes subsistence uses of Tatitlek, Valdez, Chenega Bay, and Cordova, communities found in the vicinity of the Valdez Marine Terminal. Since Valdez is not a rural community, the local harvest activities of that community are not technically subsistence uses as defined in Title VIII of ANILCA. Tatitlek, Chenega Bay, and Cordova residents harvest subsistence resources throughout extensive subsistence uses areas centered on their communities. Subsistence uses by these three communities in the Valdez Arm area exist, but these represent a small and remote portion of the uses areas for these communities. BLM conducted an analysis of subsistence impacts associated with the proposed action under requirements of Section 810 of ANILCA (see Chapter 5) and concluded that the effects of the BWTF modification on subsistence uses fall below the level of significantly restricting subsistence uses and needs. BLM also determined the proposed action would not substantially reduce subsistence resource populations or their availability to subsistence users and would not substantially limit access by subsistence users to resources.

Concerning the availability of alternative lands, the proposed BWTF modification is intrinsically linked to the existing Valdez Marine Terminal. As a result, no alternative lands for the proposed activity are relevant. Finally, as noted, modification of the BWTF would somewhat reduce the existing infrastructure at the Valdez Marine Terminal, relevant to the efficient treatment of ballast water and storage of recovered crude oil. No alternatives that further reduce the land use are feasible. Considering the three factors together, the effects of the BWTF modification on subsistence uses fall below the level of significantly restricting subsistence uses and needs. The proposed action would not substantially reduce subsistence resource populations or their availability to subsistence users, nor would it substantially limit access by subsistence users to resources.

5.3 CUMULATIVE IMPACT ANALYSIS

Section 4.3 of the EA examines cumulative impacts, noting that in the Trans Alaska Pipeline Final Environmental Impact Statement, the BLM found that operations and maintenance changes, such as the modification of the Ballast Water Treatment Facility were “not significantly distinguishable” from existing operations for the purposes of environmental review. Thus, the cumulative impacts analysis provided for the TAPS FEIS had examined and reached conclusions on cumulative impacts, of which the BWTF modification at the Valdez Marine Terminal is an indistinguishable part. The current EA is tiered from, and incorporates by reference the cumulative effects analysis of the previous TAPS FEIS (2002) and the EA for Reconfiguration of the VMT (2004). As a result, cumulative impacts to subsistence uses have already been identified, and compliance with the notice, hearings, and determinations requirements of Section 810 have already been assured (BLM 2004).

5.4 FURTHER COMPLIANCE WITH ANILCA SECTION 810

With the conclusion that the proposed BWTF modification would not significantly restrict subsistence uses, no further steps are required for compliance with Section 810. Specifically, the BLM is not required to provide notice and hearings, under Section 810 (a)(1) and (2). Similarly, the BLM is not required to reach the determinations required under Section 810 (a)(3).

6.0 CONSULTATION AND COORDINATION

6.1 ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

Section 7(a)(2) of the Endangered Species Act (ESA) requires all federal agencies to consult with the U.S. Fish and Wildlife Service on all proposed actions undertaken by the agency that may affect threatened and endangered species. BLM requested informal consultation with the U.S. Fish and Wildlife Service (USFWS) in accordance with the ESA. The USFWS stated the Steller's eider (*Polysticta stelleri*), listed as threatened in 1997, rarely occurs in Prince William Sound waters during winter, and are not likely to occur in Valdez Harbor. USFWS also stated that the Kittlitz's murrelets (*Brachyramphus brevirostris*) have not been observed in Valdez Arm since the mid-1990's, and agreed with BLM's determination that approval of the proposed action is not likely to adversely affect these species and critical habitat. USFWS concluded the requirements of Section 7(a)(2) of the Endangered Species Act were satisfied, no biological assessment was necessary, and no further consultation pursuant to the Endangered Species Act would be required for the proposed project.

6.2 EFH CONSULTATION

The consultation requirements of Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA;16 U.S.C. 1855(b)) provide that federal agencies must consult with the Secretary of Commerce on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH). EFH as defined in the MSA means those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity; Can include fresh and saltwater habitats and applies to commercially-fished species. The intent of the MSA is to ensure federal actions sustain populations to be fished. An EFH Assessment (50 CFR Part 600.920) is required to discuss any adverse effects on EFH, if so determined.

BLM consulted the National Marine Fisheries Service (NMFS) in accordance with the Magnuson-Stevens Fishery Conservation and Management Act. BLM determined the proposed action would not affect any ESA listed species or critical habitat for which the NMFS has responsibility and which may occur in the action area. NMFS concurred with BLM's determination that the proposed action would not affect the Steller sea lion (*Eumetopias jubatus*), the fin whale (*Balaenoptera physalus*), and the humpback whale (*Megaptera novaengliae*). NMFS also concurred with BLM's determination that the action is not expected to adversely affect Essential Fish Habitat (EFH) in Prince William Sound. No further EFH assessment or consultation is required and NMFS did not offer any EFH conservation recommendations.

