



Joint Permit Application

This is a joint application, and must be sent to both agencies, who administer separate permit programs.
Alternative forms of permit applications may be acceptable; contact the Corps and DSL for more information.

Date Stamp

	U.S. Army Corps of Engineers Portland District		Oregon Department of State Lands
Corps Action ID Number		DSL Number	

(1) APPLICANT AND LANDOWNER CONTACT INFORMATION

	Applicant	Property Owner (if different)	Authorized Agent (if applicable) <input checked="" type="checkbox"/> Consultant <input type="checkbox"/> Contractor
Contact Name	Derik Vowels		Casey Storey
Business Name	Jordan Cove Energy Project, L.P.	Fort Chicago Holdings II, LLC / APCO Coos Properties, LLC	David Evans and Associates, Inc.
Mailing Address 1	111 SW 5 th Ave, Ste. 1100	125 Central Avenue, Suite 380, Coos Bay , OR 97420	2100 SW River Parkway
Mailing Address 2		APCO Coos Properties, LLC. PO Box 300	
City, State, Zip	Portland, OR 97204	Coos Bay , OR 97420	Portland, OR 97201
Business Phone	971-940-7800		503-499-0480
Cell Phone			
Fax			
Email	dvowels@pembina.com		cast@deainc.com

(2) PROJECT INFORMATION

A. Provide the project location.

Project Name Jordan Cove Energy Project	Tax Lot # See Figures 1.2-1 to 10	Latitude & Longitude* Latitude: 43.425346 (approximate) Longitude: 124.16767 (approximate)	
Project Address / Location South of Trans Pacific Parkway; West of US Highway 101. See Figure 1.1	City (nearest) North Bend	County Coos	
Township 25S	Range 13W	Section Various	Quarter/Quarter Various
Brief Directions to the Site West on Trans Pacific Parkway from US Highway 101 to Jordan Cove Road			
B. What types of waterbodies or wetlands are present in your project area? (Check all that apply.)			
<input type="checkbox"/> River / Stream	<input checked="" type="checkbox"/> Non-Tidal Wetland	<input type="checkbox"/> Lake / Reservoir / Pond	
<input checked="" type="checkbox"/> Estuary or Tidal Wetland	<input type="checkbox"/> Other	<input type="checkbox"/> Pacific Ocean	
Waterbody or Wetland Name** Coos Bay	River Mile 7.3	6th Field HUC Name	6th Field HUC (12 digits)

* In decimal format (e.g., 44.9399, -123.0283)

** If there is no official name for the wetland or waterway, create a unique name (such as "Wetland 1" or "Tributary A").

(2) PROJECT INFORMATION**C. Indicate the project category. (Check all that apply.)**

- | | | |
|---|---|--|
| <input type="checkbox"/> Commercial Development | <input type="checkbox"/> Industrial Development | <input type="checkbox"/> Residential Development |
| <input type="checkbox"/> Institutional Development | <input type="checkbox"/> Agricultural | <input type="checkbox"/> Recreational |
| <input checked="" type="checkbox"/> Transportation | <input type="checkbox"/> Restoration | <input type="checkbox"/> Bank Stabilization |
| <input checked="" type="checkbox"/> Dredging | <input type="checkbox"/> Utility lines | <input type="checkbox"/> Survey or Sampling |
| <input checked="" type="checkbox"/> In- or Over-Water Structure | <input type="checkbox"/> Maintenance | <input type="checkbox"/> Other: |

(3) PROJECT PURPOSE AND NEED**Provide a statement of the purpose and need for the overall project.**

The entities constructing the project are Jordan Cove Energy Project, LP and Pacific Connector Gas Pipeline L.P. Both together are referred to as Jordan Cove. JCEP is constructing a liquefied natural gas terminal to be located on the North Spit of Coos Bay (LNG Terminal) and PCGP is constructing a pipeline from the intersection of the GTN and Ruby pipelines to Coos Bay (the Pipeline). The LNG Terminal and the Pipeline are together referred to as the Project

The Project is a market-driven response to the burgeoning and abundant natural gas supply in the U.S. Rocky Mountains and Western Canada markets, and the growth of international demand, particularly in Asia. The overall Project purpose and need is to construct a natural gas liquefaction and deep-water export terminal capable of receiving and loading ocean-going Liquefied Natural Gas (LNG) carriers, in order to export natural gas derived from a point near the intersections of the GTN Pipeline system and Ruby Pipeline system.

The pipeline origin near the intersection of the GTN Pipeline system and Ruby Pipeline system is strategically located to give reliable and secure supplies of natural gas from two natural gas supply basins – one in the U.S. Rocky Mountains (through the existing Ruby Pipeline) and a second in western Canada (through the existing GTN Pipeline) – capable of delivering volumes of at least 1,200,000 dekatherms (a unit of energy used to measure natural gas, approximately equal to one thousand cubic feet) per day (dth/d) in order to support export of 7.8 million tonnes per annum (mtpa) of LNG.

The LNG Terminal, proposed to be located on the bay side of the North Spit of Coos Bay, would support receipt, liquefaction, storage, and loading of LNG onto ocean-going LNG carriers for delivery to export markets giving those supplies an efficient and cost-effective outlet. The Pipeline is needed to transport natural gas from near the intersection of the GTN Pipeline system and Ruby Pipeline system to the LNG Terminal. The Navigation Reliability Improvements (NRIs) enhancements that are planned as part of the Project will allow for transit of LNG vessels of similar overall dimensions to those listed in the July 1, 2008 U.S. Coast Guard (USCG) Waterway Suitability Report and as approved in the USCG Letter of Recommendation dated 10 May 2018., but under a broader range of weather conditions, specifically higher wind speeds. This allows for greater navigational efficiency and reliability to enable JCEP to export the full capacity of the optimized design production of 7.8 million metric tonnes per annum from the LNG Terminal. Although the depth of the FNC is suitable for vessel transit as determined by the USCG Waterway Suitability Assessment, without the NRIs, the LNG facility would not be able to optimize its production capacity and export 7.8 mtpa of LNG and therefore would not fully satisfy the Project purpose. JCEP conducted an extensive evaluation of the existing channel geometry with the Coos Bay Pilots Association (Pilots) and LNG navigation experts from JCEP's Asian customers during 2015 at the simulator located at the California Maritime Academy (Schisler 2015). Based on these evaluations, it was determined that without the NRIs, the number and duration of LNG carrier transits would be limited by the Pilots' environmental condition requirements for transit, such as wind speed, channel currents and fog. JCEP modeled the LNG Terminal, LNG production, and transportation throughput, both with and without the NRIs in place. Modeling showed that without the NRIs in place, the greater delays imposed by the Pilots on LNG ship transits of the channel due to environmental conditions would result in a potential annual loss of production at the facility equal to about 38,000 tonnes of LNG. This would equate to a direct loss of revenue of about \$8.0 million per year for the facility.

(3) PROJECT PURPOSE AND NEED**Reference:**

Schisler, V. 2015. LNG Carrier Transit and Maneuvering Simulation Report. Vallejo, CA, JCLNG Doc Control # J1-000-MAR-RPT-KSE-00003-00

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

A. Describe the existing physical and biological characteristics of each wetland or waterway. Reference the wetland and waters delineation report if one is available. Include the list of items provided in the instructions.

1. INTRODUCTION

For the sake of providing clarity, this introduction includes a limited summary of Project-specific nomenclature used throughout this Joint Permit Application (JPA). Project components are described in detail in Box 6 (Attachment A.1) of this Removal-Fill Permit application.

Jordan Cove Energy Project, LP (JCEP) – project proponent to construct the LNG Terminal.

Pacific Connector Gas Pipeline, LP (PCGP) – project proponent to construct the natural gas transmission pipeline (the “Pipeline”).

LNG Terminal – the Liquefied Natural Gas (LNG) Terminal includes Ingram Yard, the Access and Utility Corridor, and the South Dunes site. The LNG Terminal includes all building infrastructure, machinery, utilities, and other components associated with the receipt, liquefaction, storage, and loading of LNG onto ocean-going LNG carriers for export.

JCEP Project Area – the limits of disturbance associated with all permanent and temporary impacts resulting from construction of the LNG Terminal, including temporary construction sites and mitigation sites.

JCEP Project Vicinity – the JCEP Project Area and the general area beyond, as shown in Figure 1.1.

Ingram Yard – the portion of the LNG Terminal site that will house permanent facilities, including LNG tanks and liquefaction equipment.

Access Channel – the in-water area to be dredged that will provide LNG vessel access from the Federal Navigation Channel (FNC) to the marine slip. The area will also include a material off-loading facility (MOF) and temporary materials barge berth.

Access and Utility Corridor – a corridor connecting Ingram Yard and the South Dunes site, which will provide temporary construction and permanent access roads and facilities, and will include the Fire Department Facility, underground utilities, and gas feed to the LNG Terminal.

South Dunes Site - the portion of the LNG Terminal site that will house temporary construction and permanent facilities including a Workforce Housing Facility, metering station, administrative building, and the Southwest Oregon Regional Safety Center (SORSC), which will provide emergency response services for the facility and the southern Oregon region.

Trans Pacific Parkway and U.S. Highway 101 (US-101) Intersection Widening – the asymmetrical widening of Trans Pacific Parkway to the north and US-101 to the west to provide safe ingress/egress for construction traffic, by creating a left-turn lane from Trans Pacific Parkway onto northbound US-101, and a right-turn lane from US-101 onto Trans Pacific Parkway.

APCO Sites 1 and 2 – two vacant sites on North Point, separated by a mudflat, that will be used for dredge material disposal and construction material laydown.

Temporary Construction Sites – additional sites outside of the immediate project construction footprint, which will provide space for construction staging, temporary equipment laydown, and employee park & rides. These areas include the Port Laydown site, Roseburg, Boxcar Hill, Myrtlewood Park & Ride, and APCO Site.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

Meteorological Station - a permanent facility consisting of a tower located on the west side of the lagoon on the North Spit, used to measure wind speed, direction, and other weather data to provide weather information to the LNG Terminal facility and to support ship navigation.

