Chapter 17 Responses to Comments

17.1 Introduction

This chapter contains the responses to comments received during the DEIS comment period. Chapter 16 contains the comments.

Possible options for responding to comments include further explanation of how analysis is conducted, new analysis or modified analysis, factual corrections, or explanation of why comments do not warrant further agency response. Accordingly, each response does one or more of the following.

- Provides additional information or elaborates on a topic previously discussed in the DEIS;
- Notes how the DEIS text has been revised to incorporate new information or factual corrections;
- Refers the reader, when appropriate, to another comment response to avoid repetition;
- Explains why the comment does not warrant further response; or
- Acknowledges the commenter when an opinion is stated (i.e., Thank you for your comment or your comment is noted).

17.2 Organization of this Chapter

Each letter and oral comment received during the DEIS comment period was categorized based on the nature of the commenter into the following groups: Agency and Tribal Governments, Non-governmental Organizations, Citizens, Public Hearing, and Petition. Each individual comment was then categorized by chapter. Each response includes the number of the corresponding applicable written comment or transcript, and the number of the individual comment stated within it.

Fourteen separate issues received multiple comments. To address these comments in a manner to avoid repetition and to provide meaningful information to decision-makers, detailed Standard Responses were made to the 14 issues. The specific subject areas covered by Standard Responses are:

1. Purpose and Need, Project Objectives
2. Project Alternatives
3. Electricity Use and Costs
4. Seismic (Geologic) Hazards
5. Air Emissions
6. Vessel Impacts - Downstream
7. Wastewater Discharge
8. Water Use
9. Wake Stranding
10. Natural Gas Production
11. Risk of Explosion
12. Methanol Spills
13. Responsibility, Liability, and Costs
14. Reduced Property Values

Following the Standard Responses are the responses to the individual comments. Each comment was categorized by chapter of the DEIS to which it relates and follows in the order of the DEIS. Some comments were determined to be not specific to a chapter topic and were classified as "general" comments. Responses to general comments are in section 17.19, following the responses to comments on DEIS chapter topics. The lead agencies also received

several comments that did not relate to the environmental review process under SEPA, and these comments have not been reproduced or responded to in this FEIS.

17.3 Standard Responses

17.3.1 Standard Response No. 1: Purpose and Need, Project Objectives

Several commenters question the need for the project and whether the project will result in less coal use and emissions through a reduction in coal-based methanol production.

Sections 1.1.3 and 2.4 of the FEIS contain additional information to more clearly state the purpose and need for the proposed project. These sections identify the project objectives and include a statement of the proposed project's purpose and need.

The purpose of the proposed project is to convert natural gas to methanol, to store it on site, and transport it via marine vessel to global markets. The marine terminal, part of the proposed project, is established both for NWIW's purpose to provide the infrastructure needed to load methanol on vessels for export, as well as the Port's purpose to provide general use by the Port for other cargo operations, such as lay berthing and maintenance activities (see section 1.1.2). The purpose of the proposed project also includes providing economic benefits to the region by creating jobs and tax revenues during construction and operation and improving access to recreational resources at the Port, which is in support of the Port's mission to "induce capital investment in an environmentally responsible manner to create jobs and to enhance public recreational opportunities."

The need for the proposed project is to meet the increased demand for methanol in global markets (primarily Asian) and to reduce greenhouse gas (GHG) emissions globally by producing methanol from natural gas rather than coal that emits very high levels of GHGs.

The marine terminal also meets the Port's need for an additional lay berth for vessel-related activities when the berth is not in use for the proposed project.

NWIW has not entered into agreements with any party that expressly requires retiring facilities that produce methanol from coal. The substitution of NWIW's methanol produced from natural gas for methanol produced from coal will be driven by market factors and the Chinese government's commitment to reduce coal consumption. Currently, increased demand for methanol in Asia is being met primarily by the construction of facilities in China that manufacture methanol from coal, which, as stated above, emits very high levels of GHG and generates toxic byproducts and wastes (Yang et al. 2012). Chapter 2 is updated to include more information on the project objectives.

17.3.2 Standard Response No. 2: Project Alternatives

Commenters requested the EIS evaluate different locations for the off-site alternative, as well as additional methanol production technologies.

The basis for selection of reasonable alternatives is described in WAC 197-11-440 (5) and the term "reasonable alternative" is defined in WAC 197-11-786. Both of these aforementioned WAC sections state that "reasonable alternatives may be those over which an agency with jurisdiction has authority to control impacts, either directly, or indirectly through requirement of mitigation measures."

Some comments have suggested that other locations should be considered, including location(s) distant from the Port of Kalama. As stated in section 1.1.3, the Project Objectives include the implementation of a methanol manufacturing facility and a marine terminal infrastructure allowing export of the methanol to global markets by vessel. Both the Port and NWIW have been identified as project proponents (see section 2.3). The Port is responsible for implementing the actions related to the proposed marine terminal (see section 1.1.2), which include availability of the terminal for "general use by the Port for other cargo operations when not being used for loading methanol, such as a lay berth where vessels could moor while waiting to use other Port berths, and topside ship maintenance." If the proposal was implemented at an entirely different location not under Port control, the Port would no longer be a proponent and, therefore, no longer an agency with jurisdiction. A proposal at a location not under Port control would, therefore, not meet the definition of "reasonable" under WAC 197-11-440 (5)(iii) and 197-11-786.

Comments also state that other methanol production technologies are not "reasonable" alternatives. SEPA encourages the consideration of design alternatives that could meet the proposal's objective at a lower environmental cost. Section 3.3.2 of Ecology's SEPA Handbook states for example that, "Project alternatives might include design alternatives, location options on the site, different operational procedures, various methods of reclamation for ground disturbance, closure options, etc." Therefore consideration of a different production process meets this intent under SEPA and is a reasonable alternative.

17.3.3 Standard Response No. 3: Electricity Use and Costs

Several commenters questioned if electrical power costs (both for the necessary costs to extend power to the site and for the costs of electricity generation) for the proposed project will be paid by NWIW or ratepayers (consumers).

Chapters 2 and 7 of the EIS are updated in response to the comment. Costs associated with electrical power demand at the Facility for operation and construction will be the responsibility of NWIW, not ratepayers. The electric supply for the proposed project during construction and operation must be self-generated, and/or purchased from non-federal-market-based power that is paid for by NWIW, without expense to the ratepayers.

During the DEIS public review process, Cowlitz PUD submitted a letter dated 18 April 2016, outlining the PUD's intent to supply a part of the electric demand associated with the proposed project. In that letter, Cowlitz PUD stated "Finally, the District has initiated an electric interconnection study with its Balancing Authority, which is the BPA, to determine if BPA's system would require any improvements in order for the District to serve electric power to this project. Based on estimates provided by BPA, the District expects the study will be completed sometime in the second half of 2016."

BPA, which is the System Balancing Authority for the area within which Cowlitz PUD provides service, is required to conduct a system reliability study for new large single loads. The purpose of such a study is to determine the affect a new load will have on the regional system, and the results of this study will guide Cowlitz PUD on how they will need to source the power that is being provided to NWIW. The system reliability study may show the need for minor system improvements and/or changes in contractual supply arrangements. These minor changes would not pose new environmental impacts or result in the need for additional permitting processes.

The resultant costs associated with these minor changes would be the sole responsibility of NWIW. Such system improvements are not expected to result in any increase in electricity rates for Cowlitz PUD customers.

The system reliability study, which is scheduled to be completed by the second half of 2016, should not affect the existing project permitting schedule. No project permits are dependent on the results of the system reliability study.

17.3.4 Standard Response No. 4: Seismic (Geologic) Hazards

Some comments have expressed concern over seismic activity (earthquakes) impacting the proposed facility. Section 3.3.3.2 identifies the geologic and volcanic hazards that could affect the proposed project site. The impacts of these hazards are discussed in section 3.4.1.2 of the EIS.

The Facility design is based on a site-specific investigation of the soil and groundwater conditions at the proposed project site, and in accordance with the seismic performance criteria and seismic hazards required by the applicable codes, i.e., IBC 2012 for the upland area and ASCE 60-41 for the dock. These codes consider the hazard from a potential M9.0 Cascadia Subduction Zone earthquake. These code-based design requirements are intended to mitigate the potential damage to the Facility resulting from earthquake hazards.

Mitigation measures to limit damage and impacts are discussed in the EIS sections 3.4.1.2 and 3.5.2.1 and Appendix C.

17.3.5 Standard Response No. 5: Air Emissions

Numerous comments raised concerns about the impact of emissions from the proposed project on air quality, including impacts of odors, vapor/fumes, and other emissions. Chapter 4 and Appendix D present the projected emissions of toxic air pollutants (TAPs) for the proposed project and analyzes the potential impacts from those emissions. The analysis presented in Chapter 4 concludes that all TAP emissions will comply with all applicable emissions standards and would cause ambient concentrations less than the applicable screening level thresholds as those levels are applied by Ecology. Chapter 4 also confirms that there would be little likelihood of significant adverse odor impacts.

Risk associated with the proposed project should a failure or incident occur at the Facility are discussed in Chapter 8.

As discussed in section 4.4.2.2, model-predicted concentrations of Diesel Particulate Matter (DPM) exceed the Acceptable Source Impact Levels (ASIL). The ASIL is not an air quality standard, but is a threshold at which additional analysis is required when evaluating industrial sources. Note that DPM concentrations result primarily from the non-project ship engines that would visit the Port – not the proposed Facility or the methanol tankers that would visit the Facility. These ship emissions are not subject to the ASIL analysis, but an additional analysis was conducted in accordance with Ecology's 2nd Tier TAPs review procedures. This modeling determined that DPM concentrations at all nearby residences would be far less than the Ecology 2nd Tier DPM criterion. The highest model-predicted concentration occurs at a location southwest of the Facility across the river, where the estimated increase in cancer risk is about three in a population of 1 million exposed continuously for 70 years, which is well below the 2nd Tier criterion. Additional details of the 2nd Tier impact assessment for DPM are included in Appendix D.

Because the Facility with ULE technology will not be a major source of criteria pollutants, an air quality impact analysis is not required. Nevertheless, dispersion modeling was conducted and is presented in Chapter 4 and Appendix D. The modeling shows that the Facility will not exceed National Ambient Air Quality Standards.

17.3.6 Standard Response No. 6: Vessel Impacts - Downstream

Some comments noted that the analysis in the EIS related to marine vessels and shipping failed to include emissions and other impacts from vessels traveling beyond the state of Washington. As noted in section 6.5.3.1, impacts considered include shipping from the project site (at approximately Columbia River Mile 72) to the boundary of the 3-nautical mile territory sea along a route that corresponds with the vessel route subject to state jurisdiction.

Section 2.6.2.3 indicates that the Facility would generate from 36 to 72 vessel trips (or calls) per year, depending on the size of the vessel used to transport the methanol. The upper end of this range represents an increase in volume on the Columbia River of approximately 5 percent as compared to historical shipping volumes on the Columbia River volumes (section 12.5.3). While small, this increase is large enough to warrant an evaluation.

The route a vessel would take in the Columbia River can be easily determined and analyzed because the shipping channel is defined and the vessel is limited to a specific route that follows it. However, once a vessel reaches the mouth of the Columbia River, it enters the Pacific Ocean. While the project proponents have identified a potential destination port in China, methanol is a global commodity and market-driven factors can result in product delivery to ports worldwide. In addition, while international agreements cover predetermined routes for shipping in congested areas, in the open ocean, there are no such specific shipping routes to destination ports. Therefore, identifying a particular route for analysis would be speculative and would not yield meaningful information about the impacts of shipping.

In addition, when compared to the overall volume of shipping in the North Pacific Ocean, the number of vessels calling on the Facility is by comparison very small. The most recent published data (2013) from the U.S. Maritime Administration estimates approximately 14,000 yearly ship calls to West Coast ports in the United States (MARAD 2013). The project would increase that volume by approximately one-half of 1 percent. This very small increase becomes even smaller when one includes the traffic of military and other deep-draft vessels calling only on foreign ports. SEPA does not require that every remote and speculative consequence be included in an EIS. While there are impacts from oceangoing deep-draft vessel traffic, when considered in the context of the existing vessel traffic, the vessel traffic related to the proposed project, in the open ocean, is so marginal in number and consequence that its impacts cannot be meaningfully measured, detected, or evaluated. Therefore, the scope of the analysis is appropriate considering the scale of the proposed project and the traffic of oceangoing vessels that can be reasonably associated with it.

17.3.7 Standard Response No. 7: Wastewater Discharge

Several comments expressed concerns related to wastewater discharge and potential impacts to water quality in the Columbia River, such as water quality and temperature impairments.

Section 5.5.1.2 discusses the operational impacts of the proposed project associated with wastewater treatment and discharge. The analysis concludes that all discharge from the proposed project would comply with current water quality standards.

Section 6.6.1.2 discusses the temperature of the planned wastewater discharge to the Columbia River and its potential impacts on plants and animals, including salmonids. The analysis concludes that no substantial adverse impacts would result because of the proposed project operations. The applicant is also evaluating the feasibility of incorporating a zero liquid discharge (ZLD) system. If the applicant determines this system is feasible, industrial wastewater would be treated and reused in the methanol production process, requiring no discharge to the Columbia River. Therefore, the proposed project would not affect ambient water temperatures or water quality in the Columbia River. Accordingly, with no discharge to the river, there will be no impact on salmon or other aquatic life.

17.3.8 Standard Response No. 8: Water Use

Some comments noted a concern with the volume of water needed for the project and requesting comparisons to other water users.

As discussed in Chapters 5, the proposed project would obtain a majority of the required water from a new collector well. Certification of the water rights by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer and subsequently on the Columbia River and would not have a significant impact on existing or proposed water rights or users. A comparison to the flow of the Columbia River demonstrates that the proposed project would divert a very small percentage of groundwater that could otherwise flow into the river. A comparison to other industrial/municipal withdrawals would not characterize the significance of the impact, if any exists. This type of analysis would only show individual projects relative to each other, not to the resource as required by SEPA.

17.3.9 Standard Response No. 9: Wake Stranding

Several comments expressed concerns related to the impacts of wakes created by vessels serving the facility, including the potential stranding of fish.

Chapters 6 and 15 are updated with additional analysis regarding vessel wake impacts of the proposed project. Effects associated with vessel wakes, including wake stranding of juvenile salmonids throughout the vessel transport study area for the proposed project, are discussed in section 6.2.2.2. Cumulative effects of vessel wakes associated with reasonably foreseeable development projects are discussed in section 15.5.4.

The EIS acknowledges that vessels calling on the Facility, in conjunction with the other reasonably foreseeable development projects, could contribute incrementally to wake stranding on the Lower Columbia River. However, based on current understanding and available information, it is not possible to quantify potential impacts associated with wake stranding from the proposed project accurately. Additionally, because potential impacts due to wake stranding are not unique to project vessels, but are similar for all deep-draft vessel traffic on the Columbia River, both existing and projected cumulative traffic, any plan or program to address these impacts should be addressed collectively under the direction of agencies responsible for maritime traffic on the river.

17.3.10 Standard Response No. 10: Natural Gas Production

Several comments request discussion and consideration of the impacts of fracking or hydraulic fracturing, a technology for the development of new wells or enhancement of existing wells used in the extraction of natural gas.

The proposed project does not propose or involve fracking or any other form of development of new natural gas wells. As discussed in Chapter 7, existing natural gas production capacity in North America is available to supply gas to the proposed project and this production capacity is increasing. Therefore, the proposed project will not necessarily lead to the development of new wells for natural gas extraction by fracking or any other method.

Natural gas wells developed by fracking currently provide more than half of the natural gas production capacity in the United States (US EIA 2016c) and natural gas production via fracked wells is increasing in Canada. It is likely that some portion of the natural gas used by the proposed project will be produced by wells that have been developed using fracking techniques. These resources will be developed with or without the proposed project, and permitting for such wells in North America receives environmental review as necessary in the jurisdiction where they are located. Impacts from fracking are outside the scope of this EIS.

17.3.11 Standard Response No. 11: Risk of Explosion

Several comments expressed concerns related to the potential risks associated with hazards (fire, explosion, and releases from tanks) for the proposed project with specific impacts submitted by at least one commenter. Many comments reference an analysis of the hazards of methanol storage, and consequence modeling conducted by NW Citizens Science Initiative using the ALOHA® (Areal Locations of Hazardous Atmospheres) model, developed by the Environmental Protection Agency (EPA), Office of Emergency Management (OEM), and the National Oceanic and Atmospheric Administration (NOAA), Emergency Response Division. The comment presents the modeling assumptions and outcomes, and concludes that certain incident scenarios present a threat of such extreme magnitude that "could plausibly be serious enough that tens to hundreds of people, or more, could die as a result of various incident scenarios."

In response to the comment, additional modeling and analysis was conducted and a technical response prepared ("Technical Memorandum: NWCSI DEIS Comments," dated 3 August 2016; included in the FEIS as Appendix G4).

The comments were based on the use of the ALOHA model. The ALOHA model is a planning and response tool designed for responders to calculate potential impact boundaries quickly during a real emergency. It is not an appropriate model for conducting consequence modeling for quantitative risk assessment for siting an industrial plant. The results of NWCSI's ALOHA modeling also are flawed due to

- unrealistic scenarios, such as the assumption that seven of the eight storage tanks would release their entire volume of methanol instantaneously;
- incorrect assumptions about methanol storage tank types, sizes, and the volumes of methanol to be stored on site (the design size and capacity is much smaller than assumed by NWCSI);
- incorrect assumption that methanol would be stored under pressure;
- incorrect assumption that a Boiling Liquid Flammable Vapor Explosion (BLEVE) could occur as a result of tank failure (a BLEVE is not possible if the tanks are not pressurized); and,

- terrorist threat scenarios that are not credible based on the history of threats at similar sites, national and state security measures, and typical terrorist targets.

The NWCSI ALOHA modeling also used exaggerated scenarios leading to scientifically unrealistic large-scale methanol releases and their results showing potential hazard zones extending up to 6 miles from the proposed methanol plant are not possible because

- BLEVE is not credible or possible based on the actual tank design;

- there is no potential for a vapor cloud explosion related to an evaporating pool of methanol; and

- the terrorist threat scenarios used by NWCSI are not credible and the consequences of a terrorist attack were overstated by NWCSI because instantaneous vaporization of the entire contents of a storage tank is not possible.

A comparative analysis using the ALOHA model was completed with more plausible worst-case scenarios, including the actual tank size, type, and storage conditions currently intended to be used at the site to identify the conservation consequences of emergency activities following a potential incident at the facility.

The ALOHA model results illustrate that the proposed project does not present any potential for serious or permanent injury outside of the plant boundary due to a large release from methanol storage. This conclusion is consistent with the more detailed analysis and conclusions in the EIS and QRA (included as Appendix G1 of the DEIS). The QRA and the corresponding analysis presented in the DEIS concluded that "the proposed NWIW site does not present a significant risk of serious or permanent injury outside of the plant, and all identified fire, vapor cloud explosion, and toxic hazards would not extend beyond the plant boundary."

17.3.12 Standard Response No. 12: Methanol Spills

Several comments requested additional information regarding the potential impacts of a methanol release to the Columbia River.

Chapter 8 was revised to include additional information regarding release scenarios and impacts to aquatic organisms, including the effects of dissolved oxygen (DO) depletion, to address the DEIS comments regarding methanol releases. An additional technical study identified a worst-case scenario spill and modeled methanol movement, degradation, and impacts to aquatic life from such a spill. This study is provided as Appendix G3 of the FEIS and Chapter 8 of the FEIS has been updated to reflect the results of the study and potential impacts on aquatic resources from both toxicity and reductions in dissolved oxygen resulting from methanol degradation.

17.3.13 Standard Response No. 13: Responsibility, Liability, and Costs

Several comments raised questions and concerns related to responsibility, liability, and costs associated with unexpected incidents, including catastrophic events, spills, ending operation of the Facility, and termination of the lease agreement.

The lease between NWIW and the Port of Kalama imposes comprehensive insurance requirements on NWIW. Before commencing operations, the lease requires that NWIW hold at a minimum the following insurance.

- Commercial General Liability Insurance (occurrence basis) with a minimum limit of at least $25,000,000. This insurance covers NWIW's liability to third parties for bodily injury, personal injury, and property damage, including a catastrophic event.

- Pollution Legal Liability Insurance with a minimum limit of at least $25,000,000. This insurance covers NWIW's liability to third parties for bodily injury, property damage (including third party claims), natural resource damages, cleanup, and defense costs during and after construction of the facility.

- Automobile Liability Insurance with a minimum limit of at least $5,000,000. This insurance covers NWIW's liability to third parties for bodily injury, personal injury, and property damage caused by NWIW vehicles.

- Workers Compensation Coverage as required by law.

- Employer's Liability or "Stop Gap" Insurance with a minimum limit of at least $25,000,000. This insurance covers liability of NWIW and its contractors to workers at the facility for work-related bodily injury or disease that is not covered by Workers Compensation Insurance.

- Builder's Risk Insurance upon any site improvement to the full insurable value until completion of NWIW's construction. This insurance protects the Port in the event of damage to the Facility during the course of construction.

- All Risk Property Insurance (including boiler and machinery insurance) for the facility buildings and facilities in an amount equal to the full replacement value. This insurance helps protect the Port in the event of damage to the facility after completion of construction.

- Contingent Business Income Interruption Insurance in an amount to be approved by the Port. This insurance helps to protect the Port in the event something happens that prevents the facility from operating and that affects NWIW's ability to pay rent and other charges.

In addition, the lease requires NWIW to indemnify the Port for personal injury or property damage claims that arise out of its use of the site or violation of law. These indemnities are not limited by the amount of insurance carried by NWIW; the Port will have recourse against NWIW for losses not covered by insurance.

The lease also requires that prior to beginning construction, NWIW will provide the Port with security to restore the site at the conclusion of the project. The amount the security will be determined once facility design and construction details are finalized and the appropriate amount of security can be set. In addition, the Port may, once every five years, require a reasonable increase in the amount of the security to restore the site to reflect the Port's determination of any increase in the likely costs of site restoration.

The lease between NWIW and the Port of Kalama requires NWIW to pay rent and leasehold excise tax before and after the lease term begins. After the lease term begins, NWIW will be obligated to pay certain other charges (e.g., minimum wharfage, dockage, and water payments) in addition to rent and leasehold excise tax. The rent, leasehold excise tax, and additional charges are due and payable whether the facility is operating or not.

If NWIW defaults under the lease, the Port has the right (subject to all the terms of the lease) to evict NWIW and re-let the premises. At the expiration or earlier termination of the lease, the Port also has the right (subject to all the terms of the lease) to require NWIW to remove its site improvements and to restore the site.

17.3.14 Standard Response No. 14: Reduced Property Values

Several commenters noted concerns that residential property values near the facility could decline.

A research study cited by some commenters evaluated nearby property values from 1,600 Toxic Plant Openings and Closings (Currie, J. et al. 2015). The study concluded that single-family residences within 1/2-mile radius of a toxic release inventory plant depreciated 10.7 percent in value, but there were no distinguishable price effects beyond the 1/2-mile radius. The findings of the study were applied to the proposed project in a review prepared by ECONorthwest (2016). The review found that there are no single-family residences within 1/2-mile radius of the proposed project (as measured by the study); therefore, the facility would have no effect on single-family home values.

17.4 Response to Comments on Chapter 1, Summary

Commenter: William Brake #5, Comment No. 32

Category: Citizen

Response: Comment noted.

17.5 Response to Comments on Chapter 2, Proposed Project and Alternatives

Commenter: Cowlitz Indian Tribe, Comment No. 1

Category: Agency and Tribal Government

Response: The permitted use of the premises in the lease agreement is for the production of methanol from natural gas and for activities related and incidental thereto, and for no other purpose.

The lease stipulates that NWIW has a preferential berthing arrangement for the dock and will produce methanol at the facility. The DEIS estimates 36 to 72 vessels will call on the facility each year for the methanol facility. As stated in section 2.1 of the DEIS, the proposed marine terminal would accommodate oceangoing vessels that would transport methanol to destination ports. The dock would also be designed to accommodate other vessel types and, when not in use for loading methanol, would be made available for general use by the Port for other cargo operations, as a lay berth, and for topside vessel maintenance. Chapter 2 has been updated with additional information regarding anticipated lay berth and cargo use of the proposed dock.

Commenter: Cowlitz Indian Tribe, Comment No. 2

Category: Agency and Tribal Government

Response: NWIW has not entered agreements with any party that expressly requires retiring facilities that produce methanol from coal. The substitution of NWIW's methanol for methanol from coal will be driven by market factors and the Chinese government's commitment to reduce coal consumption. Currently, increased demand for methanol in Asia is being met primarily by the construction of facilities in China that manufacture methanol from coal, which

emits very high levels of GHG and generates toxic byproducts and wastes (Yang et al. 2012). Chapter 2 has been updated to include more information on the project objectives.

Commenter: City of Kalama, Comment No. 1

Category: Agency and Tribal Government

Response: These permit requirements have been added to Chapter 2.

Commenter: Cowlitz Indian Tribe, Comment No. 3

Category: Agency and Tribal Government

Response: See standard response No. 1 regarding the proposed project's purpose and need.

Commenter: Cowlitz Indian Tribe, Comment No. 4

Category: Agency and Tribal Government

Response: See standard response No. 2 regarding alternatives.

Commenter: Cowlitz Indian Tribe, Comment No. 17

Category: Agency and Tribal Government

Response: See standard response No. 3 regarding electricity use and costs..

Commenter: Cowlitz PUD, Comment No. 2

Category: Agency and Tribal Government

Response: Comment noted. These improvements are identified in the DEIS and their environmental impacts were considered in the DEIS in evaluating the overall impacts of the project (see DEIS sections 3.4.1.3, 4.4.5, 5.5.2, 6.6.3, 7.4.2, 8.5, 9.4.2, 10.5.2, 11.5.2, 12.5.4, 13.5.2, and 14.4.4). NWIW is responsible for coordinating with Cowlitz PUD as outlined in the last paragraph of the comment.

Commenter: Cowlitz PUD, Comment No. 3

Category: Agency and Tribal Government

Response: BPA, which is the System Balancing Authority for the area within which Cowlitz PUD provides service, is required to conduct an interconnection study for new large single loads. The purpose of such a study is to determine the effect a new load will have on the regional system, and the results of this study will guide Cowlitz PUD on how they will need to source the power that is being provided to NWIW. The study is not anticipated to show the need for significant system improvements and/or changes in contractual supply arrangements, but this will not be confirmed until completion of the study. These minor changes would not be expected to pose new environmental impacts or result in the need for additional permitting processes.

Costs associated with any changes that might be required would be the sole responsibility of NWIW and, therefore, are not expected to result in any increase in electricity rates for Cowlitz PUD customers.

Commenter: Port of Woodland, Comment No. 1

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: U.S. Coast Guard, Comment No. 1

Category: Agency and Tribal Government

Response: No bridges are involved with the project.

Commenter: Washington State Department of Ecology, Comment No. 5

Category: Agency and Tribal Government

Response: Comment noted. The applicant intends to comply with all applicable regulations and permit requirements.

Commenter: Columbia Riverkeeper, Comment No. 1

Category: Non-governmental Organization

Response: A new section 2.6.4 has been added to Chapter 2 to address the option of using the existing dock.

Commenter: Columbia Riverkeeper, Comment No. 8

Category: Non-governmental Organization

Response: See standard response No. 1 regarding purpose and need and project objectives.

Commenter: Tacoma Audubon Society, Comment No. 3

Category: Non-governmental Organization

Response: See standard response No. 2 regarding alternatives.

Commenter: William Brake #1, Comment No. 1

Category: Citizen

Response: The Control Room location will follow Process Industry Practices PNE00003 – Process Unit and Off Sites Layout Guide and American Petroleum Institute RP752 - Management of Hazards Associated with Location of Process Plant Buildings for separation of high-occupancy buildings and process units. The Control Room is characterized as an occupied building. As such, the structure will have the level of protection to comply with all applicable building codes, including the 2015 International Building Code, including safe haven, blast peak overpressure, fire and gas detection, and fire protection.

Commenter: William Brake #4, Comment No. 1

Category: Citizen

Response: Chapter 2 of the EIS describes the project and alternatives. The figures noted by the commenter were included for specific purposes to represent the alternatives being evaluated in the EIS. In addition, as noted in Chapter 15 of the EIS, the Tacoma proposal from NWIW has been cancelled.

Commenter: William Brake #4, Comment No. 4

Category: Citizen

Response: Site and plot plan development follows Process Industry Practices (PIP) PNE00003 – Process Unit and Offsites Layout Guide for separation of process equipment. Additionally, design and spacing of storage tank areas are consistent with the requirements of National Fire Protection Association (NFPA) 30 - Flammable and Combustible Liquids Code. Egress routes will be provided according to requirements of International Building Code, with NFPA 101 – Life Safety Code as an alternate compliance option. Spacing within the plot plan adequately accommodates spacing between units for maintenance and safety.

Commenter: William Brake #4, Comment No. 6

Category: Citizen

Response: See standard response No. 1 regarding purpose and need and project objectives.

Commenter: William Brake #5, Comment No. 1

Category: Citizen

Response: As shown on Figures 2.5 and 2.6, there is no vacant land that will remain following the construction of the project. Port roads and recreation areas will occupy the 10 acres.

The Port holds $2 million for completion security to ensure the project is completed and receives contingency period lease payments. These payments are typical for the right of NWIW to prevent the property from being granted to another party to use. In addition, the project is subject to numerous regulatory requirements and permits from agencies with specific requirements and criteria for approval as outlined in section 1.6.

Commenter: William Brake #5, Comment No. 3

Category: Citizen

Response: Section 2.2. discusses the prior proposals on the site. These proposals did not proceed for various reasons and do not reflect or address the suitability of the facility. As an example, the Pacific Mountain Energy Center was cancelled by the applicant because the "financial and economic conditions do not support a project of this size."(Energy Northwest 2009).

Commenter: William Brake #5, Comment No. 4

Category: Citizen

Response: See response to Sandra Davis Comment No. 5 regarding ULE technology (see page 17-15).

Commenter: William Brake #5, Comment No. 5

Category: Citizen

Response: Comment noted. The various differences in the two technology alternatives are discussed in numerous locations throughout the EIS. Relying merely on BTU (as measurement of energy) to determine which technology is more appropriate fails to consider all of the other various factors.

Commenter: William Brake #5, Comment No. 6

Category: Citizen

Response: Cowlitz PUD has not indicated a need to build additional power generation in connection with the proposed project. The ULE Alternative will require the construction and operation of an on-site gas-fired power generation as part of the project. This power generation would be constructed and operated by NWIW, not Cowlitz County PUD. The power generation is an integral part of the ULE Alternative as presented in the EIS and is fully considered in the EIS.

Commenter: William Brake #5, Comment No. 7

Category: Citizen

Response: Comment noted.

Commenter: William Brake #5, Comment No. 9

Category: Citizen

Response: See standard response No. 2 regarding project alternatives.

Commenter: William Brake #5, Comment No. 10

Category: Citizen

Response: See standard response No. 2 regarding project alternatives.

Commenter: William Brake #5, Comment No. 14

Category: Citizen

Response: Comment noted.

Commenter: William Brake #5, Comment No. 39

Category: Citizen

Response: Comment noted. The prices of power and natural gas are business decisions of NWIW and not pertinent to SEPA.

Commenter: William Brake #5, Comment No. 49

Category: Citizen

Response: The federal permit review follows the process defined by the applicable federal regulations (33 CFR Part 325). This process includes public notice and opportunities to comment. Because it is a federal permit, the SEPA process does not apply. The U.S. Army Corps of Engineers (USACE) must comply with the requirements of the National Environmental Policy Act. As part of the USACE permitting process, the Washington State Department of Ecology (Ecology) will evaluate the project for the issuance of 401 Water Quality Certification. Public notice for the 401 Water Quality Certification was included with the public notice issued by the USACE for their permit review. NOAA Fisheries is involved through an agency-to-agency consultation request under the Endangered Species Act through the USACE. There is no public process involved in the consultation process. The U.S. Coast Guard (USCG) has authority over private navigation aids either proposed by the project or

required by the USCG. The USCG process is defined by federal rules (33 CFR Part 66) and does not include a public comment period or process.

The WDFW Hydraulic Project Approval process is established by state law (WAC 220-660) and does not include a public comment period. Permitting for wastewater discharge through Ecology will include a public notice as required by Ecology rules.

Both the Southwest Clean Air Agency and Ecology air quality permits include public comment periods. The commenter should contact agencies for specific information if they wish to participate in the permit process.