6.3 STATE AND FEDERAL AGENCY COORDINATION

BLM consulted the Environmental Protection Agency (EPA) and the Alaska Department of Environmental Conservation (ADEC) for analysis of specific data and information related to fugitive air emissions and wastewater treatment and discharge as a result of the proposed action. EPA indicated it does not plan to modify the current NPDES permit due to expire in 2009, as a result of the proposed action. ADEC plans to review the proposed action to ensure continued compliance with State air and water quality requirements. BLM also requested informal consultation with the Alaska Office of History and Archaeology State Historical Preservation Officer (SHPO) in accordance with Section 106 of the National Historic Preservation Act**,** and no substantial concerns were identified.

List of Agency Consultations

U.S. Fish and Wildlife Service, Anchorage, AK

Greg Balough	Biologist

U.S. National Marine Fisheries Service, Anchorage, AK

Brad Smith	Biologist

Alaska Department of Environmental Conservation, Valdez, AK

Ron Doyel	Environmental Health Specialist & JPO Liaison

U.S. Environmental Protection Agency, Seattle, WA

Jean Zodrow	Toxicologist, Office of Environmental Assessment

Alaska Department of Natural Resources, Office of History & Archaeology

Judy Bittner	State Historic Preservation Officer, Anchorage, AK

6.4 LIST OF JPO/BLM PREPARERS AND CONTRIBUTORS

EA Preparer

Lois Simenson	NEPA Coordinator & Realty Specialist

NTP Project Manager JPO Valdez Supervisor
Joe Hughes

Contributors

Joe Dygas	Physical Scientist
Nolan Heath	Deputy Authorized Officer
Bruce Hollen	Wildlife and Threatened and Endangered Species Biologist
George Browning	Administrative Support
Scott Guyer	Cover Design

6.5 ALYESKA PIPELINE SERVICE COMPANY CONTRIBUTORS

Joe Riordan	Project Engineer
Rob Shoaf	Compliance Officer
Judy McCormick	JPO Liaison
Mike Britt	BWTF Operations
Dave Connor	Ballast Water Treatment Operations Specialist