Kentuck Project Site – approximately 100-acre proposed mitigation and habitat restoration site to compensate for impacts to wetlands.

Pile Dike Rock Apron – A rock apron has been proposed immediately west of the Access Channel to arrest slope migration, or equilibration, before it can progress to a condition that could potentially negatively impact Pile Dike 7.3. The rock apron design would require the placement of angular stone over an area 50-feet wide by 1,100 feet long.

Eelgrass Mitigation Site – approximately 9.3-acre proposed mitigation site for unavoidable eelgrass impacts associated with dredging of the Access Channel.

HMT –For the purpose of Oregon State Removal-Fill Act compliance, state jurisdiction extends to the Highest Measured Tide (HMT). JCEP has received concurrence from the Oregon Department of State Lands (DSL) establishing HMT at elevation 10.26 feet North American Vertical Datum of 1988 (NAVD 88).

2. WETLANDS

Historically, wetlands in the JCEP Project Vicinity consisted of interdunal freshwater wetlands and tidal salt marsh. However, considerable development and land alteration have occurred in much of the proposed JCEP Project Area over the past century or so. Current-day freshwater wetlands being impacted by the proposed LNG Terminal consist of a combination of remnant wetlands surrounded by adjacent fill material and new wetlands that formed on top of fill.

Wetland delineations were conducted throughout the JCEP Project Area in February and March of 2013 and in June and December of 2016. Additional wetland delineations were conducted at the temporary construction sites during 2017.

Table 4.1, below, summarizes the wetland delineations conducted within the JCEP Project Area and concurrences received from the DSL to date. The concurrences received to date are provided in Attachments C.1 to C.8. The wetland delineation reports and wetland determination technical memos detailing the location, hydrology, and dominant vegetation species for wetlands throughout the JCEP Project Area, where concurrences have not yet been granted, are provided in Attachment C.9 to C.13. Figures 4.1-1 to 4.1-7 show delineated wetlands within the JCEP Project Vicinity. Wetland impact quantities are provided in Table 6-1. Functional assessments of these wetlands are included in the Compensatory Wetland Mitigation Plan (CWMP), Attachment I. Wetlands throughout the various portions of the JCEP Project Area are summarized in the following section.

Ingram Yard

Tidal wetlands are generally lacking at the slip location and nearby shoreline. They occur within the Henderson Property located to the west of Ingram Yard, but this is outside of the JCEP Project Area and will not be impacted. Tidal wetlands to be impacted by the Project at Ingram Yard consist of limited areas of salt marsh that transition to a relatively narrow bench of intertidal and shallow subtidal mudflat that drops off abruptly where it meets the FNC. The hydrogeomorphic (HGM) class of wetlands to be impacted is “estuarine fringe,” which extends down to a depth of 2 meters (6.6 feet) or approximately mean daily lower tide. No HGM class is provided for resources below the 2-meter depth. Cowardin classes of site resources include estuarine, intertidal, unconsolidated shore, regularly flooded (E2USN), and estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL).

Most of the freshwater wetlands on upland areas of Ingram Yard are of the depressional HGM class, with hydrology primarily driven by the regional groundwater table. Based on the Cowardin classification system, these wetlands are the following classes: PEMA (palustrine emergent), PEMF (palustrine forested), and PSS and PSSC (palustrine scrub-shrub). Vegetation types include forested, scrub-shrub, and herbaceous communities. Plant communities are dominated by native species, with varying amounts of non-native species present.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA**Access and Utility Corridor**

Freshwater emergent wetlands identified within the Access and Utility Corridor are characterized as Cowardin class PSSC, PFOC, and PEMF. Similar to the wetlands at Ingram Yard, the HGM class of these wetlands is depressional, with hydrology primarily driven by the regional groundwater table. Vegetation consists of forested, scrub-shrub, and herbaceous plant communities.

South Dunes Site

Tidal wetlands at the South Dunes site are located along the eastern and western shoreline of Jordan Cove (the water body) and at the southeastern tip of the South Dunes site. Wetlands adjacent to Jordan Cove are classified as estuarine intertidal emergent (i.e., salt marsh) based on the Cowardin system. These features are classified as estuarine wetlands based on the HGM system. Wetlands on the southeastern tip of the site consist of tidal marsh, as noted in the Wetlands J & H Technical Memo (Attachment C.13)

Freshwater wetlands in upland areas of the South Dunes site are classified as palustrine aquatic bed (PABH), palustrine emergent (PEM and PEMA), and palustrine scrub-shrub (PSS). These features are classified as depressional based on the HGM system, and hydrology is primarily driven by the regional groundwater table. Vegetation is characterized by scrub-shrub and herbaceous communities, and the presence of non-native and invasive species varies by wetland. As detailed in Attachment C.1, wetlands F and G as well as wetlands I (south) and N are non-jurisdictional as determined by DSL, and therefore not subject to state Removal-Fill Law. An additional freshwater wetland, wetland K, occurs on the eastern side of the South Dunes site – east of the railroad and west of Coos Bay. Wetland K is a freshwater wetland dominated by PFO/PSS and PEM plant communities. It is also a depressional wetland, with the main source of hydrology provided by a seasonally high water table. Wetland K is presumed jurisdictional by DSL, pending a jurisdictional determination by the agency.

APCO Sites 1 and 2

Tidal and freshwater wetlands at APCO Sites 1 and 2 mostly occur outside of the JCEP Project Area, and therefore are outside the wetland delineation study boundary for these sites. The source of wetland hydrology at delineated wetlands is primarily a function of either tidal exchange with Coos Bay (in tidal wetlands) or precipitation (in freshwater wetlands).

Tidal wetlands between APCO Site 1 and APCO Site 2 are classified as estuarine intertidal emergent (i.e., salt marsh) based on the Cowardin system. These features would be classified as estuarine wetlands based on the HGM system. These wetlands transition to intertidal mudflats.

Freshwater wetlands on the west, north, and east sides of the sites are classified as palustrine scrub-shrub wetlands based on the Cowardin system and as slope wetlands based on the HGM system. These extend off-site and transition to tidal wetlands. Freshwater wetlands in upland, central portions of the site are characterized as palustrine scrub-shrub wetlands based on the Cowardin system and as depressional wetlands based on the HGM system.

A wetland survey performed in July 2017 along the north shore of APCO Site 2 confirmed that no wetlands are present within the proposed corridor where the temporary dredge line will be placed, see Attachment C.12.

Kentuck Project Site

Tidal wetlands which are located along the edge of Coos Bay adjacent to the Kentuck Project site include estuarine intertidal emergent wetlands (i.e., salt marsh) based on the Cowardin system. These features are classified as estuarine wetlands based on the HGM system.

Emergent wetlands at the Kentuck Project site primarily consist of non-native lawn grasses and invasive species, as a result of the site's prior use as a golf course. Some native species are present. Portions of the Kentuck Project site, south of Golf Course Lane, also contain forested wetlands. Hydrology for wetlands at the Kentuck Project site is driven by a seasonally high groundwater table. Wetlands at the Kentuck Project site are classified as PEM and PFO based on the Cowardin system and as slope/flats based on the HGM system.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA**Temporary Construction Sites and Meteorological Station**

Wetland surveys have been conducted at the Boxcar Hill site, the Port Laydown site, Myrtlewood Offsite Park & Ride, the Meteorological Station and access road, and along Trans Pacific Parkway north of the LNG Terminal site. The status of subsequent wetland determination memos and delineation reports are summarized below in Table 4.1.

Wetlands delineated at the Boxcar Hill site are freshwater and classified as palustrine scrub-shrub/emergent (PSS/PEM) according to the Cowardin classification system, and as depressional according to the HGM system. Hydrology is driven by a high groundwater table associated with sandy soils. Vegetation is characterized by shrubs with an emergent understory.

Freshwater wetlands delineated at the Port Laydown site are characterized as palustrine scrub-shrub/emergent (PSS/PEM) according to the Cowardin classification system, and as depressional based on the HGM system. These wetlands are also dominated by shrub vegetation with an emergent understory. Hydrology is derived from groundwater as well as saturation from runoff.

At the Myrtlewood Offsite Park & Ride, wetlands with emergent, scrub-shrub, and forested components are located outside the site, but no wetlands were found within the site boundaries as outlined in Attachment C.11.

Table 4.1. Summary of Wetland Delineations and DSL Concurrences as of 10/31/2018

DSL ID #	Prepared by	Report Title Description	Geographic Coverage	Concurrence/Review Status
WD#2013-0218 (current approval), WD# 2011-0065 (original approval)	DEA	Linerboard/Mill Site	Linerboard/Mill Site (South Dunes)	Concurrence received February 13, 2014. (Original concurrence received June 21, 2011) (Attachment C.1)
WD#2010-0337R	DEA	Kentuck Site	Kentuck Site, mostly north of Golf Course Lane. Additional areas added as separate delineation.	Renewal concurrence on August 18, 2016. Original concurrence received June 10, 2011 (Attachments C.2 & C.3)
WD#2012-0313	SHN	Jordan Cove Energy Project, February 2013	Roseburg Property, TPP west of causeway and at Hwy 101 intersection, North End of Hwy 101 bridge over Coos Bay.	Concurrence received April 15, 2013 (Attachment C.4)
WD#2013-0116	SHN	Jordan Cove Energy Project, June 2012	Portions of TPP along North Spit, Ingram Yard, north and east boundary of Henderson Marsh, access road/utility corridor at north end of Roseburg property.	Concurrence received November 8, 2013 (Attachment C.5)
WD#2013-0193	DEA	APCO Coos Properties	APCO Site 1 and 2	Concurrence received January 23, 2014 (Attachment C.6)
WD#2014-0350	DEA	Kentuck Mitigation Site Expanded Area	Kentuck site south of Golf Course Ln including irrigation pond	Concurrence received February 23, 2016 (Attachment C.7)
WD#2017-0058	DEA	Boxcar Hill	Boxcar Hill	Concurrence received May 3, 2017 (Attachment C.8)
WD#2018-0213	DEA	Port Laydown Site	Port Laydown Site	Concurrence submittal pending. (Attachment C.9)
WD#2018-0217	DEA	Trans Pacific Parkway Lagoon to Boxcar Hill	Trans Pacific Parkway north of LNG Terminal site	Concurrence submittal pending. (Attachment C.10)
N/A	DEA	Myrtlewood RV Park Wetland Determination Tech Memo	Myrtlewood Offsite Park & Ride	Attachment C.11
N/A	DEA	APCO North Shore Wetland Determination Tech Memo	Temporary Dredge Line at APCO Site 2	Attachment C.12

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

N/A	DEA	Wetlands J and H Estuarine Boundary Delineation Tech Memo	Linerboard/Mill Site (South Dunes)	Attachment C.13
NA	DEA	Wetland K – Eastern South Dunes Site	Eastern South Dunes	NA-Pending Completion

*DEA = David Evans and Associates, Inc.