Commenter: William Brake #5, Comment No. 51

Category: Citizen

Response: The EIS does not make a determination that the project site is the "Best Site" for the facility. Rather SEPA evaluates the potential environmental impacts of the project and reasonable alternatives that achieve the project's purpose and objectives. It does not require evaluation of the best location for the proposed facility.

Commenter: William Brake #5, Comment No. 55

Category: Citizen

Response: Comment noted. See standard response No. 2. SEPA requires consideration of reasonable alternatives that achieve the project's purpose and objectives.

Commenter: Sandra Davis, Comment No. 1

Category: Citizen

Response: Chapter 2 discusses the connected actions associated with the project. The pipeline, electrical lines, and substation were considered as connected actions and evaluated in the EIS. On-site power generation is included as part of the project for the ULE Alternative.

Commenter: Sandra Davis, Comment No. 2

Category: Citizen

Response: See standard response No. 1 regarding purpose and need and project objectives.

Commenter: Sandra Davis, Comment No. 3

Category: Citizen

Response: As noted in standard response No. 3, the project will not impact existing users or ratepayers. Determining future electrical user needs and impacts would be speculative and outside the scope of the EIS.

Commenter: Sandra Davis, Comment No. 5

Category: Citizen

Response: There are several references for methanol technology at the scale of the proposed project that use conventional methanol technology. Conventional methanol technology has been in operation in the United States and other countries for over 40 years so it is a well-proven technology. The ULE technology, which is to be used at the Kalama site, is an

enhancement of conventional methanol technology. The difference between conventional methanol technology and ULE is in the reforming section of the plant where natural gas is burned to provide the heat necessary for the process. In the ULE process, the heating system is replaced by a much smaller system where the reaction heat is provided by the process itself using better heat integration. This method has been demonstrated in Australia at a smaller scale. To accommodate the larger plant, additional units will be added. The design of these units, as well as other key design parameters, will be the same as those proven in Australia so the thermal and hydraulic performance, as well as the reliability and safety of the design, has been proven.

NWIW has not applied for any tax or other governmental incentives specifically associated with the ULE technology.

Commenter: Lowell Groat, Comment No. 3

Category: Citizen

Response: See standard response No. 3 regarding electricity use and cost.

Commenter: Daryl Linnell #1, Comment No. 3

Category: Citizen

Response: Section 2.6.1.4 describes the flare that is included as part of the project. The section indicates that the flare will be used during the normal start-up and shutdown of the production process and during process upset or an emergency shutdown situation. Chapter 10 addresses impacts to visual resources, including the flare.

However, the section does not provide an estimate of the frequency of the use of the flare or the length of time it will operate. Section 2.6.1.4 has been updated with additional information on the flare.

Commenter: Daryl Linnell #1, Comment No. 4

Category: Citizen

Response: See standard response No. 3 regarding electricity use and cost..

Commenter: Susan Powell #3, Comment No. 7

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and cost.

Commenter: Matt Ramsay, Comment No. 2

Category: Citizen

Response: See standard response No. 1 regarding purpose and need and project objectives.

Commenter: Claudia Riedener, Comment No. 3

Category: Citizen

Response: NWIW has indicated that they intend to license technology from Johnson Matthey only. There is no intent for Johnson Matthey to construct or operate the plant.

Commenter: Claudia Riedener, Comment No. 23

Category: Citizen

Response: The permit decision of the U.S. Army Corps of Engineers for the proposed dock and proposed pipeline project and the action of FERC for the proposed pipeline project are actions that are subject to review under the National Environmental Policy Act (NEPA). Compliance with NEPA is being addressed by these federal agencies.

Commenter: Tedline Roos, Comment No. 3

Category: Citizen

Response: Analysis of market competition for natural gas and methanol is outside the scope of SEPA review.

Commenter: Bill Spencer #1, Comment No. 4

Category: Citizen

Response: Chapter 2 has been updated in response to this comment.

Commenter: Bill Spencer #1, Comment No. 6

Category: Citizen

Response: The lease between NWIW and the Port of Kalama requires NWIW to pay rent and leasehold excise tax before and after the lease term begins. After the lease term begins, NWIW will be obligated to pay certain other charges (e.g., minimum wharfage, dockage, and water payments) in addition to rent and leasehold excise tax. The rent, leasehold excise tax, and additional charges are due and payable whether the facility is operating or not.

Commenter: Cynthia Svensson #1, Comment No. 2

Category: Citizen

Response: Comment noted. The proposed project has two parts: a methanol manufacturing facility and a marine terminal to ship methanol to Asian markets for plastics manufacturing in Asia. The project purpose does not contemplate plastics manufacturing at the Port of Kalama and SEPA does not require consideration of such an alternative. The Port of Kalama offers a marine terminal in relatively close proximity to an existing natural gas pipeline that with the Kalama Lateral Project could be connected to a colocated manufacturing plant and marine terminal, thereby helping reduce the project footprint over having separate facilities. Locating the methanol manufacturing facility at an existing natural gas source, without constructing the Kalama Lateral Project, would require transporting methanol to the Port of Kalama for shipment. Colocating manufacturing and the marine terminal has the added benefit of eliminating shipment and transloading of methanol product produced at a separate manufacturing facility.

Reasonable alternatives under SEPA are those that feasibly attain or approximate a proposal's objectives and provide a lower environmental cost or decreased level of environmental degradation than the proposal. The Off-Site Alternative would not attain the project objectives with a lower environmental cost. Therefore, the Off-Site Alternative was not included in the more detailed EIS analysis.

Commenter: Cynthia Svensson #1, Comment No. 8

Category: Citizen

Response: Cowlitz PUD is the electric supplier for the area within the Port of Kalama. The ULE Alternative total power demand will be about 200 megawatts (MW) of firm supply and another 25 MW or more of interruptible power for start-up purposes. The ULE Alternative would include an on-site natural gas-fired power generator to produce approximately 101 MW, and the remaining 100 MW of electricity demand would be provided by the Cowlitz PUD. In a letter dated 12 June 2015, the Cowlitz PUD stated that it can support a connected load of 100 MW for the proposed project, although improvements to its system would be necessary as described above (see Appendix F of the DEIS). The CR Alternative would require approximately 36 MW of electricity. This demand could be met entirely by the Cowlitz PUD, and it would not require an on-site power generation facility.

The power supply, delivered by the Cowlitz PUD, must be considered by the PUD as a "new large single" load. This legal designation requires that power purchased for this "new large single load" must not be supplied from the "preference power" generated by the federal Columbia River Hydropower System.

Commenter: Steven Wright, Comment No. 3

Category: Citizen

Response: See standard response No. 1 regarding purpose and need and project objectives.

Commenter: Bob Zeigler, Comment No. 3

Category: Citizen

Response: As stated in Chapter 2, the proposed project is designed for the manufacture and export of methanol and does not include the export of fossil fuels. In addition, the Port of Kalama Commissioners in December 2010, voted to not discuss the export of coal. The project does not provide a foothold for other projects as other projects would be subject to appropriate and separate permitting and SEPA review.

Commenter: Scott Daly - Written, Comment No. 1

Category: Public Hearing

Response: The characteristics of methanol, including toxicity and flammability, are addressed in Chapters 2 and 8.

Commenter: Sandra Davis, Comment No. 1

Category: Public Hearing

Response: See response to Sandra Davis Comment No. 5 regarding ULE technology (see page 17-15).

Water sources are discussed in Chapter 5 and electricity is discussed in Chapter 7.

Commenter: Diane Dick, Comment No. 1

Category: Public Hearing

Response: See standard response No. 3 regarding electricity use and cost.

Commenter: Diane Dick, Comment No. 2

Category: Public Hearing

Response: Chapter 2 of the EIS describes the necessary improvements to the electrical transmission system to serve the project. The PUD currently owns, operates, and maintains an existing 115,000-volt (115kV) overhead transmission line located along North Hendrickson Road near the proposed project site. This transmission line and the construction of two new 115kV lines (described below) would facilitate the delivery of electric power to the facility. Any of the PUD's electric infrastructure costs associated with providing electric service to the methanol project will be the responsibility of NWIW. The PUD anticipates no rate impacts to its existing customers due to construction of new facilities to serve the NWIW load. In addition, NWIW understands that it does not have access to preference power the PUD purchases and receives from the Bonneville Power Administration under their current long-term power sales agreement. NWIW will be sourcing power supplies from the wholesale power market and other sources.

As identified above, the electric facilities infrastructure necessary to serve the project includes the construction of the following.

1. A 700-foot line extension from its existing 115kV line located adjacent to Tradewinds Road to the project proponent's proposed substation, and

2. A 750-foot line between the PUD's Kalama Industrial Substation and its existing 115kV line located east of and adjacent to Interstate 5.

Commenter: Diane Dick, Comment No. 3

Category: Public Hearing

Response: See response to Cowlitz PUD Comment No. 3 in regards to the interconnection study (see page 17-11).

Commenter: Ellen Leatham, Comment No. 1

Category: Public Hearing

Response: See response to Ellen Leatham (Citizen) Comment No. 1 in regards to the study referenced in the comment (see page 17-22).

In regards to dredging and contamination, section 2.6.2.3 discusses the dredging and characterization of the material to be dredged.

Commenter: Roxann Murray, Comment No. 2

Category: Public Hearing

Response: See standard response No. 3 regarding electricity use and cost.

Commenter: Mike Thomas - Written, Comment No. 1

Category: Public Hearing

Response: See standard response No. 3 regarding electricity use and cost.

17.6 Response to Comments on Chapter 3, Earth

Commenter: Washington State Department of Natural Resources, Comment No. 2

Category: Agency and Tribal Government

Response: Both geotechnical reports included as Appendix C to the DEIS state that because this site is susceptible to liquefaction it is classified as Site Class F. The commenter quotes a specific section of Appendix C2. Later in the same section, the report indicates:

"Our analysis has identified a potential risk of liquefaction for the CLE and DE hazard levels. In accordance with ASCE 60-41, sites with subsurface conditions identified as vulnerable to failure or collapse, such as liquefiable soils, are classified as Site Class F."

In accordance with the International Building Code (IBC) 2012 and the American Society of Civil Engineers (ASCE) 60-41, Site Class F requires a site-specific response analysis to determine the design response spectrum."

The site response analysis was included in the geotechnical report completed for the proposed dock. A site-specific response analysis will also be completed for the uplands portion of the project during the detailed design process and prior to building permits being issued for construction of the structures.

Commenter: Cowlitz Indian Tribe, Comment No. 6

Category: Agency and Tribal Government

Response: Subsurface conditions are described in sections 3.3.2 and 3.3.2.1 of the DEIS. The subsurface conditions were evaluated with respect to geologic hazards. The facility will be designed to meet the code requirements for potential geologic hazards discussed in section 3.4.1.2. The design code (International Building Code 2012) was developed to mitigate the potential effects of geologic hazards.

Commenter: Cowlitz Indian Tribe, Comment No. 7

Category: Agency and Tribal Government

Response: Section 3.3.3.2 identifies the volcanic hazards that could affect the site. The impacts of these hazards is discussed in section 3.4.1.2.

The facility will be designed based on site-specific investigation of the soil and groundwater conditions at the site, and in accordance with the seismic performance criteria and seismic hazards required by the applicable codes, i.e., IBC 2012 for the upland area and ASCE 60-41 for the dock. These codes consider the hazard from the M9.0 Cascadia Subduction Zone Earthquake. These code-based design requirements are intended to mitigate the potential damage to the facility resulting from earthquake hazards.

Mitigation measures to limit damage and impacts are discussed in the DEIS sections 3.4.1.2 and 3.5.2.1 and Appendix C.

Commenter: Columbia Riverkeeper, Comment No. 33

Category: Non-governmental Organization

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 2

Category: Non-governmental Organization

Response: Appendix B to the EIS contains an assessment of geologic hazards along the proposed pipeline route. No rockfall hazards were identified in the vicinity of the pipeline route. Williams Pipeline were not aware of the specific incident indicated in the comment.

Commenter: William Brake #4, Comment No. 3

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

Commenter: William Brake #5, Comment No. 2

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards and seismic performance criteria.

Commenter: Mary Collins, Comment No. 2

Category: Citizen

Response: Section 3.3.4 of the DEIS addresses seismic hazards related to the proposed pipeline project. It indicates that there are no existing active or dormant landslide hazards located along the pipeline route.

Commenter: Sandra Davis, Comment No. 7

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Thomas Gordon #2, Comment No. 1

Category: Citizen

Response: As noted in section 3.3.3.1 of the PDEIS, lateral spreading could occur during the design level earthquake (M9.0). The design of piles (or other foundations) will include detailed analysis of the seismic loading, including those due to lateral spreading of liquefied and nonliquefied layers.

Commenter: Lloyd Groat #2, Comment No. 2

Category: Citizen

Response: The Trojan Nuclear Plant was located across the Columbia River from the project site. The decision to permanently shut down the plant was primarily due to financial and reliability concerns relating to steam generator tube degradation within the plant and not due to concerns regarding geology of the site. (Oregon Department of Energy January 1996). Chapter 3 of the EIS contains a discussion of the geologic hazards on site and there are no known faults on the project site.

Commenter: Lowell Groat, Comment No. 4

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards and response to Lloyd Groat #2 comment No. 2 regarding the Trojan Nuclear Plant (see page 17-21).

Commenter: Ellen Leatham, Comment No. 1

Category: Citizen

Response: The study referenced in the comment is Accommodation Space Controls on the Latest Pleistocene and Holocene (16-0 ka) Sediment Size and Bypassing in the Lower Columbia River Valley: A Large Fluvial-Tidal System in Oregon and Washington, USA by Curt D. Peterson.

GRI evaluated this study in response to the comment. This study is not relevant to geologic hazards at the site other than it describes sedimentation of the lower Columbia River as sea level rises from the end of the Pleistocene. This paper does not discuss the "stability" of sediments, and it does not have a bearing on the geotechnical evaluation completed as part of the DEIS.

Commenter: Daryl Linnell #2, Comment No. 3

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Sharon Rickman, Comment No. 2

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Claudia Riedener, Comment No. 18

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

See standard response No. 11 regarding the threat of explosion at the storage tanks.

Commenter: Cynthia Svennson #1, Comment No. 13

Category: Citizen

Response: Neither dredging nor site development is expected to change scour conditions along the Columbia River and Federal Navigational Channel.

From page 6, Coast & Harbor Engineering, Technical Memorandum, February 1, 2016, Port of Kalama New North Port Terminal Response to Corps' Questions on CHE's Study Report, "Kalama Manufacturing and Marine Export Facility Possible Impacts on Federal Navigation Channel," August 2015:

> *In summary, no scour of the river bank is expected for post-project conditions. The sediment composing the river bank will be stable for the predicted increase in flow*

velocity of 0.6 ft. per second that may occur at some localized areas in the vicinity of the project boundary for post-project conditions.

From page 11, Coast & Harbor Engineering, Technical Memorandum, August 19, 2015, "Kalama Manufacturing and Marine Export Facility Possible Impacts on Federal Navigation Channel":

Currently, a significant amount of maintenance dredging work is conducted along the FNC in the vicinity of the proposed project. The scale and variability of this work overshadows the possible risk associated with hypothetical alteration of the study conclusions. A maximum hypothetical impact from the Methanol Terminal project on sedimentation of the FNC (if any) would exist as a non-detectable noise in the variability of the ongoing maintenance dredging work in the channel.

Erosion hazard is addressed in DEIS Appendix H, Shoreline Narrative and Critical Areas Report, Section 5.3.3, page 39, Erosion Hazard of Critical Areas Assessment:

Under Section 19.15.150 of the International Building Code, erosion hazard areas are those identified by USDA-NRCS as having a "severe" or "very severe" erosion hazard, or impacted by shoreland and/or streambank erosion, or within a stream's channel migration zone (Section 19.15.150.G).

No portions of the project site are mapped as having "severe" or "very severe" erosion hazard by NRCS. Similarly, no areas of the site are impacted by shoreland or streambank erosion, and none are within the active channel migration zone of a stream.

For these reasons, the site contains no erosion hazard areas that would be affected by the project, and no further assessment of erosion hazards is required.

In regards to the Trojan site, because no change in erosion is anticipated as a result of the project, there would be no risk to the waste storage area.

Commenter: Bradley Thompson, Comment No. 9

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Chris Turner, Comment No. 2

Category: Citizen

Response: See standard response No. 4 regarding seismic hazards.

Chapter 3 has been updated based on this comment and others to include information regarding code requirements and performance of buildings and structures during earthquakes.

Commenter: Steven Wright, Comment No. 2

Category: Citizen

Response: As stated in section 3.3.3.1 of the DEIS, "Geologic mapping completed by DNR has not identified evidence of historical or geological surface rupture crossing the site (Phillips 1987, Walsh et al. 1999)." In addition, section 3.3.3.1 discusses potential earthquakes hazards

at the site. Earthquake effects, such as liquefaction, lateral spreading, ground rupture, and ground motion, are described and the impacts discussed in section 3.4.1.2. Chapter 3 of the EIS has been updated in response to this comment and others to include information regarding the code requirements for structures as it relates to earthquakes.

The Trojan Nuclear Plant was located across the Columbia River from the project site. The decision to permanently shut down the plant was primarily due to financial and reliability concerns relating to steam generator tube degradation within the plant and not due to concerns regarding geology of the site (Oregon Department of Energy, 1996).

The geologic hazard review completed for the plant concluded:

"In summary, we know of no geologic reason, based on presently available information to reasonably question the geologic adequacy of the site for safe plant operation or for temporary storage of spent fuel." (State of Oregon Department of Geology and Mineral Industries 1978)

Commenter: Scott Daly - Written, Comment No. 9

Category: Public Hearing

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Captain Kimberly Higgins - Written, Comment No. 1

Category: Public Hearing

Response: Comment noted. The EIS discusses liquefaction in Chapter 3 and floodplains in Chapter 5.

Commenter: Chris Hill, Comment No. 1

Category: Public Hearing

Response: Information regarding the 1965 event has been included in Chapter 3 of the EIS.

Commenter: Monika Jovwsma, Comment No. 1

Category: Public Hearing

Response: Comment noted. Geologic hazards, including liquefaction, are discussed in Chapter 3 of the EIS.

Commenter: Ellen Leatham - Written, Comment No. 1

Category: Public Hearing

Response: See response to Ellen Leatham (Citizen) Comment No. 1 regarding the study referenced in the comment (see page 17-22).

Commenter: Mary Lyons, Comment No. 1

Category: Public Hearing

Response: Comment noted.

Commenter: James Plunkett - Written, Comment No. 1

Category: Public Hearing

Response: See standard response No. 4 regarding seismic hazards.

Commenter: Zachary Prim, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Geologic hazards at the project site, including liquefaction, are discussed in Chapter 3 of the EIS. Appendix B includes a discussion of geologic hazards related to the pipeline, including liquefaction. It indicates that construction techniques can be employed to address liquefaction.

Commenter: Unknown #1, Comment No. 1

Category: Public Hearing

Response: See response to Steven Wright Comment No. 2 regarding the Trojan Nuclear Plant (see page 17-23).

Commenter: Jasmine Zimmer-Stucky, Comment No. 2

Category: Public Hearing

Response: Comment noted. Chapter 3 discusses geologic hazards on the subject site, including liquefaction. Chapter 8 and Appendix G1 of the EIS includes an analysis of risk of explosion.

Commenter: Petition Letter #2, Comment No. 2

Category: Petitions

Response: See standard response No. 4 regarding seismic hazards.

17.7 Response to Comments on Chapter 4, Air Quality and Greenhouse Gas (GHG) Emissions

Commenter: Washington State Department of Commerce, Comment No. 1

Category: Agency and Tribal Government

Response: See standard response No. 1 regarding project objectives.

A general discussion of methanol production using coal is provided in section 2.4. A coal to methanol plant would not meet the project objective.

Commenter: Columbia Riverkeeper, Comment No. 3

Category: Non-governmental Organization

Response: Chapter 4 has been updated to discuss GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Columbia Riverkeeper, Comment No. 23

Category: Non-governmental Organization

Response: Chapter 4 has been updated to discuss GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Columbia Riverkeeper, Comment No. 30

Category: Non-governmental Organization

Response: Chapter 4 has been updated to discuss GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Chapter 4 and section 15.5.2 of the EIS address the potential impacts of the project on overall state and worldwide GHG emissions. As indicated in this section, GHG emissions have resulted in climate change. However, climate change is a global phenomenon resulting from worldwide GHG emissions. While the project will generate GHG emissions as discussed in Chapter 4 as revised, determining specific impacts from the incremental contribution to GHG from the project would be impossible or highly speculative. The projected GHG emissions from the project represent only a very small increase in global GHG emission (approximately 0.0022 percent increase from the 2011 global GHGs) and these same or likely greater GHG emissions would occur if the world methanol demand were met by some other methanol plant.

Commenter: Columbia Riverkeeper, Comment No. 34

Category: Non-governmental Organization

Response: The potential impacts from GHG emissions from the proposed project were assessed consistent with Ecology's guidance document *Including Greenhouse Gas Emissions in SEPA Reviews.* Section J of that guidance specifically addresses when GHG emissions should be considered significant. This guidance states: "A proposal will be presumed to be not significant for greenhouse gas emissions and thus no further mitigation for greenhouse gas emissions will be necessary if it is . . . subject to a legal requirement to reduce or mitigate GHG emissions." In order to document its commitment to not exceed the GHG emissions levels for ULE technology as presented in the EIS, NWIW has agreed to voluntarily accept GHG emissions limits in the permit to be issued by the Southwest Clean Air Authority. According to Ecology guidance, the project's GHG impacts are not considered significant. In the interest of a complete evaluation of the potential GHG impacts, the EIS includes consideration of the potential impacts.

Chapter 4 has been updated to discuss GHG emissions from natural gas production and transport.

See standard response No. 6 regarding vessel emissions.

The EIS does not attempt to estimate GHG emissions from the end use of the methanol. Much of the methanol production is expected to be further processed to produce other materials

although some of it may be used as a finished product. Attempting to estimate GHG emissions from use of the methanol would be impossible or extremely speculative.

The GHG estimates presented in the air permit application and the EIS did consider fugitive emissions from on-site facility sources.

Consistent with Ecology guidance, the GHG estimates presented in the EIS did consider GHG emissions associated with generation of purchased power. Although the comment questions the use of average eGrid emissions related to such purchased power, this technique is an accepted approach, and other suggested means of estimating GHG emissions from purchased power would be highly speculative.

Commenter: Columbia Riverkeeper, Comment No. 35

Category: Non-governmental Organization

Response: The potential impacts from GHG emissions were assessed consistent with Ecology's guidance document *Including Greenhouse Gas Emissions in SEPA Reviews (2011).* Section J of that guidance specifically addresses when GHG emissions should be considered significant. This guidance states: "A proposal will be presumed to be not significant for greenhouse gas emissions and thus no further mitigation for greenhouse gas emissions will be necessary if it is . . . subject to a legal requirement to reduce or mitigate GHG emissions." In order to document its commitment to not exceed the GHG emissions levels for ULE technology as presented in the EIS, NWIW has agreed to voluntarily accept GHG emissions limits in the permit to be issued by the Southwest Clean Air Authority. According to Ecology, the project's GHG impacts are not considered significant.

Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: New Progressive Alliance, Comment No. 6

Category: Non-governmental Organization

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 6 regarding vessel emissions.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 5

Category: Non-governmental Organization

Response: See response to Columbia Riverkeeper Comment No. 7 regarding regional climate impacts (see page 17-104).

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 7

Category: Non-governmental Organization

Response: The commenter confuses N_20, a greenhouse gas, with NOx (primarily NO and NO_2). CO2 is the primary greenhouse gas emitted by the facility. Nonetheless, Table 4-3

identifies the quantity of NOx and SO_2 that would be emitted from the facility on an annual basis. Table 4-3 provides annual emissions from each emission unit, including the flare.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 8

Category: Non-governmental Organization

Response: See standard response No. 5 regarding emissions.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 12

Category: Non-governmental Organization

Response: According to the U.S. Environmental Protection Agency, acid rain results when sulfur dioxide (SO_2) and nitrogen oxides (NOX) are emitted into the atmosphere and transported by wind and air currents. The SO_2 and NOX react with water, oxygen, and other chemicals to form sulfuric and nitric acids. These then mix with water and other materials before falling to the ground.

The federal Acid Rain Program regulates power plants and is not applicable to the proposed project. However, all emission units at the facility are required to apply the Best Available Control Technology (BACT) as determined by the Southwest Clean Air Agency. As proposed in the air permit application, BACT for NOX and SO2 emissions from the primary on-site sources of those pollutants (i.e., the boilers and the power generation unit) will be state-of-the-art Selective Catalytic Reduction (SCR) systems, and use of pipeline natural gas, which has the lowest sulfur content of commonly available fuels. Any change in emissions of pollutants, such as NOX and SO2, will cause a theoretical change in the pH of nearby surface waters. The emission increases attributable to the proposed facility, combined with dispersion in the atmosphere, are not expected to result in effects on the pH of rain and surface waters.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 13

Category: Non-governmental Organization

Response: See standard response No. 5 regarding emissions.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 15

Category: Non-governmental Organization

Response: See standard response No. 5 regarding emissions.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 18

Category: Non-governmental Organization

Response: It is not clear what the H2S concentrations are referring to in this comment, but the facility will not cause off-site H2S concentrations in the ppm ranges presented in this comment. Appendix D contains a list of pollutants to be emitted. While it is theoretically possible for some H2S to be emitted, it would be extremely low because the source of the sulfur is natural gas, and all the natural gas is either converted to methanol or combusted in the boilers or the combustion turbines. The sulfur dioxide that results from combusting the natural gas is accounted for in the facility emissions.

Commenter: Lynda Raven Brake, Comment No. 1

Category: Citizen

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: William Brake #1, Comment No. 2

Category: Citizen

Response: See response to Columbia Riverkeeper Comment No. 5 in regards to emissions related to olefin production and use (see page 17-111).

Chapter 4 of the EIS considers GHG emissions from external power supply.

Commenter: William Brake #2, Comment No. 2

Category: Citizen

Response: In response to this comment and others, Chapter 4 has been updated to consider GHG emissions from natural gas production and transport for the defined scope area.

See standard response No. 6 in regards to vessel emissions.

Commenter: William Brake #4, Comment No. 2

Category: Citizen

Response: In response to this comment and others, Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transport within the scope of the project.

See standard response No. 6 regarding GHG emissions for vessel transport.

Section 4.4.1.2 of the EIS specifically includes GHG emissions from off-site power generation for both technology alternatives.

Commenter: William Brake #5, Comment No. 11

Category: Citizen

Response: The comment does not provide a basis for any error in the GHG calculations and no modifications to the EIS have been completed in response to the comment.

Commenter: William Brake #5, Comment No. 12

Category: Citizen

Response: The source of the data provided by this commenter is unclear, but it doesn't represent data contained in FERC's analysis of the pipeline project. In the FERC EA, air emissions related to the pipeline project are discussed in Section 6, pages 62 to 66. FERC assessed the potential emissions associated with the pipeline, including GHG emissions, in accordance with state and federal requirements pursuant to the Clean Air Act. The construction of the pipeline would result in temporary emissions and are reported in Table 10 in the FERC

EA, page 65. The operation of the pipeline would not result in emissions except for minor fugitive methane emissions and minor exhaust emissions from equipment used to maintain vegetation in the pipeline easement.

Relative to cumulative air quality impacts from other sources, the FERC EA considered 15 projects (listed in Table 17, pages 81 and 82). One of these projects, the Northwest Pipeline, LLC Washington Expansion Project has been cancelled and is no longer reasonably foreseeable.

Commenter: William Brake #5, Comment No. 17

Category: Citizen

Response: Chapter 4 includes comparison of the GHG emissions from the two technology alternatives.

See standard response No. 5 for additional information regarding emissions.

Commenter: William Brake #5, Comment No. 23

Category: Citizen

Response: Potential impacts from the vapor plume are discussed in Chapters 4 and 10. As discussed in section 3.4.1.7 of Appendix D, the SACTI model evaluated cooling tower impacts using actual hourly meteorological data from Kalama. This analysis predicts a low probability of fogging and icing.

Air fin coolers use finned tubing and electric fans to dissipate heat. Their use would substantially increase the consumption of electric power and would be less energy efficient than planned cooling towers. The overall efficiency and cost of operation favor the use of cooling towers in a humid climate, such as along the Columbia River.

Commenter: William Brake #5, Comment No. 34

Category: Citizen

Response: In response to this comment and others, Chapter 4 has been updated to consider GHG emissions from natural gas production and transport. See response to Columbia Riverkeeper Comment No. 34 (see page 17-26).

Commenter: Sandra Davis, Comment No. 6

Category: Citizen

Response: Based on this and other similar comments, Chapter 4 of the EIS has been updated to address GHG emissions associated with natural gas production and transportation.

Commenter: Marcia Denison, Comment No. 2

Category: Citizen

Response: Because the facility with ULE technology will not be a major source of criteria pollutants, it is not required to conduct an air quality impact analysis. Nevertheless, dispersion modeling has been conducted and is presented in Chapter 4 and Appendix D of the EIS. The modeling shows that the facility will not cause any exceedance of National Ambient Air Quality Standards.

Commenter: Diane Dick, Comment No. 1

Category: Citizen

Response: The facility is deemed a minor source with respect to the air quality permit process because its emissions will be below the state and federal emissions thresholds that require permitting as a major source. Although not required for minor sources, a detailed air quality impact analysis is summarized in Appendix D to the Draft EIS and presented in greater detail in the permit application submitted to the Southwest Clean Air Agency. This analysis includes consideration of existing air quality conditions in the vicinity of the project site.

The Longview Air Toxics Monitoring Project (LATMP), conducted by SWCAA from May 2004 through May 2005, compared monitored toxic air pollutant (TAP) concentrations to the results of similar studies conducted in Seattle and Vancouver; Washington Acceptable Source Impact Levels (ASILs) and the U.S. Environmental Protection Agency's (EPA) National Air Toxic Assessment (NATA). Ambient standards, such as those established for carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM), and sulfur dioxide (SO_2) have not been established for TAPs (except lead) at the federal, state, or local levels. Small quantity emission rates (SQERs) and ASILs are screening thresholds used to determine whether or not a health impact assessment (HIA) is needed for a new source of TAPs. These thresholds are not intended to be used as standards, but, lacking any standards, it is natural for a study like the LATMP to use ASILs as a basis for comparison.

Comparing the modeled concentrations attributable to the proposed facility of four of the five compounds determined by the LATMP to be of potential health concern.

Compound	CAS No.	LATMP Reading Freq. > MRL	LATMP Annual Average Conc. (µg/m^3)	KMMEF Modeled Conc. (µg/m^3)	KMMEF Fraction of LATMP Conc.
Acetaldehyde	75-07-0	98%	1.36E+00	1.40E-03	0.10%
Arsenic	7440-38-2	100%	1.20E-03	4.00E-05	3.3%
Benzene	71-43-2	83%	1.27E+00	6.10E-04	0.048%
Formaldehyde	50-00-0	100%	9.98E-01	4.20E-03	0.42%

As compounds that are not known or probable carcinogens, manganese, and ammonia have a 24-hour averaging period basis. The proposed facility's maximum potential to emit manganese is less than the SQERs established in WAC 173-460, effective 21 August 1998 (4.51 lb/yr versus a SQER of 175 lb/yr, and 0.00181 lb/hr versus a SQER of 0.02 lb/hr), and was, therefore, not modeled. Maximum potential ammonia emissions attributable to the proposed facility exceeded the applicable SQER, and the modeled concentration was 28 µg/m^3, which is 28 percent of the ASIL (100 µg/m^3).

Even assuming the maximum contribution of the proposed facility were at the monitoring site in Longview, which is highly unlikely, the increase in concentration would be minimal. See standard response No. 5 for additional information regarding emissions, including DPM concentrations.

Commenter: Diane Dick, Comment No. 2

Category: Citizen

Response: The project site is more than 4.5 miles from the Southwest Regional Airport in Kelso, and any vapor clouds are well outside any protected surfaces or approach zones for the airport.

Commenter: Diane Dick, Comment No. 3

Category: Citizen

Response: Based on this comment and others, Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transport.

Commenter: Diane Dick, Comment No. 4

Category: Citizen

Response: See standard response No. 5 regarding threats to human health.

Commenter: Carole and Jack Eby, Comment No. 2

Category: Citizen

Response: The flare is designed to safely burn excess hydrocarbon gases during certain operations. The height of the flare is not based on the emissions generated by the flaring. The height allows for safe dispersion of heat generated during flaring.