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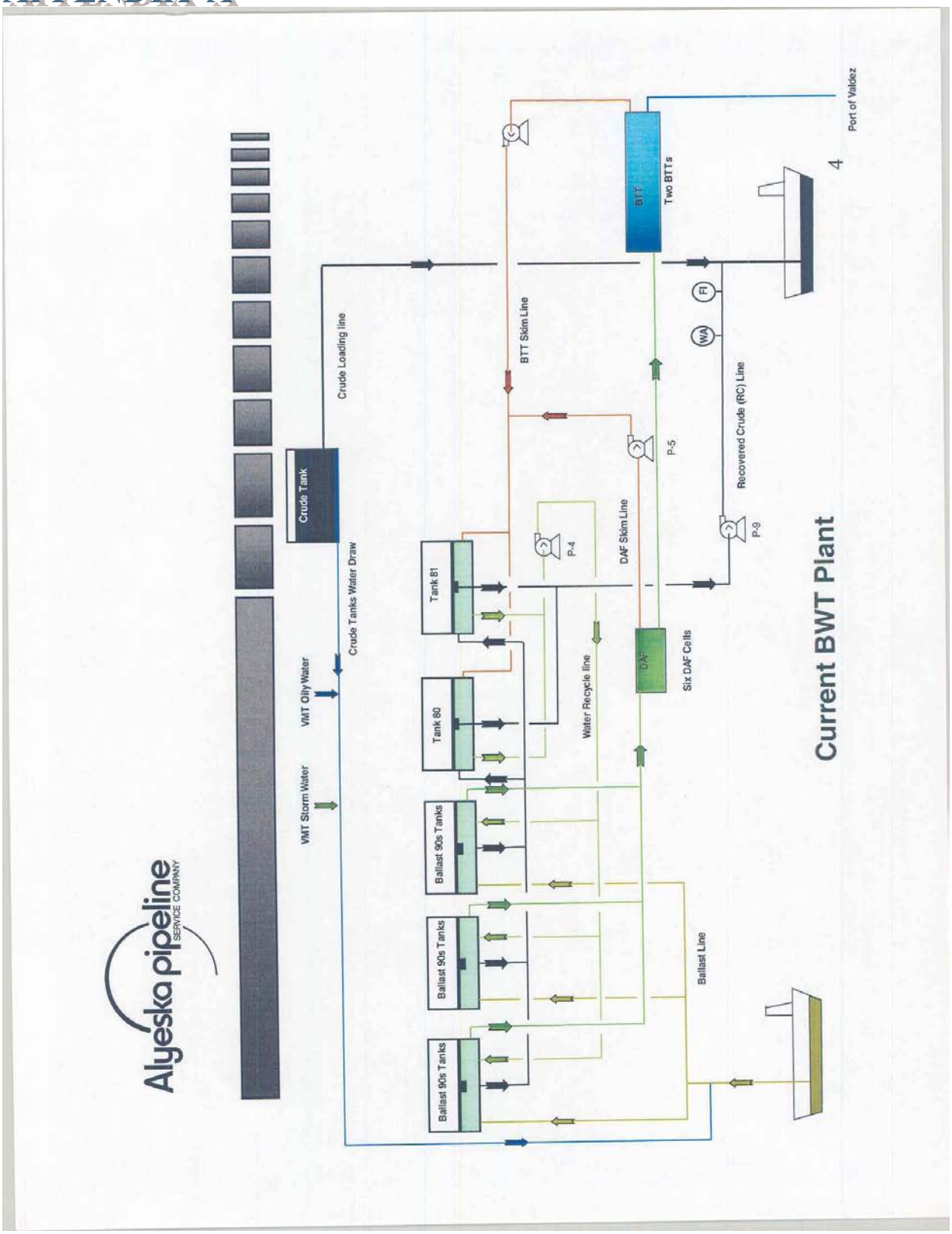