**SHN = SHN Engineers and Geologists, Inc.

3. MUDFLATS

Mudflat resources within the JCEP Project Area are described in the wetland delineation reports for the JCEP Project Area that are included in Attachments C.1 to C.8 and Figures 4.1-1 to 4.1-7. Quantities for impacts to mudflats are provided in the Bulk Upload Template (Table 4.2). Mudflats throughout the various portions of the JCEP Project Area are briefly summarized in the following section.

Ingram Yard

The JCEP Project Area will affect mudflats in the area of the proposed access channel. Mudflats adjacent to the proposed Access Channel consist of unvegetated sand to mud substrates in the shallowest intertidal areas, which are regularly inundated by brackish water and are influenced by tidal flux, resulting in cycles of saturation and exposure. These transition along a relatively narrow bench through shallow subtidal areas and vegetated shallows, before dropping off abruptly at the adjacent FNC. Plant life is not typically abundant along these intertidal mudflats and adjacent shallow subtidal areas.

South Dunes Site

The estuarine intertidal emergent wetlands along Jordan Cove transition into a larger expanse of sparsely vegetated and unvegetated mudflats within Jordan Cove. These areas would not be disturbed by activities associated with the Project.

Trans Pacific Parkway/US-101 Intersection Widening

The in-water work area associated with the Trans Pacific Parkway/US-101 Intersection Widening consists of intertidal mudflats characterized by mud and sand, with some limited algae growth. A portion of habitat below HMT includes riprap and roadway embankment. This area was part of the open estuarine environment of Coos Bay until it was built up by placement of fill material during construction of the roadways.

Kentuck Project Site

Vegetated and unvegetated intertidal mudflats exist on the estuary side of the dike separating the Kentuck Project site from Coos Bay.

4. VEGETATED SHALLOWS

Vegetated shallows within the JCEP Project Area are characterized by eelgrass that occurs throughout the lower bay, typically straddling the boundary between intertidal mudflats and shallow subtidal areas. Vegetated shallows occur at the proposed access channel. The eelgrass in this area tends to be less dense and in smaller patches than is found in the broader flats in the upper and lower bay. Areas of vegetated shallows also occur on the western and eastern sides of the entrance to Jordan Cove. A fringing band of eelgrass is located within vegetated shallows along the north side of APCO Sites 1 and 2. Eelgrass also occurs within the area surrounding the proposed Eelgrass Mitigation site. Additional areas of vegetated shallows exist within Coos Bay at the mouth of Kentuck Slough, in the vicinity of the Temporary Dredge Transfer Line.

Vegetated shallows within the JCEP Project Area where a concurrence has not been issued are described in the wetland delineation reports that are included as Attachments C.9 to C.13. Quantities for impacts to vegetated shallows are provided in Table 6-1.

5. DEEP SUBTIDAL

A portion of the access channel and the entire footprint of the four areas to be dredged adjacent to the FNC for navigation reliability are located in deep subtidal habitat (i.e., below -15 MLLW). The substrate in these areas consists primarily of unvegetated sand and rock.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA**6. FLOODPLAINS**

Portions of the JCEP Project Area lie within the 100-year floodplain. The areas of the JCEP Project Area lying within the 100-year floodplain are summarized below and detailed in Figure 4.1-8.

Ingram Yard and South Dunes Site

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) 41011C0167E and 41011C0186E, effective March 17, 2014, the majority of the LNG Terminal site is located within FEMA Flood Hazard Zone X, which denotes areas of minimal flood hazard. Portions of the South Dunes site adjacent to Jordan Cove are located in Flood Hazard Zone AE, elevation 12 feet, which represents areas that are subject to the 1 percent annual chance flood (100-year flood, or base flood) where the 12-foot base flood elevation is the water-surface elevation of the 1 percent annual chance flood. The area at the southern tip of the South Dunes site and the easternmost portion of the South Dunes site abutting Haynes Inlet to the east of the railroad right-of-way are also located in Flood Hazard Zone AE, base elevation 12 feet.

APCO Sites 1 and 2

According to FEMA FIRM Panel 41011C0186E, effective March 17, 2014, the upland portions of the fill pads at APCO Site 1 and APCO Site 2, where most of the disturbance associated with the JCEP Project Area would occur, are located outside of the 100-year floodplain. The intertidal mudflat between APCO Site 1 and APCO Site 2, where a temporary construction bridge will be placed, is in Zone AE, base flood elevation 12 feet. The area along the northern and western shoreline of APCO 2 is in Zone AE, base flood elevation 12 feet. The area of APCO Site 1 at the foot of the railroad bridge is in Zone AE, base flood elevation 12 feet, and is an "area of undetermined flood hazard."

Kentuck Project Site

Based on FEMA FIRM Panels 41011C0187E and 41011C0195E, effective March 17, 2014, nearly the entire Kentuck Project site is located within Flood Hazard Zone AE, base flood elevation 12 feet. Small upland areas along the southern and eastern boundaries of the Kentuck Project site are outside of the 100-year floodplain.

Temporary Construction Sites

According to FEMA FIRM Panel 41011C0180E, effective March 17, 2014, the entire Myrtlewood Offsite Park & Ride and most of the work area below the road bed at the Trans Pacific Parkway/US-101 Intersection Widening are located within Flood Hazard Zone AE, base flood elevation 12 feet. The Boxcar Hill, Port Laydown, and Meteorological Station sites are outside of the 100-year floodplain.

7. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

As indicated in Box 7 below, three federally listed anadromous fish species and one listed bird species are known to be present and use various habitats within the estuarine environment of Coos Bay. The fish species include Oregon Coast coho salmon, southern Distinct Population Segment (DPS) green sturgeon, and southern DPS Pacific eulachon. The bird species is marbled murrelet. The fish species are not included in the listing maintained by the Oregon State Fish and Wildlife Commission under ORS 496.171-496.192); however Coos Bay and all of its major tributaries, including Kentuck Slough, are state-designated Essential Salmonid Habitat. Section 7 consultation will be undertaken with the National Marine Fisheries Service (NMFS) with jurisdiction over the fish species and the US Fish and Wildlife Service (USFWS) with jurisdiction over marbled murrelet. A biological assessment (BA) will be prepared by the Federal Energy Regulatory Commission (FERC) based upon an Applicant Prepared Draft Biological Assessment submitted to FERC in September 2018.

8. CULTURAL RESOURCES

A cultural resources report has been submitted to FERC as part of JCEP's application to FERC under Section 3 of the Natural Gas Act. The application was filed on 9/21/2017. Under the National Historic Preservation Act (NHPA), FERC is responsible for initiating consultation under Section 106 of the NHPA.

B. Describe the existing navigation, fishing and recreational use of the waterway or wetland.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA**1. NAVIGATION**

Coos Bay is the second largest estuary in Oregon and is used by deep-draft commercial ships and barges, a commercial fishing fleet, and recreational boats. The FNC adjacent to the LNG Terminal site, which is maintained by the U.S. Army Corps of Engineers (USACE), is generally 300 feet wide and currently has a navigational depth of -37 Mean Lower Low Water (MLLW). Annual commercial ship traffic into and out of the Oregon International Port of Coos Bay (the "Port") has declined in recent years from a high of 310 deep-draft vessel calls at the Port in 1988 to 52 in 2016. The Port is also visited, by conservative estimates, by 50 tug/barge units per year, with 14 tug/barge units requesting pilotage during 2016 as per data from the Coos Bay Pilots Association.

2. FISHING

Commercial fisheries within the Coos Bay estuary include clams, bait fish, and ghost and mud shrimp (used for fishing bait), along with crabbing from September through December. There are no commercial fisheries for vertebrate fish species in any of the estuarine or freshwater habitats of Coos Bay.

Commercial ocean fisheries include boats (trollers and trawlers) targeting albacore tuna, sablefish, salmon, groundfish, Dungeness crab, clams, and pink shrimp. Oregon Department of Fish and Wildlife (ODFW) data on pounds and values of commercially caught fish and shellfish landed in Charleston, Oregon in 2016 indicate that shellfish fisheries (predominantly crab, shrimp, and clams) are of substantial economic importance to the Coos Bay area, exceeding \$18.8 million in value in 2016.

3. RECREATION

The primary recreational activities taking place within the Coos Bay estuary include boating, fishing, waterfowl hunting, bird watching, clamming, and crabbing. Recreational boating takes place throughout Coos Bay, although most originates primarily near the towns of Charleston and Empire, where there are boat ramps. There is also a marina complex in Charleston. In addition to the Charleston boat ramp (approximately 13.25 miles from the LNG Terminal site) and Empire boat ramp (approximately 4.75 miles from the LNG Terminal site), recreational boaters operating within the JCEP Project Area vicinity use the Bureau of Land Management (BLM) North Spit boat ramp (approximately 0.75 mile from the LNG Terminal site) to access the bay. A system of water trails for canoeists and kayakers exists throughout the sloughs and rivers draining into the bay. The water trails closest to the LNG Terminal site are approximately 1 mile northeast in North Slough and Haynes Inlet east of the Central Oregon and Pacific Railroad Bridge crossing Coos Bay. Jordan Cove and the section of Coos Bay south of the LNG Terminal site are not part of the water trail system.