Commenter: Lowell Groat, Comment No. 2

Category: Citizen

Response: See standard response No. 10 in regards to fracking.

Commenter: Rus Higley, Comment No. 1

Category: Citizen

Response: In response to this comment and others, Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transport.

The comment is correct in noting that methanol production from natural gas results in fewer GHG emissions than methanol production from coal. This conclusion is based on a comparison provided in the EIS that considered the difference in the production methods irrespective of methods of transport.

Commenter: Robert Hill, Comment No. 1

Category: Citizen

Response: Chapter 4 and Appendix D present the projected emissions of toxic air pollutants and analyzes the potential impacts from those emissions. The analysis in Chapter 4 concludes that all toxic air pollutant emissions will comply with all applicable emissions standards and would cause ambient concentrations less than the applicable screening level thresholds as those levels are applied by Ecology. Chapter 4 also confirms that there would be little likelihood of significant adverse odor impacts.

Risk associated with the plant should a failure or incident occur are discussed in Chapter 8.

See standard response No. 5 regarding threats to human health.

Commenter: Daryl Linnell #2, Comment No. 1

Category: Citizen

Response: In the absence of documentation of the commenter's calculations, it is not possible to respond to this assertion. The estimates of direct facility emissions are correct as presented in the EIS. In response to this comment and others, Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transport.

Commenter: Joann McGovern, Comment No. 5

Category: Citizen

Response: The chemicals that will emit during normal plant operations are presented in Chapter 4, Table 4-3, and Appendix D, Table 12, in the EIS. See standard response No. 5 regarding threats to human health.

Commenter: Joann McGovern, Comment No. 6

Category: Citizen

Response: The air quality permit to be issued by Southwest Clean Air Agency authorizing operation of the facility will include permit conditions setting emission limits and requiring monitoring, record-keeping and reporting of emissions from the facility. Southwest Clean Air Agency has the authority to enforce the permit requirements. Air quality inside the facility and worker exposure are governed by state and federal occupational health and safety regulations.

Commenter: Susan Powell #1, Comment No. 3

Category: Citizen

Response: Very little particulate matter would be emitted by the facility so “filters” were not considered and would not be effective emission controls. However, the facility will employ wet scrubbers to reduce methanol emissions from tanks and from loading the tankers and will employ Selective Catalytic Reduction and oxidation catalysts to reduce NOx, CO, and volatile organic compounds from the boiler exhaust and power generators.

Commenter: Susan Powell #3, Comment No. 3

Category: Citizen

Response: See standard response No. 5 regarding emissions.

Commenter: Christopher Pringer, Comment No. 2

Category: Citizen

Response: Comment noted.

Commenter: Claudia Riedener, Comment No. 1

Category: Citizen

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Claudia Riedener, Comment No. 2

Category: Citizen

Response: See standard response No. 5 regarding emissions.

Commenter: Claudia Riedener, Comment No. 4

Category: Citizen

Response: Chapter 15 evaluates cumulative impacts of the project. The analysis and determination of the nature of the environmental impacts in the EIS is not based on the presumed closure of existing coal to methanol plants nor the reduction in future coal to methanol plants. The commenter's claims about China's regulation of methanol plants have not been confirmed, but it is not relevant to the EIS analysis. The impacts to air quality are discussed in Chapter 4.

Commenter: Claudia Riedener, Comment No. 7

Category: Citizen

Response: Although the EIS does not present this level of detail, the emissions calculations supporting the air permit application submitted to the Southwest Clean Air Agency identifies emissions from storage tanks and the vessels being loaded. Tables 2-14 and 2-15 of the permit application identify total methanol emissions from storage tank and vessel loading of approximate 5 tons per year. These emission rates reflect the use of wet scrubbers that capture 99 percent of methanol gases.

The methanol storage tanks are cleaned after construction to remove rust, reduce the potential for rust prior to filling, and to remove other impurities that may contaminate the product. This clearing is done with a professional dish detergent followed by a citrus based product (citrus terpene). Washwater would be collected and trucked to an appropriate facility for disposal that can handle the wastewater based on its constituents.

Commenter: Tedline Roos, Comment No. 2

Category: Citizen

Response: See standard response No. 10 in regards to fracking.

Commenter: Steven Storms #1, Comment No. 1

Category: Citizen

Response: As noted in section 4.4.2.2, expected GHG emissions associated with the ULE Alternative (excluding on-site power generation) are approximately 61 percent lower than with the CR Alternative. With on-site generation of electricity, the direct (Scope 1) GHG emissions

with the ULE Alternative are projected to be approximately 31.5 percent less than with the CR Alternative.

Commenter: Steven Storms #1, Comment No. 2

Category: Citizen

Response: See response to Steven Storms #2 Comment No. 1 (see page 17-35). It would be inappropriate to use emission calculations from other regions as it would not accurately reflect regional power generation differences.

In regards to new electrical demand resulting from the plant being generated by hydrocarbons, the EIS accounts for the emissions from on-site generated power. In regards to power supplied from off-site sources, there is no indication that additional generation capacity is necessary. Therefore, using the regional emissions analysis is appropriate.

Commenter: Steven Storms #1, Comment No. 4

Category: Citizen

Response: The federal and state Clean Air Acts are designed to allow environmentally responsible industrial development. An applicant seeking approval of a new or modified industrial source must demonstrate (1) that the project is applying the Best Available Control Technology to minimize emissions and (2) that after application of these controls the concentrations of air pollutants in the surrounding area comply with ambient impact criteria established to protect human health and welfare. Both of these demonstrations were made in the permit application and were summarized in the Draft EIS. In this case, however, the applicant went beyond BACT requirements and modified the technology used to produce methanol to substantially reduce criteria air pollutants and greenhouse gases. That additional commitment is appropriately referred to as a mitigating measure for air quality.

Commenter: Steven Storms #2, Comment No. 1

Category: Citizen

Response: The use of eGrid estimates of GHG emissions related to electrical generation is a standard method that reflects the regional differences in electrical generation sources. Such considerations are appropriate.

See standard response No. 5 for additional information on emissions, including eGrid.

See response to Columbia Riverkeeper Comment No. 34 (see page 17-26) for additional information in this regard.

Commenter: Cynthia Svensson #1, Comment No. 3

Category: Citizen

Response: As discussed in section 4.4.2.2, model-predicted concentrations of DPM exceed the ASIL. The ASIL is not an air quality standard. It is a threshold at which additional analysis is required when evaluating industrial sources. Note that DPM concentrations result primarily from the non-project ship engines that would visit the port – not the proposed methanol production facility or the methanol tankers that would visit the facility. These ship emissions are not subject to the ASIL analysis, but an additional analysis was conducted nonetheless in accordance with Ecology's 2nd Tier TAPs review procedures. This modeling determined that

DPM concentrations at all nearby residences would be far less than the Ecology 2nd Tier DPM criterion. The highest model-predicted concentration occurs at a location southwest of the facility across the river, where the estimated increase in cancer risk is about three in a population of 1 million exposed continuously for 70 years, which is well below the 2nd Tier criterion. Additional details of the Tier 2 impact assessment for DPM are included in Appendix D.

Commenter: Cynthia Svensson #1, Comment No. 4

Category: Citizen

Response: As discussed in section 3.4.1.7 of Appendix D, the SACTI model evaluated cooling tower impacts using actual hourly meteorological data from Kalama. Predictions indicate a low probability of fogging and icing.

Commenter: Cynthia Svensson #1, Comment No. 5

Category: Citizen

Response: Comment noted. See standard response No. 6 regarding vessel emissions.

Commenter: Cynthia Svensson #2, Comment No. 1

Category: Citizen

Response: Potential impacts from odor were considered in the EIS and are discussed in Chapter 4, section 4. In addition, Southwest Clean Air Agency regulations (SWCAA 400-040) include provisions concerning nuisance impacts from industrial odors.

Commenter: Bradley Thompson, Comment No. 1

Category: Citizen

Response: The analysis and determination of the nature of the environmental impacts in the EIS is not based on the presumed closure of existing coal to methanol plants nor the reduction in future coal to methanol plants.

In addition, in response to this comment and others, Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transport. See standard response No. 5 regarding emissions.

See standard response No. 1 regarding the analysis of the end use of the product in China.

Commenter: Bradley Thompson, Comment No. 2

Category: Citizen

Response: The project does not include methods to load and transport methanol other than loading ships at the proposed dock. Rail or truck loading is not proposed. SEPA does not require evaluation of speculative project elements that are not proposed. The analysis of potential impacts from transportation of methanol by ship would be similar whether the ships were destined for China or another location.

Commenter: Bradley Thompson, Comment No. 3

Category: Citizen

Response: Cumulative impacts of the project are discussed in Chapter 15. The two additional NWIW projects are included in the evaluation, although the NWIW project in Tacoma has since been cancelled.

The availability of natural gas supply is discussed in Chapter 7.

Commenter: Bradley Thompson, Comment No. 4

Category: Citizen

Response: In response to this comment and others, Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

Commenter: Bradley Thompson, Comment No. 6

Category: Citizen

Response: See standard response No. 10 in regards to fracking.

In response to this comment and others, Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transport. See standard response No. 5 for additional information on emissions.

The analysis and determination of the nature of the environmental impacts in the EIS is not based on the presumed closure of existing coal to methanol plants. See standard response No. 1 for additional information on the proposed project purpose and need.

Commenter: Bradley Thompson, Comment No. 7

Category: Citizen

Response: See response to Sandra Davis Comment No. 5 regarding methanol technology (see page 17-15).

Commenter: Bradley Thompson, Comment No. 11

Category: Citizen

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

See standard response No. 6 regarding vessel emissions.

Commenter: Priya Veeraraghavan, Comment No. 4

Category: Citizen

Response: Comment noted. The air quality impact analysis presented in Chapter 4 and Appendix D of the EIS includes consideration of existing background concentrations of pollutants and cumulative impacts.

Commenter: Alex Williams, Comment No. 3

Category: Citizen

Response: Comment noted. Section 15.5.2 compares GHG emissions to state and worldwide emissions.

Commenter: Alex Williams, Comment No. 7

Category: Citizen

Response: The proposed project is expected to produce methanol to be used in the manufacture of other products, not as fuel. This is not a fossil fuel energy plant. As noted in section 4.4.2.2, expected GHG emissions associated with the ULE Alternative (excluding on-site power generation) are about 61 percent lower than with the CR Alternative. With on-site generation of electricity, the direct (Scope 1) GHG emissions with the ULE Alternative are projected to be about 31.5 percent less than with the CR Alternative.

Commenter: Steven Wright, Comment No. 4

Category: Citizen

Response: See standard response No. 5 regarding threats to human health.

Commenter: Bob Zeigler, Comment No. 1

Category: Citizen

Response: Comment noted.

Commenter: Bob Zeigler, Comment No. 2

Category: Citizen

Response: See standard response No. 10 in regards to fracking.

Commenter: Deborah Belle, Comment No. 2

Category: Public Hearing

Response: Chapter 8 and Appendix G1 include an analysis of risk of explosion. The analysis indicates the destructive force from potential explosions at methanol manufacturing facility would not extend beyond the property boundaries.

Commenter: William Brake, Comment No. 2

Category: Public Hearing

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Scott Daly - Written, Comment No. 8

Category: Public Hearing

Response: Comment noted.

Commenter: Pat Freiberg - Written, Comment No. 2

Category: Public Hearing

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

In regards to methane, the project will use natural gas (methane) but will produce methanol. Methanol is different than methane. Chapter 4 includes an analysis of GHG emission associated with the project.

Commenter: Alex Harris, Comment No. 1

Category: Public Hearing

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Melissa Hubbard, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Melissa Hubbard, Comment No. 2

Category: Public Hearing

Response: See response to Melissa Hubbard Comment No. 1 (see page 17-39).

Commenter: Dave McDevitt - Written, Comment No. 1

Category: Public Hearing

Response: Comment noted. Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Bonnie McKinlay - Written, Comment No. 1

Category: Public Hearing

Response: Methane will be emitted in small quantities by the project. These are accounted for in the project-related GHG emissions and disclosed in Table 12 in Appendix D to the DEIS.

Commenter: Gregory Monahan, Comment No. 1

Category: Public Hearing

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Roxann Murray, Comment No. 1

Category: Public Hearing

Response: Emissions resulting from the projects are disclosed in Chapters 4 and 5 of the EIS. Electricity demand of the facility is disclosed in Chapters 2 and 7 and is approximately 200 megawatts, not 5,200 megawatts.

Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Reg Namara, Comment No. 2

Category: Public Hearing

Response: See standard response No. 5 regarding emissions.

Commenter: Tim Norgren, Comment No. 1

Category: Public Hearing

Response: Chapter 4 of the EIS has been updated to consider GHG emissions from natural gas production and transportation.

See standard response No. 10 in regards to fracking.

Commenter: Don Steinke, Comment No. 1

Category: Public Hearing

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Dorothy Walker, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Jasmine Zimmer-Stucky, Comment No. 3

Category: Public Hearing

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Petition Letter #1, Comment No. 2

Category: Petition

Response: The volume of natural gas used by the project is discussed in Chapter 7.

See standard response No. 10 in regards to fracking.

Chapter 4 has been modified in response to this comment and others to include a discussion of GHG emission associated with natural gas production and transportation. Also see standard response No. 5 regarding emissions.

Commenter: Lacey Carpenter (Petition Letter #1), Comment No. 1

Category: Petition

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

As noted in Chapter 4, the ULE Alternative results in less GHG emission than the CR Alternative.

Commenter: Carol Colleran (Petition Letter #1), Comment No. 1

Category: Petition

Response: See standard response No. 5 regarding threats to human health.

Commenter: MJ Ferguson (Petition Letter #1), Comment No. 1

Category: Petition

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

As noted in Chapter 4, the ULE Alternative results in less GHG emission than the CR Alternative.

Commenter: Melissa Hubbard (Petition Letter #1), Comment No. 1

Category: Petition

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

Commenter: Dorothy Walker (Petition Letter #1), Comment No. 1

Category: Petition

Response: See standard response No. 10 in regards to fracking.

Commenter: Petition Letter #2, Comment No. 1

Category: Petition

Response: See response to Sandra Davis Comment No. 5 regarding methanol technology (see page 17-15).

Commenter: Petition Letter #2, Comment No. 3

Category: Petition

Response: Chapter 4 has been updated to consider GHG emissions from natural gas production and transport.

See standard response No. 5 regarding emissions.

See standard response No. 10 in regards to fracking.

17.8 Response to Comments on Chapter 5, Water Resources

Commenter: Cowlitz Tribe, Comment No. 8

Category: Agency and Tribal Government

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new collector well. Certification of the water rights by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer and subsequently on the Columbia River and would not have a significant impact on existing or proposed water rights or users. The comparison to the flow of the Columbia River was intended to demonstrate that the project would divert a very small percentage of groundwater that could otherwise flow into the river. A comparison to other industrial/municipal withdrawals would not characterize the significance of the impact, if any exists. This type of analysis would only show individual projects relative to each other, not to the resource as required by SEPA.

Commenter: Cowlitz Tribe, Comment No. 9

Category: Agency and Tribal Government

Response: A National Pollutant Discharge Elimination System (NPDES) permit will not be required if a "zero liquid discharge" (ZLD) process is used for wateswater management. The facility will secure a NPDES permit through Ecology if a surface water discharge of process wastewater is implemented (see Appendix A).

The project, as shown in Appendix B, meets Oregon State water quality standards at the mixing zone.

Commenter: Cowlitz Tribe, Comment No. 10

Category: Agency and Tribal Government

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Washington State Department of Ecology, Comment No. 4

Category: Agency and Tribal Government

Response: Comment noted. The facility will secure a NPDES permit for industrial wastewater discharge through Ecology. The engineering team is continuing to coordinate with Ecology on specific items to demonstrate compliance with state water quality standards.

The facility will discharge stormwater through on-site infiltration. Facilities without a stormwater discharge are not typically required to obtain an Industrial Stormwater General Permit. The Applicant is completing additional analysis related to stormwater runoff and will coordinate with Ecology regarding the stormwater runoff as part of project permitting.

Commenter: Columbia Riverkeeper, Comment No. 24

Category: Non-governmental Organization

Response: The City of Kalama Water System Plan indicates that it relies solely on the Kalama River for its water supply. The City's Ranney Well is located approximately 2.75 miles above the mouth of the Kalama River which is approximately 1 mile upriver from the project location on the Columbia River. If a spill were to occur at the facility it would need to travel 1 mile up the Columbia River from the project site than 2.75 miles up the Kalama River to reach the location of the City of Kalama's Ranney Well.

A study completed for the siting of thermal powers plants in the vicinity of the project site found that the Columbia River can experience reverse flows up to approximately 25 miles from the mouth of the river during all times of the year with flow reversal extending further upstream during low flows. Based on testing just downstream of the project site, the study estimated that flow reversal could move water approximately 3 miles upstream from the release point (Clark and Snyder 1969). Because the City's water source is more than 3 miles from the project site and up a tributary, the likelihood of a spill reaching the source is minimal. In addition, backwater effects from the Columbia River only occur up to Kalama River Mile 1.55 and there are several rapids on the Kalama River below the City of Kalama's Ranney Well, further reducing the chances of spill reaching the source (Ecology 2002).

Commenter: Columbia Riverkeeper, Comment No. 36

Category: Non-governmental Organization

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Columbia Riverkeeper, Comment No. 37

Category: Non-governmental Organization

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: New Progressive Alliance, Comment No. 5

Category: Non-governmental Organization

Response: See standard response No. 8 regarding water use.

As noted in Chapter 5, less than 100 gallons per minute is consumed in process and the majority of the water is returned to the environment as water vapor with a minor amount being discharged to the Columbia River.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 1

Category: Non-governmental Organization

Response: Chapter 5 of the EIS discussed floodplains on the project site. Upland construction of the methanol production lines, storage tanks, and other critical facilities are proposed above the limits of the 100-year floodplain. Elements within the floodplains would be elevated about the floodplain level or designed to withstand flooding consistent with all applicable state and local codes.

In regards to the pipeline, Appendix B to the EIS notes that flooding could impact the proposed pipeline project by causing buoyancy in the pipeline. In this area, the pipeline would be installed using horizontal direct drilling, which provides for substantial overburden and sufficient weight to counter any buoyancy forces caused during flooding.

In addition, the pipeline project will also be designed and constructed to prevent subsurface erosion, also known as "soil piping," in the backfilled trench. This erosion would be controlled with trench breakers designed to slow, but not completely stop, subsurface water flow in such a way that drainage in the backfilled trench simulates native natural drainage. Where necessary, additional drainage enhancements would be installed to further improve seepage characteristics within the trench.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 6

Category: Non-governmental Organization

Response: Chapter 3 of the EIS addresses risk to the project site from tsunamis and landslides and Chapter 5 of the EIS addresses risk to the project site from flooding. As indicated in the EIS, there is no risk to the site from tsunamis, and the tanks are not located in the regulatory 100-year floodplain.

Risks of and consequences from incidents on site are discussed in Chapter 8 of the EIS. See also standard response No. 4 in regards to seismic hazards.

In regards to sea level rise, Chapter 5 of the EIS has been updated to address potential impacts from future sea level rise.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 10

Category: Non-governmental Organization

Response: See response to Claudia Riedener Comment No. 24 (see page 17-48) regarding acidification associated with wastewater discharge.

See comment to Columbia Riverkeeper Comment No. 7 (see page 17-104) in regards to GHG emissions and its effect on acidification.

Commenter: William Brake #5, Comment No. 13

Category: Citizen

Response: As noted in Chapters 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new collector well. Certification of the well by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer and subsequently on the Columbia River. Alternatives have been considered as described in Chapter 2.

The alternatives identified by the commenter are not considered feasible as follows.

The City of Kalama wastewater treatment plant only generates an average flow of 0.8 million gallons per day and would not be sufficient to support the project. The Port does not hold water rights to allow for direct withdrawal from the Kalama or Columbia Rivers and a surface water withdrawal would likely result in greater impacts than from groundwater withdrawal.

As indicated in Chapter 5 of the DEIS, water reuse is planned but does not eliminate the need for water use at the facility.

Air fin coolers use finned tubing and electric fans to dissipate heat from industrial sources. This type of heat exchange could save water. However, their use would increase the use of electric power and are less efficient than planned cooling towers. The overall efficiency and cost of operation favor the use of cooling towers in a humid climate, such as along the Columbia River and their use has not been further evaluated in the EIS.

Transport of wastewater from treatment facilities in Longview or La Center would require significant pipelines. These would not be economically feasible, may introduce additional potential environmental impacts, and are not evaluated further in the EIS.

Commenter: William Brake #5, Comment No. 33

Category: Citizen

Response: The potential for a dam failure on the Columbia River is very unlikely and an assessment of potential impacts from dam failure was not included in the DEIS for this reason. In the very unlikely, but not impossible, failure of one or more of these dams, severe flooding could occur along the Columbia River, including inundation of the project site (USACE 1989). Worst-case scenario, flood events are shown by dam failure inundation maps with dam failure at the spillway design flood. These inundation maps are worst-case scenarios, designed for emergency planning purposes only, and do not indicate that any of these dams are unsafe. Such an event would be remote and speculative and impacts resulting from such an event are not required to be considered under SEPA per WAC 197-11-060(4)(a).

Commenter: William Brake #5, Comment No. 35

Category: Citizen

Response: The design of the facility includes considerable reuse of on-site waters to reduce the projects water demand to the maximum extent possible. Approximately 80 percent of the water used within the methanol production portion of the facility is sourced directly from process wastewaters. All wastewaters from the process area of the facility are recycled as raw water

make-up for the facility. Additionally, water is recycled eight times within the cooling towers, also reducing the water demand significantly (see Appendix A).

Commenter: William Brake #5, Comment No. 56

Category: Citizen

Response: Section 5.5.1 addresses impacts of the project on water resources, including Floodplains.

Commenter: Mary Collins, Comment No. 3

Category: Citizen

Response: As noted in Chapters 5 (Water Resources) and 13 (Public Services and Utilities), the proposed facility would obtain a majority of the required water from a new groundwater collector well. As noted in section 5.4.2, the alluvial aquifer the well is located in has been characterized. The water rights were certified by Ecology. Part of the certification includes investigation and testing to determine the effects of the proposed water withdrawal. Certification of the well by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer or the Columbia River. See Chapter 5, References: (1) CH2M Hill. 2002. Groundwater Rights Evaluation. Bellevue, WA: Port of Kalama; and (2) Ecology 2002c. Report of Examination. Ground Water Application No. G2-30036. Olympia, WA.

Commenter: Carole and Jack Eby, Comment No. 1

Category: Citizen

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new groundwater collector well located near the river through an existing water right (6,600 gallons per minute). Certification of the well by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer; therefore, is not likely to affect other wells in the aquifer.

The City would supply water only for domestic uses at the facility, estimated at 5,600 gallons per day as described in Chapter 13, Public Services and Utilities. City-supplied water would not be used in the production process (see section 2.6.1.4). Estimated water use by the production process (i.e., water obtained from the proposed collector well) is included in Table 5-4.

Commenter: Sandra Davis, Comment No. 4

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Diane Gordon #1, Comment No. 2

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Lloyd Groat #2, Comment No. 1

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Shaun Hubbard, Comment No. 12

Category: Citizen

Response: Water quality impacts of operation of the facility, including stormwater, are discussed in section 5.5.1.2 of the EIS. As indicated, stormwater is not proposed to be directly discharged to the Columbia River and will be infiltrated on site after treatment and would not be expected to have significant amounts of pollution.

Commenter: Shaun Hubbard, Comment No. 18

Category: Citizen

Response: See response to Columbia Riverkeeper Comment No. 30 regarding global emissions (see page 17-26).

Commenter: Shaun Hubbard, Comment No. 19

Category: Citizen

Response: See response to Columbia Riverkeeper Comment No. 30 regarding emissions related to climate change (see page 17-26).

Commenter: Daryl Linnell #1, Comment No. 2

Category: Citizen

Response: As noted in Chapters 5 (Water Resources) and 13 (Public Services and Utilities), the proposed facility would obtain a majority of the required water from a new collector well. Certification of the well by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer and other wells located in the aquifer. See Chapter 5, References: (1) CH2M Hill. 2002. Groundwater Rights Evaluation. Bellevue, WA: Port of Kalama; and (2) Ecology 2002c. Report of Examination. Ground Water Application No. G2-30036. Olympia, WA.

Commenter: Joann McGovern, Comment No. 1

Category: Citizen

Response: Stormwater from the site, including areas from paved and unpaved areas, will be collected and conveyed on site to a stormwater treatment and infiltration system designed in accordance with Cowlitz County stormwater design manual as described in section 5.5.1.2 of the DEIS. Stormwater from the proposed methanol manufacturing facility would be segregated into two streams depending on the anticipated pollutant loadings. Stormwater from areas of the project site that are physically separated from the production process (i.e., access roads, parking lots, and building rooftops) and from on-site paved areas would be directed to an infiltration facility for discharge into the ground. Stormwater from the production process areas of the facility would be directed to a first flush pond for treatment. The first flush pond would discharge treated stormwater to the infiltration facility. Stormwater from the first flush pond also may be reused on site as raw water. The first flush ponds and infiltration facility would be sized to manage stormwater on site consistent with Cowlitz County and state standards. The infiltration facility would be sized to infiltrate the 100-year, 24-hour rainfall event per Cowlitz County's Stormwater Manual.

Commenter: Susan Powell #1, Comment No. 3

Category: Citizen

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new groundwater collector well located near the river. The City would supply water only for domestic uses at the facility. City-supplied water would not be used in the production process (see section 2.6.1.4) and is not expected to be contaminated. Furthermore, wastewater from the facility would be treated on site prior to discharge through the Port's WWTP and into the Columbia River. At no point would any untreated process water be discharged upgradient of the City water supply on the Kalama River (see section 5.4.2) that could result in contamination of the City water supply.

Commenter: Susan Powell #1, Comment No. 4

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Susan Powell #3, Comment No. 1

Category: Citizen

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new groundwater collector well. Certification of the water rights by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer; therefore, is not likely to affect other wells in the aquifer.

Commenter: Susan Powell #3, Comment No. 2

Category: Citizen

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new groundwater collector well located near the river. The City would supply water only for domestic uses at the facility. City-supplied water would not be used in the production process (see section 2.6.1.4) and is not expected to be contaminated. Furthermore, wastewater from the facility would be treated on site prior to discharge through the Port's WWTP and into the Columbia River. At no point would any untreated process water be discharged upgradient of the City water supply on the Kalama River (see section 5.4.2) that could result in contamination of the City water supply.

Commenter: Matt Ramsay, Comment No. 1

Category: Citizen

Response: Comment noted. Section 2.6.1.4, describes the new water supply well that would be constructed to serve project requirements. The water right associated with the well has been certified by Ecology and does not affect any existing drinking water supply wells located within the aquifer (see section 5.5.1). The water use of the facility represents less than 0.0067 percent of the lowest anticipated flows in the river.

Commenter: Claudia Riedener, Comment No. 24

Category: Citizen

Response: Acidification is the decrease in pH of surface waters. Wastewater effluent from the facility has the potential to affect pH in the Columbia River. A detailed analysis of wastewater

effluent constituents and treatment is presented in DEIS Appendix A, which is the Engineering Report and Application for NPDES Permit application for the project. This information is also presented in section 5.5.1.2 of the DEIS.

WAC 173-201A-320 requires that an analysis of the proposed discharge wastewater from new sources be reviewed in reference to existing background concentrations in receiving waters. For the NPDES Permit application, a Type II antidegradation analysis was conducted to determine if the development of the proposed methanol manufacturing facility would result in a measureable change in the physical, chemical, or biological quality of the Columbia River. With regards to pH, WAC 173-201A-320(3) defines a measureable change as a pH change of 0.1 unit or greater.

Table 23 in Section 16.1 of Appendix A reports the results of the Tier II antidegradation analysis. The pH of receiving water in the Columbia River has been measured and reported in Appendix A as approximately 7.53. The effluent from the facility is estimated to have a pH of approximately 8.2 at the point of discharge and, therefore, has been modeled to have a range of approximately 7.53 to 8.2 at the edge of the mixing zone. Effluent from the facility, therefore, is expected to be slightly basic in pH. For this reason, effluent from the facility would not contribute to acidification.

The project proponent completed a mixing zone study and reasonable potential determination, which are included as attachments to Appendix A of the DEIS. The analysis in these reports demonstrate that the proposed wastewater discharge would not cause or contribute to a violation of water quality standards in the river and would result in only negligible changes in water quality.

Commenter: Tedline Roos, Comment No. 1

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Cynthia Svensson #1, Comment No. 6

Category: Citizen

Response: Comment noted. The flooding noted occurred in the downtown area of Kalama located more than 2 miles away from the project site. The project would not contribute stormwater runoff to the downtown area or other off-site locations.

The project site was not affected by the December 2015 storm event. Port staff did not observe any flooding during the event. A complete description of the site in reference to the floodplains is included in section 5.4.4 of the DEIS.

Commenter: Cynthia Svensson #1, Comment No. 14

Category: Citizen

Response: As noted in Chapters 5 (Water Resources) and 13 (Public Services and Utilities), the proposed facility would obtain a majority of the required water from a new groundwater collector well. Certification of the water right by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer; therefore, is not likely to affect other wells in the aquifer. The proposed well will not serve or affect public supply needs. Potential pollution of the aquifer may occur during construction as described in section 5.5.1.1,

but impacts are not likely to be significant or result in long-term impacts to groundwater quality.

In regards to stormwater, section 5.5.1.2 of the EIS addresses stormwater impacts. The project will manage stormwater consistent with county and state standards.

Commenter: Bradley Thompson, Comment No. 8

Category: Citizen

Response: The DEIS presents water use based on the current design and Engineering Report. According to NWIW, the reduction in projected water use compared to its original public statements was the result of NWIW's engineering design objectives to reduce water consumption and increase water reuse.

Commenter: Bradley Thompson, Comment No. 12

Category: Citizen

Response: The estimated wastewater characterization for the facility has been developed and a comprehensive Engineering Report (attached to the DEIS in Appendix A) has been submitted to Ecology for review of necessary NPDES permits. NPDES permits require compliance with applicable water quality standards.

Commenter: Alex Williams, Comment No. 1

Category: Citizen

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain a majority of the required water from a new groundwater collector well located near the river. The City would supply water only for domestic uses at the facility. City-supplied water would not be used in the production process (see section 2.6.1.4) and is not expected to be contaminated. Furthermore, wastewater from the facility would be treated on site prior to discharge through the Port's WWTP and into the Columbia River. At no point would any untreated process water be discharged upgradient of the City water supply on the Kalama River (see section 5.4.2) that could result in contamination of the City water supply.

Commenter: Debra Belle, Comment No. 1

Category: Public Hearing

Response: Chapter 2 of the EIS describes the project and indicates that the project does not involve the pumping of any substance, including nickel and copper, into the ground. The project includes the discharge of wastewater to the Columbia River. Impacts from this are identified in section 5.5.1.2 of the EIS. However, an alternative that would eliminate this discharge has been identified and is discussed in Chapter 2.

Commenter: Scott Daly - Written, Comment No. 5

Category: Public Hearing

Response: Comment noted.

Commenter: Linda Horst, Comment No. 1

Category: Public Hearing

Response: As noted in Chapter 5 (Water Resources), the proposed facility would obtain process water from a new groundwater collector well. Certification of the well by Ecology demonstrated that the maximum pumping rate would have a negligible effect on the alluvial aquifer and subsequently on other wells within the aquifer. The proposed well is 1.7 miles west of the City of Kalama municipal water supply, a surface water withdrawal on the Kalama River.

Commenter: Linda Horst - Written, Comment No. 1

Category: Public Hearing

Response: See standard response No. 8 regarding impacts to existing water rights or users.

Commenter: Cambria Keely, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in response to fracking. Chapter 4 of the DEIS evaluates impacts of the projects on air quality and includes the quantification and impact assessment of the discharge of toxic air pollutants.

See standard response No. 7 regarding water quality concerns.

Commenter: Lisa (Last name unknown), Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Chapter 5 of the EIS discusses the water needs of the project.

Commenter: Susan Powell, Comment No. 2

Category: Public Hearing

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Barbara Wright - Written, Comment No. 1

Category: Public Hearing

Response: As shown on Figure 2-9, access to the wetland area north of the site will be maintained with the project. The road and parking improvements will improve access to the wetlands.

Commenter: Carol Colleran (Petition Letter #1), Comment No. 2

Category: Petition

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Anne Elkins (Petition Letter #1), Comment No. 1

Category: Petition

Response: See standard response No. 7 regarding wastewater discharge.