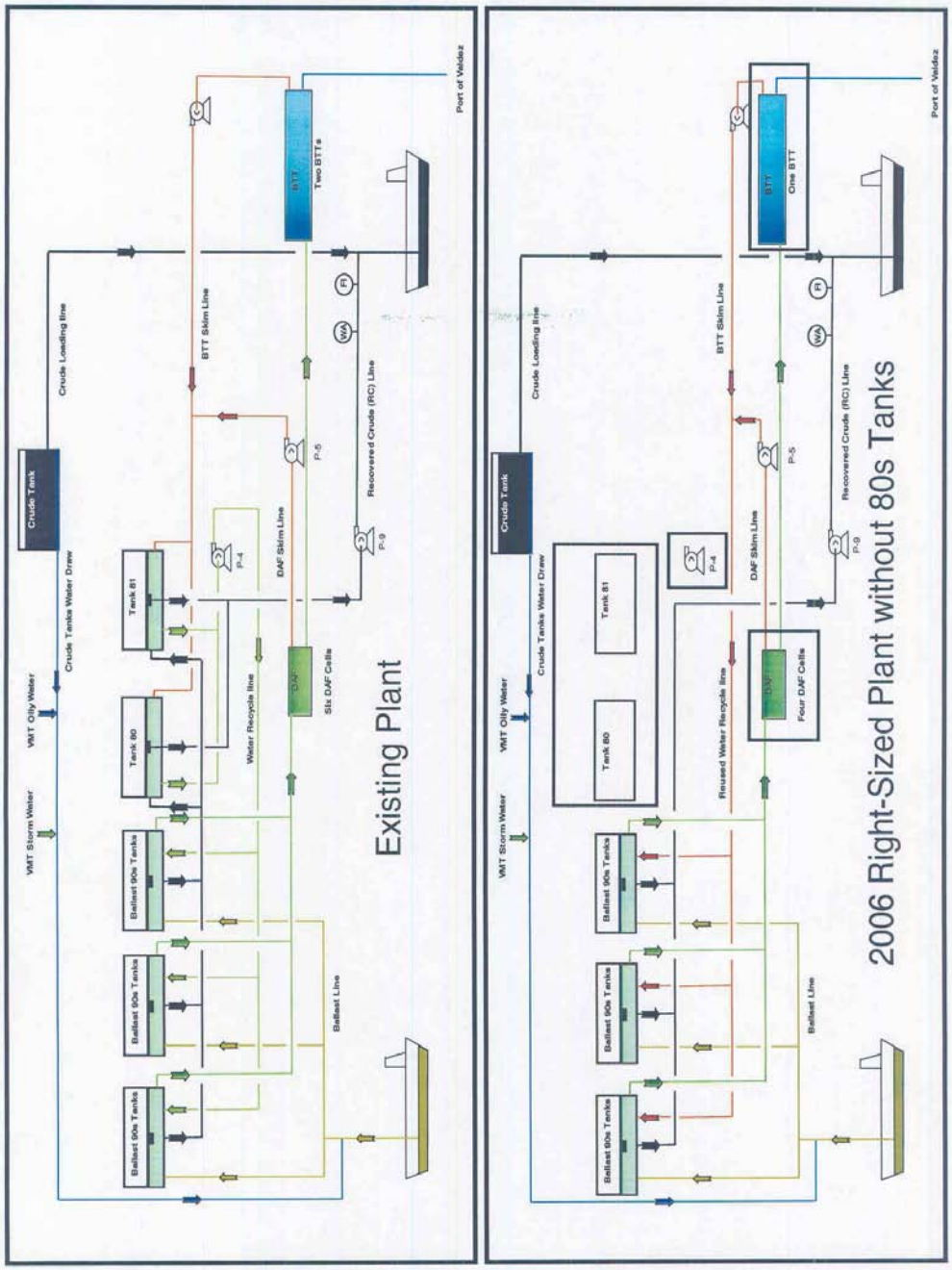
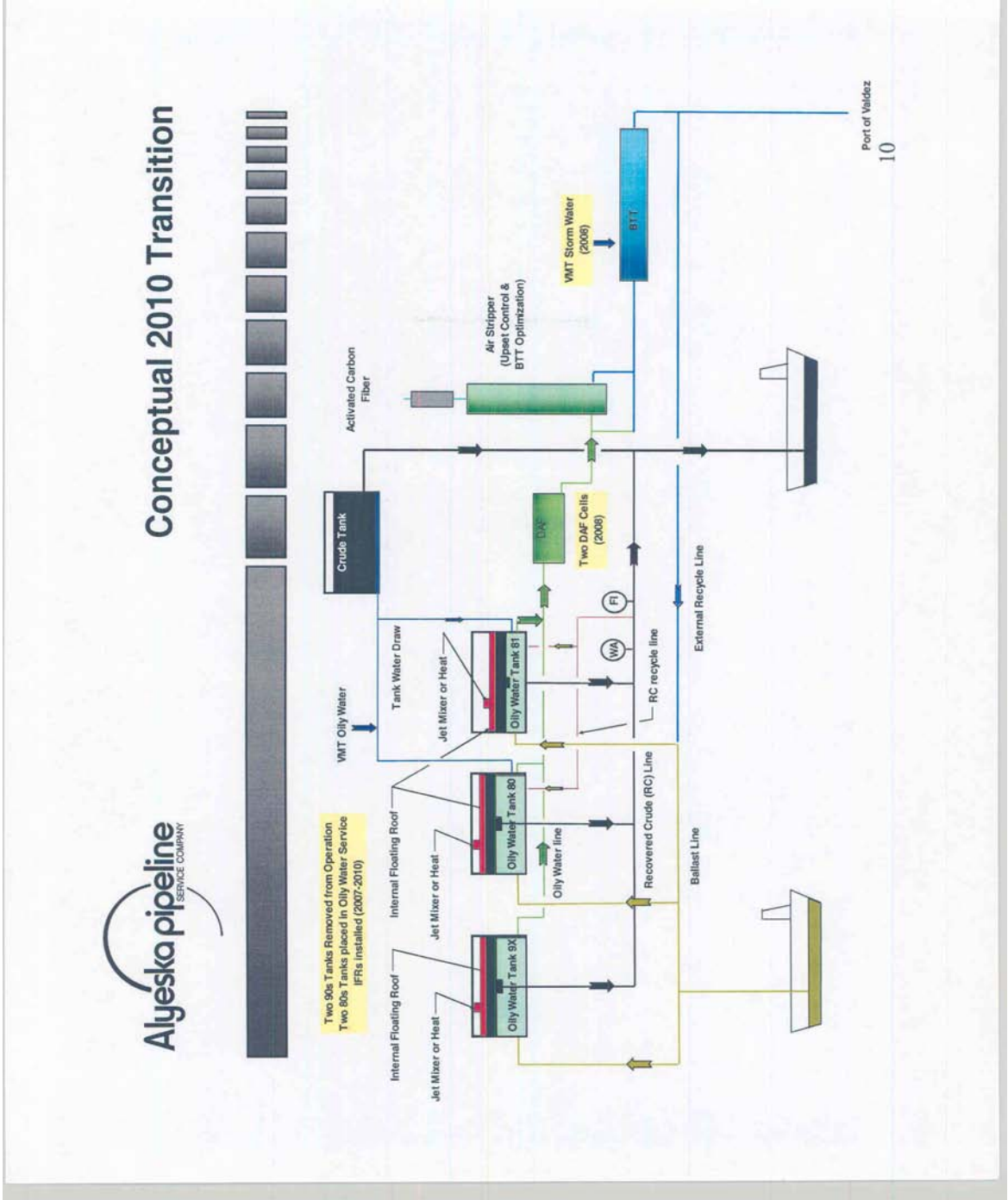
APPENDIX A