The main recreational catch species of fish in and around Coos Bay include coho and Chinook salmon. Other recreational catch species include American shad, shiner perch, redbtail surf perch, striped sea perch, white sea perch, pile perch, black rockfish, lingcod, Cabezon, red Irish lord, Pacific staghorn sculpin, surf smelt, Pacific herring, Pacific tomcod, kelp and rock greenling, blue and cooper rockfish, halibut, and white sturgeon. Much of the recreational angling for salmon in Coos Bay occurs in late summer and fall, usually beginning in late summer at jetty areas and moving up the bay as fish move upstream. Recreational fishing for sturgeon occurs between the railroad bridge and the McCullough Bridge, and also above the McCullough Bridge. Recreational crabbing and clamming bring year-round tourist income to the region. Crabbing occurs in the main channel areas, largely from the BLM boat ramp on the North Spit (west of the JCEP Project Area) to the mouth of the bay, and typically is done around slack tides. The main areas for recreational clamming and crabbing in the bay are located along the west side of the South Slough near Charleston, along the North Spit; at Fossil and Pigeon points; near Haynes Inlet, North Slough, and Glasgow; and along the east side of the upper bay. The west shore of the bay at Jordan Cove contains sand/mudflats, eelgrass beds, and a fringe of salt marsh that provide habitat for recreationally important ghost shrimp and mud shrimp. These shrimp are recreationally harvested at a number of locations throughout the bay, and are popular among fishermen for use as bait.

Loaded LNG carriers departing the LNG facility could have a sailing draft approaching or exceeding the current channel navigation depth of -37 MLLW, thus requiring the use of tidal advantage and associated scheduled departure (i.e., loaded vessels would need to transit at slack high tide). As a LNG carrier is in transit through the bay, USCG will impose a moving safety/security zone of 500 yards around the carrier

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

or up to the shoreline, whichever is less. Current USCG law restricts all recreation activities from within the Coos Bay FNC during all marine vessel transits. Recreational crabbing within the bay, which also typically occurs at slack high tide throughout the year, may be further limit access to crabbing areas within the safety/security zone, in two areas of the lower bay. The two areas are located immediately north of Charleston Marina and along the northwest side of the bay from approximately RM 2.5 to RM 5. Crab pots or traps placed outside of the FNC could feasibly be deployed prior to and remain during LNG carrier transit and subsequently retrieved following vessel safety zone passing. JCEP estimates that it will take an LNG carrier approximately 90 minutes to make the full transit of the waterway from the Coos Bay jetty entrance to the LNG Terminal at speeds between 4 and 6 knots. The maximum period for an LNG carrier to pass through the safety and security zone would be 30 minutes, meaning recreational crabbers would not have access to their pots or traps for up to 30 minutes, but the pots or traps would be “soaking” during this time. The sum of the periods in which LNG carriers would have a potential impact on recreational and other boating activity is about 7 hours per week or about 8 percent of all daylight hours (see Appendix C.5 to Resource Report 5).

Once navigation safety stakeholders gain experience and familiarization with the transit (after the first few months), the USCG will allow LNG carrier transits to occur on a 24-hour basis. This will allow night transit, which will lessen potential impacts on recreational and commercial fishermen to about 4 percent of all hours when LNG carriers can potentially transit LNG carrier transits will be prioritized during nighttime hours to reduce the impact of the moving safety/security zone on recreational and commercial fishing activities in the bay. The USCG and Oregon State Marine Board will continue to remind boaters of their obligation not to impede the safe transit of deep-draft ships, regardless of the cargo.

Dredging associated with the NRI portion of the project will occur concurrently with the recreational salmon fishery for approximately one month annually during construction. NRI dredging will observe the ODFW in-water work window of October 1 – February 15 and is expected to overlap with the salmon fishery primarily during the month of October. NRI related dredging and dredge material transport for this project elements will be limited in extent and avoidable by recreational craft participating in the fishery. Dredge operations and submerged temporary dredge line are not expected to impact recreational craft transit to upstream or downstream areas of Coos Bay or limit fishing except where work is actively occurring and in the associated safety area around work areas. Dredging activities will be announced to the boating community via a local notice to mariners provided through notification to the USCG.

(5) PROJECT SPECIFIC CRITERIA AND ALTERNATIVES ANALYSIS

Describe project-specific criteria necessary to achieve the project purpose. Describe alternative sites and project designs that were considered to avoid or minimize impacts to the waterway or wetland.

JCEP submitted Resource Report 10 to FERC in September 2017. Resource Report 10 details the reasonable alternatives to siting the JCEP Project Area at its current location in Coos Bay (Attachment B.1).

In addition, a technical memorandum included with this application provides a description of overall project specific criteria in context of the needs of the Project and outlines the alternative sites and project designs that were considered to avoid and minimize impacts to wetlands and waters (Attachment B.2). This memorandum responds specifically to the USACE 404(b)(1) guidelines for evaluating alternatives (Subpart H).

The Waterway Suitability Report (WSR) completed by the USCG in 2008 determined that the FNC is safe to transit LNG carriers planned for the current project. However, the NRIs are needed to meet the project’s purpose of 7.8 MTPA of throughput as detailed in the Block 3 response above. The NRI deepening in four corners adjacent to the FNC allows increased reliability such that transits would not be delayed due to wind or other weather conditions.

The WSR (USCG 2008) was reviewed and assessed for the project and the assessment determined that the FNC was suitable for transit by a 148,000 m³ cargo capacity LNG carrier (JCEP et. al. 2017). The current FNC navigational depth of -37 ft. MLLW is thus generally considered sufficient for the sizes of

(5) PROJECT SPECIFIC CRITERIA AND ALTERNATIVES ANALYSIS

LNG carriers that would likely be serving the proposed LNG facility. In support of an update to the Waterway Suitability Assessment in 2017, JCEP performed over 75 simulator transits of Coos Bay using a variety of LNG carriers (dimensions/capacity/ tank type/ship handling). Based on the simulations, JCEP has concluded that LNG Carriers with dimensions of up to 300 meter length x 52 meter beam x 12 meter draft would be able to safely transit into Coos Bay and to the LNG terminal. Enclosure (1) of the USCG May 10, 2018 Letter of Recommendation (LOR) issued to FERC (Analysis Supporting the LOR Issued by Captain of the Port Sector Columbia River on May 10, 2018) reflected this by stating that the primary dock of the marine terminal can accommodate a vessel with a maximum length of 300 meters, a beam of 52 meters, and a draft of 12 meters. This section of the enclosure (1) went on to state that JCEP and the local pilots must ensure that transiting LNG vessels are able to maintain 10% Underkeel Clearance (UKC) as required by JCEP's LNGC Transit Management Plan. Subsequent to the issuance of the May 10, 2018 LOR, as required in the 2008 WSR, JCEP conducted additional simulation runs with the USCG using larger dimension and capacity LNG carriers at the California Maritime Academy during 26-27 September 2018. Based upon the result of these recent simulation runs with larger LNG Carriers, the USCG has deemed the Coos Bay Port channel suitable for these larger dimension vessels and has concluded that the Coos Bay Pilots can safely and successfully maneuver LNG carriers up to 299.9 meters in length x 49 meter beam x 11.9 meter draft to and from the proposed JCEP marine terminal. JCEP is currently awaiting the letter from the USCG updating the current LOR to this effect. Navigational depth was one of the primary evaluation criteria in selecting a location for the proposed LNG Terminal, as the LNG terminal requires a port location with a suitable and maintained depth for deep draft vessels. Siting criteria included a channel depth of -36 ft. MLLW, based on an average 36 ft draft for an average 135,000 cubic meter (m³) cargo capacity LNG carrier.

The width required to transit a vessel is proportional to the depth as guided by Society of International Gas Tanker and Terminal Operators (SIGTTO) / Oil Companies International Marine Forum (OCIMF) industry standards. As a result, the required depth is driving the modelled requirement to deepen four areas adjacent to four corners of the FNC.

Reference:

JCEP, KSEAS, and Amergent Techs, 2017 Waterway Suitability Assessment Review JCLNG Doc Control #J1-000-MAR-RPT-KSE-00008-00

(6) PROJECT DESCRIPTION

- A. Briefly summarize the overall project including work in areas both in and outside of waters or wetlands..**
B. Describe work within waters and wetlands
C. Construction Methods. Describe how the removal and/or fill activities will be accomplished to minimize impacts to waters and wetlands.
D. Describe source of fill material and disposal location if known

See Attachment A.1: Project Description – Section 6 Narrative for a discussion of the overall project, including work in areas both in and outside of waters or wetlands. A more detailed discussion of work outside of waters and wetlands is provided in Resource Report 1 issued to FERC in September 2017 (Attachment A.2.).

A summary of activities which may impair water quality and subsequent plans or practices to manage potential impacts are summarized in Resource Report 2 issued to FERC in September 2017 (Attachment A.3).

E. Construction timeline.

What is the estimated project start date? 1st half of 2020

What is the estimated project completion date? 1st half of 2024

Is any of the work underway or already complete? Yes No

If yes, describe.

(6) PROJECT DESCRIPTION

N/A

E. Fill Volumes and Dimensions (if more than 4 impact sites, include a summary table as an attachment)

See Table 6-1, Wetland and Water Impact Summary Table

Wetland / Waterbody Name *	Fill Dimensions					Duration of Impact**	Material***
	Length (ft.)	Width (ft.)	Depth (ft.)	Area (sq.ft. or ac.)	Volume (c.y.)		