17.9 Response to Comments on Chapter 6, Plants and Animals

Commenter: Cowlitz Indian Tribe, Comment No. 11

Category: Agency and Tribal Government

Response: Section 6.6.1.2 of the DEIS addressees the potential impacts to plant and animal resources (including fish and aquatic species) from water use and wastewater discharge associated with the proposed project.

With regards to water withdrawal, the volume of water withdrawn from groundwater would be insubstantial relative to the flows in the Columbia River; flows in the tidal portions of the river typically range between 110,000 and 400,000 cfs (USGS 2015). (The average discharge of the Columbia River at its mouth is approximately 265,000 cfs [Kammerer 1990]). The approximately 3,440 gpm that the project would use represents approximately 7.4 cfs, which represents less than 0.0067 percent of the lowest anticipated flows in the river. The water withdrawal is well within the Port's existing water right.

Section 5.5.1.2 of the DEIS describes the process wastewater system for the proposed project. Process wastewater discharge would either be directed to the Columbia River through the common outfall noted above or directed to a zero liquid discharge (ZLD) system for final disposal.

Process wastewater discharge from the facility would consist of cooling tower blowdown. If discharged to the outfall, blowdown from the cooling towers would be directed to the firewater pond, and then cooled to a temperature not to exceed 20°C (the ambient water quality standard for the Columbia River) through evaporative cooling and a heat exchanger. Cooled water would then be conveyed to the Columbia River through the Port's existing outfall. An analysis was completed to evaluate the proposed discharge's compliance with water quality standards for the Columbia River (ESA Vigil Agrimis 2015). NWIW proposes to meet the 20-degree temperature standard for wastewater at the point of discharge, rather than relying on a mixing zone to meet the temperature standard. For those few constituents that do not meet water quality criteria at the point of discharge from the facility using conservative assumptions, the analysis also considered existing authorized discharges from Steelscape and the Port Wastewater Treatment Plant (WWTP) and a proposed mixing zone in the river that has approximately the same dimensions as the existing mixing zones for Steelscape and the Port WWTP. The proposed mixing zone is approximately 300 feet downstream and 100 feet upstream of the outfall. The analysis demonstrates that the proposed wastewater discharge would not cause or contribute to a violation of water quality standards in the river and would result in only negligible changes in water quality.

The analysis presented in the DEIS documents indicates that while water use and water discharge could result in effects to plant and animal resources, these activities would not result in significant adverse impacts. For this reason, additional compensatory mitigation for water use and water discharge has not been provided.

Commenter: Cowlitz Indian Tribe, Comment No. 13

Category: Agency and Tribal Government

Response: Potential impacts to Columbia River Distinct Population Segment (DPS) Columbian white-tailed deer that could occur associated with the proposed project are described in Chapter 6 of the DEIS. Section 6.5.2.1 of the DEIS describes habitat suitability at the project site, and documents that, while Columbian white-tailed deer have been occasionally reported as present on currently unfenced portions of the site, that the project site provides very little if any suitable habitat for this species.

The population of Columbia white-tailed deer that are present within the vicinity are most likely deer that were translocated to Cottonwood Island in 2010 and 2013 by the U.S. Fish and Wildlife Service (USFWS). The USFWS 2013 five-year status review for Columbia white-tailed deer (USFWS 2013) documented that many of the Columbian white-tailed deer translocated to Cottonwood Island in 2010 and 2013 moved off of the island, and indicated that habitat quality may have been a contributing factor. Columbian white-tailed deer are closely associated with woodland cover (Smith 1987; as cited in USFWS 2013), and often prefer open canopy and park-forest habitat, to which the project has avoided impacts.

While deer would no longer be able to access the upland portion of the site where the facility would be constructed, this would not represent a loss of habitat, nor would it present a new barrier to travel between Cottonwood Island and the Kalama River. The majority of the site is fenced, and currently, all but the northern peninsula of the site is inaccessible to deer. The area between Cottonwood Island and the mouth of the Kalama River is already quite fragmented by existing roads, rail lines, and existing fencing and infrastructure on the North Port site. The proposed project would not further fragment or otherwise affect the ability for Columbian white-tailed deer to move between relatively higher-quality habitats on Cottonwood Island and the mouth of the Kalama River, or to other habitats within the vicinity. An existing network of mature cottonwood forest (preferred Columbian white-tailed deer habitat) to the north of the proposed project site would remain intact.

The DEIS describes the compensatory mitigation actions that have been incorporated into the project, to offset unavoidable impacts to aquatic, riparian, and wetland buffer impacts at the site, and these compensatory mitigation actions will also benefit Columbian white-tailed deer. Proposed riparian plantings and restoration actions along the shoreline would improve riparian cover and forage for deer in an area that is currently devoid of this habitat structure.

In addition, the USFWS 2013 five-year status review for Columbia white-tailed deer (USFWS 2013) evaluated the status of the species under the ESA and concluded that based on the total population and subpopulations it is meeting its recovery goals and may qualify for down listing from ”Endangered” status to “Threatened” status under the ESA.

Given that the site provides very little suitable habitat for Columbian white-tailed deer in its current state, and is currently fragmented by existing fences and infrastructure, the analysis presented in the DEIS concludes that construction of the site will not result in any significant adverse effects to Columbia River DPS Columbia White-tailed deer. No additional compensatory mitigation is proposed.

Commenter: Cowlitz Indian Tribe, Comment No. 14

Category: Agency and Tribal Government

Response: Dredging associated with the proposed project is described in section 2.6.2.3 of the DEIS, and this section also includes a description of the anticipated dredging that could be required to maintain the berth. The DEIS states that maintenance dredging would likely be required over time to maintain the berth to the permitted depth, and that this activity would occur in the same manner as used for the establishment of the berth. The volumes and frequency of maintenance dredging events would vary based on the needs of the facility and the rate of shoaling. It is estimated that an average of 27,000 cubic yards of sediment could be deposited in the berth area yearly.

Impacts to plants and animal resources (including fish and aquatic species) associated with dredging are described in Chapter 6 of the DEIS. Dredging would occur in deep water, and is expected to result in only temporary and localized effects.

Commenter: Cowlitz Indian Tribe, Comment No. 15

Category: Agency and Tribal Government

Response: The mitigation plan that has been prepared for the permit applications outlines the proposed monitoring and maintenance plan for the mitigation, and outlines the performance standards and criteria for evaluating success of the mitigation. These performance standards and success criteria will become conditions of the permits with the U.S. Army Corps of Engineers, Washington Department of Ecology, WDFW, and Cowlitz County.

Impacts to plant and animal resources associated with operation of the Marine Terminal Alternatives (including vessel transport) are addressed in section 6.2.2.2. Operation of the proposed project would result in the introduction of approximately 3 to 6 ships per month (36 to 72 per year) to the Columbia River. The river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel calls in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant adverse impact on any plant or animal resources (including fish and aquatic species and habitats).

The compensatory mitigation activities that are included in the project provide mitigation for the unavoidable impacts to aquatic and riparian habitats from the project, including for those temporary impacts to fish and fish habitat that could occur during dredging to establish the new berth and dredge material placement. While maintenance dredging is not proposed as part of the project, section 2.6.2.1 of the DEIS describes the anticipated need for dredging associated with the long-term maintenance of the berth basin. Maintenance dredging, when necessary, would occur in the same manner as used for the establishment of the berth. Maintenance dredging could result in minor temporary impacts to fish and benthic habitats, but would represent only a minor effect, given the fact that maintenance dredging would be an infrequent event, and would be expected to consist of the removal of small amounts of material from an established berth basin in deep water. For this reason, no additional mitigation has been proposed for maintenance dredging.

The project will include extensive safeguards to prevent releases to the land or surface water, but the EIS acknowledges that releases could nonetheless occur as discussed in Chapter 8. If

and when a release does occur, applicable laws will require an appropriate cleanup and compensation for natural resource damages; no mitigation is therefore proposed.

Commenter: Washington Department of Fish and Wildlife, Comment No. 1

Category: Agency and Tribal Government

Response: The discussion in section 6.6.2.2 of the DEIS regarding potential impacts associated with operation acknowledges that operation of vessels associated with the proposed project could result in effects to wildlife species and aquatic habitats, and specifically discusses the potential impacts to unarmored shallow water habitats.

The DEIS acknowledges that vessels calling on the facility could result in impacts to shallow water habitat, but that the project is not expected to result in significant adverse effects to plants or wildlife species. Operation of the proposed project would result in the introduction of approximately 3 to 6 ships per month (36 to 72 per year) to the Columbia River. The river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel calls in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant adverse impact on any plant or animal resources.

Commenter: Washington Department of Fish and Wildlife, Comment No. 2

Category: Agency and Tribal Government

Response: Effects associated with vessel wakes, including wake stranding of juvenile salmonids throughout the vessel transport study area, are discussed in section 6.2.2.2 of the DEIS. Cumulative effects of vessel wakes associated with reasonably foreseeable development projects are discussed in section 15.5.4 of the DEIS.

In response to this comment, Chapters 6 and 15 have been updated with additional analysis regarding the impact of the project related vessel wakes. Please refer to the updated EIS chapters for a response to this comment.

The DEIS acknowledges that vessels calling on the facility, in conjunction with the other reasonably foreseeable development projects, could contribute incrementally to wake stranding on the Lower Columbia River. However, based on current understanding and available information, it is not possible to quantify potential impacts associated with wake stranding accurately. Additionally, because potential impacts due to wake stranding are not unique to project vessels, but are similar for all deep-draft vessel traffic on the river, both existing and projected cumulative traffic, any plan or program to address these impacts should be addressed collectively under the direction of agencies responsible for maritime traffic on the river.

Commenter: Washington Department of Fish and Wildlife, Comment No. 4

Category: Agency and Tribal Government

Response: In response to this comment, Chapter 6 has been updated with additional analysis regarding the impact from noise associated with project-related vessels. Please refer to the updated EIS chapter for a response to this comment.

Commenter: Washington Department of Fish and Wildlife, Comment No. 7

Category: Agency and Tribal Government

Response: Section 6.7.2.2 of the DEIS describes the in-water work windows that are proposed for the construction of various elements of the project. Ultimately, in-water construction will be conducted only during the in-water work windows that are approved for each construction element by the regulatory agencies.

The windows proposed in the DEIS were developed in close coordination with regulatory agencies, including the USACE, WDFW, USFWS, and National Oceanic and Atmosphere Administration (NOAA) Fisheries, to accommodate the construction schedule, while simultaneously being cognizant of avoiding biologically sensitive time periods for given activities. One of the important considerations for timing is the need to conduct all or most berth dredging prior to pile installation. In response to discussions with WDFW, specifically, the proposed in-water work window for dredging has been modified to avoid the month of August.

The currently proposed dredging window (September 1 – December 31) is designed to begin early enough in the season to allow pile-driving activities to begin on schedule, while avoiding the bulk of the peak juvenile salmonid outmigration in the spring/summer, and the peak run timing for Pacific eulachon in the late winter/early spring.

The proposed pile installation window (September 31 – January 31) would minimize the need for pile installation to be extended into the late winter/early spring time frame. The project proposes to use impact-driven concrete structural piles, which are not known to result in injurious levels of underwater noise. Steel piles, which would be used for fenders and walkway supports, would be driven with a vibratory hammer to the extent possible. If steel piles require impact installation or proofing, a bubble curtain would be used. For this reason, an early start to the pile installation window would not result in adverse effects to any fish or other aquatic species.

Pile removal activities, and work conducted below the ordinary high water mark (OHWM) but outside the wetted perimeter of the river (i.e., in the dry), are not expected to result in significant impacts to aquatic species or resources, and these activities could be conducted year-round.

Commenter: Washington Department of Fish and Wildlife, Comment No. 8

Category: Agency and Tribal Government

Response: Section 6.6.2.1 of the DEIS documents the impacts that could occur to fish and aquatic habitat resources associated with dredging activities. Proposed dredging activities associated with the berth extension would occur in deep water (-39 feet Columbia River Datum [CRD] and deeper), and are not expected to result in habitat impacts greater than those resulting from naturally recurring hydraulic action of the river. Sand waves naturally form and propagate along the channel and the adjacent river bottom, with the estimated volume of sand in a single large sand wave in a range of between 100,000 to 200,000 cubic yards (CHE 2015).

While dredging for the berth extension will result in short-term impacts to water quality, and would temporarily disturb benthic habitat communities, these impacts will not represent a complete and permanent loss of habitat. Dredging is a temporary construction activity, conducted in deep water, which would be expected to have only minor, localized, and

temporary effects. No dredging would be conducted in shallow water habitats, and no shallow water habitat would be converted to deep water.

The project is subject to the Hydraulic Code, which includes provisions for construction of marinas and terminals in freshwater areas (WAC 220-660-160), dredging in freshwater areas (WAC 220-660-170), as well as mitigation requirements (WAC 220-660-080). Specifically, WAC 220-660-080 4(g) states that the department will evaluate the need for compensatory mitigation by comparing the condition of the habitat before and after project construction to determine impacts. The analysis presented in the DEIS characterized the benthic conditions of the site in section 6.5.1.1 - Aquatic as silts and medium-to-coarse alluvial sands. The proposed dredging activities would deepen the berth area to -48 feet plus a 2-foot overdredge; however, the habitat would not change to a different type after construction. According to the 2015 geotechnical report for the Kalama North Port Methanol Plant Dock (Appendix C2), offshore borings in the project area revealed sands from the current mudline to a depth of 101.5 feet. Therefore, the removal of substrate through project dredging will result in a benthic habitat condition of sandy materials, which is the same as the existing condition.

Section 6.7 of the DEIS describes the compensatory mitigation actions that have been proposed associated with the project. The compensatory mitigation actions include a combination of on-site, in-kind replacement of impacted aquatic habitat functions (pile removal), and on-site, out-of-kind enhancements to nearshore and riparian habitats at the site (ELJ installation and riparian and wetland buffer enhancements). These measures have been designed to offset the unavoidable impacts to aquatic and riparian habitat that would occur associated with the project, including impacts associated with dredging for establishment of a new berth and dredge material placement.

Commenter: Washington Department of Fish and Wildlife, Comment No. 9

Category: Agency and Tribal Government

Response: The anticipated pile quantities and benthic habitat impacts are described in section 6.6.2.1 of the EIS. The proposed terminal will require the installation of approximately 320 24-inch concrete piles and twelve 12-inch steel pipe piles, as well as four 18-inch steel pipe piles (a total of 336 piles). This represents a total of approximately 1,079 square feet of new benthic impact associated with new pile footprints. These numbers are inclusive of the trestle piles.

The EIS reports that the project would result in direct permanent impacts to approximately 29,006 square feet (0.67 acre) of Riparian Habitat Area (RHA) buffer.

The proposed project and mitigation plan have been developed in close coordination with WDFW, USACE, and NMFS. The proposed project has been designed consistent with all applicable mitigation guidance and regulatory requirements, including Hydraulic Code provisions for construction of marinas and terminals in freshwater areas (WAC 220-660-160), dredging in freshwater areas (WAC 220-660-170), and mitigation requirements (WAC 220-660-080).

The mitigation strategy follows the mitigation sequencing requirements and guidance of the USACE and WDFW, which includes impact avoidance, minimization, and compensatory mitigation. The project has been designed to avoid and minimize impacts to the aquatic environment to the extent practicable, including selecting a site, terminal, and berth design which greatly minimize impacts to riparian and aquatic habitats.

To compensate for unavoidable impacts to aquatic and riparian habitat function from construction of the project including new overwater coverage, new benthic habitat impacts from piling, and impacts associated with dredging and dredge material placement, the project includes a suite of compensatory mitigation components that are diverse in nature and function, and that meets or exceeds the applicable USACE and WDFW guidance. In addition, the proposed compensatory mitigation plan is comparable to compensatory mitigation that has been required for recently permitted projects on the Columbia River having similar impacts.

In response to discussions with regulatory agencies, and in response to comments received on the EIS, additional compensatory habitat mitigation has been proposed, and this mitigation is presented and discussed in section 6.7 of the DEIS.

Commenter: Washington Department of Fish and Wildlife, Comment No. 10

Category: Agency and Tribal Government

Response: Section 6.5.2.1 of the DEIS describes the habitat suitability for streaked horned lark at the project site, and section 6.6.1.1 of the DEIS describes the potential impacts to streaked horned larks and their habitat that could occur associated with construction of the project. Additional information was presented in the Biological Assessment that was prepared for the project's Endangered Species Act (ESA) consultation with U.S. Fish and Wildlife Service (USFWS). The Biological Assessment was included as Appendix E of the DEIS. The USACE has initiated a formal consultation with USFWS under Section 7 of the ESA for the project that is addressing potential impacts to streaked horned larks.

In response to this comment, section 6.5.2.1 and section 6.6.1.1 have been updated to incorporate additional information from the Biological Assessment.

Commenter: Washington Department of Fish and Wildlife, Comment No. 11

Category: Agency and Tribal Government

Response: An analysis of the extent of terrestrial construction noise attenuation is presented in section 6.6.1.1 of the DEIS, This noise attenuation assessment used a practical spreading loss model to determine the distance at which noise from the loudest anticipated construction activity (assumed to be impact driving of steel piles) would attenuate fully to baseline conditions, either background (such as roadway traffic) or ambient conditions, whichever is loudest (ENVIRON 2015).

The limit of terrestrial pile-driving noise attenuation is the distance at which a maximum sound level (Lmax) of 110 A-weighted decibels (dBA) (which could be generated if any impact driving of steel piles is required) attenuates to traffic noise and/or existing ambient sound. ENVIRON measured an average daytime equivalent continuous sound pressure level (Leq) of 54 dBA on the west shore of the Columbia River and a daytime Leq of 49 dBA on the bluff east of Interstate 5 (Kristen Wallace, pers. comm., January 6, 2007 as cited in ENVIRON 2015). Because of the intervening topography, particularly to the east of the project site, pile-driving Lmax levels would reduce to the background level at a distance of 13,770 feet, or approximately 2.6 miles (ENVIRON 2015).

Terrestrial noise was modeled using the noise model CadnaA. CadnaA is a sophisticated software program that enables noise modeling of complex industrial sources using sound propagation factors (e.g., distance, terrain, vegetation, atmospheric absorption, ground effects, etc.) as adopted by International Organization for Standardization (ISO) 9613. Atmospheric

absorption was estimated for conditions of 10°C and 70 percent relative humidity (i.e., conditions that favor propagation) and computed in accordance with ISO 9613-1. The modeling process included the following steps: (1) characterizing the noise sources, (2) creating 3-D maps of the site and vicinity to enable the model to evaluate effects of distance and topography on noise attenuation, and (3) assigning the equipment sound levels to appropriate locations on the site. CadnaA then constructed topographic cross sections to calculate sound levels in the vicinity of the project site.

An assessment of potential impacts to wildlife from terrestrial construction noise is presented in section 6.6.1.1 of the DEIS. This assessment documents that pile-driving noise could potentially cause wildlife at the project site or within the vicinity of the project site, to temporarily avoid the site or vicinity. However, the terrestrial portions of the project site that could experience temporarily elevated terrestrial noise levels provides only marginally suitable habitat for terrestrial species, and most species that could potentially be present are accustomed to the high levels of noise and activity associated with the industrial sites in the vicinity.

Terrestrial noise levels that could be generated during pile driving would not exceed any established injury thresholds for any special-status species, and the effect to any special-status species wildlife species present at the site during pile driving would be expected to be limited to temporary avoidance of the site or vicinity. Habitat suitability at the site for special-status species is low. Elsewhere within the project vicinity, relatively higher quality terrestrial habitat is available, though it is unlikely that terrestrial noise generated at the site would result in any measurable or significant effect on any terrestrial or avian species present within the project vicinity.

Commenter: Washington Department of Fish and Wildlife, Comment No. 13

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: Washington State Department of Natural Resources, Comment No. 1

Category: Agency and Tribal Government

Response: Section 6.5.2.1 of the DEIS describes the habitat conditions at the project site for terrestrial plants and animals and includes a discussion of the special-status plant species known or with potential to occur at the project site. This section includes an assessment of the potential for plant species listed as Natural Heritage Features by the Washington Natural Heritage Program (WNHP) to occur at the project site. The proposed project would not affect any of the Natural Heritage Features identified in the WNHP database.

NW Pipeline analyzed the potential effect of the Kalama Lateral Project on Natural Heritage Resources in Resource Reports prepared for their application to FERC (NW Pipeline LLC 2014). The proposed alignment for the Kalama Lateral Project will not affect any of the Natural Heritage Features identified in the WNHP database. NW Pipeline conducted surveys for Nuttall's quillwort and Wheeler's bluegrass in 2012, and did not identify these species. NW Pipeline also documented in their FERC application resource reports that they will continue to consult with Washington State agencies on project-related impacts on listed plant and wildlife species.

Commenter: Columbia Riverkeeper, Comment No. 2

Category: Non-governmental Organization

Response: Section 6.7.2.2 of the DEIS describes the in-water work windows that are proposed for the construction of various elements of the project. This section describes the possibility that in-water construction may potentially need to extend over two in-water work windows.

The windows proposed in the DEIS were developed in close coordination with regulatory agencies, including the USACE, WDFW, USFWS, and NOAA Fisheries, to accommodate the construction schedule, while simultaneously being cognizant of avoiding biologically sensitive time periods for given activities. One of the driving considerations for timing is the need to conduct all or most berth dredging prior to pile installation. Ultimately, in-water construction will be conducted only during the in-water work windows that are approved for each construction element by the regulatory agencies.

Commenter: Columbia Riverkeeper, Comment No. 14

Category: Non-governmental Organization

Response: Section 6.6 of the DEIS describes the potential impacts to plant and animal resources (including fish and aquatic species, and habitat for these species) that could occur associated with the proposed project, These include both impacts associated with the construction and operation of the project. Section 6.5 of the DEIS describes the baseline habitat condition within the Lower Columbia River and Estuary and documents its importance as habitat for ESA-listed salmonids, including its designation as Essential Fish Habitat for Pacific Salmon.

With regards to fisheries, the Columbia River, both within the vicinity of the proposed project, and throughout the vessel shipping route, supports commercial, tribal, and recreational fisheries for a wide variety of fish and other aquatic species. The DEIS addresses potential impacts from the proposed project to fisheries and the habitats they rely on in sections 6.6.2.1 and 6.6.2.2, and the potential cumulative impacts to these resources in section 15.5.4.

The operation of the proposed project would result in the introduction of approximately 3 to 6 ships per month (36 to 72 per year) to the Columbia River. The river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel calls in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant adverse impact on aquatic species or habitats within the Lower Columbia River Estuary, nor to any commercial, tribal, or recreational fisheries.

Commenter: Columbia Riverkeeper, Comment No. 15

Category: Non-governmental Organization

Response: Chapter 6 of the DEIS has been updated to address the potential occurrence of several additional species of marine mammals and sea turtles that could potentially occur within the marine portion of the vessel corridor between the mouth of the Columbia River and the point 3 nautical miles (nmi) out to sea from the river's mouth.

The 3-nmi distance from the mouth of the Columbia River was selected for the western boundary of the study area for vessel transportation because it is consistent with the seaward limit of Washington's coastal zone boundary (Ecology 2001). However, the EIS also includes the NMFS Biological Opinion discussed below that considers impacts to marine mammals and ESA-listed species out 40 nmi offshore.

Chapter 6 of the FEIS documents that marine mammals and sea turtles that could potentially occur within the project's vessel shipping route could potentially be directly affected by project vessels. Vessel-related impacts to marine mammals and sea turtles include increased risk of ship strikes, acoustic and physical disturbance, introduction of invasive species in ballast water, and through effects associated with a potential spill to surface water.

As described in section 2.6.2.3 of the DEIS, the proposed project would result in approximately 36 to 72 vessel entry transits per year. By comparison, the river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel entry transits in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015).

The analysis presented in Chapter 6 of the DEIS concludes that marine mammals could potentially be affected by vessels associated with the project. However, given the low numbers of vessel transits associated with the proposed project compared to the existing baseline, the low likelihood of a ship strike or an accident, such as a spill occurring, and the best management practices (BMPs) that would be incorporated into the project for ballast water management, vessel traffic associated with the project would not result in a significant adverse impact to marine mammals.

Commenter: Columbia Riverkeeper, Comment No. 16

Category: Non-governmental Organization

Response: See response to Columbia Riverkeeper Comment No. 15 vessel related impacts to marine mammals (see page 17-60).

In response to this comment and other similar comments, Chapter 6 has been updated with additional analysis regarding the impact of the project-related vessel traffic on marine mammals. Please refer to the updated EIS chapter for a response to this comment.

Commenter: Columbia Riverkeeper, Comment No. 17

Category: Non-governmental Organization

Response: In response to this comment and other similar comments, Chapter 6 has been updated with additional analysis regarding the impact of the project-related vessel traffic on marine mammals. Please refer to the updated EIS chapter for a response to this comment.

The commenter specifically requests that mitigation in the form of vessel speed limits be imposed through the SEPA process. As shown in the revised EIS chapter, impacts to marine mammals from vessel strikes within the scope of the area analyzed in the EIS is not expected to be significant and no mitigation is proposed.

Commenter: Columbia Riverkeeper, Comment No. 18

Category: Non-governmental Organization

Response: Temporary construction noise impacts associated with pile installation are discussed in section 6.6.2.1 of the DEIS. As described in the DEIS, a vibratory hammer would be used for all in-water steel pile driving, to the extent practicable, in order to reduce noise levels and minimize the potential for adverse impacts. The DEIS states that a bubble curtain would be used if steel piles require impact installation or proofing.

As described in the DEIS, impact installation of concrete piles does not generate underwater sound pressure levels that are injurious to fish. Underwater noise generated during installation of concrete piles is not expected to exceed 188 dBPEAK, 176 dBRMS, and 166 dBSEL (measured at a distance of 10 meters or 33 feet from the pile) (Caltrans 2012). Fish may avoid the area temporarily during impact installation of concrete piles, but this is unlikely to affect feeding and/or migratory activities significantly.

The steel piles for walkway supports and fender systems would most likely be installed with a vibratory hammer and are not expected to require impact proofing. However, if impact proofing is required for steel piles, a bubble curtain would be employed to attenuate underwater noise.

For the reasons provided above, the DEIS concludes that pile driving associated with the proposed project will not have any adverse impacts to any fish or other aquatic species.

Commenter: Columbia Riverkeeper, Comment No. 19

Category: Non-governmental Organization

Response: Impacts associated with construction of the marine terminal, including impacts associated with new overwater coverage, are described in section 6.6.2.1 of the DEIS.

Construction of Marine Terminal Alternative 1 would result in a total of approximately 44,943 square feet of new solid overwater coverage. Of the total new aquatic habitat impact, approximately 34,018 square feet of overwater coverage, and approximately 906 square feet of new benthic impact associated with new pile footprints, would be located in water deeper than 20 feet below OHWM. Approximately 10,925 square feet of new overwater coverage associated with the access trestle, and a total of approximately 173 square feet of new benthic impact associated with new pile footprints for the access trestle, would occur in and over shallow water habitat (water shallower than 20 feet below OHWM).

The dock configuration is designed to require the minimum necessary amount of new piling and overwater structure and has reduced the quantity of direct permanent habitat impacts to the least practicable amount. The design would minimize potential effects to aquatic habitats by locating most of the dock terminal in deep water and minimizing structure in and over shallow water habitats. Shallow water habitats are important habitats for salmonids, particularly for their importance to juvenile outmigration. Deep-water habits, while still providing aquatic habitat function, provide relatively less function for juvenile salmonid outmigration. Unshaded, and unarmored shallow water habitats are also relatively more limiting in the lower river than deep openwater habitats and as such are of relatively higher importance to salmonids.

The terminal is designed such that (with the exception of the access trestle) the platforms, dolphins, and structures associated with the terminal would be located in water deeper than 20 feet below OHWM (11.6 feet CRD), which would minimize the effects to aquatic habitat by

minimizing structure in and over shallow-water habitat. Walkways would also be grated to further minimize shading and the access trestle abutments are designed and configured to eliminate the need for shoreline armoring along the riverbank.

To mitigate for unavoidable habitat impacts, the project includes a combination of compensatory mitigation actions that include on-site, in-kind replacement of impacted aquatic habitat functions (pile removal), and on-site, out-of-kind enhancements to nearshore and riparian habitats at the site (ELJ installation and riparian and wetland buffer enhancements). These actions are described in section 6.7 of the FEIS.

The proposed project and mitigation plan have been developed in close coordination with WDFW, USACE, and NMFS. The mitigation strategy follows the mitigation sequencing requirements and guidance of the USACE and WDFW, which includes impact avoidance, minimization, and compensatory mitigation. Impacts associated with new overwater coverage have been avoided and minimized to the extent practicable, and unavoidable impacts will be fully offset through proposed compensatory mitigation. For this reason, the new overwater structure associated with the proposed project will not have any unavoidable adverse impacts to any fish or other aquatic species.

Commenter: Columbia Riverkeeper, Comment No. 20

Category: Non-governmental Organization

Response: Section 6.7.2.2 of the DEIS describes the in-water work windows that are proposed for the construction of various elements of the project. Ultimately, in-water construction will be conducted only during the in-water work windows that are approved for each construction element by the regulatory agencies.

The windows proposed in the DEIS were developed in close coordination with regulatory agencies, including the USACE, WDFW, USFWS, and NOAA Fisheries, to accommodate the construction schedule, while simultaneously being cognizant of avoiding biologically sensitive time periods for given activities. One of the driving considerations for timing is the need to conduct all or most berth dredging prior to pile installation.

The proposed dredging window (September 1 – December 31) is designed to begin early enough in the season to allow pile-driving activities to begin on schedule, while avoiding the bulk of the peak juvenile salmonid outmigration in the spring/summer, and the peak run timing for Pacific eulachon in the late winter/early spring.

The proposed pile installation window (September 31 – January 31) would minimize the need for pile installation to be extended into the late winter/early spring time frame. The project proposes to use impact-driven concrete structural piles, which are not known to result in injurious levels of underwater noise. Steel piles, which would be used for fenders and walkway supports, would be driven with a vibratory hammer to the extent possible. If steel piles require impact installation or proofing, a bubble curtain would be used. For this reason, an early start to the pile installation window would not result in adverse effects to any fish or other aquatic species.

ELJ installation, pile removal activities, and work conducted below the OHWM but outside the wetted perimeter of the river (i.e., in the dry), are not expected to result in significant impacts to aquatic species or resources, and these activities could be conducted year-round.

Commenter: Columbia Riverkeeper, Comment No. 21

Category: Non-governmental Organization

Response: See standard response No. 9 regarding wake stranding.

Commenter: Columbia Riverkeeper, Comment No. 22

Category: Non-governmental Organization

Response: It is possible for fish or other aquatic species to become entrained in or impinged on vessel water intakes. Vessels that would serve the facility would have intakes for engine cooling water and for ballast water intake. However, vessels serving the facility are not likely to take on ballast water within the vessel corridor, making ballast water intake a highly unlikely risk of entrainment to fish or other aquatic species.

Because project vessels could potentially take in cooling water within the vessel shipping route or at the dock, it is possible that aquatic species could become entrained/impinged by these cooling water intakes. However, because the project proposes to include electrical infrastructure to power vessel needs while at the dock use of intakes will minimized during project vessel, other vessel and layberth operations on the dock.

Impacts associated with entrainment could include physical stress due to pressure changes or abrasions or mortality from contact with screens and pump impellers. The change in pressure associated with water intakes can burst the swim bladders of some species. The potential for entrainment would affect fish eggs and larval fish more than juvenile or adult fish, due to their small size and relative lack of mobility. Adult fish would not be expected to be entrained or impinged on vessel intakes.

The potential for entrainment/impingement to occur would likely be minimal and similar to that associated with the existing baseline level of vessel traffic on the river. The increased potential for entrainment would result in minor negative impacts to fish and other aquatic species.

Commenter: Columbia Riverkeeper, Comment No. 29

Category: Non-governmental Organization

Response: See response to WDFW Comment No. 10 regarding lark habitat (see page 17-58).

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 14

Category: Non-governmental Organization

Response: The EIS identifies and describes potential impacts to migratory and resident birds and other wildlife species in section 6.6.1.1. The project is not expected to vent or leak gas and no impacts to migratory birds are identified related to venting of gas. In addition, section 6.6.3.1 identifies potential impacts to birds and other wildlife species from the pipeline project.

Commenter: William Brake #5, Comment No. 36

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

See response to William Brake Comment No. 35 in regards to water reuse (see page 17-45).

With regards to sea lions on the dock, the deck of the dock will be at an elevation above the water level that will preclude sea lions from hauling out on the dock.