Alyeska pipeline
SERVICE COMPANY
VMT Storm Water
VMT Oily Water
Crude Tank
Crude Loading line
Crude Tanks Water Draw
Ballast 90s Tanks
Ballast 90s Tanks
Ballast 90s Tanks
Tank 80
Tank 81
Ballast Line
Water Recycle line
P-4
DAF Skim Line
BTT Skim Line
P-5
DAF
Six DAF Cells
BTT
Two BTTs
FI
WA
Recovered Crude (RC) Line
P-9
4
Port of Valdez
Current BWT Plant

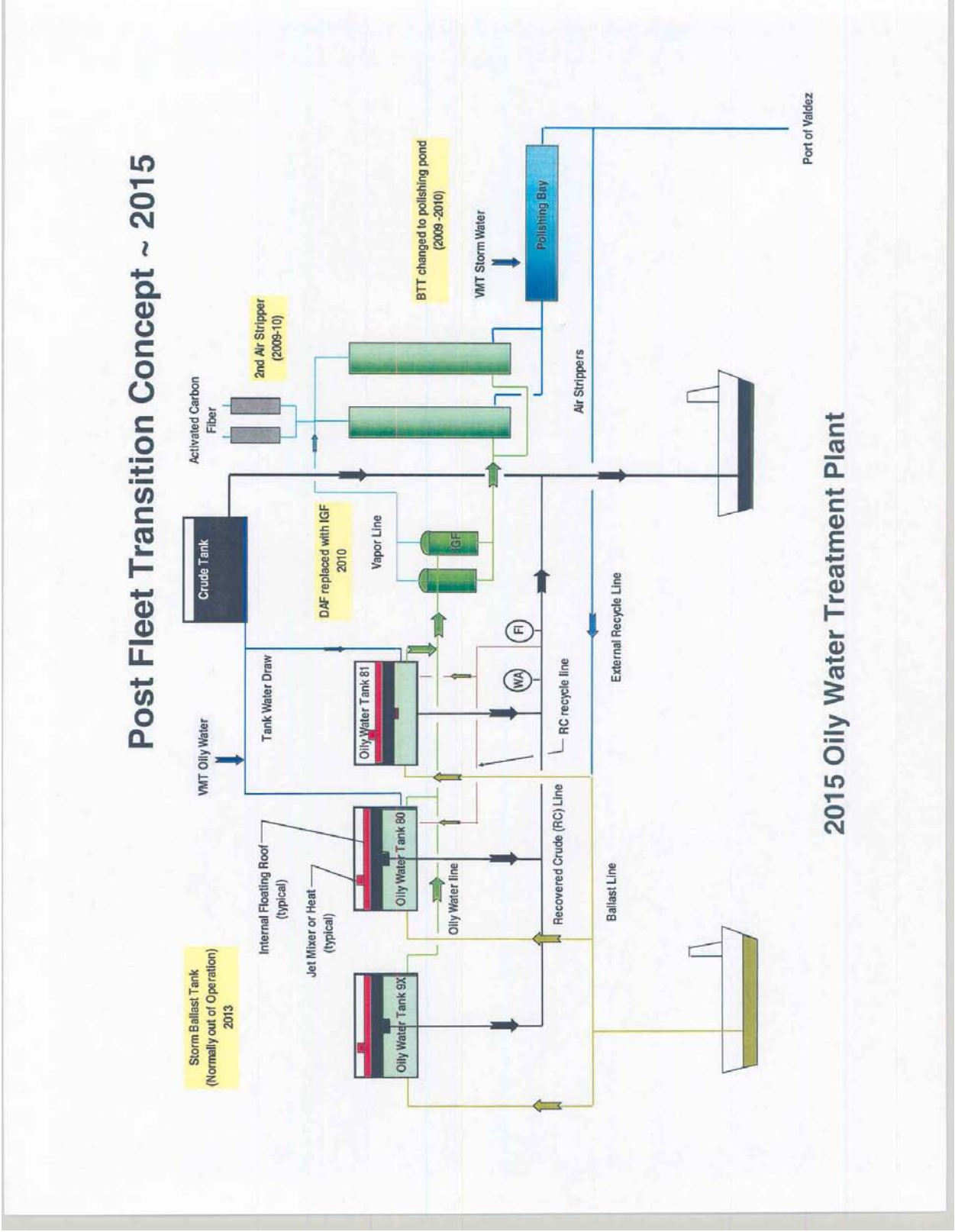
APPENDIX B


Existing Plant
Crude Tank
Crude Loading line
Crude Tanks Water Draw
VMT Oily Water
VMT Storm Water
Tank 81
Tank 80
Ballast 90s Tanks
Ballast 60s Tanks
Ballast 90s Tanks
Ballast 60s Tanks
BTT Skim Line
Water Recycle line
DAF Skim Line
Six DAF Cells
Ballast Line
BTT
Two BTTs
Recovered Crude (RC) Line
Port of Valdez
2006 Right-Sized Plant without 80s Tanks
Crude Tank
Crude Loading line
Crude Tanks Water Draw
VMT Oily Water
VMT Storm Water
Tank 81
Tank 80
Ballast 90s Tanks
Ballast 90s Tanks
Ballast 60s Tanks
BTT Skim Line
Reused Water Recycle line
DAF Skim Line
Four DAF Cells
Ballast Line
BTT
One BTT
Recovered Crude (RC) Line
Port of Valdez

APPENDIX C


Alyeska pipeline
SERVICE COMPANY
Conceptual 2010 Transition
Two 90s Tanks Removed from Operation
Two 80s Tanks placed in Oily Water Service
IFRs installed (2007-2010)
VMT Oily Water
Crude Tank
Activated Carbon Fiber
Internal Floating Roof
Jet Mixer or Heat
Tank Water Draw
Oily Water Tank 9X
Oily Water Tank 80
Oily Water Tank 81
Oily Water line
DAF
Air Stripper (Upset Control & BTT Optimization)
Two DAF Cells (2008)
VMT Storm Water (2008)
BTT
FI
WA
RC recycle line
Recovered Crude (RC) Line
External Recycle Line
Ballast Line
Port of Valdez
10

APPENDIX D


Post Fleet Transition Concept ~ 2015
Crude Tank
Activated Carbon Fiber
2nd Air Stripper (2009-10)
BTT changed to polishing pond (2009 -2010)
VMT Storm Water
Polishing Bay
Port of Valdez
Air Strippers
DAF replaced with IGF 2010
Vapor Line
IGF
FI
WA
External Recycle Line
RC recycle line
VMT Oily Water
Tank Water Draw
Oily Water Tank 81
Internal Floating Roof (typical)
Jet Mixer or Heat (typical)
Oily Water Tank 80
Oily Water line
Recovered Crude (RC) Line
Ballast Line
Storm Ballast Tank (Normally out of Operation) 2013
Oily Water Tank 9X
2015 Oily Water Treatment Plant