F. Total Fill Volumes and Dimensions

See Table 6-1 Wetland and Water Impact Summary Table

Fill Impacts to Waters	Length (ft.)	Area (sq. ft or ac.)	Volume (c.y.)
Total Fill to Wetlands			39,273
Total Fill Below Ordinary High Water			
Total Fill Below Highest Measured Tide			39,483
Total Fill Below High Tide Line			
Total Fill Below Mean High Water Tidal Elevation			

Fill volumes within mudflats and eelgrass habitats accounted for within "Total Fill Below Highest Measured Tide" line. See Table 6-1 appended to this application for Wetland and Water Impact Summary; See Table B- Attachment A.1 (Project Description) for a summary of removal and fill volumes within the Kentucky Mitigation Site and; Table C (Attachment A.1.) for Proposed Dredged Material Management for Construction Activities

G. Removal Volumes and Dimensions (if more than 4 impact sites, include a summary table as an attachment)

Wetland / Waterbody Name*	Removal Dimensions					Duration of Impact**	Material***
	Length (ft.)	Width (ft.)	Depth (ft.)	Area (sq. ft. or ac.)	Volume (c.y.)		

(6) PROJECT DESCRIPTION			
H. Total Removal Volumes and Dimensions			
Removal Impacts to Waters	Length (ft.)	Area (sq. ft or ac.)	Volume (c.y.)
Total Removal to Wetlands			198
Total Removal Below Ordinary High Water			
Total Removal Below <u>Highest Measured Tide</u>			1,784,675
Total Removal Below <u>High Tide Line</u>			
Total Removal Below <u>Mean High Water Tidal Elevation</u>			
Removal volumes within mudflats and eelgrass habitats accounted for within "Total Removal Below Highest Measured Tide" line. See Table 6-1 appended to this application for Wetland and Water Impact Summary; See Table B- Attachment A.1 (Project Description) for a summary of removal and fill volumes within the Kentuck Mitigation Site and; Table C (Attachment A.1.) for Proposed Dredged Material Management for Construction Activities			
<p>* If there is no official name for the wetland or waterway, create a unique name (such as "Wetland 1" or "Tributary A").</p> <p>** Indicate the days, months or years the fill or removal will remain. Enter "permanent" if applicable. For DSL, permanent removal or fill is defined as being in place for 24 months or longer.</p> <p>*** Example: soil, gravel, wood, concrete, pilings, rock etc.</p>			

(7) ADDITIONAL INFORMATION			
Are there any <u>state</u> or <u>federally</u> listed species on the project site?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Is the project site within designated or proposed critical habitat?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Is the project site within a national <u>Wild and Scenic River</u> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
Is the project site within the <u>100-year floodplain</u> ?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes to any of the above, explain in Block 4 and describe measures to minimize adverse effects to these resources in Block 5.			
Is the project site within the <u>Territorial Sea Plan (TSP) Area</u> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, attach TSP review as a separate document for DSL.			
Is the project site within a designated <u>Marine Reserve</u> ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, certain additional DSL restrictions will apply.			
Will the overall project involve construction dewatering or ground disturbance of one acre or more?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, you may need a 1200-C permit from the Oregon Department of Environmental Quality (DEQ).			
Is the fill or dredged material a carrier of contaminants from on-site or off- site spills?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
Has the fill or dredged material been physically and/or chemically tested?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
*If yes, explain in Block 4 and provide references to any physical/chemical testing report(s).			
Has a cultural resource (archaeological) survey been performed on the project area?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, provide a copy of the survey with this application. Do not describe any resources in this document.			

(7) ADDITIONAL INFORMATION

Identify any other federal agency that is funding, authorizing or implementing the project.

A full list of agency approvals required is provided in Part 1 Attachment G of this application.

Agency Name	Contact Name	Phone Number	Most Recent Date of Contact
Federal Energy Regulatory Commission	John Peconom	(202) 502-6352	September 2018
National Marine Fisheries Service	Chuck Wheeler	(541) 957-3379	September 2018
US Coast Guard	Randy Clark	(503) 240- 2594	October 2018

List other certificates or approvals/denials required or received from other federal, state or local agencies for work described in this application. For example, certain activities that require a Corps permit also require [401 Water Quality Certification](#) from Oregon DEQ.

Approving Agency	Certificate/ approval / denial description	Date Applied
DEQ	401 WQ Certification	10/23/17
US Army Corps of Engineers – Civil Works	408 Approval/60% Design Package	1/18/18
National Marine Fisheries Service	Biological Opinion	September 2018
US Fish and Wildlife Service	Biological Opinion	September 2018

Other DSL and/or Corps Actions Associated with this Site (Check all that apply.)

- Work proposed on or over lands owned by or leased from the Corps
- State owned waterway DSL Waterway Lease #
- Other Corps or DSL Permits Corps # NWP-2017-41/2 DSL # 60528
- Violation for Unauthorized Activity Corps # DSL #
- Wetland and Waters Delineation Corps # NWP-2012-441; NWP-2016-265 DSL # See Table 4.1
- A wetland / waters delineation has been completed (if so, provide a copy with the application)
- The Corps has approved the wetland / waters delineation within the last 5 years
- DSL has approved the wetland / waters delineation within the last 5 years

(8) IMPACTS, RESTORATION/REHABILITATION, COMPENSATORY MITIGATION

A. Describe unavoidable environmental impacts that are likely to result from the proposed project. Include permanent, temporary, direct, and indirect impacts.

See Table 6-1 for detail on the extent of Project specific unavoidable permanent impacts to wetlands and waters resulting from construction of the LNG Terminal.

See attachments for further detail on the impacts to other environmental resources. Attachment A. 3 - Resource Report 2 (issued to FERC on 9/21/17) details impacts to water use and water quality. Attachment A.4 – Resource Report 3 (issued to FERC on 9/21/17) details impacts to fish, wildlife, and vegetation. An evaluation of the potential impacts and effects of project construction and maintenance activities on navigational servitude is provided in the Navigation Servitude Assessment Revision memorandum (Attachment A.5). A hydrodynamics modeling analysis and sediment transport analysis specific to the Project are provided as Attachments A.6 and A.7 respectively.

Unavoidable impacts to aquatic resources were evaluated in planning for the development of the Kentucky Project site and efforts made to minimize these. The following information is provided in this section to establish how these minimization and design decisions were made, because these actions are specific to

(8) IMPACTS, RESTORATION/REHABILITATION, COMPENSATORY MITIGATION

the development of the mitigation area and separate from the analysis undertaken to avoid and minimize aquatic resource impacts for aquatic resources from other Project elements.

As detailed in Section 4, "Proposed Alternative," in Attachment D.4, the most feasible option is for dredge material to be unloaded and hydraulically transported to the Kentuck Project site. This option represents the preferred method for avoidance and minimization as described in Attachment B. The unloading system would include a hydraulic unloader on a deck barge, mooring/fleeting barges, booster pumps, and a material transport pipeline. The unloading facility would be moored, outside of the FNC, in water deep enough to accommodate the transport barges/scows and tugs that would deliver material to the facility, but as closely as possible to the Kentuck Project site to minimize the distance that material would need to be hydraulically pumped.

As discussed in Section 3 of Attachment D.4, "Alternatives Considered and Eliminated," other options considered included trucking the material to the Kentuck Project site and dredging an access channel between the existing navigation channel and the Kentuck Project site. Trucking the material was dismissed due to safety and traffic concerns, and dredging another access channel was dismissed due to the substantial environmental impacts that would result. Impacts related to the preferred alternative would be minimal in area, limited only to the duration of dredging activities, and would be limited to the temporary placement of spuds to anchor the barges, and the placement of the submerged hydraulic material transport pipeline on the floor of the bay.

Similar to the analysis of dredged material placement at the Kentuck Project site in Attachment D.4, Attachment D.9 details both the preferred alternative for dredging at the eelgrass mitigation site (see Attachment D.9, Section 4) and the alternatives that were dismissed due to their relatively greater impacts (see Attachment D.8, Section 3).

B. For temporary removal or fill or disturbance of vegetation in waterways, wetlands or riparian (i.e., streamside) areas, discuss how the site will be restored after construction.

During construction, a number of methods will be utilized to minimize the impacts of removal and fill on waterways and wetlands. Following completion of construction, areas of temporary disturbance to wetland and upland areas will be restored to pre-project conditions to the extent practicable. Methods used to minimize the temporary wetland and tidal waters impacts to the greatest extent practicable and avoid permanent wetland impacts are detailed in the Erosion and Sediment Control Plan (ESCP) and Procedures (Attachment D.11) and Site Restoration Plan (Attachment H), and include the following.

1. Areas disturbed by construction of the Project facilities will be stabilized with temporary erosion controls until construction is complete, unless covered by equipment, gravel or other covering. Following construction, the site will be final graded, and Best Management Practices (BMPs) will be applied to prevent erosion and associated impacts to wetlands and waterways.
2. While construction of permanent facilities at the LNG Terminal site is not anticipated beyond the toe of the fill slope, perimeter site preparation activities, installation and maintenance of erosion and sediment control measures and ground improvements adjacent to the toe of slope may cause settlement or temporary disturbances beyond the toe of slope.
3. Following excavation activities, all exposed areas, including exposed slopes, will be stabilized with an approved seed mixture specified as being capable of surviving in highly permeable, xeric regimes, binding loose sand, and withstanding burial and deflation from aeolian processes.
4. All work within the Coos Bay estuary, including construction of the MOF, dredging of the access channel and removal of the berm, and dredging associated with the navigation reliability improvements and eelgrass mitigation site, will be performed during the ODFW in-water work window (October 1 to February 15).
5. Upon completion of dredging operations, any temporary in-water and upland facilities will be removed. Slurry and decant water pipelines will be removed, and any areas disturbed by these pipelines will be restored to pre-construction conditions.

(8) IMPACTS, RESTORATION/REHABILITATION, COMPENSATORY MITIGATION

6. The APCO 2 site and other permanent or long-term disposal sites will be stabilized using an approved seed mix to minimize windblown sand from being deposited on roads, upland habitats, and waterways.
7. At temporary construction sites, grades will be restored to pre-project conditions and the sites will be revegetated with an approved seed mixture.
8. Following compaction during ground improvements, wetland areas will be returned to original elevations and can be loosened or scarified to allow planting of vegetation. Soils will be amended as needed, and hydrophytic vegetation will be replanted.