Commenter: Diane Gordon #2, Comment No. 2

Category: Citizen

Response: The discussion in section 6.6.2.2 of the DEIS regarding potential impacts associated with operation acknowledges that operation of vessels associated with the proposed project could result in effects to vegetation and wildlife resources and aquatic habitats, and specifically discusses the potential impacts to vegetation resources (including increased bank erosion generated by vessel wakes and propeller wash).

The DEIS acknowledges that vessels calling on the facility could result in these effects, but that the project is not expected to result in significant adverse effects to plants or wildlife species. Operation of the proposed project would result in the introduction of approximately 3 to 6 ships per month (36 to 72 per year) to the Columbia River. The river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel calls in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant adverse impact on any plant or animal resources.

Commenter: Diane Gordon #1, Comment No. 1

Category: Citizen

Response: See standard response No. 7 regarding wastewater discharge.

Commenter: Diane Gordon #2, Comment No. 2

Category: Citizen

Response: See standard response No. 9 regarding wake stranding.

Commenter: Shaun Hubbard, Comment No. 1

Category: Citizen

Response: The project does not involve the transport of oil. Fuel oil will likely be used to power vessels but this is typical of all vessels transiting the Columbia River navigation channel. There are currently no plans to conduct fuel or oil bunkering at the dock for vessels serving the facility. However, if fuel or oil bunkering were to occur, it would be conducted consistent with all applicable federal and state regulations and BMPs, including the bunkering guidelines established by the Lower Columbia Region Harbor Safety Committee. The scoping process did not identify risk of fuel oil spills as part of the EIS.

Section 8.4.3 of the EIS discusses the potential operational impacts of the project, including the potential impacts associated with a spill.

Impacts to salmonids and marine mammals during both construction and operation are discussed in section 6.6 of the EIS, including impacts to listed species and critical habitat.

Commenter: Shaun Hubbard, Comment No. 4

Category: Citizen

Response: Impacts associated with dredging are discussed in section 6.6.2.1 of the EIS.

Commenter: Shaun Hubbard, Comment No. 5

Category: Citizen

Response: Impacts associated with construction of the new dock, including pile placement, are discussed in section 6.6.2.1 of the EIS.

Commenter: Shaun Hubbard, Comment No. 6

Category: Citizen

Response: Impacts associated with construction of the new dock, including pile placement, are discussed in section 6.6.2.1 of the EIS.

Commenter: Shaun Hubbard, Comment No. 7

Category: Citizen

Response: Impacts associated with operation of the marine terminal are discussed in section 6.6.2.2 of the EIS.

Commenter: Claudia Riedener, Comment No. 8

Category: Citizen

Response: See response to Columbia Riverkeeper Comment No. 15 regarding ballast water.

Commenter: Cynthia Svensson, Comment No. 7

Category: Citizen

Response: Sections 6.5.1.1 and 6.5.1.2 of the DEIS describe the general habitat conditions at the project site and within the vicinity. The terrestrial portion of the project site has been developed and used as a placement site for dredge materials removed from the Columbia River Federal Navigation Channel since approximately 1980 (and as sand material sales site). As a result, terrestrial vegetation and wildlife habitat at the project site are of limited quality and quantity with very little vegetation or wildlife habitat present on the upland portions of the site. DEIS section 6.5.2.1 describes the species of terrestrial plants and wildlife species known or with the potential to occur at the project site.

DEIS section 6.6.1.1 describes the potential impacts from the project on plants, wildlife, and their associated habitats. As described above, very little terrestrial plant or animal habitat is present at the project site. Most of the site was filled as part of previous authorized dredge material placement activities and the remaining areas of natural vegetation are small, isolated, and/or disturbed from their natural condition. The construction of the upland portion of the proposed project under either Technology Alternative would occur almost exclusively within the unvegetated industrial and ruderal upland grass/forb habitat types. Similarly, the areas where temporary construction parking areas would be established are all sparsely vegetated ruderal upland habitats. These vegetation types provide little or no wildlife habitat function. Because these areas are currently providing only very limited habitat for a limited number of

species and individuals, the impacts that would occur from the proposed project in these areas would not be considered a "significant adverse effect" as defined under SEPA.

Commenter: John Svensson, Comment No. 1

Category: Citizen

Response: The potential for the project to result in increased water temperature is described in section 6.6.1.2 of the DEIS. Discharge of wastewater from the facility has the potential to affect water temperature within the Columbia River, which could in turn affect fish or other aquatic species. However, wastewater would be cooled to 20°C (the ambient water quality standard for the Columbia River) through evaporative cooling and a heat exchanger. Cooled water would then be conveyed to the Columbia River through the Port's existing outfall. NWIW proposes to meet the 20-degree temperature standard for wastewater at the point of discharge, rather than relying on a mixing zone to meet the temperature standard. This means that during the critical low flow summer months (when ambient conditions in the river typically exceed 20°C, and elevated water temperature is of greatest concern) the temperature of the effluent would be cooler than the receiving water in the Columbia River.

The proposed project would generate an average wastewater flow of approximately 390 gpm (0.87 cfs) with a maximum of approximately 470 gpm (1.047 cfs). By comparison, flows in the tidal portions of the Columbia River typically range between 110,000 and 400,000 cfs. The wastewater flow from the proposed project represents less than 0.001 percent of the volume of flow in the river. Therefore, the temperature of the facility's discharge will have very little effect on the temperature of the river and, as stated above, will be slightly cooler than the temperature of the river during summer months when water temperature exceed the ambient water quality standard.

Commenter: John Svensson, Comment No. 2

Category: Citizen

Response: Dredging associated with the proposed project is described in section 2.6.2.3 of the DEIS. Note that the dredging is necessary to accommodate ships that currently travel on the Columbia River and is not specific to Panamax vessels, which are limited to a draft that is less than what can navigate the Columbia River. Section 6.6.2.1 of the DEIS documents the impacts that could occur to fish and aquatic habitat resources associated with dredging activities. Proposed dredging activities associated with the berth extension would occur in deep water (-39 feet CRD and deeper), and are not expected to result in habitat impacts greater than those resulting from naturally recurring hydraulic action of the river, and no compensatory mitigation is proposed for temporary effects to benthic habitats associated with berth dredging. Sand waves naturally form and propagate along the channel and the adjacent river bottom, with the estimated volume of sand in a single large sand wave in a range of between 100,000 to 200,000 cubic yards (CHE 2015).

While dredging for the berth extension will result in short-term impacts to water quality, and would temporarily disturb benthic habitat communities, these impacts will not represent a major long-term impact to habitat. Dredging is a temporary construction activity, conducted in deep water, which would be expected to have only minor, localized, and temporary effects. No dredging would be conducted in shallow water habitats, and no shallow water habitat would be converted to deep water. The project has proposed compensatory mitigation activities to offset impacts to aquatic and riparian habitats from the project, including for those potential impacts associated with dredging and dredge material placement.

Dredging would not affect the availability of water at the site.

Commenter: Priya Veeraraghavan, Comment No. 3

Category: Citizen

Response: The commenter is concerned with the potential for effects of emissions from the facility on wildlife and on human health.

Chapter 6 of the DEIS describes and documents the potential impacts to wildlife resources that could occur as a result of the project. While wildlife resources could be potentially affected by the project, the analysis presented in the DEIS concludes that the proposed project would not result in unavoidable significant adverse impacts to wildlife resources.

Chapter 8 of the DEIS describes and documents potential impacts to environmental health, including human health and safety, from the project. While the proposed project has the potential to result in impacts to environmental health, the DEIS documents that the proposed project would not result in unavoidable significant adverse impacts to environmental health.

With regards to emissions, Chapter 4 of the DEIS describes and documents potential impacts to air quality from the project. Additional technical information is also included in the Air Quality Technical Report which is Appendix D of the DEIS. While air quality could be affected, the DEIS documents that the project would not result in unavoidable significant adverse impacts to air quality.

Commenter: Diane Gordon, Comment No. 2

Category: Public Hearing

Response: See standard response No. 9 regarding wake stranding.

With regards to bank erosion, the DEIS acknowledges that vessels calling on the facility could result in and contribute to bank erosion, but that this is not expected to result in significant adverse effects to plants or wildlife species. Operation of the proposed project would result in the introduction of approximately 3 to 6 ships per month (36 to 72 per year) to the Columbia River. The river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel calls in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant adverse impact on any plant or animal resources.

See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Susan Powell - Written, Comment No. 1

Category: Public Hearing

Response: The EIS identifies and describes potential impacts to fish in Chapter 6.

Commenter: John Svensson, Comment No. 1

Category: Public Hearing

Response: Dredging associated with the proposed project is described in section 2.6.2.3 of the DEIS. Section 6.6.2.1 of the DEIS documents the impacts that could occur to fish and aquatic habitat resources associated with dredging activities. Proposed dredging activities associated with the berth extension would occur in deep water (-39 feet CRD and deeper), and are not expected to result in habitat impacts greater than those resulting from naturally recurring hydraulic action of the river, and no compensatory mitigation is proposed for temporary effects to benthic habitats associated with berth dredging.

Dredging would not affect water levels at the site or within the river, nor would it cause a loss of feeding areas. While dredging for the berth extension will result in short-term impacts to water quality, and would temporarily disturb benthic habitat communities, these impacts will not represent a major long-term impact to habitat. Dredging is a temporary construction activity, conducted in deep water, which would be expected to have only minor, localized, and temporary effects. No dredging would be conducted in shallow water habitats, and no shallow water habitat would be converted to deep water.

17.10 Response to Comments on Chapter 7, Energy and Natural Resources

Commenter: Cowlitz Indian Tribe, Comment No. 16

Category: Agency and Tribal Government

Response: The commenter requests discussion and consideration of the impacts of fracking. Hydraulic fracturing is a technology for the development of new wells or enhancement of existing wells. It is not an ongoing process associated with the extraction of natural gas from a fully developed well. The project does not propose or involve fracking or any other form of development of natural gas wells. Existing natural gas production capacity in North America is available to supply gas to the project. Therefore, the project will not necessarily lead to the development of new wells by fracking or any other method.

Natural gas wells developed by fracking currently represents over half of the natural gas production capacity in the United States (US EIA 2016c) and is growing in Canada as well. So it is likely that some portion of the natural gas used by the proposed project will be produced by wells that have been developed using hydraulic fracturing techniques. These resources have been or will be developed with or without this project and permitting for all such wells in North America receives environmental review as necessary in the jurisdiction where they are located. Therefore, impacts from fracking are outside the scope of this EIS.

Commenter: Cowlitz PUD, Comment No. 1

Category: Agency and Tribal Government

Response: Section 2.7.2 of the EIS describes the related actions necessary to provide electrical service to the site and is consistent with the improvements noted by the commenter.

Commenter: Columbia Riverkeeper, Comment No. 32

Category: Non-governmental Organization

Response: See standard response No. 10 in regards to fracking.

Commenter: New Progressive Alliance, Comment No. 1

Category: Non-governmental Organization

Response: See standard response No. 3 regarding electricity use and supply. In addition, 2016 electricity use forecasts for Cowlitz County PUD indicate an average daily use of 620 megawatts, not 200 megawatts.

See response to William Brake #2 Comment No. 1 regarding natural gas increase in Washington State (see page 17-70).

In regards to the potential for price increases for natural gas, economic competition related to gas use is outside the scope of SEPA review. Regardless, the U.S. Energy Information Administration indicates that natural gas use is expected to increase by 1 percent per year primarily driven by the industrial and electric power sectors and that much of this growth in natural gas consumption results from relatively low natural gas prices. Average annual U.S. natural gas prices at the Henry Hub are expected to remain around or below $5.00 per million British thermal units (MMBtu) (in 2015 dollars) through 2040. The Henry Hub spot price averaged $2.62 per MMBtu in 2015, the lowest annual average price since 1995 (US EIA 2016b).

Commenter: New Progressive Alliance, Comment No. 2

Category: Non-governmental Organization

Response: See standard response No. 10 in regards to fracking.

Commenter: William Brake #2, Comment No. 1

Category: Citizen

Response: Section 7.4.1.2 addresses the availability of natural gas for the project and both transportation capacity and supply is available. As noted in this section, the gas demand for the facility represents a very small amount of overall gas use in the United States. Based on a reported natural gas use in 2014 of 307,201 million cubic feet in Washington State, the gas use of the proposed facility would represent approximately 25 percent of total natural gas use in the state, due to the extensive use of hydropower by various facilities in the state (US EIA 2016a). It is important to note that a simple percentage increase does not relate to the significance of an impact. Section 7.4.1.2 also addresses natural gas transmission capacity in the Northwest. While growing demand from consumers, existing and new industrial users and gas-fired power generation will eventually require additional incremental transmission capacity in the region, the proposed project is not dependent on expansion of regional pipeline capacity. Because the analysis shows that there is available gas supply and transmission capacity, there will be no significant impact to availability of natural gas to other Washington customers.

As indicated in section 7.4.1.2, on a typical day, there is in excess of 500,000 dekatherms per day of operationally available capacity historically available for deliveries to the Kalama market area, which is more than the plant demand. In addition, residential customers are served by local distribution companies that hold sufficient firm gas supply resources to serve their customers. During extreme cold weather days, NWIW may have to cut back its production due to limitations on gas delivery when demand surges from consumer needs.

Commenter: William Brake #5, Comment No. 18

Category: Citizen

Response: See response to William Brake #2 Comment No. 1 regarding availability of natural gas.

Commenter: William Brake #5, Comment No. 48

Category: Citizen

Response: No power is being exported with this project. The proposed project will be responsible for paying for any electricity use by the facility; thus, costs associated with electricity use at the facility will be the responsibility of NWIW-K, not ratepayers.

Commenter: Susan Powell #3, Comment No. 4

Category: Citizen

Response: Section 7.4.1.2 addresses the availability of natural gas for the project.

Commenter: Steven Wright, Comment No. 1

Category: Citizen

Response: In response to this comment and others, Chapter 4 of the EIS has been updated to discuss GHG emissions from natural gas production and transport.

See standard response No. 10 in regards to fracking.

Commenter: William Brake, Comment No. 1

Category: Public Hearing

Response: See response to William Brake #2 Comment No. 1 regarding availability of natural gas.

Commenter: Sharon Bucher, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Commenter: Julia Cochrane, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Commenter: Scott Daly - Written, Comment No. 4

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Commenter: Scott Daly - Written, Comment No. 6

Category: Public Hearing

Response: Comment noted.

Commenter: Nick Engelfried, Comment No. 1

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Commenter: Alex Harris, Comment No. 2

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Commenter: Jan Zuckerman, Comment No. 2

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

17.11 Response to Comments on Chapter 8, Environmental Health and Safety

Commenter: Cowlitz Indian Tribe, Comment No. 18

Category: Agency and Tribal Government

Response: See standard response No. 11 for explosive risk analysis.

Commenter: City of Prescott, Comment No. 4

Category: Agency and Tribal Government

Response: See standard response No. 11 for fire and explosive risk analysis.

Chapter 8 evaluates potential construction impacts and potential operational impacts on environmental health and safety, including impacts resulting from chemical release or spills, fire and explosion incidents at the proposed project methanol manufacturing facility and marine terminal, or during loading methanol on to ships used for transport.

Section 8.7 outlines the design features and BMPs the Applicant proposes to avoid or minimize environmental impacts during construction and operations and those required by agency standards or permits and would be assumed to be part of the project and have been considered in assessing the environmental impacts to environmental health and safety.

Commenter: Port of Woodland, Comment No. 3

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: Washington State Department of Ecology, Comment No. 1

Category: Agency and Tribal Government

Response: Comment noted. NWIW intends to comply with all applicable regulations and permit requirements.

Commenter: Washington State Department of Ecology, Comment No. 2

Category: Agency and Tribal Government

Response: Comment noted. NWIW intends to comply with all applicable regulations and permit requirements.

Commenter: Washington State Department of Ecology, Comment No. 3

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: Washington Department of Fish and Wildlife, Comment No. 12

Category: Agency and Tribal Government

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Columbia Riverkeeper, Comment No. 10

Category: Non-governmental Organization

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Columbia Riverkeeper, Comment No. 11

Category: Non-governmental Organization

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Columbia Riverkeeper, Comment No. 12

Category: Non-governmental Organization

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Columbia Riverkeeper, Comment No. 13

Category: Non-governmental Organization

Response: The commenter requests consideration of the impacts of spill responses in the EIS. As noted in Chapter 8, methanol readily mixes with water, which influences spill response efforts. It is not practical to recover methanol from water (Methanol Institute 2013) and thus the typical spill response methods involving booming or dispersants would not be employed and thus no impacts would result from these types of response.

There is the potential for spills of oil or other fuel used for ship power. However, these types of spills are relatively small, are infrequent, are similar to other ships traveling on the river and there is an extensive planning effort regarding spill responses for the Columbia River that considers environmental impacts of oil spill response activities (Ecology 2015) and vessels calling on the facility are required to have an oil spill response plan in place. Therefore, there is no need to provide additional analysis on potential impacts of a fuel oil spill response in the EIS.

Commenter: Columbia Riverkeeper, Comment No. 26

Category: Non-governmental Organization

Response: Chapter 8 and Appendix G1 evaluate the potential impacts to environmental health and safety resulting from operations of the project. Each of the cited incidents involves specific circumstances that may or may not be applicable to this project.

The NEXEO incident in Garland, Texas, involved a fire. An evacuation was ordered, largely because the facility was a multi-solvent storage facility, and tanks of toluene and other solvents surrounded the methanol tank. No member of the community was harmed, nor were there any documented off-site impacts.

The Williams Olefin incident in Gelmar, Louisiana, involved a "cracking" unit, which produces ethylene and propylene from ethane and propane. Neither of these compounds are similar in fire or explosive behavior to methane or methanol. Ethylene and propylene are high-energy molecules with an energetic double bond. No off-site consequences resulted from this accident.

The Tianjin Fuel Refinery in Rizhao, Shandong Province, involved explosions not at the Tianjin Refinery, but in a chemical warehouse near the refinery. The facility was filled with a mixture of explosives and hazardous materials. It was operating illegally. The refinery was not affected (Reuters 2015).

The incident at the Bethune Point wastewater treatment in Florida occurred on January 11, 2006 and not in 2016 as noted in the comment. As reported by the U.S. Chemical Safety Board, the explosion was a result of failure to follow basic safety requirements (in this case, hot work permitting) on a tank filled with 3,000 gallons of methanol. No off-site consequences were reported (U.S. Chemical Safety and Hazard Investigation Board 2007).

Commenter: Maritime Fire and Safety Association, Comment No. 1

Category: Non-governmental Organization

Response: The MFSA provided the following clarifications regarding their role in providing response services to vessels in the Columbia Willamette River Marine Transportation System (CWRMTS).

The following information is provided as a supplement to the information provided in the DEIS:

The MFSA is a not-for-profit association that supports three programs that are referenced in the DEIS and are part of the regional response structure — the MFSA Vessel Response Plan (the MFSA Plan), the Fire Protection Agencies Advisory Council (FPAAC), and VHF Microwave Digital Radio System.

- The MFSA Plan is a state-approved umbrella plan first developed in 1993 to provide an effective and cost-efficient way for ships to meet the regulations of Oregon and Washington for oil spill planning and response. Specifically, the MFSA Plan covers vessels of 300 GT or greater that carry oil as fuel or cargo (WAC). It provides the equipment and personnel resources necessary to meet state planning standards from 3 miles beyond the mouth of the Columbia River up to RM 1 13 and on the Willamette River from its confluence with the Columbia to the Willamette Falls.

- FPAAC was established in 1983 to address the need for a coordinated focus by local land-based fire agencies to develop programs, training and equipment caches that improve the ability of one land-based focused agency to respond to a shipboard fire in their jurisdiction. The program includes a mutual aid agreement amongst the participating agencies.

- MFSA maintains a VHF microwave digital radio communications system in concert with the Merchants Exchange of Portland (MEX). This system supports both of these programs by ensuring that reliable radio communication is available throughout the CWRMTS — both VHF channels used by the maritime industry and private command and tactical channels for use during an incident.

MFSA also provided the following clarifications:

DEIS Table 1-1

"The facility would have full response capabilities to respond to emergencies at the marine terminal. The MFSA and Cowlitz County would have primary responsibility if an event involves a ship, but would be supported by NWIW."

Clarification:

For an event involving the spill of oil from a covered vessel, the MFSA Plan would be activated by the vessel and a response initiated. MFSA would direct the response until the vessel Qualified Individual could be on site and take over control.

DEIS Section 8.4.4.3

"MFSA strives to provide a comprehensive system that ensures fast, well-coordinated, and effective response to ship fire and spill incidents on the Lower Columbia and Willamette Rivers. The Port of Kalama is an MFSA member and NWIW vessels calling at their marine terminals are expected to be covered by the MFSA or to be covered by the MFSA for fire and spill incidents."

Clarification:

However, for a fire onboard a ship, the MFSA does not itself provide fire response and is not a firefighting entity. The FPAAC comprises 13 member agencies. FPAAC agencies may respond to a fire onboard a covered ship when the vessel is located at a dock in their jurisdiction, and that agency may call for mutual aid as part of the response. The MFSA coordinated mutual aid agreement between these agencies provides mechanisms for backup support between these agencies for responding to ship fires. A vessel's contracted Salvage and Marine Fire Fighting contractor would be called in to manage the response. The local agency would be the first responder.

DEIS Section 8.7.1

"The MFSA is an association of ports and private facilities along the Lower Columbia and Willamette Rivers that provides fire safety, oil spill response, and communication coordination for fire and spill incidents involving commercial vessels along the two rivers from the

Portland/Vancouver area to Astoria. The MFSA would provide fire safety and oil spill response for incidents for participating members and enrolled commercial vessels."

Clarification:

See above clarifications.

Commenter: Maritime Fire and Safety Association, Comment No. 2

Category: Non-governmental Organization

Response: Comment noted.

Commenter: New Progressive Alliance, Comment No. 3

Category: Non-governmental Organization

Response: Risks associated with transporting natural gas by pipeline were disclosed and analyzed in section 8.5.2 and section 7 of Appendix B. The analyses concluded that "The available data show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 1994 to 2013, there were an average of 62 significant incidents, 10 injuries, and 2 fatalities per year. The number of significant incidents over the more than 303,000 miles of natural gas transmission lines indicates the risk is low for an incident at any given location. The operation of the project would represent a slight increase in risk to the nearby public." (Appendix B to the DEIS).

See response to William Brake #2 Comment No. 1 regarding natural gas availability from the pipeline (see page 17-70).

Commenter: New Progressive Alliance, Comment No. 4

Category: Non-governmental Organization

Response: See standard response No. 11 in regards to flammability and risks and standard response No. 12 in regards to toxicity and impacts from spills.

Characteristics and impacts from the wastewater discharged from the plant are discussed in Chapter 5 and air discharge is discussed in Chapter 4.

Commenter: Northwest Citizen Science Initiative, Comment No. 1

Category: Non-governmental Organization

Response: See standard response No. 11 for fire and explosive risk analysis.

Commenter: Northwest Citizen Science Initiative, Comment No. 2

Category: Non-governmental Organization

Response: See standard response No. 11 for fire risk analysis.

Commenter: Northwest Citizen Science Initiative, Comment No. 3

Category: Non-governmental Organization

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Northwest Citizen Science Initiative, Comment No. 4

Category: Non-governmental Organization

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 3

Category: Non-governmental Organization

Response: The project does not propose to leak or spill methanol or natural gas and thus the analysis under the ESA would not cover potential impacts from spills or leaks. Chapter 8 of the FEIS contains a discussion of spill risks and evaluations the potential impacts of such an event.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 4

Category: Non-governmental Organization

Response: See standard response No. 11 for fire and explosive risk analysis.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 10

Category: Non-governmental Organization

Response: See response to Claudia Riedener Comment No. 24 (see page 17-48) regarding acidification associated with wastewater discharge.

See comment to Columbia Riverkeeper Comment No. 7 (see page 17-104) in regards to GHG emissions and its effect on acidification.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 11

Category: Non-governmental Organization

Response: Natural gas from the Bakken region is not expected to be used by the facility as the region is not connected by any pipeline or combinations of pipelines to the Bakken region. In addition, all natural gas transported on the Northwest Pipeline system must adhere to strict gas quality requirements as outlined in Section 3 of the Northwest Pipeline LLC's FERC Gas Tariff. The tariff requirements state the gas shall contain no more than one-quarter grain of hydrogen sulfide per 100 cubic feet.

Section 2.6.1.4 describes the flare that is included as part of the project. The section indicates that the flare will be used during the normal start-up and shutdown of the production process and during process upset or an emergency shutdown situation to safely burn gases to prevent discharge to the atmosphere. All the equipment including the flare system shall have corrosion allowance set by the American Society of Mechanical Engineers (ASME) standard. The plant will also have regular inspection on the facilities.

NWIW Kalama methanol plant will have automatic isolation valves on the battery limit of natural gas pipeline from Williams. Williams also will also have automatic isolation valves at the custody transfer station, located at the boundary of our facility. They will also have a set of automatic shut-off valves where their mainline meets the Kalama lateral, located some 3 miles to the east of the facility. Hence, there are three levels of isolation that can be employed in the event of an emergency shutdown.

The catalysts will last for three to four years. The replacement of catalyst is a routine operation and will follow procedures that have been developed by the catalyst suppliers over many years and have been demonstrated to be safe and reliable in methanol plants both in the United States and the rest of the world. The effectiveness of the catalyst will change over time but that will not affect the composition of the facility's air emissions.

The piping and tank will be designed to ASME standard, the design of tanks also follows API 2000 – Venting Atmospheric and Low-Pressure Storage Tanks. The inspection requirements will be set by both U.S. regulation and any requirements the plant insurers require.

Commenter: Tacoma Audubon Society, Comment No. 1

Category: Non-governmental Organization

Response: See standard response No. 12 regarding the impacts of methanol spills to water, including impacts from oxygen depletion.

In regards to the risk of methanol to provide a medium for existing chemical pollutants in the soil to migrate, Chapter 8 of the EIS discusses conditions on the site and notes there is no evidence of any existing contamination.

Commenter: Tacoma Audubon Society, Comment No. 2

Category: Non-governmental Organization

Response: See standard response No. 4 regarding seismic hazards.

Commenter: William Brake #1, Comment No. 3

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis.

Commenter: William Brake #4, Comment No. 2

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis.

Commenter: William Brake #5, Comment No. 20

Category: Citizen

Response: Comment noted.

Commenter: William Brake #5, Comment No. 21

Category: Citizen

Response: Comment noted. See standard response No. 11 for additional information in regards to impacts from explosions.

Commenter: William Brake #5, Comment No. 30

Category: Citizen

Response: As discussed in Chapters 8, NWIW met with Cowlitz County Fire District No. 5 on 15 January 2015 to discuss the proposed project and general emergency response protocols. The proposed project response planning reflects the results of that meeting, including the concept that the manufacturing facility operator would be the primary responder to all incidents in the methanol manufacturing facility with Cowlitz County Fire District No. 5 providing support.

Commenter: William Brake #5, Comment No. 40

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis.

Commenter: William Brake #5, Comment No. 45

Category: Citizen

Response: The facility operator would be the primary responder to all incidents in the methanol manufacturing facility with Cowlitz County Fire District No. 5 providing support. The facility will have an extensive fire suppression system and on-site fire brigade, made up of staff trained to respond to fires, explosions, and injury as described in Chapter 2 of the DEIS. The brigade would be housed in an on-site fire station, which would also house the emergency response vehicle used by the brigade. The fire station would also house other required supplies and would be used as a secondary command post during an emergency at the proposed project.

Personnel would be certified in compliance with OHSA standards, Process Safety Management guidelines, and NFPA requirements. In addition, emergency responders would maintain training and certification in all required areas. The manufacturing facility operators, Port of Kalama, and Cowlitz County Fire District No. 5 would participate in emergency response drills at the project site (NWIW 2015).

NWIW met with Cowlitz County Fire District No. 5 on 15 January 2015 to discuss the proposed project and general emergency response protocols. The proposed project response planning reflects the results of that meeting, including the concept that the manufacturing facility operator would be the primary responder to all incidents in the methanol manufacturing facility with Cowlitz County Fire District No. 5 providing support.

There has been no indication from Cowlitz County Fire District No. 5 during project planning that they do not have the capacity to provide secondary support to the on-site primary emergency response team. The data cited in the comment is from a 2007 report and is not reflective of current Cowlitz County Fire District No. 5 capabilities.

Commenter: Mary Collins, Comment No. 1

Category: Citizen

Response: See standard response No. 11 for fire and explosive risk analysis.

See Chapter 8, section 8.4.3.6 for a detailed description of fire protection and emergency response services. As discussed in Chapters 8, NWIW met with Cowlitz County Fire District No. 5 on 15 January 2015 to discuss the proposed project and general emergency response

protocols. The proposed project response planning reflects the results of that meeting, including the concept that the manufacturing facility operator would be the primary responder to all incidents in the methanol manufacturing facility with Cowlitz County Fire District No. 5 providing support.

The commenter notes a Level A methanol release. We assume the commenter is referring to Level A personal protective equipment (PPE) as there is no industry standard Level A methanol release.

Commenter: Marcia Denison, Comment No. 1

Category: Citizen

Response: See standard response No. 12, which addresses potential impacts of a methanol release in the Columbia River, including impacts to aquatic species.

The project does not use or produce hydrogen sulfide (H2S).

Commenter: Thomas Gordon #1, Comment No. 1

Category: Citizen

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Marguerite Hall, Comment No. 1

Category: Citizen

Response: See standard response No. 12 and additional information provided in Chapter 8 and Appendix G regarding the potential impacts of a methanol spill in the Columbia River.

See Chapter 8, section 8.4.3.1 for a detailed description of fire protection and emergency response services and section 8.7 for mitigation measures related to general incident response, spill prevention response, and representative and additional safeguards for upland spill prevention and response, in-water spill prevention and response and accidental release, fire and explosion response.

See standard response No. 13 for information regarding NWIW's liability for emergency incidents and related impacts.

Commenter: Shaun Hubbard, Comment No. 8

Category: Citizen

Response: See response to Shaun Hubbard Comment No. 1 regarding impacts to salmon (see page 17-65).

Commenter: Shaun Hubbard, Comment No. 9

Category: Citizen

Response: See response to Shaun Hubbard Comment No. 1 regarding impacts to salmon (see page 17-65).

Commenter: Shaun Hubbard, Comment No. 10

Category: Citizen

Response: See response to Shaun Hubbard Comment No. 1 regarding impacts to salmon (see page 17-65).

Commenter: Shaun Hubbard, Comment No. 11

Category: Citizen

Response: See response to Shaun Hubbard Comment No. 1 regarding impacts to salmon (see page 17-65).

Commenter: Shaun Hubbard, Comment No. 14

Category: Citizen

Response: The project does not ship oil. The Washington State Department of Ecology, the U.S. Environmental Protection Agency, and Oregon Department of Environmental Quality maintain the Lower Columbia River Geographic Response Plan, and there are a variety of resources on the Columbia River that are in place to respond to potential oils spills that could result from fuel oil on vessels calling on the facility. See standard response No. 12 regarding methanol spills.

Commenter: Daryl Linnell #1, Comment No. 7

Category: Citizen

Response: See standard response No. 4. Chapter 3 has been updated based on this comment and others to include information regarding code requirements and performance of buildings and structures during earthquakes.

See standard response No. 11 for additional information in regards to blast zone and BLEVE potential.

Commenter: Daryl Linnell #2, Comment No. 2

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Tina Linnell, Comment No. 2

Category: Citizen

Response: See Chapter 8 and Appendices G1 and G2 for modeling and analysis that concludes the "blast zones" and "pressure waves" would not extend beyond the project boundaries.

Commenter: Joann McGovern, Comment No. 3

Category: Citizen

Response: Upland spills would be contained by on-site infrastructure, such as containment walls.

Special safety or breathing equipment could be needed by plant personnel and emergency responders under some conditions. Special equipment that could be needed will be provided by NWIW and/or hazardous materials firefighting units.

Modeling and analysis described in Chapter 8 of the FEIS and Appendices G1, G2, and G3 indicate that explosions and upland spills and/or explosions impacts would not extend beyond the plant boundaries.

Commenter: Joann McGovern, Comment No. 4

Category: Citizen

Response: See standard response No. 11 for fire and explosive risk analysis.

Commenter: Joann McGovern, Comment No. 7

Category: Citizen

Response: See Chapter 8 for a discussion of fire response. See section 8.7 for specific mitigation measures that address accidental release, fire, and explosion response.