APPENDIX E

Alyeska pipeline SERVICE COMPANY

Potential Affect on HAPS Air Emissions

	Current Forecast HAPS from BWTF	Forecast HAPS from BWTF with Implementaiton of Conceptual Plan	
Year	**HAP Emissions (tpy)**	**HAP Emissions (tpy)**	**Modifications**
2005	72	72	
2006	42	38	DAF Weir Installed, TK81 RFO, TK80 RFO, One BTT RFO, Splitter box RFO
2007	38	31	IFR installed in TK92, TK93 RFO
2008	36	18	
2009	38	14	
2010	21	10	IFRs installed in TK80 & TK81, TK 94 RFO
2011	25	5	

APPENDIX F (1)

Status Update

Ballast Water Treatment Facility

Alyeska pipeline

Alyeska Pipeline Service Company (Alyeska) is planning to completely renovate the Ballast Water Treatment (BWT) system at the Valdez Marine Terminal (VMT) due to lower ballast water flow and needed improvements for health, safety, and operability purposes. As a result of less ballast water to process, the existing BWT system is over-sized for the forecasted needs. These planned modifications will address health, safety, environment, operations and maintenance challenges. In 2006, design engineering proceed and for some aspects, implementation is occuring: new skimmers in the gravity separation tanks (90's tanks), splitter box covered, DAF cells reduced. In 2007, vapor controls are planned for the 90's tanks. In addition, the pilot plants and studies for DAF and BTT replacement will be utilized to move into engineering.

BWT Operations

Crude oil tankers arriving at the VMT routinely contain ballast water (ballast) for ship stability. The latest generation of tankers normally keeps the seawater ballast segregated from the oil tanks, but complete segregation is not always possible for safety reasons. In addition, some of the older style tankers do not have the ability to segregate the ballast. In those cases the ballast becomes contaminated with remnants of the oil previously carried in the ships' tanks and must be processed at the BWT. The BWT system has two purposes: (1) recover crude oil from the ballast, and (2) treat the separated seawater for return to the sea. Recovered oil is returned to the crude oil system, the separated water is treated and discharged into Port Valdez in compliance with federal and state permits.

The BWT system involves a three-step process prior to effluent discharge:

1. Gravity separation where crude oil is remove and recovered and returned to the crude oil system.
2. Dissolved air floatation where more crude oil and grease is recovered and returned to the crude oil system.
3. Biological treatment where semi-volatile hydrocarbons are removed to meet permit limits.

The treated ballast water is then discharged into Port Valdez.

Approach

Work at the BWT facility focuses on a permanent resolution to skimming recovered crude oil in tanks and reducing hydrocarbon emissions, and replacing the treatment system with one that is safer and right-sized for future volumes. Administrative safety measures are currently in place until the permanent solutions are implemented in 2006—2010. A preliminary plan is presented below.

Conceptual and Planned BWT Modifications

	2006	2007	2008	2009	2010
Engineering	Pilot studies and preliminary engineering	Preliminary engineering and final design	Complete final designs of new BWT processes		
Recovered Crude Process	Improved skimming, pumps and piping	Bypass and eliminate recovered crude tanks			
BWT 90s Tanks Flammable Atmosphere		Tie BWT Tanks 94 & 93 to VMT vapor system	Idle Tank 92 (standby or remove from service)		
Replace DAFs			Install replacement design (Induced Gas Flotation- IGF)		
Replace BTTs				Install BTT Replacement (new air stripper design)	
Supplemental Treatment					Install Supplemental treatment (if req'd)
Estimated Cost (Millions)	$10.5	$26.2	$33.2	$20.8	$10.5

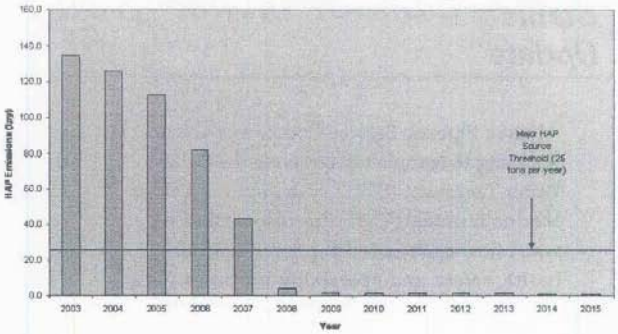
August 2006

APPENDIX F(2)