Proposed conservation and mitigation actions that would be implemented as part of the Project to compensate for the loss of eelgrass and unvegetated mudflat habitat are expected to offset the losses incurred during Project construction. Mitigation details are provided in the Project Compensatory Wetland Mitigation Plan (Attachment I).

Compensatory Mitigation**C. Proposed mitigation approach. Check all that apply:**

- Permittee-responsible On-site Mitigation
 Permittee-responsible Offsite mitigation
 Mitigation Bank or in-lieu fee program
 Payment to Provide (not approved for use with Corps permits)

D. Provide a brief description of mitigation approach and the rationale for choosing that approach. If you believe mitigation should not be required, explain why.

Mitigation for unavoidable impacts to DSL-regulated resources are addressed in the Compensatory Wetland Mitigation Plan (CWMP), which describes the proposed Kentucky Project site and Eelgrass Mitigation Site (see Attachment I).

Mitigation Bank / In-Lieu Fee Information:

Name of mitigation bank or in-lieu fee project: N/A
 Type of credits to be purchased: N/A

If you are proposing permittee-responsible mitigation, have you prepared a compensatory mitigation plan?

- Yes. Submit the plan with this application and complete the remainder of this section.
 No. A mitigation plan will need to be submitted (for DSL, this plan is required for a complete application).

Mitigation Location Information (Fill out only if permittee-responsible mitigation is proposed)

Mitigation Site Name/Legal Description	Mitigation Site Address	Tax Lot #	
Kentuck Mitigation Site; Eelgrass Mitigation Site	N/A	Kentuck - 25s12w06c lot 100, 25s13w12a lot 100, and 25s13w1d lot 400; Eelgrass - N/A	
County Coos	City North Bend	Latitude & Longitude (in DD.DDDD format) varies	
Township 25	Range Kentuck - 12 West, 13 west; Eelgrass: 13 West	Section Kentuck - 12W section 6 and 7; 13W section 1 and 2; Eelgrass: 13W Section 8	Quarter/Quarter varies

(9) ADJACENT PROPERTY OWNERS FOR PROJECT AND MITIGATION SITE

Pre-printed mailing labels <input checked="" type="checkbox"/> of adjacent property owners attached	Project Site Adjacent Property Owners	Mitigation Site Adjacent Property Owners
--	--	---

Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

,

,

Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

,

,

Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

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Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

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Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

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Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

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,

Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

,

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Contact Name
 Address 1
 Address 2
 City, ST ZIP Code

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**(10) CITY/COUNTY PLANNING DEPARTMENT LAND USE AFFIDAVIT
(TO BE COMPLETED BY LOCAL PLANNING OFFICIAL)**

I have reviewed the project described in this application and have determined that:

- This project is not regulated by the comprehensive plan and land use regulations.
- This project is consistent with the comprehensive plan and land use regulations.
- This project will be consistent with the comprehensive plan and land use regulations when the following local approval(s) are obtained:
- Conditional Use Approval
 - Development Permit
 - Other Permit (see comment section)
- This project is not consistent with the comprehensive plan. Consistency requires:
- Plan Amendment
 - Zone Change
 - Other Approval or Review (see comment section)

An application has has not been filed for local approvals checked above.

Local planning official name (print)	Title	City / County (circle one)
--------------------------------------	-------	----------------------------

Signature	Date
-----------	------

Comments:

See Attachment L.

(11) COASTAL ZONE CERTIFICATION

If the proposed activity described in your permit application is within the [Oregon coastal zone](#), the following certification is required before your application can be processed. A public notice will be issued with the certification statement, which will be forwarded to the Oregon Department of Land Conservation and Development (DLCD) for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program, contact DLCD at 635 Capitol Street NE, Suite 150, Salem, Oregon 97301 or call 503-373-0050.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

Print /Type Name	Title
------------------	-------

DERIK VOWELS

CONSULTANT, SUPERVISOR,
FEDERAL AND STATE APPROVALS

Signature	Date
-----------	------

Derek Vowels

11/7/18

(12) SIGNATURES

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or DSL staff to enter into the above-described property to inspect the project location and to determine compliance with an authorization, if granted. I hereby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish supplemental information in support of this permit application. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that payment of the required state processing fee does not guarantee permit issuance. To be considered complete, the fee must accompany the application to DSL. The fee is not required for submittal of an application to the Corps.

Fee Amount Enclosed	\$
---------------------	----

Applicant Signature

Print Name

Derik Vowels

Title

Supervisor, Federal and State Approvals

Signature



Date

November 7, 2018

Authorized Agent Signature

Print Name

Casey Storey

Title

Environmental Specialist

Signature



Date

November 7, 2018

Landowner Signature(s)**Landowner of the Project Site (if different from applicant)**

Print Name

Title

Signature

Date

Landowner of the Mitigation Site (if different from applicant)

Print Name

DEBORAH C. WEBB

Title

LAND OWNER

Signature



Date

10-31-18

Department of State Lands, Property Manager (to be completed by DSL)

If the project is located on state-owned submerged and submersible lands, DSL staff will obtain a signature from the Land Management Division of DSL. A signature by DSL for activities proposed on state-owned submerged/submersible lands only grants the applicant consent to apply for a removal-fill permit. A signature for activities on state-owned submerged and submersible lands grants no other authority, express or implied and a separate proprietary authorization may be required.

Print Name

Title

Signature

Date

(12) SIGNATURES

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or DSL staff to enter into the above-described property to inspect the project location and to determine compliance with an authorization, if granted. I hereby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish supplemental information in support of this permit application. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that payment of the required state processing fee does not guarantee permit issuance. To be considered complete, the fee must accompany the application to DSL. The fee is not required for submittal of an application to the Corps.

Fee Amount Enclosed

\$

Applicant Signature

Print Name

Derik Vowels

Title

Supervisor, Federal and State Approvals

Signature



Date

November 7, 2018

Authorized Agent Signature

Print Name

Casey Storey

Title

Environmental Specialist

Signature



Date

November 7, 2018

Landowner Signature(s)**Landowner of the Project Site (if different from applicant)**

Print Name

Title

Signature

Date

Landowner of the Mitigation Site (if different from applicant)

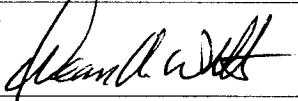
Print Name

DEAN A. WEBB

Title

OWNER

Signature



Date

10/31/2018

Department of State Lands, Property Manager (to be completed by DSL)

If the project is located on state-owned submerged and submersible lands, DSL staff will obtain a signature from the Land Management Division of DSL. A signature by DSL for activities proposed on state-owned submerged/submersible lands only grants the applicant consent to apply for a removal-fill permit. A signature for activities on state-owned submerged and submersible lands grants no other authority, express or implied and a separate proprietary authorization may be required.

Print Name

Title

Signature

Date

(13) ATTACHMENTS – SEE TABLE OF CONTENTS

- Drawings (items in bold are required)**
- Location map with roads identified**
 - U.S.G.S topographic map
 - Tax lot map**
 - Site plan(s)**
 - Cross section drawing(s)**
 - Recent aerial photo**
 - Project photos
 - Erosion and Pollution Control Plan(s), if applicable**
 - DSL/Corps Wetland Concurrence letter and map, if approved and applicable**
- Pre-printed labels for adjacent property owners (Required if more than 5)
- Restoration plan or rehabilitation plan for temporary impacts**
- Mitigation plan**
- Wetland functional assessment and/or stream functional assessment**
- Alternatives analysis**
- Biological assessment (if requested by Corps project manager during pre-application coordination.)
- Stormwater management plan (may be required by the Corps or DEQ)
- Other:**
- Dredge Material Management Plan, Navigational Servitude Memo
 - Hydrodynamic Memo, Sediment Transport Memo

Send Completed form to:

U.S. Army Corps of Engineers
ATTN: CENWP-OD-GP
PO Box 2946
Portland, OR 97208-2946
Phone: 503-808-4373

Counties:
Baker, Clackamas,
Clatsop, Columbia,
Gilliam, Grant, Hood
River, Jefferson, Lincoln,
Malheur, Marion, Morrow,
Multnomah, Polk,
Sherman, Tillamook,
Umatilla, Union,
Wallowa, Wasco,
Washington, Wheeler,
Yamhill

OR

U.S. Army Corps of Engineers
ATTN: CENWP-OD-GE
211 E. 7th AVE, Suite 105
Eugene, OR 97401-2722
Phone: 541-465-6868

Counties:
Benton, Coos, Crook,
Curry, Deschutes,
Douglas, Jackson,
Josephine, Harney,
Klamath, Lake, Lane,
Linn

Send Completed form to:

DSL - West of the Cascades:
Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
Phone: 503-986-5200

OR

DSL - East of the Cascades:



Department of State Lands
1645 NE Forbes Road, Suite 112
Bend, Oregon 97701
Phone: 541-388-6112

Send all Fees to:
Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
Pay by Credit Card by Calling 503-986-5253

Joint Permit Application

This is a joint application, and must be sent to both agencies, who administer separate permit programs. Alternative forms of permit applications may be acceptable; contact the Corps and DSL for more information.