NWIW will provide foam and/or water on site for fire containment. The on-site fire brigade would act as the primary responder to a fire in the methanol production facility. The brigade will be equipped and trained to fight fires specific to the facility. Cowlitz County Fire District No. 5 and other emergency responders in the site area will provide assistance as needed.

Commenter: Joann McGovern, Comment No. 8

Category: Citizen

Response: See response to Chun Yu Comment No. 1 regarding security (see page 17-85).

Commenter: Susan Powell #1, Comment No. 1

Category: Citizen

Response: Section 8.4.4.3 discusses the impacts of the project on local emergency services and indicates that the facility firefighting resources are appropriately trained to respond to the type of fire that could occur at the facility, and would be the primary responder to on-site fires.

Commenter: Susan Powell #1, Comment No. 2

Category: Citizen

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Susan Powell #1, Comment No. 6

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Susan Powell #3, Comment No. 5

Category: Citizen

Response: See response to William Brake Comment No. 45 regarding emergency response (see page 17-78).

See Chapter 8, section 8.4.3.1 for a detailed description of fire protection and emergency response services.

Commenter: Susan Powell #3, Comment No. 6

Category: Citizen

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Sharon Rickman, Comment No. 1

Category: Citizen

Response: See standard response No. 11 regarding explosive risk analysis.

Commenter: Claudia Riedener, Comment No. 11

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Claudia Riedener, Comment No. 12

Category: Citizen

Response: Comment noted.

Commenter: Claudia Riedener, Comment No. 13

Category: Citizen

Response: See response to Chun Yu Comment No. 1 regarding security (see page 17-85).

Commenter: Claudia Riedener, Comment No. 20

Category: Citizen

Response: Chapter 8 has been updated in response to this comment.

Commenter: Claudia Riedener, Comment No. 21

Category: Citizen

Response: The Bunga Alpinia tanker was loading methanol at the Petronas Chemicals Methanol Sdn Bhd terminal in Labuan at the time of the incident. Reportedly, the tanker was being loaded in severe weather, which included lightning. The fire was reportedly the result of a lightning strike. Lightning in the Kalama area is an infrequent meteorological event. The facility will institute severe weather policies, which would forbid loading in such weather.

The methanol manufacturing facility is designed to be safely shut down in the case of an emergency or upset.

Commenter: Claudia Riedener, Comment No. 22

Category: Citizen

Response: Chapter 8 and Appendix G2 discuss the chemicals of concern that will be stored on site.

Commenter: Bill Spencer, Comment No. 3

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Bradley Thompson, Comment No. 5

Category: Citizen

Response: Chapter 8 addresses the potential impacts to environmental health and safety. In addition, Williams' internal report completed 30 April 2015, "2014 Annual Integrity Management Performance Report," shows that in 2014, Williams' 10-year yearly average for serious incidents (defined as incidents that result in injury or death) per 10,000 miles is 0.07; therefore, it is not reasonable to assume that a catastrophic release will occur during the 30-year projected life of the 3-mile Kalama Lateral. Catastrophic releases are very rare, so it is prudent to evaluate such an event using probabilistic analysis.

Commenter: Bradley Thompson, Comment No. 13

Category: Citizen

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Chris Turner, Comment No. 1

Category: Citizen

Response: See standard response No. 11 for explosive risk analysis. In addition, Chapter 8 of the FEIS has been updated in response to comments regarding potential risks to spent fuel rods stored at the decommissioned Trojan plant.

Commenter: Chris Turner, Comment No. 3

Category: Citizen

Response: Based on the Port's current understanding of the classification of methanol and discussions with the U.S. Coast Guard, a security zone will not be required for vessels calling on the facility. However, the U.S. Coast Guard has the ability to require security zones as they determine appropriate (33 CFR 165.1335).

Pilotage of vessels by a licensed river or bar pilot is required by law throughout the entire transit either by river pilots from the Astoria-Megler Bridge seaward to a water depth of at least 30 fathoms. In addition, vessels will be assisted by tugs during arrival and departure at the dock.

The characteristics and risk of methanol is described in Chapter 8.

Commenter: Donald Watt #3, Comment No. 1

Category: Citizen

Response: Chapter 8 and Appendix G1 include an analysis of risk of explosion. The Quantitative Risk Assessment (Appendix G1) indicates that severe personal harm and property damage from an explosion would not extend beyond the plant boundary and thus no effects would be expected to the former Trojan Nuclear Power Plant located across the Columbia River from the facility.

Even if destructive forces could be felt at that location, the Trojan Independent Spent Fuel Storage Installation (ISFSI) was designed to store spent fuel safely in 34 canisters. The Trojan ISFSI is designed to withstand a M9.0 earthquake. The ISFSI consists of

- Stainless-steel inner canisters: The inner canisters are sealed, transportable stainless-steel cylinders containing fuel assemblies, fuel containers, and fuel debris cans. Each canister is stored in a concrete cask.

- Concrete casks: The 34 concrete casks containing the steel inner canisters at Trojan sit on the ISFSI storage pad, protecting the canisters and their contents from hazards and providing shielding from the irradiated fuel. The temperature of the air exiting the cask is continuously monitored. These casks have a thick inner liner made of carbon steel surrounded by thick concrete walls. Each cask weighs about 150 tons.

Commenter: Donald Watt #5, Comment No. 1

Category: Citizen

Response: See standard response No. 12 for impacts of a methanol spill.

It is true that environmental and climactic factors, including elevated summer water temperatures, are affecting fish and other aquatic species in the Lower Columbia River.

The extent of any potential effects from a methanol spill would be dependent upon the size and duration of the spill, as well as environmental and biological factors, including (1) water volume, velocity, and temperature at the time of the spill; (2) hydrodynamic forces, such as tidal forces, turbulence, and freshwater inputs; (3) the location of the spill relative to biological receptors; (4) species-specific tolerance or susceptibility; and (5) the timing relative to the presence or absence of sensitive species and/or life stages of a given species.

As described in section 2.6.2.3, the proposed project would result in approximately 36 to 72 vessel entry transits per year. By comparison, the river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel entry transits in 2014 and historically has accommodated much higher numbers of vessels according to vessel entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant increase in the risk of a spill. Complying with regulatory requirements and implementing BMPs and mitigation measures at the facility during vessel loading and transport as discussed below would reduce the chance of a release occurring and would improve emergency response in the event of a release.

Commenter: Alex Williams, Comment No. 6

Category: Citizen

Response: During normal operations, exposure to methanol is not expected to occur (see Chapter 8).

The report cited in the comment (Patin 2016) analyzes the effects of gaseous methane and other saturated aliphatic hydrocarbons of the methane series in an aqueous environment. It is important to note that methanol is chemically different than methane and has different biological effects.

See standard response No. 12, which addresses potential impacts of a methanol release in the Columbia River, including impacts to aquatic species.

Methanol is metabolized in living organisms, and, as such, methanol would not be expected to persist in fish or other aquatic organisms in the case of exposure. Fish that are exposed to elevated levels of methanol would not be contaminated with methanol and would not become unfit for consumption.

Commenter: Chun Yu, Comment No. 1

Category: Citizen

Response: The commenter notes that the Department of Homeland Security (DHS) recommends certain measures for a "high risk chemical facility." DHS regulates certain chemical facilities under the Chemical Facility Anti-Terrorism Standards (CFATS) under 6 CFR Part 27. CFATS establishes a risk-based approach to screening and securing chemical facilities determined by DHS to be "high risk." High-risk facilities are facilities that present a risk of release, theft/diversion, and/or sabotage/contamination based on the facilities possession of specific quantities of DHS defined chemicals of interest (DHS 2007). Based on the materials and quantities to be stored on site, the project would not be subject to CFATS.

Regardless, the Port and NWIW will maintain a high level of security at the site, including the following.

The entire perimeter of the facility will be enclosed by a security fence.

Access will only be allowed at gates that are located or are manned with security personnel.

The proposed dock will be a considered a Maritime Transportation Safety Act (MTSA) facility that follows the stringent requirements of DHS and the U.S. Coast Guard under 33 CFR 105. Specific details of the Port's existing and planned security systems and practices cannot be disclosed in order to maintain the integrity of the system. The Port is required to have an approved Facility Security Plan as submitted to the U.S. Coast Guard, Capitan of the Port, and Sector Columbia River. The North Port marine terminal, which will include the expansion of the second dock for loading vessels with methanol, features a secure perimeter with both manual and electronic access control systems. Security staff working at North Port have a variety of communication systems available to them in the event of an incident or emergency, including redundant systems. When the facility is in use, it is staffed around the clock with specifically trained maritime security officers who monitor the comprehensive video surveillance systems for domain awareness and the access control points. All items and vehicles entering the facility may be subject to enhanced screening methods prior to entry. Drills and exercises to test the staff and systems are conducted regularly.

Access to the facility is restricted to individuals with pre-authorization who must also hold a valid Transportation Worker Identification Card (TWIC) presented to security at the time of accessing the facility. The TWIC is administered by the Transportation Security Administration (TSA) who conducts annual and randomized checks of the TWIC cards at facility access points, as well as ensuring the facility is complying with inspection standards.

Similarly, all foreign flag vessels berthing at the North Port facility are required under 33 CFR 104 to have a Vessel Security Plan and designated Vessel Security Officer with a copy of the plan submitted to the U.S. Coast Guard, Commanding Officer, Marine Safety Center for

approval. During a vessel's time at the berth, the Facility Security Officer and Vessel Safety Officer meet and agree on methods of communication, current procedures being used to maintain domain awareness, and to share any updated information on current security conditions.

Inspections of the vessels are conducted by entities outside of the Port's control, but with their cooperation. The U.S. Customs and Border Patrol (CBP) conduct their own boarding and inspection of ship crew and documentation. Approval for a member of the ship's crew to leave the ship must be granted by CBP. The U.S. Coast Guard conducts inspections of the vessel for both maritime safety requirements while ensuring the requirements of the Vessel Security Plan are followed (Swenningson 2016).

Commenter: Bob Zeigler, Comment No. 4

Category: Citizen

Response: The Columbia River, both within the vicinity of the proposed project, and throughout the vessel shipping route, supports commercial, tribal, and recreational fisheries for a wide variety of fish and other aquatic species. This includes fisheries resources, such as the net pens, that are described in this comment.

The net pens on the Lower Columbia River are all located in the lower estuary. Off channel net pen sites are located in Youngs Bay, Blind Slough-Knappa Slough, and Tongue Point-South Channel in Oregon, and in Deep River and Cathlamet on the Washington side of the river. The nearest net pen location, in Cathlamet near RM 38, is located approximately 34 river miles downstream of the project location.

In response to comments received on the DEIS, additional spill simulation and numerical modeling and analysis were conducted by Geosyntec. This modeling is documented in a technical response titled, "Technical Memorandum, Methanol Spill Simulation in Support of Draft EIS Response to Comments" dated 22 August 2016, which is included in the FEIS as Appendix G3.

Chapter 8 was revised to include additional information from the spill simulation and numerical modeling, regarding the potential for impacts to aquatic organisms and other environmental resources from a methanol spill. The spill model describes a reasonable worst-case spill scenario, and models the movement, dilution, and degradation of methanol as it enters the aquatic system and moves downstream (see standard response No. 12).

A spill from a vessel, if one were to occur within the vicinity of a net pen, would affect fish being reared in these facilities. The extent of any potential effects from a methanol spill would be dependent upon the size and duration of the spill, as well as environmental and biological factors, including (1) water volume, velocity, and temperature at the time of the spill; (2) hydrodynamic forces, such as tidal forces, turbulence, and freshwater inputs; (3) the location of the spill relative to biological receptors; and (4) species-specific tolerance or susceptibility; and (5) the timing relative to the presence or absence of sensitive species and/or life stages of a given species.

As described in section 2.6.2.3, the proposed project would result in approximately 36 to 72 vessel entry transits per year. By comparison, the river accommodated approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel entry transits in 2014 and historically has accommodated much higher numbers of vessels according to vessel

entry and transit data (Ecology 2015). The small increase in vessel traffic associated with the proposed project operations would have the potential to contribute a minor increase to the baseline condition on the river that would not be expected to result in a significant increase in the risk of a spill. Complying with regulatory requirements and implementing BMPs and mitigation measures at the facility during vessel loading and transport as discussed below would reduce the chance of a release occurring and would improve emergency response in the event of a release.

Impacts to streams, wetlands, and floodplains associated with the pipeline are addressed in Chapter 5, and potential impacts associated with seismicity within the vicinity of the project are addressed in Chapter 3. The potential impacts of the Kalama Lateral Project (the proposed pipeline) were assessed in the Draft Resource Report No. 6, "Geological Resources," submitted to FERC by Northwest (Golder 2012) and the FERC EA for the proposed pipeline. The results of the assessment indicate the potential for geologic hazards to impact the pipeline is low.

Commenter: Bob Zeigler, Comment No. 5

Category: Citizen

Response: Impacts to plant and animal species (specifically Pacific eulachon and Columbian white-tailed deer) are described in Chapter 6 of the FEIS. Chapter 8 of the FEIS addresses the potential effects to fish and other aquatic species that could occur associated with a methanol spill.

Commenter: Bob Zeigler, Comment No. 6

Category: Citizen

Response: See standard response No. 12 for in-water methanol spill impacts.

A methanol release to the upland portion of the site would be contained by on-site infrastructure and any impacts would be limited to the site boundary.

Commenter: Chris Hill, Comment No. 2

Category: Public Hearing

Response: See standard response No. 11 for fire and explosive risk analysis.

Commenter: Dave Hopkins, Comment No. 1

Category: Public Hearing

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Dave McDevitt, Comment No. 1

Category: Public Hearing

Response: Comment noted. Chapter 8 includes a discussion of potential impacts from incidents.

Commenter: Dave McDevitt - Written, Comment No. 3

Category: Public Hearing

Response: Comment noted. Chapter 8 includes a discussion of potential impacts from incidents.

Commenter: Michael Shreve, Comment No. 2

Category: Public Hearing

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: Michael Shreve, Comment No. 1

Category: Public Hearing

Response: Chapter 8 and Appendices G1 and G2 discuss the safety and health aspects of the proposed project, including the potential for gas leaks. The methanol manufacturing facility will install gas detection and warning systems per the requirements of NFPA 72 – National Fire Alarm and Signaling Code.

Appendix B addresses the potential impacts related to leaks from the pipeline. Section 7.1 specifically addresses safety standards, including maintenance and operational practices, for safe pipeline operations.

Commenter: Michael Shreve, Comment No. 2

Category: Public Hearing

Response: See standard response No. 12 regarding impacts of a methanol spill.

Commenter: John Svensson, Comment No. 2

Category: Public Hearing

Response: See standard response No. 12 regarding impacts of a methanol spill.

In regards to closures of the river, based on the Port's current understanding of the classification of methanol and discussions with the U.S. Coast Guard, a security zone will not be required for vessels calling on the facility. However, the U.S. Coast Guard has the ability to require security zones as they determine appropriate (33 CFR 165.1335).

Commenter: Theodora Tsongas, Comment No. 1

Category: Public Hearing

Response: The EIS acknowledges the flammability and toxicity of methanol. Chapter 8 and Appendices G1 and G2 evaluates the risks and impacts from potential incidents that could occur at the facility.

Commenter: Theodora Tsongas, Comment No. 2

Category: Public Hearing

Response: See standard response No. 11 for explosive risk analysis and Appendix G2.

Commenter: Chris Turner, Comment No. 1

Category: Public Hearing

Response: See standard response No. 11 for fire and explosive risk analysis.

Commenter: Unknown #1, Comment No. 1

Category: Public Hearing

Response: See standard response No. 11 for fire and explosive risk analysis.

Commenter: Unknown #1 - Written, Comment No. 1

Category: Public Hearing

Response: Comment noted. Chapter 8 of the EIS evaluates the environmental health and safety aspects of the project.

Commenter: Unknown #2, Comment No. 1

Category: Public Hearing

Response: See Chapter 8, section 8.4.3.1 for a detailed description of fire protection and emergency response services and section 8.7 for mitigation measures related to general incident response, spill prevention response, and representative and additional safeguards for upland spill prevention and response, in-water spill prevention and response and accidental release, fire, and explosion response.

Commenter: Unknown #2, Comment No. 2

Category: Public Hearing

Response: Section 8.4.1.1, page 8-9 states the following:
The quantity of methanol released into the air, its duration, weather conditions, and the nature of the surrounding terrain can influence the outcome of a release. Methanol vapor has nearly neutral buoyancy and would readily dissipate or disappear from locations with circulating air and in open-air areas. It may not dissipate from non-ventilated locations, such as sewers and enclosed spaces. Depending on the circumstances of a release, methanol liquid may pool and vapor may migrate near the ground and collect in confined spaces and low-lying areas. Methanol vapor can flash back to its source if ignited. These factors are discussed in detail in Appendix G2.

Commenter: Unknown #3, Comment No. 1

Category: Public Hearing

Response: Comment noted. Risks of vessel traffic are discussed in Chapter 8.

Commenter: Todd Vertea, Comment No. 2

Category: Public Hearing

Response: Comment noted. Environmental Health and Safety is discussed in Chapter 8.

Commenter: Jasmine Zimmer-Stucky, Comment No. 1

Category: Public Hearing

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Petition Letter #1, Comment No. 1

Category: Petition

Response: See standard response No. 11 for explosive risk analysis.

Commenter: Lacey Carpenter (Petition Letter #1), Comment No. 2

Category: Petition

Response: Chapter 8 and the Quantitative Risk Assessment (Appendix G1) include an analysis of risk of explosion. Potential impacts from explosions at the methanol manufacturing facility have been evaluated with the conclusion that the destructive force would not extend beyond the property boundaries.

See standard response No. 11 for additional information regarding blast zones.

Commenter: Judi Chelotti (Petition Letter #1), Comment No. 1

Category: Petition

Response: A health impact assessment is not required under SEPA. Appropriate impact analysis of the project's effects on health are included in Chapter 8.

Commenter: Melissa Hubbard (Petition Letter #1), Comment No. 1

Category: Petition

Response: Chapter 8 and the Quantitative Risk Assessment (Appendix G1) include an analysis of risk of explosion. Potential impacts from explosions at the methanol manufacturing facility have been evaluated with the conclusion that the destructive force would not extend beyond the property boundaries.

17.12 Response to Comments on Chapter 9, Land Use and Shoreline Use, Housing, and Employment

Commenter: City of Castle Rock, Comment No. 1

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: City of Kalama, Comment No. 3

Category: Agency and Tribal Government

Response: The economic study was based on the extent of potential effects of the project. Appendix M contains a detailed discussion and includes local as compared to state benefits.

Commenter: Washington Department of Fish and Wildlife, Comment No. 5

Category: Agency and Tribal Government

Response: Chapter 9 has been updated to include an analysis of impacts of the project on recreation fisheries. In addition, section 2.6.2.3 discusses vessel traffic associated with the project. The proposed project would result in approximately 36 to 72 vessel entry transits per year resulting in an increase of less than 5 percent (not 223 percent) from the approximately 1,581 cargo and passenger vessels, tank ships, and articulated tug barge vessel entry transits on the Columbia River in 2014 and is within the historic range of vessel traffic on the river.

Commenter: Association of Washington Business, Comment No. 1

Category: Non-governmental Organization

Response: Comment noted.

Commenter: Columbia River Steamship Operators' Association, Comment No. 3

Category: Non-governmental Organization

Response: Comment noted.

Commenter: Tacoma Audubon Society, Comment No. 4

Category: Non-governmental Organization

Response: The Economic Impact Analysis presented in Appendix M takes into consideration the fact that a portion of the plant modules likely will be constructed off site and shipped to the site. As shown in the Economic Impact Analysis, at least $660,000,000 of the total construction costs would be spent locally, drawing construction workers from a 12-county region surrounding Kalama.

Commenter: John Boatman, Comment No. 1

Category: Citizen

Response: The Port previously assessed a bulk export facility for the site, which would include a rail loop. The total project cost at the time was estimated at $66.3 million. A transloading (sole purpose is transfer for export, with no value added to the product) facility would likely result in fewer permanent jobs than a manufacturing facility. A bulk export facility with a rail loop would have produced greater environmental impacts from dock (in-water) and rail (wetland impacts). The previously proposed Energy Northwest gas-fired power plant would also have produced fewer jobs with an estimated $1.5 capital billion investment and 100 permanent jobs. Evaluation under SEPA was completed for the Energy Northwest project by the Washington State Energy Facility Site Evaluation Council.

Commenter: William Brake #2, Comment No. 3

Category: Citizen

Response: Appendix M of the DEIS discusses the economic impacts of the project, including anticipated tax revenues by taxing authority. As shown in the appendix, revenues to taxing authorities is not based directly on the volume on product produced but rather the value of the product and improvements.

Commenter: William Brake #5, Comment No. 22

Category: Citizen

Response: Chapter 9 addresses land use consistency, including compliance with adopted County land use plans.

Commenter: William Brake #5, Comment No. 28

Category: Citizen

Response: Comment noted.

Commenter: William Brake #5, Comment No. 29

Category: Citizen

Response: Comment noted. Appendix M contains a detailed analysis of economic benefits of the facility.

Commenter: William Brake #5, Comment No. 41

Category: Citizen

Response: SEPA requires consideration of reasonable alternatives that achieve the project's purpose and objectives. As noted in Chapter 9 of the EIS, the project is consistent with local land use plans and regulations. See also response to William Brake #3 Comment No. 6.

Commenter: Shaun Hubbard, Comment No. 2

Category: Citizen

Response: Impacts to marine mammals are addressed in section 6.6. Impacts to Orca whales are not anticipated and thus no economic impacts would be anticipated as a result.

Commenter: Shaun Hubbard, Comment No. 3

Category: Citizen

Response: Vessels calling on the project are not expected to transit through the San Juan Islands for any purpose.

Commenter: Shaun Hubbard, Comment No. 15

Category: Citizen

Response: The project does not involve the shipping of fossil fuels. If the terminal malfunctions, it would likely only delay the shipment of product from the facility and would not impact other commodities.

Commenter: Shaun Hubbard, Comment No. 17

Category: Citizen

Response: The project does not ship oil and thus a major oil spill would not result from the project and is not analyzed in the EIS.

Commenter: Daryl Linnell #1, Comment No. 5

Category: Citizen

Response: Comment noted. See response to WDFW Comment No. 5 regarding impacts to recreational fishing (see page 17-90).

Commenter: Susan Powell #3, Comment No. 8

Category: Citizen

Response: Comment noted. The Economic Impact Study performed for the project (see Appendix H) indicates the 12-county region (defined as encompassing a 90-minute or less driving range from the facility) has an ample labor pool from which to draw the 192 future employees at the facility. In total, 688 jobs per year are linked to the KMMEF operations. This total includes the 192 direct jobs at the facility, and the 273 indirect and 223 induced jobs elsewhere in the economy of the 12-county region.

Commenter: Susan Powell #4, Comment No. 1

Category: Citizen

Response: According to the Port, there is no clause requiring local employment.

Commenter: Claudia Riedener, Comment No. 25

Category: Citizen

Response: The EIS does not differentiate impacts to low income communities versus impacts to communities with other economic characteristics. Impacts are discussed in regards to all communities in the various sections of the EIS. Consistency with the vision established for the area by Cowlitz County's comprehensive plan is addressed in Chapter 9.

Commenter: Claudia Riedener, Comment No. 27

Category: Citizen

Response: Appendix M, *Final Economic Impact Analysis of the Proposed Kalama Manufacturing & Marine Export Facility*, indicates that the numbers of needed workers for each occupation is exceeded by available workers in region by seven times or more and identifies the economic benefits of the project.

Section 6.2 of the lease between the Port and NWIW requires the methanol plant to "maintain an average of at least eighty (80) full-time equivalent employees (i.e., 166,400 hours) during each 12-month period once the plant starts commercial operations." Both NWIW and the Port have indicated that they expect the facility to maintain a substantially higher level of employment as described in Appendix M to the DEIS, Final Economic Impact Analysis of the Proposed Kalama Manufacturing and Marine Export Facility, but the lease sets this minimum requirement.

Commenter: Bill Spencer, Comment No. 1

Category: Citizen

Response: The employment estimates for the plant are included in Appendix M – Table 7.

Commenter: Cynthia Svensson #1, Comment No. 1

Category: Citizen

Response: Section 2.6.1.4 describes the recreational improvements proposed by the Port for the project that will result in an overall improvement from current conditions. Improvements include a new access road and parking at the recreational area. Impacts from vessel traffic are addressed in section 9.4.1.2 and conclude that impacts are not significant. Greenhouse gas and toxic air pollutants are discussed in Chapter 4. It is important to note that greenhouse gas emissions do not have a direct impact on individuals near the site because they are not considered an air pollutant that causes direct health-related impacts; section 9.4.1.2 specifically acknowledges that there will be a change in the view for recreational users.

Commenter: Cynthia Svensson #1, Comment No. 9

Category: Citizen

Response: The proposed project would manufacture methanol here in Washington, rather than exporting North American natural gas to China so methanol can be manufactured. Methanol produced by the proposed project is actually expected to displace methanol manufacturing in China that is more expensive. This project is expected to provide 192 new local direct employment opportunities for American workers as described in section 9.4.1.

Commenter: Cynthia Svensson #1, Comment No. 10

Category: Citizen

Response: See previous comment. The project actually is expected to create manufacturing jobs in Washington rather than China.

Commenter: Cynthia Svensson #1, Comment No. 12

Category: Citizen

Response: Section 9.3.1.3 indicates that the majority of the project site is identified by the Cowlitz County Comprehensive Plan as Heavy Industrial. Constructing the facility is consistent with the vision established by the plan. The proposed project is consistent with permitted and/or conditionally permitted shoreline uses designated in the Cowlitz County Shoreline Management Master Program (see Appendix I).

Commenter: Cynthia Svensson #1, Comment No. 15

Category: Citizen

Response: See standard response No. 14 regarding residential property values.

Commenter: Cynthia Svensson #1, Comment No. 16

Category: Citizen

Response: Comment noted. Chapter 9 addresses economic effects of the project and estimates increased tax revenues.

Commenter: Bradley Thompson, Comment No. 14

Category: Public Hearing

Response: Chapter 9 includes an analysis of the economic benefits of the project but SEPA does not include a costs-benefits analysis. The analysis in Chapter 9 and Appendix M recognizes that certain components may be constructed off site.

Commenter: Priya Veeraraghavan, Comment No. 2

Category: Citizen

Response: See standard response No. 14 regarding residential property values.

Commenter: Alex Williams, Comment No. 2

Category: Citizen

Response: The project does not involve production of natural gas or other fossil fuels in the state of Washington. Relating this project to fossil fuel production in other states is not within the scope of the SEPA review for the project.

Commenter: Alex Williams, Comment No. 5

Category: Citizen

Response: Comment noted. While the jobs are temporary, construction workers depend on these jobs for their income year-round. As noted in Table 3 in Appendix M, there is a significant number of construction workers within the region.

Commenter: Scott Daly - Written, Comment No. 3

Category: Public Hearing

Response: See Economic Impact Analysis presented in Appendix M and summarized in Chapter 9. As noted in this analysis, there are significant economic benefits from the project that will accrue in the United States and locally. This includes increase tax revenue and jobs during construction and operation.

Commenter: Tiffany Gray - Written, Comment No. 1

Category: Public Hearing

Response: The project site is not located in the city of Kalama and is not subject to the City's Comprehensive Plan. The site is located in Cowlitz County. Consistency with the County's comprehensive plan as discussed in section 9.4.1.

Commenter: Unknown #2, Comment No. 3

Category: Public Hearing

Response: The employment estimates for the plant are included in Appendix M – Table 7.

17.13 Response to Comments on Chapter 10, Visual Resources

Commenter: City of Prescott, Mayor Lynette Oswald, Comment No. 2

Category: Agency and Tribal Government

Response: The FEIS evaluated potential impacts associated with noise, light, and pollution. Chapter 10 of the FEIS addresses visual resource, including impacts from light and glare. The proposed project would be contiguous and visually consistent with existing industrial facilities along the Columbia River upriver of the project site. Emission plumes are expected to be visible in most atmospheric conditions. The proposed dock facilities would require moderate to high levels of light for operation at night while vessels are arriving, departing, or being loaded. Lighting associated with the proposed project would be reflected in the waters of the Columbia River and may be visible from Prescott Beach Park. However, artificial lighting is common along the Columbia River in the study area and Prescott Beach Park is designated as a day-use only facility. Furthermore, most on-water recreational viewers access the river during daylight hours and would not experience increased light and glare impacts. Therefore, viewers at the Prescott viewpoint would experience a low level of effect due to proposed project-generated light and glare. Overall, the proposed project would result in a moderate level of effect to viewers at Prescott, and a low level of effect due to light and glare.

Chapter 14 of the DEIS addresses impacts from noise created by the proposed facility, including noise levels expected to occur in Prescott. The FEIS indicated that with mitigation the project would result in some increase in noise levels but would not exceed levels established by the state of Oregon.

See standard response No. 5 regarding emissions.

Commenter: City of Prescott, Mayor Lynette Oswald, Comment No. 6

Category: Agency and Tribal Government

Response: The design measures referenced in the FEIS, section 10.6.1.1, would minimize the effects on aesthetics and light and glare. There are no significant adverse impacts identified for aesthetics and visual resources and, therefore, no additional mitigation measures are identified. As discussed in Chapter 6, the project will plant riparian vegetation along portions of the shoreline. While this is not designed specifically to reduce visual impacts, once mature the vegetation will provide some buffer to views from the river or the Oregon side.

Commenter: William Brake #1, Comment No. 42

Category: Citizen

Response: Comment noted.

Commenter: Cynthia Svensson #1, Comment No. 11

Category: Citizen

Response: Potential impacts on aesthetics and visual resources are considered in Chapter 10 of the DEIS. The assessment includes consideration of potential steam plumes emitted from the facility when operating, as well as an evaluation of potential impacts due to light (i.e., man-made artificial nighttime light) and glare (i.e., a strong or dazzling lighting condition originating with sources of either direct or reflected light that causes visual discomfort) resulting from the proposed project.

As stated in section 10.4 of the DEIS (page 10-9):

> *With the exception of Drays Mound directly east of the project site between the BNSF railway and I-5 (approximate elevation 265 feet), the elevation of the floodplain generally ranges from approximately 5 to 30 feet in the study area. The hillsides east and west of the floodplain rise steeply and are generally heavily forested and in a natural or semi/natural condition. The native vegetation of the floodplain is a complex landscape composed of riparian and lowland deciduous and conifer forests but, in many areas, depending on the level of existing development, the vegetation has been highly modified. The built environment and existing vegetation across the relatively flat floodplain block most views of the project site. The viewshed is also influenced by the floodplain and topography associated with the Kalama River (approximately 1,500 feet south of the project site) extending east of the Columbia River.*

In specific response to the comment on the views from overlooking residences, the City of Prescott, Oregon, which consists of a small cluster of residential land uses along the Columbia River, lies west of the project site on the opposite shore of the river. Residences along the Columbia River in Prescott have views of the project site. There are also a number of residential areas located within unincorporated Cowlitz County that may have views of the project site (they are generally located at least 1 mile east of the project site on the hills and bluffs above the floodplains). However, the views from both Prescott and the hills and bluffs to the east of the project site already include existing industrial development, such as the Steelscape facility adjacent to the project site and/or the existing Port of Kalama industrial facilities and use upstream of the project site.

From a cumulative standpoint, viewers would be unlikely to notice an overall increase in industrial activity during operations because of the limited scale of the dredging projects and the Steelscape warehouse and ongoing Kelso-Martin's Bluff rail improvement projects. In combination with the proposed project, portions of the Spencer Creek Business Park may be visible to some residential viewers. For viewers with low sensitivity, such as workers at industrial sites near the project site or travelers on southbound I-5, the visual change in the viewshed would not represent an adverse cumulative impact because their attention is typically focused on work or driving. Viewers with moderate or high sensitivity, such as recreational and residential viewers, may notice an overall increase in development in the viewshed and subjectively relate this to a cumulative impact. However, views combining both the proposed project and Spencer Creek Business Park are expected to be available to a limited number of viewers. Views combining both the proposed project and the Port's Small Vessel Dock and Marina Renovation projects would not be expected because of the distances between the projects. Additionally, these projects would not alter views of the Columbia River and Columbia River valley, which are defining features of the affected viewshed. Therefore, the proposed project, in combination with the other reasonably foreseeable development projects, would not result in significant adverse cumulative impacts to visual resources. By extension, the proposed project would not result in significant impacts to property values because of impacts to visual resources.