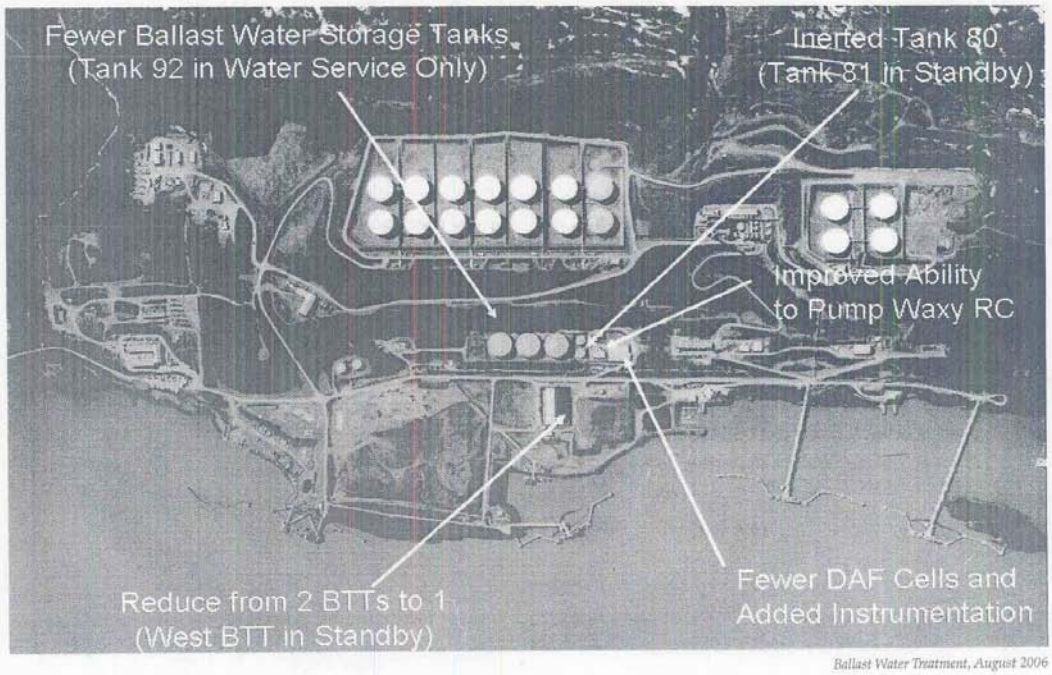
Safety and Environmental Protection

The BWT system emits volatile organic compounds that are flammable or explosive under very limited conditions. These same compounds also include hazardous air pollutants that can pose a public risk if exposure is great enough. An Alyeska assessment determined that the explosive risks were too high within the BWT tanks during certain operating conditions. The BWT modifications will dramatically reduce that risk. At the same time these explosive risks are mitigated the emission of air pollutants will be equally reduced. A previous health study, shared with ADEC and EPA, showed the emissions do not pose a threat to the public. Consistent with an EPA rulemaking, Alyeska placed vapor controls on two tanker loading berths. Since that time VOC emissions at the terminal have reduced to less than 10% of what they were previously. In addition, the present flow of ballast water through the BWT is dramatically reducing because the number of double-hulled tankers in the oil tanker fleet has increased in conformance with the Oil Pollution Act, which require double-hulled tankers according to a set schedule. Double-hulled tankers carry significantly less non-segregated ballast water. The reduction in ballast water flow also causes fewer air pollutants. The reduction in ballast water flow is compelling Alyeska to examine all of the BWT treatment steps. The proposed modifications to the DAF and BTT part of the BWT are life-cycle and flow based changes, which will dramatically decrease air emissions.

BWT Plant HAP Emissions
(with planned changes implemented)



BWT Work Overview for 2006



Ballast Water Treatment, August 2006

APPENDIX G

2006295

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish & Wildlife Field Office
605 West 4th Avenue, Room G-61
Anchorage, Alaska 99501-2249

RECEIVED
JOINT PIPELINE OFFICE
2006 OCT 3 AM 7 09

in reply refer to
AFWFO

September 29, 2006

Memorandum

To: Lois Simenson, Bureau of Land Management Realty Specialist

From: Ellen Lance, Wildlife Biologist, Anchorage Fish and Wildlife Field Office

Re: Ballast Water Treatment System Upgrade, TAPS at Valdez (*consultation # 2006124*)

On September 21, 2006, we received an email requesting concurrence with your determination that upgrading the TransAlaska Pipeline (TAPS), Ballast Water Treatment Facility (BWTF) at the Valdez marine terminal is not likely to adversely affect threatened or endangered species and their critical habitat protected under the Endangered Species act of 1973 (16 U.S.C. 1531 et seq: 87 stat 884, as amended; Act). Bureau of Land Management (BLM) proposes to approve a permit submitted by Alyeska Pipeline Services to conduct the upgrade, which will incorporate new technologies, improve operational efficiency, and reflect operation changes. Hazardous air pollutants are expected to decrease.

Steller's eider *(Polysticta stelleri)*, listed as threatened in 1997, rarely occur in Prince William Sound waters during winter, and they are not likely to occur in Valdez Harbor. Kittlitz's murrelets (*Brachyramphus brevirostris*) have not been observed in Valdez Arm since the mid-1990s. The Service agrees with your conclusion that the probability that a species protected under the Act would occur within the action area can be considered discountable, therefore, we concur with your determination that approval of the permit to upgrade the BWTF is not likely to adversely affect species and critical habitat. Preparation of a biological assessment or further consultation under section 7 of the Act is not necessary at this time. If project plans change, additional information on listed or proposed species becomes available, or new species are listed that may be affected by the project, consultation should be reinitiated.

This letter relates only to federally listed or proposed species and/or designated or proposed critical habitat under our jurisdiction. It does not address species under the jurisdiction of National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, or Bald and Golden Eagle Protection Act.