Date Stamp

	U.S. Army Corps of Engineers Portland District		Oregon Department of State Lands
Corps Action ID Number		DSL Number	

(1) APPLICANT AND LANDOWNER CONTACT INFORMATION

	Applicant	Property Owner (if different)	Authorized Agent (if applicable) <input checked="" type="checkbox"/> Consultant <input type="checkbox"/> Contractor
Contact Name	Derik Vowels	Multiple – Pacific Connector Gas Pipeline, LP (PCGP) must obtain an easement prior to commencing construction. A list of landowners where wetlands/waterbodies would be affected by the Pipeline is provided in Table 1.	Carolyn Last
Business Name	Pacific Connector Gas Pipeline, LP		Edge Environmental, Inc.
Mailing Address 1	111 SW 5 th Ave., Ste. 1100		405 Urban Street, Ste. 310
Mailing Address 2	Portland, OR 97204		Lakewood, CO 80228
City, State, Zip			
Business Phone	971-940-7800		303-988-8844
Fax	971-940-7799		303-988-8999
Email	dvowels@pembina.com		clast@edgeenvironmental.com

(2) PROJECT INFORMATION

A. Provide the project location.

Project Name Pacific Connector Gas Pipeline Project	Tax Lot # See Table 1 in the 'Tables' section	Latitude & Longitude* MP 0.0=43.4325 -124.2402 MP 228.13=42.0335 -121.3753
Project Address / Location See maps in 'Figures' section. Also see Attachment A.1.	City (nearest) Coos Bay, North Bend, Dillard, Myrtle Creek, Trail, Klamath Falls and Malin	County Coos, Douglas, Jackson, Klamath counties.
Township Multiple - See various map sets in 'Figures' section.	Range	Section
		Quarter/Quarter

Brief Directions to the Site
See maps in 'Figures' section. The USGS-topographic location maps provide the proposed access roads. The proposed pipeline is 229 miles long. PCGP will provide directions to specific locations upon request. The 'Figures' section provide the following map sets:

1. F.1 = Figure 1.1-1 General Location Map
2. F.2 = General Location Maps – Wetlands (set of 34 topo-based maps with wetland/waterbody call-outs)
3. F.3 = General Location Maps – Transportation Management (set of 55 topo-based maps with pipeline information and road call-outs)
4. F.4 = Map Series 2 - from Wetland Delineation Report (set of 99 aerial-based maps providing landowner and survey status information; also index for Map Series 3)
5. F.5 = Map Series 3 – from Wetland Delineation Report (set of 325 aerial-based maps providing detailed wetland information)

B. What types of waterbodies or wetlands are present in your project area? (Check all that apply.)

(2) PROJECT INFORMATION

<input checked="" type="checkbox"/> River / Stream	<input checked="" type="checkbox"/> Non-Tidal Wetland	<input checked="" type="checkbox"/> Lake / Reservoir / Pond
<input checked="" type="checkbox"/> Estuary or Tidal Wetland	<input type="checkbox"/> Other	<input type="checkbox"/> Pacific Ocean
Waterbody or Wetland Name**	River Mile	6 th Field HUC Name
		6 th Field HUC (12 digits)

See Tables F-2, A.2-2, and A.2-3 in the 'Tables' section as well as the Wetland Delineation Report (provided under separate cover).

C. Indicate the project category. (Check all that apply.)

<input type="checkbox"/> Commercial Development	<input type="checkbox"/> Industrial Development	<input type="checkbox"/> Residential Development
<input type="checkbox"/> Institutional Development	<input type="checkbox"/> Agricultural	<input type="checkbox"/> Recreational
<input type="checkbox"/> Transportation	<input type="checkbox"/> Restoration	<input type="checkbox"/> Bank Stabilization
<input type="checkbox"/> Dredging	<input checked="" type="checkbox"/> Utility lines natural gas	<input type="checkbox"/> Survey or Sampling
<input type="checkbox"/> In- or Over-Water Structure	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Other:

* In decimal format (e.g., 44.9399, -123.0283)

** If there is no official name for the wetland or waterway, create a unique name (such as "Wetland 1" or "Tributary A").

(3) PROJECT PURPOSE AND NEED**Provide a statement of the purpose and need for the overall project.**

The Project is a market-driven response to the burgeoning and abundant natural gas supply in the US Rocky Mountain and Western Canada markets, and the growth of international demand, particularly in Asia.

The overall Project purpose and need is to construct a natural gas liquefaction and deep-water export terminal capable of receiving and loading ocean-going LNG carriers, in order to export natural gas derived from a point near the intersections of the GTN Pipeline system and Ruby Pipeline system.

The Pipeline receipt point near the intersection of the GTN Pipeline system and Ruby Pipeline system is strategically located to give reliable and secure supplies of natural gas from two natural gas supply basins – one in the U.S. Rocky Mountains (through the existing Ruby Pipeline) and a second in western Canada (through the existing GTN Pipeline) – capable of delivering volumes of at least 1,200,000 Dth/d in order to support export of 7.8 mtpa of LNG.

PCGP held an open season for transportation service on the Pipeline in July of 2017. PCGP has executed precedent agreements totaling 96% of the Pipeline's capacity.

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA**A. Describe the existing physical and biological characteristics of each wetland or waterway. Reference the wetland and waters delineation report if one is available. Include the list of items provided in the instructions.**

The existing physical and biological characteristics of each wetland and waterbody are included in the wetland delineation report, provided under separate cover. Summary information for all wetlands and waterbodies affected by the Pipeline is provided in Attachments C.1 and C.2, Tables A.2-2, A.2-3, A.2-7, A.2-8, A.2-9 in the 'Tables' section, and Attachment C.3/HGM Report. While a summary is provided below, the following bullets provide references to the specific location in the application materials for the detailed information requested in the JPA form instructions:

- **4.A. Overall Description.** An overall description of the Pipeline project is provided in Attachments A.1 and A.2 (includes work outside and within waterbodies and wetlands as well as total ground disturbance [Table 1.2-1]; impervious surface will be limited to graveled areas at aboveground facilities, none of which will affect wetland or waterbodies).
- **4.B. Work within Waters and Wetlands.** Attachment C details proposed work within waterbodies (Attachment C.1) and Wetlands (Attachment C.2). Tables A.2-2 and A.2-3 in the 'Tables' section quantify volumes of removal/fill by waterbody and wetland (same material removed from the trench will be replaced following pipe installation). Temporary bridge crossings are noted in Table B.3-4 in the 'Tables' section. Attachments J.1 and J.2 provide estimates for fill volumes associated with stream restoration BMPs and culvert installation/replacement, respectively. (Attachments C.16-1 and 16-2 provide the basis for the fill volumes estimated in Attachment J.1.)
- **4.C. Construction Methods.** Detailed information is provided in Attachment A.2, A.4, and C4 through C.11.
- **4.D. Fill Material and Disposal.** The native material removed from the trench will be used to backfill the trench

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

following pipe installation. Offsite fill material will not be used. Material will not be disposed of offsite.

- 4.E. Construction Timing. The construction schedule is provided in Attachment A.3.
- 4.F. Summary of Removal and Fill Activities. See Tables A.2-2 and A.2-3 in the 'Tables' section.

The Pipeline will affect 342 waterbodies, 64 of which are not crossed by the centerline (31 streams, 9 lakes or ponds, 23 ditches, and 1 estuarine feature) but are within the right-of-way or temporary extra work areas. Of the 342 waterbodies, 66 are perennial, 163 are intermittent, 100 are ditches, 9 are lakes or stock ponds, and 4 are estuarine (Coos Bay/2 HDD crossings, the HDD pullback at MP 0.0, and the Coos River).

In Coos County, the Pipeline will affect 19 perennial and 21 intermittent waterbodies, 3 ditches, and 4 estuarine features. In Douglas County, the Pipeline will affect 32 perennial and 43 intermittent waterbodies, 3 industrial ponds, and 11 ditches. In Jackson County, the Pipeline will affect 13 perennial and 60 intermittent waterbodies, 15 ditches, and 2 lakes/ponds. In Klamath County, the Pipeline will affect 2 perennial and 39 intermittent waterbodies, 71 ditches, and 4 lakes/ponds. For hydrostatic/dust control water resources, 16 lakes/reservoirs have been identified, and they are included in Table A.2-2. Thirteen culvert installation/replacement areas have been identified along existing access roads, and they are included in Table A.2-2 as well.

Table 2.2-1 in the 'Tables' section describes the beneficial uses of the basins crossed by the Project. Table A.2-2 in the 'Tables' section provides a listing of all waterbodies crossed by the Pipeline and includes: 1) waterbody name; 2) milepost location (centerline of the waterbody); 3) waterbody identification number; 4) NHD waterbody reach code, if available; 5) approximate stream width at the crossing location; 6) excavated volume and area at crossing; 7) proposed crossing method; 8) FERC classification; 9) Cowardin Classification; 10) stream flow type (perennial or intermittent); 11) ODF water quality classification/Northwest Forest Plan Designation; and 12) status of water quality limited streams. The Fish Utilization table (Table B.3-4) in the 'Tables' section includes the fish presence for each waterbody crossed by the Project.

Table A.2-3 lists the milepost location, classification and the crossing length of the excavated trench (in feet) as well as construction-related disturbance (in acres) for each wetland that will be affected by construction. Table A.2-7 in the 'Tables' section provides a summary of wetland impacts by watershed (Fifth Field/HUC10) and Cowardin classification. The Pipeline will cross a total of approximately 29,205.07 feet (5.53 miles) of wetlands. The construction right-of-way and temporary extra work areas will affect 112.19 acres of wetlands, 106.71 acres of palustrine emergent wetlands, 2.30 acres of palustrine scrub-shrub wetlands, and 2.55 acres of palustrine forested wetlands. Additionally, 0.64 acre of palustrine unconsolidated bottom or aquatic bed wetlands (predominantly stock ponds) will be disturbed by the Pipeline. Permanent wetland vegetation type conversion impacts have been quantified for each forested or scrub-shrub wetland where permanent maintenance of the Pipeline's operational corridor would convert the wetland to a different wetland type (see Table A.2-3 in the 'Tables' section). Permanent vegetation type conversion impacts will affect a total of 0.91 acre of wetlands, including 0.73 acre of palustrine forested and 0.18 acre of palustrine scrub-shrub wetlands.

A Preliminary Jurisdictional Determination was received on June 16, 2018 from the U.S. Army Corps of Engineers (USACE), concurring that all wetlands/waterbodies affected by the Pipeline are jurisdictional. PCGP understands that jurisdiction for purposes of Oregon Department of State Lands (DSL) will be determined through the concurrence process for the wetland delineation report.