Commenter: Priya Veeraraghavan, Comment No. 1

Category: Citizen

Response: Comment noted: The impacts of the proposed project on visual resources are discussed in Chapter 10 of the FEIS.

17.14 Response to Comments on Chapter 11, Historic and Cultural Resources

Commenter: Cowlitz Indian Tribe, Comment No. 20

Category: Agency and Tribal Government

Response: Comment noted. The Port SEPA Responsible Official has reached out to the commenter and is discussing issues related to the EIS.

Commenter: Cowlitz Indian Tribe – Cultural Resources, Comment No. 1

Category: Agency and Tribal Government

Response: Comment noted. This requirement has been added to mitigation measures in Chapter 11 of the EIS.

Commenter: Washington State Department of Archaeology and Historic Preservation, Comment No. 1

Category: Agency and Tribal Government

Response: Due to federal permit requirements, the project is subject to Section 106 of the National Historic Preservation Act. In addition, historic and cultural preservation, is an element of the environment as specified in WAC 197-11-444 and subject to evaluation under the SEPA process.

Commenter: Washington State Department of Archaeology and Historic Preservation, Comment No. 2

Category: Agency and Tribal Government

Response: Comment noted. The responsible official has provided the commenter with the requested materials and contacted DAHP for review of the proposed project. DAHP reviewed the proposed project on behalf of the State Historic Preservation Officer (SHPO). In a letter dated June 2016, DHAP provided the following comments.

- It is unclear what parts of the project are under federal nexus (Section 106) or under state law.
- The report recommended no further archaeological work or oversight because the precontact and historic landform would not have supported human settlement. However, the probability still exists for technological features such as fish weirs which have been found during other projects in similar environments.
- We request that excavations for the project that extend below 4 feet in depth be monitored by a professional archaeologist under a monitoring plan approved by DAHP and the interested Tribes.

These recommendations will be considered in the permitting decisions for the project.

Commenter: William Brake #5, Comment No. 43

Category: Non-governmental Organization

Response: The totem pole noted in the comment is approximately 3 miles south of the facility and will not be impacted by the project.

17.15 Response to Comments on Chapter 12, Transportation

Commenter: City of Kalama, Comment No. 3

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: Port of Woodland, Comment No. 2

Category: Agency and Tribal Government

Response: Comment noted - river traffic addressed in DEIS Chapter 12, Transportation.

Commenter: City of Prescott, Mayor Lynette Oswald, Comment No. 3

Category: Agency and Tribal Government

Response: Section 2.6.2.3 of the DEIS indicates that methanol loading rates would vary from approximately 203,000 to 523,000 gallons (610 to 1,571 tonnes) per hour per line depending on the vessel size. A vessel would be at the dock for 24 to 36 hours depending on the size and loading rate of the vessel. Based on schedule of arrival, the vessels are expected to dock directly at the berth based on the preferential berthing arrangement with NWIW but may use designated anchorages while waiting for space at the dock.

Commenter: Columbia River Steamship Operators' Association, Comment No. 1

Category: Non-governmental Organization

Response: Comment noted.

Commenter: Columbia River Steamship Operators' Association, Comment No. 2

Category: Non-governmental Organization

Response: Comment noted.

Commenter: William Brake #5, Comment No. 16

Category: Citizen

Response: Chapter 12 of the DEIS discussed the size of the ships and the nature of the channel. See Phillip Massey's Comment No. 1 (see page 17-100).

Commenter: William Brake #5, Comment No. 26

Category: Citizen

Response: As indicated in section 2.6.1.5 of the DEIS, off-site parking areas have been identified that can be used as necessary for construction parking.

Commenter: William Brake #5, Comment No. 44

Category: Citizen

Comment 44 Response: Impacts from project-related traffic, including construction traffic, is addressed in Chapter 12 and Appendix K. This analysis is consistent with established methods to consider impacts to transportation from projects.

Commenter: Diane Gordon #2, Comment No. 1

Category: Citizen

Response: Chapter 12 of the EIS considers impacts of the vessel traffic on the transportation network and other chapters evaluate potential impacts of vessel traffic on other resources. Cumulative impacts of vessel traffic are evaluated in Chapter 15 of the EIS.

Commenter: Shaun Hubbard, Comment No. 16

Category: Citizen

Response: The project does not propose to or involve train transport of raw or finished materials. Vessel transportation is discussed in Chapter 12 and as evaluated in section 12.5.3 vessel traffic associated with the project is within the historic range on the Columbia River and the channel would be able to accommodate the increase without any impact on existing traffic. In addition, the EIS also addresses impact on anchorages.

Commenter: Phillip Massey, Comment No. 1

Category: Citizen

Response: Comment noted. Vessel characteristics are identified in section 2.6.2.3 of the EIS. The Applicant has indicated that they currently do not own or operate vessels, and specific vessels have not been chartered to service the facility. Therefore, specific vessels and their characteristics cannot be determined at this time. Vessels will be required to comply with applicable provisions of state and federal law and operating requirements of the pilotage organization regardless of the country under which the vessel is registered. Laws and regulations related to vessel transportation are listed in section 12.2.2 of the DEIS.

Commenter: Donald Watt #4, Comment No. 1

Category: Citizen

Response: As described in section 2.6.2.3 of the DEIS, the proposed project would result in approximately 36 to 72 vessel entry transits per year that will vary in size from 45,000 DWT to 127,000 DWT, which would include vessels measuring from approximately 600 feet to 900 feet in length and 106 feet to 152 feet in width. The term "supertanker" is not a standard term used to classify tank vessels. According to U.S. Maritime Administration, the largest tank vessels are classified as an ultra-large crude carrier, which is in excess of 320,000 DWT. Tankers anticipated to call on the facility would be classified as Handy-Max on the lower end with a size of 35,000 to 49,900 DWT and as an Aframax on the high end with a size of 70,000 to 119,000 DWT. Vessels of these size regularly use the Columbia River Channel. Section 12.4.2.1 of the DEIS describes the channel, and it is maintained to a consistent width through its entire length. Vessels would be piloted across the Columbia River bar and up the river to the terminal as required by state and federal regulations. Assist tugs would help vessels arriving at and leaving the berth. The commenter is correct in that incidents can occur on the Columbia River. Section 8.4.3.4 discusses the relative risk and impacts associated with vessel incidents.

Commenter: Phillip Massey, Comment No. 1

Category: Public Hearing

Response: See Phillip Massey's (Citizen) Comment No. 1 regarding vessel characteristics (see page 17-100).

Commenter: Captain Kimberly Higgins, Comment No. 2

Category: Public Hearing

Response: Traffic impacts are discussed in Chapter 12 and as shown are expected to be within acceptable levels of service.

17.16 Response to Comments on Chapter 13, Public Services and Utilities

Commenter: William Brake, Comment No. 27

Category: Citizen

Response: The DEIS does not specifically address temporary wastewater disposal during construction operations. Wastewater needs during construction will be addressed with portable toilets or some other similar method. Material is collected from these portable units by truck and transferred to an acceptable wastewater treatment plant. Wastewater treatment facilities will only accept material if the plant is designed for and can accommodate the volume of waste proposed for disposal.

Commenter: Claudia Riedener, Comment No. 17

Category: Citizen

Response: Economic benefits of the project are discussed in Chapter 13 of the EIS, including a discussion of potential impacts on public services. SEPA does not require a cost-benefits analysis.

17.17 Response to Comments on Chapter 14, Noise

Commenter: City of Prescott, Mayor Lynette Oswald, Comment No. 5

Category: Agency and Tribal Government

Response: The DEIS does not propose establishing a quiet period as mitigation for anticipated noise impacts and the project does not propose any limitation on operation periods to address noise.

Under the ULE Alternative, appropriate noise mitigation measures would be implemented so the associated sound levels would comply with applicable noise limits and regulations and would not result in significant adverse noise impacts (see DEIS section 14.5.2). The CR Alternative would not result in significant adverse noise impacts during operation.

Noise from construction activities would be limited to the hours of 7 a.m. and 10 p.m. per WAC 173-60-050 and CCC 10.25.050.A.11.

Commenter: Columbia Riverkeeper, Comment No. 25

Category: Non-governmental Organization

Response: Chapter 14 of the EIS includes an analysis of noise impacts from the project. While sound levels produced by pile driving activities may occasionally be intrusive and considered annoying at the sensitive receivers nearest the site, the temporary nature of the activities, restriction to daytime hours, and relatively low hourly sound levels would minimize any potential for significant noise impacts, and no noise mitigation is required. Sound levels from typical construction activities are expected to be fairly low at the noise sensitive receivers

nearest the site and would be conducted only during hours authorized by state and local regulations unless exceptions are granted.

In regards to impacts to workers, appropriate hearing protection as required by state and federal worker safety rules would be used.

Regarding operations, the EIS analyzed increased noise resulting from the project and determined that the project will comply with applicable noise levels (sections 14.4.1.3 and 14.4.2.3) with implementation of design measures for the ULE Alternative.

Commenter: William Brake #5, Comment No. 31

Category: Citizen

Response: Noise-related impacts are discussed in Chapter 14 of the DEIS. The noise analysis includes Oregon provisions as receiving properties in Prescott are located in the state of Oregon.

Commenter: William Brake #5, Comment No. 46

Category: Citizen

Response: As discussed in Chapter 14, the estimated sound levels for the CR Alternative indicate compliance with both the Washington and Oregon noise limits. While the project is not located in the state of Oregon, because increased noise levels could occur in Oregon, consideration of Oregon's noise standards was included.

Commenter: Joann McGovern, Comment No. 2

Category: Citizen

Response: The applicable noise limits, proposed hours of operation and construction, and calculated project-related sound levels are identified in Chapter 14 of the DEIS. The DEIS identified potential noise mitigation measures for the facility to comply with the applicable limits. If noise levels are exceeded by the project Cowlitz County has established provisions for noise control in Chapter 10.25 of Cowlitz County Code (CCC). Section 10.25.060 establishes authority to enforce the noise provisions with the County Sheriff including the authority to issue civil infractions or misdemeanors. In addition, CCC 2.06.120 provides the County with authority to initiate legal action to abate such violations, which are considered a public nuisance under the CCC.

Commenter: Cynthia Svensson #1, Comment No. 18

Category: Citizen

Response: Chapter 14 of the DEIS addresses noise impacts from the proposed project and is evaluated in consideration of noise criteria established by Cowlitz County, the City of Kalama, and Washington and Oregon. The topography of the site and surrounding area was incorporated into the CadnaA noise model used to calculated project-related sound levels at off-site receivers.

Noise related to construction activities of the proposed project would not result in significant adverse noise impacts. Under the ULE Alternative, appropriate noise mitigation measures would be implemented so the associated sound levels would comply with applicable noise limits and regulations, and would therefore not result in significant adverse noise impacts (see

DEIS section 14.5.2). The CR Alternative would not result in significant adverse noise impacts during operation.

17.18 Response to Comments on Chapter 15, Cumulative Impacts

Commenter: Cowlitz Indian Tribe, Comment No. 21

Category: Agency and Tribal Government

Response: The comment indicates a concern regarding the continued development of industrial projects that are replacing the natural landscape. Section 2.2.1 describes the history of the project and that the project site has been significantly modified from its prior natural site by past practices. As indicated in section 9.3.1.3, the site has been planned for industrial use since at least 1981.

The comment also requests that the FEIS acknowledge ongoing activities and future plans for environmental restoration within the potential KMMEF impact area (including the shipping channel to the mouth of the Columbia River) as "reasonably foreseeable future actions" for the cumulative impact analysis.

As an example of such activity, the Lower Columbia Estuary Partnership works to restore habitat between Bonneville Dam and the mouth of the Columbia River, with a goal of restoring 25,000 acres of wetland habitat by 2025. Since 2000, the Estuary Partnership and over 100 regional partners have accomplished 197 projects, restoring or protecting 20,419 acres (Lower Columbia Estuary Partnership 2016a). More recently, in 2015, the partnership restored or protected 107 acres of habitat at Clatskanie Floodplain, Thousand Acres at the Sandy River Delta, and Multnomah/Wahkeena Creeks in Benson State Park (LCEP 2015). Funding for projects is based on a financial plan that supports the Estuary partnership's six-year implementation strategy (LCEP 2011). Project proposals are considered for funding several times per year (LCEP 2016b).

At the present time, only two projects are funded and proceeding to implementation (La Center Restoration Project and Hamilton Creek (LCEP 2016a, Evans 2016). Although as a whole, future restoration activities are expected to occur, with the exception of already funded projects, the actual locations of future activities have yet to be determined. It is, therefore, speculative to assess whether KMMEF activities will have any significant adverse cumulative impact in association with restoration activities.

The comment regarding impacts to traditional first foods is specifically noted. Chapter 6 of the EIS addresses impacts to plants and animals, some of which are likely to be considered as traditional first foods.

Regarding the request to consider activities and future plans for restoration in the cumulative impacts analysis, because restoration activities are meant to improve the quality of the environment, adding restoration projects to the cumulative impacts analysis will not increase the potential for any adverse cumulative impact (see for example, sections 5.5.3 and 5.5.4). Furthermore, the project operations are unlikely to impact specific restoration sites.

Commenter: Washington Department of Fish and Wildlife, Comment No. 3

Category: Agency and Tribal Government

Response: Section 6.5.3 documents that the Columbia River is designated as Essential Fish Habitat (EFH) for Pacific salmon, and impacts to salmon habitat associated with operation of the Marine Terminal Alternatives (including vessel transport) are addressed in section 6.2.2.2.

Chapter 6 has been updated to include a revised discussion of impacts of the project on marine mammals based on collisions with vessels.

The EIS acknowledges that vessels calling on the facility, in conjunction with the other reasonably foreseeable development projects, could contribute incrementally to wake-related impacts to wildlife and fisheries resources (including increased potential for the introduction of invasive species, ship strikes, and wake stranding), and to vegetation resources (including increased bank erosion generated by vessel wakes and propeller wash).The extent of impacts associated with each project varies greatly and depends on factors that include the number of trips, vessel sizes, and type and volume of materials transported. Any of the projects, however, if constructed, could generate additional vessel trips that could contribute incrementally to cumulative impacts to wildlife and fisheries habitat and species, including EFH.

Commenter: Washington Department of Fish and Wildlife, Comment No. 6

Category: Agency and Tribal Government

Response: Section 15 documents that the proposed project would add an incremental increase to existing vessel traffic on the Columbia River and, in combination with other reasonably foreseeable development projects on the Lower Columbia River, could result in cumulative impacts to vegetation, wildlife, and/or fisheries resources.

The project does propose compensatory mitigation to mitigate for unavoidable impacts to aquatic, riparian, and wetland buffer habitats, the project includes a combination of compensatory mitigation actions that include on-site, in-kind replacement of impacted aquatic habitat functions (pile removal), and on-site, out-of-kind enhancements to nearshore and riparian habitats at the site (ELJ installation and riparian and wetland buffer enhancements). All of the proposed mitigation activities that are proposed will be conducted within and adjacent to waters of the Columbia River in the vicinity of the project activities, and will directly benefit the aquatic, riparian, and adjacent wetland habitats where project activities are being conducted.

Commenter: Columbia Riverkeeper, Comment No. 6

Category: Non-governmental Organization

Response: The DEIS conservatively considered an array of various heavy industrial and commercial proposals, some of which were publically identified or discussed in the media without specific applications having been submitted to permitting agencies (e.g., Riverside Refinery and Washington Energy Storage and Transfer), or whose probability to occur is questionable (Pembina and Morrow Pacific for example, where permitting activities were suspended for various reasons at the time of publication of the DEIS).

Throughout section 15.4, the DEIS provides quantitative information regarding projects that are likely to have a cumulative impact with the KMMEF, to the extent that such quantitative information is reasonably available. For example, the DEIS considers the proximate development of the Spencer Creek Business Park and Kelso-Martin's Bluff projects and the cumulative impacts of such development on natural resources. The DEIS also conservatively considers the cumulative impact of the vessel traffic from the KMMEF and a host of other proposals, many of which have since been cancelled. Table 15-1 has been updated to reflect any new information that has become available about projects considered in the cumulative impacts analysis.

Commenter: Columbia Riverkeeper, Comment No. 7

Category: Non-governmental Organization

Response: The comment indicates that the EIS should analyze whether the cumulative impacts of the KMMEF and other projects crosses resource, ecosystem, and community thresholds and provides several examples of thresholds that should have been considered. Thresholds for consideration of impacts to each resource addressed in the DEIS were identified throughout Chapter 3.1 to 3.14. These same thresholds were considered for the evaluation of KMMEF impacts in combination with all other proposals identified in section 15; however, to avoid redundancy, the discussion was not repeated. The analysis in the EIS also considers impacts (including cumulative impacts) in the context of whether they are probable (WAC 197-11-782). The following are several examples of thresholds used to assess impacts that were described in the DEIS.

- Earth: The primary cumulative impacts to earth resources associated with the development of multiple projects are landslide hazards and erosion related to construction. Sections 3.3.3.3 and 3.3.3.4, respectively, identify thresholds for identifying locations susceptible to high levels of instability or erosion. These thresholds are established locally by Cowlitz County through its Critical Areas Ordinance (see Appendix H.1 to the DEIS). Bank erosion was identified as the primary impact resulting from vessel wakes. This impact can occur across various local, state and federal jurisdictional boundaries, and there is no specific threshold as to when vessel wake impacts become significantly adverse. The appropriate consideration threshold is, therefore, the SEPA significance threshold. As indicated in DEIS section 15.5.1 and bank erosion impacts from vessel wakes are limited to specific locations, and the additional vessel traffic related to the KMMEF with other proposals is unlikely to significantly increase bank erosion impacts.

- Air Quality: The threshold for determining adverse impacts of KMMEF activities and vessel transportation activities in general is whether the activities will cause pollutant concentrations in the air shed to exceed ambient air quality standards (see sections 4.3.1.1 and 4.3.1.2). Both state and federal ambient air quality standards (including those for emissions of PM 2.5) have been established to be protective of human health, including that of vulnerable populations. The process for evaluating the impact of the KMMEF and its related vessel operations at the marine terminal was discussed in section 4.4 of the DEIS. With respect to vessel traffic on the Columbia, the DEIS identified the control of vessel emissions with respect to federal requirements established for the Emission Control Area designated on the U.S. West Coast, and assessed the impact of vessel emissions based on federal control requirements. GHG emissions were assessed in accordance with Ecology SEPA GHG Guidelines (Ecology 2011).

- Water Resources: Impacts to water quality were assessed based on thresholds and standards established by state and federal Clean Water Acts (see section 5.2.1.1). As discussed in section 15.5.3, each proposal would be permitted to be compliant with applicable provisions of state and federal water quality regulations. Vessels are also required to adhere to state and federal requirement to minimize impacts to water quality resulting from hull fouling and ballast water exchange (see section 6.6.2).

- Plants and Animals: Impacts to plants and animals were assessed against local, state, and federal requirements to protect habitat and species. The KMMEF and projects within

Cowlitz County will all comply with the Cowlitz County Critical Area Ordinance (CAO) (see Appendix H.1 of the DEIS). The impacts to threatened species for each proposal will be assessed based on the specific level of threat and protection required on an individual or species basis, as required by the federal Endangered Species Acts. Impacts to marine environments will also be assessed against standards of no net habitat loss. The cumulative impacts to specific special status species are explicitly addressed in section 15.5.4.

- Environmental Health and Safety: Thresholds for incident risks were compared against thresholds established by the Health and Safety Executive of the United Kingdom (see section 8.3.3).

- Cultural Resources: Impacts to cultural resources were assessed against avoiding adverse impacts to either historical or archeological resource altogether (see section 11.5.1).

- Transportation: Surface traffic impacts were assessed against established and commonly accepted level of service thresholds (see section 12.3.3).

- Noise: Noise impacts were assessed against regulatory thresholds established by Cowlitz County, City of Kalama, and the states of Washington and Oregon (see section 14.2.2.1)

The following addresses the specific threshold examples raised by the comment.

- The threshold at which estuary habitat degradation caused by dredging, dock building, and vessel wake impacts causes perceptible, or unacceptable, impacts to salmon populations and to the tribal, commercial, and recreational fisheries that depend on them.

- Potential impacts and thresholds used to assess whether any project impact, alone or in combination with other activities, may be adverse were described in section 6.6 and Appendix E to the DEIS. Salmon populations in the Lower Columbia River are protected under the federal Endangered Species Act (ESA) (see Table 6-3 of the DEIS and the Biological Assessment, Appendix E to the DEIS). As a result, any proposal ("action") that may cause an impact to the species must comply with the ESA, and project impacts to protected salmon species and their habitat must be assessed in consultation with the NMFS. Based on the project-specific activities, an assessment is made as to whether the proposal is likely to have an adverse effect at the individual or species level, and whether an adverse impact may occur to designated critical habitat. NMFS is required to determine whether the proposal "taken together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat" (50 CFR § 402.14(g) (3)-(4)). Notwithstanding federal ESA requirements, similar assessments of impacts to special status salmon are completed at the local and state levels through compliance with CAO requirements, HPA review, and Section 401 Water Quality Certification.

- The threshold at which ambient PM2.5 and toxic air pollution levels result in perceptible, or unacceptable, health outcomes for people working and living in the project vicinity.

- As described above, the threshold for assessing the impact of criteria pollutants, including PM2.5, are the ambient air quality standards established by state and federal Clean Air Acts.

- Threshold at which deep-draft vessel traffic presents an unacceptable impediment to commercial and recreational fishing in the lower Columbia River and estuary.

As indicated in section 12.5.3, the additional vessel calls to the project would represent a minor increase relative to existing and historical ship traffic along the Columbia River. Regardless, deep-draft vessel traffic does not present an impediment to commercial and recreational fishing in the lower Columbia River and estuary because deep-draft vessels have the right-of-way when transiting the Federal Navigation Channel. U.S. Federal Navigation and Navigable Water Regulations (FR 33) define navigation rules (33 CRF 83) enforced by the USCG (USCG 2016). The following general navigation rules (FR 33 CFR 83.09 and 83.13) apply to the narrow navigation channel in the Lower Columbia River, which gives deep-draft vessels the absolute right-of-way within the channel (commonly referred to as the "Make Way Rule" or Rule 9).

- A vessel of less than 20 meters in length, a sailing vessel, or a vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel or fairway

- A vessel shall not cross a narrow passage or fairway if such crossing impedes the passage of a vessel that can safely navigate only within such channel or fairway

- In a narrow channel or fairway, any overtaking has to be permitted by the vessel being overtaken

- All sailing, fishing vessels, and power-driven vessels shall keep out of the way of a vessel not under command or restricted in her ability to maneuver

The Lower Columbia Harbor Safety Committee, comprised public and private interests, also works to ensure implementation of safe navigation and maritime practices that protect those areas within proximity to the Lower Columbia Region. The committee has developed the Lower Columbia River Harbor Safety Plan (LCRHSC 2013). This plan is designed to complement existing regulations by advising the mariner of unique conditions and requirements that may be encountered in the Lower Columbia Region by providing these standards and protocols as developed by local experts. The committee has recently updated its guidelines for small vessels regarding the "Make Way Rule" (LCRHSC 2016).

Deep-draft vessels would not be present in shallower waters outside the Federal Navigational Channel, where fishing activities are conducted and would, therefore, not cause an impediment to existing fishing activities.

- The threshold at which background noise levels caused by vessel traffic in the nearshore ocean will compromise cetacean survival and communication

The potential for vessel noise impacts to cetaceans is addressed in the response to Columbia Riverkeeper comment No. 16 (see page 17-61).

- The threshold at which GHG emissions will cause unacceptable impacts to local and regional climate and natural resources

The rate and overall scope of changes in regional climate depends on the rate of increase of worldwide GHG emissions and the response of the climate to such emissions (Snover et al 2013). Although certain changes in climate may be perceptible at any one time, the prediction

of exact impacts to specific resources resulting from future GHG emissions is not possible; the research community has instead relied upon the analysis of scenarios to consider the implications of a range of different future conditions rather than establishing thresholds (Snover et al 2013). As the science of climate change strengthens, so will the reliability of the conclusions derived therefrom; these conclusions will form the basis for particular decisions of what level of risk is acceptable.

As indicated in section 4.3.2.7, assessed the significance of project GHG emissions based on Ecology guidance regarding the evaluation of GHG emissions under SEPA (Ecology 2011). As indicated in section 4.3.2.7, the project was assessed against the criteria established in the guidance, including the tons of GHG emissions anticipated to be emitted per year, whether the proposal is subject to any legal requirements to reduce or mitigate GHG emissions, and whether any mitigation measures have been incorporated to mitigate GHG emissions. The FEIS disclosed proposal's GHG emissions, identified legal requirements to reduce or mitigate emissions, and described the selection of technologies with the specific purpose to reduce emissions.

Commenter: Diane Gordon #2, Comment No. 1

Category: Citizen

Response: Chapter 15 of the EIS addresses cumulative impacts and includes consideration of other projects that could contribute additional ship traffic to the Columbia River.

Commenter: Rus Higley, Comment No. 2

Category: Citizen

Response: The DEIS considered all three projects proposed by NWIW, as part of SEPA cumulative impact assessment requirements, although the Tacoma proposal has since been withdrawn.

NWIW's Manufacturing and Marine Export Facility proposed at Port Westward Industrial Park, Clatskanie, Oregon, was included in the cumulative impacts analysis presented in section 15. As indicated on page 15-3, projects, such as NWIW's Port Westward proposal, even though they are not situated in the direct vicinity of the proposed project, are addressed in each of the resource discussions of section 5.5. The DEIS identified the cumulative contribution of the KMMEF with projects identified outside the immediate project vicinity of additional vessel traffic on the Columbia River. The contribution of the Port Westward proposal is included in this consideration throughout section 5.5.

NWIW's Tacoma proposal was also identified in section 15.5.2 (page 15-11) as a possible contributor of greenhouse gas (GHG) emissions statewide. However, since issuance of the DEIS, NWIW's Tacoma proposal is no longer being pursued (Port of Tacoma 2016 Godley 2016) and will, therefore, not cumulatively contribute to any proposed project vicinity-wide or statewide impacts.

The comment indicates that the EIS should "take into account expanded production of methanol elsewhere in the U.S. and in the world." SEPA regulations require the lead agency to narrow the scope of analysis to probable significant adverse impacts (WAC 197-11-408 [1]) resulting from the proposal. As described throughout Chapter 15, the probable impacts of the KMMEF are limited to the project site, and to study areas adjacent to the project site that are defined on a resource-by-resource basis. With the exception of GHG emissions (which have

been compared to global-wide emissions in section 15.5.2). Identifying and quantifying the cumulative effect of the KMMEF with any other methanol production facilities beyond the Lower Columbia River would result in speculative conclusions that would not provide meaningful issues to the decision-makers.

Commenter: Shaun Hubbard, Comment No. 13

Category: Citizen

Response: See response to Shaun Hubbard Comment No. 1 regarding the transport of oil and bunkering (see page 17-65).

Commenter: Alex Williams, Comment No. 3

Category: Citizen

Response: Chapter 15 addresses cumulative impacts and as noted in the chapter the other announced projects by NWIW were included. Since issuance of the KMMEF DEIS, NWIW's Tacoma proposal is no longer being pursued (Port of Tacoma 2016, Godley 2016) and will, therefore, not cumulatively contribute to any KMMEF vicinity-wide or statewide impacts.

Chapter 4 has been updated in response to this comment and others to include a discussion of GHG from natural gas transportation and production.

See standard response No. 10 in regards to fracking.

Commenter: Phil Brook, Comment No. 1

Category: Public Hearing

Response: Cumulative impacts are discussed in Chapter 15. The comment regarding product lifecycle is not clear as to how the EIS should be modified and what impacts were not assessed and, therefore, no modifications have been made to the EIS.

Commenter: Diane Gordon, Comment No. 1

Category: Public Hearing

Response: Chapter 15 addresses cumulative impacts and includes consideration of other projects that could contribute additional ship traffic to the Columbia River.

17.19 Response to General Comments

Commenter: Cowlitz Indian Tribe, Comment No. 5

Category: Agency and Tribal Government

Response: SEPA regulations establish how a lead SEPA agency is selected. See WAC 197-11-922 through -948. Although Ecology is identified as a lead agency for private projects requiring licenses from more than one state agency (see WAC 197-11-936), the Port and the County assumed lead agency status pursuant to WAC 197-11-942 and WAC 197-11-944. The Port and County received agreements from all other agencies with jurisdiction. Ecology transferred lead agency status to the Port and County in writing.

Commenter: Cowlitz Indian Tribe, Comment No. 12

Category: Agency and Tribal Government

Response: Past development and river management practices have modified the site from pre-European conditions. The present condition of the site was primarily a result of filling activities following the eruption of Mount St. Helens in 1980. After the eruption, the USACE performed work in waters impacted by volcanic eruptions. Public notices were issued dated 23 May 1980 and 2 July 1980 to cover work downstream of the Cowlitz. Additional work was done upstream under Public Notice dated 15 July 1980 and/or Environmental Impact Statement. Work in waters was done under existing and emergency authorities, including President Carter's Major Disaster Declaration dated 21 May 1980, emergency disaster recover actions performed under Public Law 99, 84th Congress, 69 Stat. 186, 33 USC 701n, and authorized in accordance with Executive Directive and Regulations promulgated as 33 CFR 209.145. A USACE Public Notice dated 27 October 1980 identified permits and exemptions for the emergency work. These modifications of the project site occurred prior to the current proposal and the actions are not considered in evaluating the impacts of the project.

Commenter: Cowlitz Indian Tribe, Comment No. 19

Category: Agency and Tribal Government

Response: See standard response No. 13 regarding responsibility, liability and costs associated with catastrophic event.

Commenter: Cowlitz Indian Tribe, Comment No. 22

Category: Agency and Tribal Government

Response: Comment noted: The Port and Cowlitz County initiated discussions with the Washington State Department of Ecology regarding lead agency status under WAC 197-11-924 through 926. With the agreement of state agencies with jurisdiction, Ecology transferred lead agency status. The Port and Cowlitz County agreed on division of lead agency duties under WAC 197-11-944, with the Port being designated as nominal lead agency.

Commenter: City of Prescott, Comment No. 1

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: Columbia Riverkeeper, Comment No. 4

Category: Non-governmental Organization

Response: As noted in section 6.5.3.1 of the DEIS, the document considers the impacts of shipping from the project site (at approximately Columbia River Mile 72) to the boundary of the 3-nautical mile territory sea along a route that corresponds with the vessel route subject to state jurisdiction. Section 2.6.2.3 indicates that the facility would generate from 36 to 72 vessel trips (or calls) per year, depending on the size of the vessel used to transport the methanol. The upper end of this range represents an increase in volume on the Columbia River of approximately 5 percent when considered against historical volumes (DEIS, section 12.5.3). While small, this increase is large enough to warrant an evaluation.

The route a vessel would take in the Columbia River can be easily determined and analyzed because the shipping channel is defined and the vessel is limited to a specific route that follows

it. However, once a vessel reaches the mouth of the Columbia River, it enters the Pacific Ocean. While the project proponents have identified a potential destination port in China, methanol is a commodity and the market can drive product delivery to ports worldwide. In addition, while international agreements cover predetermined routes for shipping in congested areas, in the open ocean, there are no such specific shipping routes to destination ports. Therefore, identifying a particular route for analysis would not yield meaningful information about the impacts of shipping.

In addition, when compared to the overall volume of shipping in the North Pacific Ocean, the number of vessels calling on the facility is very small. The most recent published data (2013) from the U.S. Maritime Administration (MARAD) estimates 14,000 yearly ship calls to West Coast ports in the United States (MARAD 2013). The project would increase that volume by approximately one-half of 1 percent. This very small increase becomes even smaller when one includes the traffic of military and other deep-draft vessels calling only on foreign ports. SEPA does not require that every remote and speculative consequence be included in an EIS. While there are impacts from oceangoing deep-draft vessel traffic, when considered in the context of the existing vessel traffic, the vessel traffic related to this project in the open ocean is so marginal in number and consequence that its impacts cannot be meaningfully measured, detected, or evaluated. Therefore, we find the scope of the analysis to be appropriate considering the scale of the proposed facility and the traffic of oceangoing vessels that can be reasonably associated with it.

Commenter: Columbia Riverkeeper, Comment No. 5

Category: Non-governmental Organization

Response: While SEPA rules do not preclude analysis of potential impacts outside the state of Washington, it also does not require that every remote and speculative consequence be included in an EIS. As noted by the commenter, methanol is a commodity and can be used for a wide variety of uses, including making of olefins, which the project proponents have indicated as the likely end use of the methanol. Analyzing every potential end use of methanol, including olefin production, subsequent plastic production, product production from said plastics and then end use of said product would require significant assumptions and would result in an extremely speculative analysis that would not provide meaningful information to the decision-makers on the effects of the project. Therefore, the scope of the analysis in the DEIS is appropriate per WAC 197-11-060(4)(a) and 197-11-44(5)(b)(iii).