This concludes the section 7 consultation on the Ballast Water Treatment System Upgrade in Valdez. Thank you for your cooperation in meeting our joint responsibilities under section 7 of the Act. If you have any questions, please contact me at (907) 271-1467. In future correspondences regarding this project please refer to consultation number 2006295.

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TAKE PRIDE IN AMERICA

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APPENDIX H (1)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

RECEIVED
JOINT PIPELINE OFFICE

2006 SEP 6 AM 7 04

August 30, 2006

Jerry Brossia, Authorized Officer
Department of the Interior
Bureau of Land Management
411 West 4th Ave.
Anchorage, AK 99501

RE: Environmental Assessment
Ballast Water Treatment Plant
Valdez Marine Terminal

Attn: Lois Simenson

Dear Mr. Brossia:

This letter is in response to your request for consultation with the National Marine Fisheries Service (NMFS) in accordance with the Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson - Stevens Act). The Bureau of Land Management will be completing an environmental assessment (EA) for a proposal from Alyeska Pipeline Service Company to modify the ballast water treatment (BWT) system at the Valdez Marine Terminal. Included with your request was a copy of the Biological Evaluation of the effects of the right-of-way renewal for the Trans-Alaska Pipeline System dated June, 2002.

The Biological Evaluation you provided does not address the effects of BWT system modifications on ESA listed species. If you determine that the proposed action may affect listed species, please coordinate with Brad Smith of my staff (907-221-3023) regarding the information necessary to complete consultation under the ESA.

The information you provided also does not address effects on Essential Fish Habitat (EFH). Under Section 305(b) (2) of the Magnuson-Stevens Act, federal agencies are required to consult with the Secretary of Commerce on any action that may adversely affect EFH. NMFS is required to make conservation recommendations, which may include measures to avoid, minimize, mitigate or otherwise offset adverse effects to EFH. Port Valdez contains EFH for the following federally managed species; pink, chum, sockeye, chinook and coho salmon; arrowtooth flounder; flathead sole; Pacific cod; rock sole; sablefish; sculpins; walleye pollock; and yellowfin sole.

We understand that the BWT plant accomplishes oil recovery and wastewater treatment. The treatment process consists of gravity separation, dissolved air flotation, biological treatment and on/off air strippers. Crude oil recovered from the ballast water is ultimately mixed with the pipeline oil supply and loaded onto tanker ships. On a volume basis, tanker discharges account for approximately 90 percent of BWT discharges. The remaining wastewaters are generated by the terminal operations. Your evaluation of the effects of modifying the BWT system should

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APPENDIX H (2)

include an analysis of potential impacts to EFH from discharges or other activities. Should you determine your action *may adversely affect EFH* then an EFH assessment is required as outlined in 50 CFR Part 600.920. Please visit our web site at http://www.fakr.noaa.gov/habitat for additional information on habitat and EFH information.

In addition, and in accordance with Executive Order 13112, we are concerned about the potential introduction and spread of aquatic invasive species from discharged ballast water. Trans-Alaska Pipeline trade tankers are exempt from the United States Coast Guard ballast water exchange and reporting requirements. At least fifteen non-indigenous marine species have been identified in Prince William Sound waters, some of which may have arrived there via ballast water exchange. We recommend that your EA address potential invasive species concerns as well.

We look forward to working with you to address the issues discussed above to minimize the effects of this project on living marine resources. Jeanne Hanson is the contact for this project and can be reached at (907)271-5006. Questions regarding invasive species should be addressed to Linda Shaw at (907)586-7510.

Sincerely,

Robert D. Mecum

Robert D. Mecum
Acting Administrator, Alaska Region

cc: *Records File
*Brad Smith - PRD
*Linda Shaw – HCD

*email

2

ERRATA SHEET

Environmental Assessment
Proposed Modification of the Ballast Water Treatment Facility for the Trans-Alaska Pipeline System at the Valdez Marine Terminal

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This errata sheet was added to clarify data in response to comments received after the Finding of No Significant Impact (FONSI) was signed November 30, 2006. The following sections of the EA are amended as follows:

Section 2.2, Description of the Existing Ballast Water Treatment Facility (p. 2-1) Add:

…The Valdez Marine Terminal has 18 crude oil storage tanks, 14 of which are currently operational. The current crude oil storage capacity is 6.8 million barrels. The Terminal contains 4 loading berths, 2 of which are currently in operation.

Section 2.2.5, Effluent Discharge, 3rd paragraph (p. 2-6) Change:

…release no more than 0.3 milligrams per liter…

Section 2.3.3, Fire Protection Systems (p. 2-8) Change:

1) The State Fire Marshall requires APSC to have a fire protection plan for the BWTF. The BWTF is equipped with a fire detection and suppression system. The fire protection system includes a trained fire brigade and fire trucks, water hydrants, and portable fire extinguishers. The recovered crude 80's tanks are protected with foam equipment that can dispense foam on the oil surface in side of the tanks.

2) The citation at the end of Section 2.3.3 is amended as follows: (BLM 2004a).

Bibliography (p. 6) Change:

The Bureau of Land Management citation for 2004 is changed to 2004a.

(End of errata)