Commenter: Columbia Riverkeeper, Comment No. 9

Category: Non-governmental Organization

Response: The timing and length of the comment period is consistent with WAC 197-11. The Port provided an expanded 45-day comment period and accepted comments via mail, e-mail, web forms, and a public hearing. It is typical (and in some circumstances required) for the SEPA process to occur before permitting actions as the agencies (state and local) may not act on a proposal before the FEIS is completed. It is important to note that the federal permit processes are separate from the state and local processes that require SEPA review. FERC completed the environmental assessment for the proposed pipeline, and the findings of the environmental assessment were considered in the DEIS as a related action. The permit applications, including supporting technical studies for discharges to air and water and for federal permits, were included in the DEIS and the information appropriately considered in the analysis of potential impacts. Federal, state, and local permitting procedures include additional opportunities for public comment on the proposal.

Commenter: Columbia Riverkeeper, Comment No. 31

Category: Non-governmental Organization

Response: The area to be developed for the project does not include wetland areas and no vegetation control will occur within wetland areas and thus impacts associated with this activity are not discussed in the EIS. In addition, herbicide and pesticide use would be conducted consistent with federal and state standards and would not rise to a level of significance under SEPA.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 9

Category: Non-governmental Organization

Response: The Kalama Lateral will transport only natural gas. It will not transport oil or other liquids. All natural gas transported on the Northwest Pipeline system must adhere to strict gas quality requirements as outlined in section three of the Northwest Pipeline LLC's FERC Gas Tariff.

Williams' safety programs include

- Conducting periodic maintenance inspections, including leak surveys and valve and safety device inspections; 49CFR192.706 "Transmission Lines: Leakage Surveys."
- Examining the internal condition of the pipeline by means of a "smart pig" - an internal computerized inspection device; 49CFR192 Subpart O – "Gas Transmission Pipeline Integrity Management" starting at 192.901.
- Installing cathodic protection on the pipeline which, along with the pipe's protective coating, is designed to prevent corrosion. 49CFR192.455 "External corrosion control: Buried or submerged pipelines installed after July 31, 1971."

In accordance with federal law, Williams will install aboveground pipeline markers to alert the public of the presence of one or more pipelines within an easement. These markers, which contain the name of the pipeline operator and emergency contact information, are usually located near road, rail, fence, water crossings, and curbs.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 16

Category: Non-governmental Organization

Response: Under the Natural Gas Act, the Federal Energy Regulatory Commission (FERC) has jurisdiction over the transportation and sale of natural gas in the United States and the companies engaged in those activities. The proposed project will not involve exporting natural gas.

Commenter: Pacific Rainforest Wildlife Guardians, Comment No. 17

Category: Non-governmental Organization

Response: All natural gas transported on the Northwest Pipeline system must adhere to strict gas quality requirements as outline in Section 3 of the Northwest Pipeline LLC's FERC Gas Tariff. The tariff requirements state the gas shall contain no more than one-quarter grain of hydrogen sulfide per 100 cubic feet.

Commenter: Northwest Citizen Science Initiative, Comment No. 5

Category: Non-governmental Organization

Response: The commenter provides a statement about tort law. Analysis of how tort theories could apply to a possible incident associated with the facility is speculative and beyond the scope of the EIS.

Commenter: William Brake #5, Comment No. 8

Category: Citizen

Response: Ownership of the Williams Company is outside the scope of SEPA review. The proposed project is not dependent on the Washington Expansion Project. Northwest Pipeline withdrew the Washington Expansion Project 7(c) certificate application CP13-507 pending before the Federal Energy Regulatory Commission on 9 May 2016.

Commenter: William Brake #5, Comment No. 15

Category: Citizen

Response: The Port of Kalama does not collect property taxes. Therefore, costs of the well and other needs of the facility will be paid from other sources of revenue.

Commenter: William Brake #5, Comment No. 19

Category: Citizen

Response: Comment noted. Rate surcharges based on power source are beyond the scope of this project review and beyond the powers of the Port or County to impose.

Commenter: William Brake #5, Comment No. 24

Category: Citizen

Response: See response to Tacoma Audubon Society Comment No. 4 regarding construction of the facility (see page 17-91).

Commenter: William Brake #5, Comment No. 50

Category: Citizen

Response: The SEPA responsible officials are responsible for undertaking the procedural responsibilities for the environmental review (See WAC 197-11-788). In this role, they are not responsible for making decisions on government actions, including permitting, for the project. The County responsible official is also responsible, under a separate authority, for certain County permitting actions. Other than this one exception, other appointed or elected agency personnel, from a number of agencies and jurisdictions outlined in Table 1.3 found in section 1.6 are responsible for reviewing and making permitting and other decisions for the project.

Commenter: William Brake #5, Comment No. 52

Category: Citizen

Response: Each project must be reviewed on its own merits. The DEIS does not evaluate prior proposals for the same project site that are unrelated to the proposal.

Commenter: William Brake #5, Comment No. 53

Category: Citizen

Response: Comment noted. These comments are unrelated to the environmental impact analysis contained in the DEIS.

Commenter: William Brake #5, Comment No. 54

Category: Citizen

Response: See response to Pacific Rainforest Wildlife Guardians Comment No. 17 regarding natural gas quality (see page 17-112)

Commenter: Lloyd Groat #1, Comment No. 1

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Lloyd Groat #1, Comment No. 2

Category: Citizen

Response: See response to Sharon Rickman Comment No. 3 regarding impacts to the cemetery (see page 17-123).

Commenter: Rus Higley, Comment No. 3

Category: Citizen

Response: While SEPA rules do not preclude analysis of potential impacts outside the state of Washington, they do not require that speculative consequences or end uses be included in an EIS (see WAC 197- (4)(a) and 197-11-782). As noted by the commenter, methanol is a commodity and can be used for a wide variety of uses, including making of olefins, which the project proponents have indicated as the likely end use of the methanol. Analyzing every potential end use of methanol, including olefin production, subsequent plastic production, product production from said plastics and then end use of said product would require significant assumptions and would result in a speculative analysis that would not provide meaningful information to the decision decision-makers on the effects of the project.

Commenter: Don and Marla Imsland, Comment No. 2

Category: Citizen

Response: Comment noted, The SEPA process evaluates the potential environmental impacts of the proposed project, including connected actions, such as the pipeline construction. Neither SEPA nor applicable permit processes distinguish between foreign or U.S. ownership of applicants. NWIW and its parent company, Pan Pacific Energy, are U.S. corporations.

Commenter: Daryl Linnell #1, Comment No. 6

Category: Citizen

Response: Comment noted. The viability of the project based on energy prices is outside the scope of SEPA review.

Commenter: Susan Powell #1, Comment No. 6

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Christopher Pringer, Comment No. 1

Category: Citizen

Response: Comment noted.

Commenter: Matt Ramsay, Comment No. 3

Category: Citizen

Response: Improvements planned by the Bonneville Power Administration (BPA) known as the I-5 Corridor Reinforcement Project are not related to the methanol facility and were initiated many years before this project. More information on the I-5 Corridor Reinforcement Project is available from the BPA at https://www.bpa.gov/Projects/Projects/I-5/Pages/Project-overview.aspx.

Commenter: Claudia Riedener, Comment No. 6

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Claudia Riedener, Comment No. 9

Category: Citizen

Response: The United State Centers for Disease Control has indicated that industrial cooling towers can provide an appropriate environment for the growth of Legionella bacteria if proper maintenance and disinfection does not occur. As discussed in Appendix A to the EIS, the cooling tower water will be treated with sodium hypochlorite, which is effective against Legionella bacteria.

Commenter: Claudia Riedener, Comment No. 10

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Claudia Riedener, Comment No. 14

Category: Citizen

Response: See response to Tacoma Audubon Society Comment No. 4 regarding construction of the facility (see page 17-91).

Commenter: Claudia Riedener, Comment No. 15

Category: Citizen

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Claudia Riedener, Comment No. 16

Category: Citizen

Response: The lease between the Port and NWIW requires NWIW to indemnify the Port for personal injury or property damage claims that arise out of its use of the site or violation of law. These indemnities are not limited by the amount of insurance carried by NWIW; so the Port will have recourse against NWIW for losses not covered by insurance.

Commenter: Claudia Riedener, Comment No. 19

Category: Citizen

Response: The project will be required to comply with all applicable regulations and programs regarding hazards substances and releases to the environment.

Commenter: Claudia Riedener, Comment No. 26

Category: Citizen

Response: See response to Columbia Riverkeeper Comment No. 5 regarding scope of SEPA analysis (see page 17-111).

Commenter: Claudia Riedener, Comment No. 28

Category: Citizen

Response: NWIW will be required to comply with all laws for occupational safety and health. These laws will require personal protection equipment as appropriate for each job. NWIW will be responsible for all costs of complying with these requirements, including medical testing if required.

See standard response No. 13 regarding insurance requirements.

Commenter: Bill Spencer, Comment No. 2

Category: Citizen

Response: There are multiple different federal, state, and local requirements for inspection of the project during construction and operation. An exhaustive list is outside the scope of SEPA review. During construction, the primary inspection requirement is from the applicable building, plumbing, mechanical, fire safety, and other life-safety codes established by the state of Washing (RCW 19.27) and adopted by Cowlitz County (Chapter 16.05 Cowlitz County Code). Inspections are either completed by qualified County Building Department Staff or by special inspectors employed on behalf of the project proponent with qualifications for each specialty. During operations, inspections could be conducted by Cowlitz County or the fire district as required by life-safety codes or by other federal and state agency staff per specific regulations. These include, but are not limited to, the USCG inspection of marine terminal security measures per the Transportation Security Act of 2002 and annual inspections by the fire marshal per the International Fire Code.

Commenter: John Svensson, Comment No. 3

Category: Citizen

Response: Vessels operating in the United States, regardless of their country of origin, are required by federal law (42 USC Section 9608)(CERCLA) to maintain evidence of financial responsibility in the event of a release.

Commenter: Donald Watt #1, Comment No. 1

Category: Citizen

Response: The proposal does not include any additional facilities other than those described in Chapter 2. Should other facilities be proposed in the area or the region, they will require independent appropriate review and permitting based on the specific aspects and locations of those proposals.

Commenter: Scott Daly - Written, Comment No. 2

Category: Public Hearing

Response: Comment noted.

Commenter: Scott Daly - Written, Comment No. 7

Category: Public Hearing

Response: Comment noted.

Commenter: Pat Freiberg - Written, Comment No. 1

Category: Public Hearing

Response: See standard response No. 13 regarding responsibility, liability and costs.

Commenter: Tiffany Gray - Written, Comment No. 2

Category: Public Hearing

Response: Comment noted.

Commenter: Bruce Haeft, Comment No. 1

Category: Public Hearing

Response: See standard response No. 13 regarding responsibility, liability and cost.

Commenter: Monika Jovwsma, Comment No. 3

Category: Public Hearing

Response: See standard response No. 13 regarding responsibility, liability and cost.

Commenter: Ellen Leatham - Written, Comment No. 1

Category: Public Hearing

Response: Comment noted. **S**ee standard response No. 13. SEPA is not the appropriate venue to determine appropriate measures for future cleanup activities as it is speculative.

Commenter: Dave McDevitt - Written, Comment No. 2

Category: Public Hearing

Response: See standard response No. 10 in regards to fracking.

Commenter: Reg Namara, Comment No. 1

Category: Public Hearing

Response: A health impact assessment is not required under SEPA. Impacts to the various elements are addressed in the EIS. Air quality impacts and GHG emissions are addressed in Chapter 4, water quality impacts in Chapter 5, and noise impacts in Chapter 14.

Commenter: Kathleen Patton, Comment No. 1

Category: Public Hearing

Response: See response to Columbia Riverkeeper Comment No. 5 regarding scope of SEPA analysis (see page 17-111).

Commenter: James Plunkett - Written, Comment No. 1

Category: Public Hearing

Response: See response to Columbia Riverkeeper Comment No. 30 regarding global emissions related to climate change (see page 17-26).

Commenter: Nate Stokes, Comment No. 1

Category: Public Hearing

Response: Comment noted.

Commenter: John Svensson, Comment No. 3

Category: Public Hearing

Response: Comment noted. All facility components will be subject to inspections as required by various construction and building codes regardless of their origin.

Commenter: John Svensson, Comment No. 4

Category: Public Hearing

Response: Comment noted.

Commenter: Todd Vertea, Comment No. 1

Category: Public Hearing

Response: See standard response No. 13 regarding responsibility, liability, and costs.

Commenter: Jan Zuckerman, Comment No. 1

Category: Public Hearing

Response: Comment noted.

17.20 Response to Comments on Appendix B

Commenter: Washington Department of Fish and Wildlife, Comment No. 14

Category: Agency and Tribal Government

Response: Comment noted.

Commenter: Columbia Riverkeeper, Comment No. 27

Category: Non-governmental Organization

Response: In its EA (included as Appendix B to the EIS), FERC made several determinations regarding environmental avoidance, minimization, and mitigation. These determinations are as follows:

"To avoid and minimize potential impacts on waterbodies, Northwest would implement numerous measures as described in its ECRP, project-specific Drilling Fluid Contingency Plan for Horizontal Directional Drilling Operations, Spill Plan, Unanticipated Discovery of Contamination Plan, and it's Water Quality Monitoring Plan. We have reviewed these plans and determined that they are appropriate for minimizing impacts. The measures identified in these plans include restoring pre-construction contours; using temporary and permanent erosion control devices; sampling of stormwater discharges to waterbodies for parameters such as turbidity and pH, as applicable; monitoring HDD operations and the drill path; conducting refueling activities at least 100 feet from any waterway or wetland; secondary containment of stored fuel and lubricants, routine inspection of materials and containers, and pre-positioning of spill response equipment. Additionally, Northwest has committed to performing dry open cut crossings if water is present during the permitted WDFW-designated in-water construction windows, which are August 1 to August 15 for Kalama River tributaries, and August 1 to March 31 for Columbia River tributaries.
Furthermore, the likelihood of a frac-out has been adequately minimized and potential impacts resulting from a potential frac-out have been substantially reduced by several factors including:

- completion of an HDD feasibility study which indicated that the HDD could be accomplished successfully;
- the likelihood of a frac-out is greatest within 100 feet of the HDD entry point and 300 feet of the exit point, safely away from waterbodies S-2A6 and S-2A7;
- the HDDs would be performed during the WDFW in-stream construction windows (even though no in-stream disturbance is proposed), further decreasing potential impacts (e.g., turbidity and sedimentation) in the event that a frac-out did occur; and
- stream flows during HDD installation would be expected to be low based on seasonal patterns, further reducing potential impacts and mobilization of drilling mud and/or turbidity plumes if a frac-out did occur." (FERC EA, Section 2.2, pp 36-37)

On this basis, FERC concluded: "Based on the size and characteristics of the waterbodies crossed and the measures Northwest would implement to avoid and minimize impacts on these waterbodies, we conclude that constructing and operating the Project would not significantly impact surface waters." (FERC EA, Section 2.2, p 37, emphasis added)

Regarding the comment about loss of forest vegetation, FERC EA acknowledged, "Approximately 30.7 acres of forest land would be affected during construction and 12.4 acres would be affected by the permanent pipeline easement. Trees and shrubs would be allowed to grow within the temporary construction right-of-way and ATWS or other workspace areas, but the permanent pipeline easement would be maintained in an herbaceous state." (FERC EA Section 4.1, p 49). The 12.4 acres of forested land would be converted to herbaceous vegetation.

Regarding the comment pertaining to affecting wildlife habitat, FERC determined that, "The measures Northwest would implement to minimize impacts on vegetation would also serve to minimize impacts on wildlife, wildlife habitat, and priority habitats, species and areas. Therefore, based on the characteristics of the habitat types crossed, the wildlife species occupying these habitats, Northwest's proposed construction methods, the presence of similar habitats adjacent to and in the vicinity of construction activities, the implementation of impact avoidance and minimization measures and its adherence to our recommendation concerning oak woodlands, we conclude that constructing and operating the Project would not significantly impact wildlife habitats or species." (FERC EA, Section 3.3, p 44).

Regarding the comment on oak woodlands, approximately 0.3 mile of the project alignment crosses an area identified as potential oak woodlands. To assure that the project impacts are minimized, FERC recognizes and requires, prior to construction, Northwest to, "…file with the Secretary of the Commission (Secretary), for review and approval by the Director of the Office of Energy Projects (OEP), an Oak Woodland Impact Minimization Plan. This plan should include the results of Northwest's botanical surveys between MP 2.1 and 2.4 and address the WDFW's management recommendations pertaining to oak woodlands. This plan should also describe the measures Northwest would implement to avoid, minimize, and/or mitigate impacts on oak woodlands, including the reduction of construction workspace through oak woodlands." (FERC EA, Section 3.3, p 44).

In regard to the commentary on forest fragmentation, as the FERC EA notes, all of the forested lands crossed are privately owned and several large parcels have been previously logged. The project area is located in an area where residential properties and roads have already created a fragmented forest habitat.

Commenter: Columbia Riverkeeper, Comment No. 28

Category: Non-governmental Organization

Response: See response to Columbia Riverkeeper Comment No. 27 regarding habitat impacts (see page 17-118).

Regarding the comment that the FERC EA identified potential impacts to species, the EA considered the impacts to be less than significant "…based on the characteristics of the habitat types crossed, the wildlife species occupying these habitats, Northwest's proposed construction methods, the presence of similar habitats adjacent to and in the vicinity of construction activities, the implementation of impact avoidance and minimization measures and its adherence to our recommendation concerning oak woodlands, we conclude that constructing and operating the Project would not significantly impact wildlife habitats or species." (FERC EA, Section 3.3, p 44).

See also response to Columbia Riverkeeper Comment No. 27 regarding habitat fragmentation.

Regarding the comment pertaining to eagles, the FERC EA reported that there are no documented eagle nests within 0.5 mile of the construction area for the pipeline. Regarding temporary impacts to individual eagle foraging, FERC concluded "…this species could forage in the Project area. Impacts on foraging bald eagles and spotted owls would be similar to those described for the other priority species; however, due to the availability of similar habitat nearby and the timing of construction activities, impacts on these species should be minimal." (FERC EA, Section 3.3, p 44).

With regards to terrestrial noise during pile driving, section 6.6.1.1 of the DEIS documents that "Pile-driving noise could potentially cause wildlife at the project site or within the vicinity of the project site, to temporarily avoid the site or vicinity. However, the terrestrial portions of the project site that could experience temporarily elevated terrestrial noise levels provides only marginally suitable habitat for terrestrial species, and most species that could potentially be present are accustomed to the high levels of noise and activity associated with the industrial sites in the vicinity. The terrestrial noise levels generated during pile driving would not exceed any established injury thresholds for any special-status species, and the effect to any special-status species wildlife species present at the site during pile driving would be expected to be limited to temporary avoidance of the site or vicinity."

Impact pile driving associated with the project would be conducted outside of WDFW- and USFWS-recommended management buffers for bald eagle nests (660 feet and 0.5 mile, respectively). Foraging or resting eagles or other terrestrial or avian species may avoid or be temporarily displaced from habitats within the project vicinity during periods of construction noise. However, they would not be expected to be disturbed to a degree that would result in injury or substantial interference with normal breeding, feeding, or sheltering habits, or result in a loss of productivity or nest abandonment.

Commenter: William Brake #1, Comment No. 1

Category: Citizen

Response: Refer to Section 1.1 (Geology/Geologic Hazards/Landslides) of the FERC EA.

Northwest acknowledged, evaluated, and addressed landslide risks in developing its project application materials. According to the last paragraph of Section 1.1 at the top of page 30 of the FERC EA, *"Given the nature of the geologic resources and hazards, and Northwest's impact avoidance, minimization, and mitigation measures, we conclude that potential geologic hazards to the Project and potential impacts on geological resources resulting from the Project would be effectively avoided, managed and minimized."*

Commenter: William Brake #5, Comment No. 25

Category: Citizen

Response: Refer to Section 6.0 (Construction Schedule and Workforce) of the FERC EA. The estimated construction time frame of five months for this project is a duration that provides for the most likely amount of time for successful construction of the pipeline. Five months allows time for mobilizing to the site, clearing timber, grading the construction workspace, trenching, stringing and welding the pipe, lowering the pipe into the trench, testing, backfilling, and restoration.

The proposed project is not dependent on the Washington Expansion Project. Northwest Pipeline withdraw the Washington Expansion Project 7(c) certificate application CP13-507 pending before the Federal Energy Regulatory Commission on 9 May 2016.

Commenter: William Brake #5, Comment No. 47

Category: Citizen

Response: The proposed project is not dependent on the Washington Expansion Project. The Kalama Lateral is necessary to provide natural gas to the proposed methanol plant and is supported by an executed precedent agreement providing for TFL-1 Firm Transportation Service Agreement for 320,000 Dth/d for a period of 25 years on the lateral.

Northwest Pipeline withdraw the Washington Expansion Project 7(c) certificate application CP13-507 pending before the Federal Energy Regulatory Commission on 9 May 2016.

Commenter: Lowell Groat, Comment No. 1

Category: Citizen

Response: Appendix B to the DEIS includes the FERC EA completed for NEPA compliance and used to characterize the impacts of the pipeline project as a connected action. No long-term impacts on the cemetery are anticipated, and there are no direct impacts on portions of the cemetery used for burial purposes. While the proposed pipeline route crosses Cowlitz County Cemetery District #6 property, primarily within the access road, the route does not affect known grave sites.

Commenter: Don and Marla Imsland, Comment No. 1

Category: Citizen

Response: Appendix B identifies 12 different alternative routes that were considered by FERC in evaluating the proposed pipeline. The route was determined by Williams and approved by FERC through the FERC process and was not determined by the Port.

Commenter: Don and Marla Imsland, Comment No. 3

Category: Citizen

Response: Appendix B to the DEIS includes the FERC EA completed for NEPA compliance and used to characterize the impacts of the pipeline project as a connected action. Page 51 addresses potential impacts of the pipeline project on property values and cites two studies that indicate that there are no statistically or economically significant impacts of pipelines on property values. NWIW and its parent company Pan Pacific Energy, are U.S. corporations. The economic benefits of the proposed project for Washington are analyzed in Appendix M.

Commenter: Don and Marla Imsland, Comment No. 4

Category: Citizen

Response: On 11 December 2014, FERC issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Kalama Lateral Project, and Request for Comments on Environmental Issues* (NOI). On 13 January 2015, the NOI was supplemented and the scoping period extended. The NOI was published in the Federal Register and was mailed to approximately 300 interested parties, including federal, state, and local officials; agency representatives; affected landowners; environmental and public interest groups;

potentially interested Indian tribes; and local libraries and newspapers. As described previously, the 2012 project was also scoped. A NOI was issued for the 2012 project on 22 June 2012 and a scoping meeting was held in Kelso, Washington, on 10 July 2012. In each NOI, written comments were requested from the public on specific concerns about the project or issues that should be considered during the preparation of the EA (FERC EA, Section 3, pp 2-3).

Commenter: Daryl Linnell #1, Comment No. 1

Category: Citizen

Response: Appendix B to the DEIS includes the FERC EA completed for NEPA compliance and used to characterize the impacts of the pipeline project as a connected action. Page 51 addresses potential impacts of the pipeline project on property values and cites two studies that indicate that there are no statistically or economically significant impacts of pipelines on property values. If the pipeline project requires acquisition or use of property not owned by the pipeline company necessary rights will be obtained and compensation paid.

Commenter: Daryl Linnell #1, Comment No. 8

Category: Citizen

Response: Northwest acknowledged, evaluated, and addressed the landslide issue in developing its project application materials. According to the last paragraph of Section 1.1 at the top of page 30 of the FERC EA, *"Given the nature of the geologic resources and hazards, and Northwest's impact avoidance, minimization, and mitigation measures, we conclude that potential geologic hazards to the Project and potential impacts on geological resources resulting from the Project would be effectively avoided, managed and minimized."*

Commenter: Tina Linnell, Comment No. 1

Category: Citizen

Response: There have been numerous industry and non-industry studies completed regarding pipeline easement impacts on property values. The most recent was prepared by INGAA in 2016, "Pipeline Impact to Property Value and Property Insurability." The consensus has consistently been pipelines have no conclusive impact on property values. To the extent that easements for the pipeline would impact the use of the property, the land would be compensated as required by the Gas Act.

Commenter: Sharon Rickman, Comment No. 3

Category: Citizen

Response: The proposed pipeline is under the authority of the FERC. FERC independently considered the environmental impacts of the proposed pipeline under the National Environmental Policy Act (see the FERC EA in Appendix B of the DEIS). While FERC has authority over the decision to construction the pipeline, impacts from construction and operation of the pipeline were considered as a connected action under SEPA. The environmental impacts of the pipeline were considered in the DEIS in evaluating the overall impacts of the project (see DEIS sections 3.4.1.3, 4.4.5, 5.5.2, 6.6.3, 7.4.2, 8.5, 9.4.2, 10.5.2, 11.5.2, 12.5.4, 13.5.2, and 14.4.4).

In regards to the Cemetery, Appendix B indicates that no long-term impacts on the cemetery are anticipated, and there are no direct impacts on portions of the cemetery used for burial

purposes. While the proposed pipeline route crosses Cowlitz County Cemetery District #6 property, primarily within the access road, the route does not affect known grave sites.

Commenter: Bill Spencer #1, Comment No. 5

Category: Citizen

Response: Impacts of the proposed pipeline project are discussed in various sections of the DEIS. The applicability of the use of eminent domain is outside the scope of the SEPA review. NWIW does not have any authority to use eminent domain. Northwest Pipeline, LLC has limited rights to use eminent domain to acquire pipeline right of way as authorized by the Natural Gas Act (15 U.S.C. §§ 717 to 717Z), which specifically provides that a natural gas company has the power of eminent domain to construct natural gas pipelines and facilities when they receive a certificate of public convenience and necessity from FERC and cannot acquire by the necessary right-of-way by contract. The commenter may wish to contact FERC staff for more information.

Commenter: Bill Spencer #2, Comment No. 1

Category: Citizen

Response: See response to Sharon Rickman Comment No. 3 regarding project approval authority (see page 17-123).

Commenter: Cynthia Svensson #1, Comment No. 17

Category: Citizen

Response: See response to Petition Letter #1 Comment No. 3 regarding pipeline regulations and standards (see page 17-124).

Commenter: Bradley Thompson, Comment No. 10

Category: Citizen

Response: See response to Sharon Rickman Comment No. 3 regarding impacts to the cemetery (see page 17-123).

Commenter: Tiffany Gray - Written, Comment No. 1

Category: Public Hearing

Response: Appendix B addresses wetland impacts associated with the pipeline project. The proposed pipeline project will result in construction impacts to 4 acres of wetlands and permanent impacts to approximately 1/10 of an acre of wetlands.

Commenter: Susan Powell, Comment No. 1

Category: Public Hearing

Response: Section 1.1 of Appendix B to the EIS discusses potential impacts to the rock quarry noted by the commenter. The pipeline would cross approximately 0.4 mile of the permitted mine area and would be located approximately 400 feet north of the active portion of the 100-acre site. Construction of the pipeline could limit or reduce the production of future mineral resources. Mining activities would be prohibited within the permanent right-of-way which would total approximately 2.4 acres. However, the pipeline blasting safety zone would extend a distance of 200 feet on either side of the project centerline thereby limiting blasting activity

within a 17.1-acre portion of the permitted mine area. Williams notes that any business loss derived by the installation of the pipeline is compensable to the quarry owner.

Commenter: Dan Serres, Comment No. 1

Category: Public Hearing

Response: FERC prepared the EA for the pipeline component of the project in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508), and the Commission's implementing regulations under 18 CFR Part 380. Under the Natural Gas Act, FERC's primary responsibility rests with the review and decision regarding authorization of jurisdictional facilities along with analyzing effects associated with any interrelated projects and cumulative impacts associated with any other reasonably foreseeable cumulative impacts associated with other proposed projects in the vicinity. FERC complied with their responsibility and noted that additional environmental analyses would be performed under Washington's State Environmental Policy Act (SEPA) for the non-jurisdictional Kalama Manufacturing and Marine Export facility at the Port of Kalama.

The DEIS for the Kalama Manufacturing and Marine Export Facility identified the Northwest Pipeline, LLC Kalama Project and the FERC EA prepared for that project component. The DEIS incorporated both the FERC EA and Northwest's Application "Resource Reports" to FERC by reference (see DEIS sections 1.1.2. and 1.1.5.1 and resource specific incorporation throughout the DEIS). Washington regulations (WAC 197-11-600) identify the use of NEPA documents by SEPA lead agencies as appropriate and acceptable.

Commenter: Petition Letter #1, Comment No. 3

Category: Petition

Response: See response to Tina Linnell Comment No. 1 regarding property values.

Northwest Pipeline is regulated by the U.S. Department of Transportation's Office of Pipeline Safety, which imposes a broad range of construction and operations standards. Northwest has its own high standards for pipeline design, material specifications, construction, maintenance, and testing. These standards, which must be met before a pipeline, can be placed into service, include

- Protective coatings and other corrosion control techniques are used to help prevent corrosion of the pipeline
- During construction of the pipeline, welds linking the joints of pipe are X-rayed to verify their integrity
- Once the pipeline is in the ground and before it is placed into service, it is pressure-tested with water or inert gas in excess of its operating pressure to verify that it is fit for service
- A system called cathodic protection will be installed, which, along with the pipe's protective coating, is designed to prevent corrosion
- To help protect against third-party damage, aboveground pipeline markers are usually placed near road, rail, fence, and water crossings, regular inspections by motor vehicles and low-flying patrol aircraft also keep a watchful eye on the pipeline route

- The pipeline will become part of the nationwide One-Call system
- Pipelines undergo periodic maintenance inspections, including leak surveys and valve and safety device inspections; an internal computerized inspection device known as a "smart pig" is also used to periodically examine the pipeline's condition
- Local pipeline operation employees also meet with local emergency response officials, excavation contractors, landowners, and local community leaders to educate them about pipeline operation and emergency response procedures
- The pipeline is continuously monitored 24 hours a day, 365 days a year through its Gas Control Center

17.21 References

The responses to the DEIS comments reference the following types of documents.

- Documents submitted as exhibits by those providing oral comments at the public hearing.
- Documents contained in the appendices of the FEIS.
- Other information sources as listed below.

17.21.1 Standard Responses

Currie, J., L. Davis, M. Greenstone, and R. Walker. 2015. Environmental Health Risks and Housing Values: Evidence from 1,600 Toxic Plant Openings and Closings. American Economic Review, 105(2): 678-709.

ECONorthwest. 2016. Letter to NW Innovation Works regarding review of Environmental Health Risks and Housing Values: Evidence from 1,600 Toxic Plant Openings and Closings (2015). June 29, 2016.

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17.21.2 Chapter 1

No references.

17.21.3 Chapter 2

Cowlitz PUD. 2014 Integrated Resource Plan. Available at: http://www.cowlitzpud.org/pdf/Cowlitz%20PUD%202014%20IRP,%20FINAL%20Aug 26,2014.pdf. August 26, 2014.

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17.21.4 Chapter 3

Coast & Harbor Engineering. 2016. Technical Memorandum: Port of Kalama New North Port Terminal Response to Corps' Questions on CHE's Study Report "Kalama Manufacturing and Marine Export Facility Possible Impacts on Federal Navigation Channel," August 2015. February 1, 2016.

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Walsh, T.J., M.A. Korosec, W.M. Phillips, R.L. Logan, and H.W. Schasse. 1999. Geologic Map of the Washington – southwest quadrant (digital edition). U.S. Geological Survey. Open File Report 99-382, v. 1.0.

17.21.5 Chapter 4

Washington State Department of Ecology (Ecology). 2011. Guidance for Ecology, including Greenhouse Gas Emissions in SEPA Reviews. June 3, 2011.

17.21.6 Chapter 5

Clark, S.M. and Snyder, G.R. 1969. Timing and Extent of a Flow Reversal in the Lower Columbia River. Limnol. Oceanogr. 14:960-965.

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Washington State Department of Ecology (Ecology). 2002. Report of Examination, Groundwater Application No. G2-30036. Olympia, WA.

17.21.7 Chapter 6

California Department of Transportation (Caltrans). 2012. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. Updated October 2012.

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17.21.8 Chapter 7

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