Federally Listed Threatened and Endangered Species

PCGP prepared Resource Report 3 as part of the September 2017 FERC Certificate application*, which provided detailed information regarding federal and state-listed species, impacts to them, and proposed mitigation measures. PCGP submitted an Applicant-Prepared Draft Biological Assessment to the Federal Energy Regulatory Commission (FERC) in December 2017 and an updated document in September 2018, which details impacts to federally-listed species. PCGP has been consulting with U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), U.S. Forest Service, Bureau of Land Management (BLM), and Oregon Department of Fish and Wildlife (ODFW) throughout the FERC National Environmental Policy Act (NEPA) process and will continue to do so throughout the various federal and state permitting processes.

Cultural Resources

PCGP prepared Resource Report 4* and various cultural resource survey reports based on survey activities between 2006 and 2017 that have been submitted to FERC, State Historic Preservation Officer (SHPO), Forest Service, BLM, Bureau of Reclamation (BOR), USACE, and Native American Indian Tribes that may have interest in the Project. PCGP continues to consult with these agencies and communicate with Tribes regarding review of and mitigation for various cultural resources. PCGP is in the process of contacting landowners and securing permits to conduct cultural resources surveys on unsurveyed properties. Site-specific avoidance and protection plans will be updated/included following completion of all surveys, but prior to construction. Currently, the schedule for the completion of all surveys is by the fourth quarter of 2018, subject to obtaining access to denied areas. FERC is the lead agency for Section 106 consultation.

*can be downloaded from: <https://elibrary.ferc.gov> (filed date = 09/21/2017 and FERC Docket No. = CP17-494) or <http://pacificconnectorgp.com/project-overview/regulatory/>

(4) DESCRIPTION OF RESOURCES IN PROJECT AREA

B. Describe the existing navigation, fishing and recreational use of the waterway or wetland.

The Pipeline will affect 231 perennial and intermittent waterbodies with various associated navigational, fishing and recreational uses. Table 2.2-1 in the 'Tables' section describes the beneficial uses of the basins crossed by the Pipeline. Table A.2-2 lists the Oregon Department of Forestry stream classification for each waterbody crossed. The Fish Utilization table (Table B.3-4) in the 'Tables' section also includes the fish presence for each waterbody crossed by the Pipeline. Two horizontal directional drills (HDDs) are proposed across Coos Bay, which will avoid impacts to navigation, fishing and recreational uses within the estuary. HDDs are also proposed for the Coos, Rogue, and Klamath rivers, and a Direct Pipe[®] method is proposed for one of the South Umpqua River crossings (the other crossing of the South Umpqua River at MP 94.73 is proposed as a diverted open cut).

(5) PROJECT SPECIFIC CRITERIA AND ALTERNATIVES ANALYSIS

Describe project-specific criteria necessary to achieve the project purpose. Describe alternative sites and project designs that were considered to avoid or minimize impacts to the waterway or wetland.

Due to the linear nature of a pipeline, it is impossible to avoid crossing wetlands and waterbodies along the 229 miles of the alignment. As detailed in Attachments B.1 through B.4 and in Attachment B to Part 1 of the Removal/Fill application, the preferred route was developed by considering construction requirements for a large diameter, high pressure, natural gas transmission pipeline. Constructability/integrity requirements were the primary consideration for routing the Pipeline while minimizing potential impacts to sensitive resources such as the number of waterbody and wetland crossings (in compliance with the USACE 404(b)(1) guidelines) and landowner encumbrances. Avoidance of scenic waterways, byways, wildernesses, national parks and monuments was also a factor in development of the proposed alignment. Where practicable, the alignment utilized existing pipeline and powerline corridors while maintaining a safe distance between these existing utilities and the proposed Pipeline. Based on the routing feasibility analysis, a cross-country route was selected which traverses ridgelines and watershed boundaries to ensure the safety, stability, and long-term integrity of the Pipeline. By following ridgelines and watershed boundaries, the route significantly avoids and minimizes impacts to wetlands and waterbodies.

The alignment has been developed through an iterative process that included numerous meetings with landowners, federal and state agencies, the Confederated Tribes of Coos, Lower Umpqua and Siuslaw, the Coquille Indian Tribe, the Klamath Tribes, the Confederated Tribes of Siletz Indians, the Confederated Tribes of Grand Ronde and the Cow Creek Band of Umpqua Tribe of Indians.

The proposed alignment is based on routes that were publicly scoped, reviewed, and analyzed as part of FERC's NEPA process under Docket No. CP07-441-000, which is documented in FERC's Draft Environmental Impact Statement (EIS) (FERC 2008) and Final EIS (FERC 2009) as well as under Docket No. CP13-492-000, which is documented in FERC's Draft EIS (FERC 2014) and Final EIS (FERC 2015).

(6) PROJECT DESCRIPTION

A. Briefly summarize the overall project including work in areas both in and outside of waters or wetlands.

Attachments A/Project Description and C/Affected Water Resources detail the construction procedures to install the Pipeline in upland and wetland areas, as well as across waterbodies. Most waterbodies will be crossed using a dry crossing method (i.e., fluming or dam and pump) in order to isolate the work area from the stream flow. Fluming Procedures are provided in Attachment C.9 and Dam and Pump Procedures are provided in Attachment C.10. A conventional bore crossing is proposed for the Medford Aqueduct/ MP133.38 and for Bureau of Reclamation jurisdictional ditches in Klamath County. These are noted on Table A.2-2 in the 'Tables' section. Waterbody crossing plans and figures are provided in Attachment C.11. The South Umpqua River will be crossed twice. PCGP proposes to cross I-5, the South Umpqua River (MP 71.27), Dole Road, and a railroad using a single Direct Pipe[®] crossing. The Direct Pipe[®] Technology Overview and Design Report for this crossing is provided in Attachment C.12. The second crossing of the South Umpqua River (MP 94.73) will be crossed using a diverted open-cut (see Attachment C.11 for the Site-Specific Crossing Plan and Design Support Report). The Coos (MP 11.13R), Rogue (MP 122.65), and Klamath (MP 199.38) rivers are proposed as horizontal directional drills (HDDs). Attachment C.13 provides the HDD Design Reports for the three HDD crossings. An approximate 5,200-foot HDD will be utilized to cross the Coos Bay estuary from the North Spit at about MP 0.12 to MP 1.11 south of North Point on the west side of Highway 101. The HDD will cross the Coos Bay Rail line at MP 0.36 and the shipping channel at MP 0.66. Additionally, from MP 1.40 to MP 3.09, an approximate 9,000-foot HDD will be utilized for the second crossing of the Coos Bay estuary and will cross the shipping channel again at MP 1.6 (see Attachment C.13 for the HDD Feasibility Evaluations for these HDD crossings). Attachments C.14 and C.15 also provide PCGP's Drilling Fluid Contingency Plan and Failure Mode Procedures for HDD Pipeline Installation Methods.

(6) PROJECT DESCRIPTION**B. Describe work within waters and wetlands.**

See Response to A. above.

C. Construction Methods. Describe how the removal and/or fill activities will be accomplished to minimize impacts to waters and wetlands.

Attachments A and C detail the construction procedures for the Pipeline in uplands, wetlands, and waterbodies. Most waterbodies will be crossed using a dry crossing method (i.e., fluming or dam and pump) in order to isolate the work area from the stream flow.

The following plans describe the Best Management Practices that will be implemented to minimize potential effects to wetlands and waterbodies during pipeline construction:

- Erosion Control and Revegetation Plan (ECRP – Attachment A.4)
- FERC's Wetland and Waterbody Construction and Mitigation Procedures (Attachment A.6)
- FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (Attachment A.5)
- Spill Prevention, Containment, and Countermeasures Plan (Attachment C.8)
- Stream Crossing Risk Analysis and Addendum (C.16)
- Hydrostatic Test Plan (Attachment C.17)
- Culvert Crossing Best Management Practices (Attachment C.18)
- Contaminated Substances Discovery Plan (Attachment E)
- Fish Salvage Plan (Attachment H)
- Wetland and Waterbody Mitigation Plan (Attachment I)

All work in waterbodies will be isolated from flowing water by utilizing dry crossing methods:

- Fluming Procedures (Attachment C.9)
- Dam and Pump Procedures (Attachment C.10)
- Diverted Open Cut Design (South Umpqua River #2 Crossing Plan - Attachment C.11)
- Waterbody Crossing Plans and Figures for the N. Fork Coquille River, E. Fork Coquille River, S.F. Little Butte Creek, Lost River, and Medford Aqueduct (Attachment C.11).
- HDD Design Reports (Coos River, Rogue River, and Klamath River) and Coos Bay HDD Feasibility Analyses (Attachment C.13).
- A Direct Pipe[®] installation has been proposed to minimize impacts to the South Umpqua River #1. An overview of Direct Pipe[®] technology and a Design Report is provided in Attachment C.12.

D. Describe source of fill material and disposal locations if known.

Native material that is removed from the pipeline trench during excavation will be used to backfill once the pipe is installed in the trench. Fill material will be the native soil or gravel material that is screened to exclude rock greater than a predetermined size. Attachment C.16 also includes the Stream Crossing Risk Analysis, which provides the Bioengineered Best Management Practices using rock and large woody debris (LWD) for stream channel bed and bank restoration. These site-specific BMPs were developed based on field observation of natural analog structures and widely accepted techniques for bank restoration, bed restoration, and aquatic habitat restoration techniques.

(6) PROJECT DESCRIPTION**E. Construction timeline.**

What is the estimated project start date? Second Quarter 2020

What is the estimated project completion date? Fourth Quarter 2023

Is any of the work underway or already complete? Yes No

If yes, describe.

F. Fill Volumes and Dimensions (if more than 4 impact sites, include a summary table as an attachment)							
Wetland / Waterbody Name *	Fill Dimensions					Duration of Impact**	Material***
	Length (ft.)	Width (ft.)	Depth (ft.)	Area (sq.ft. or ac.)	Volume (c.y.)		
See Tables A.2-2 and A.2-3 in the 'Tables' section for removal and fill volumes and dimensions in wetlands and waterbodies.							Native material removed from pipeline trench will be used to backfill the trench once the pipeline is placed.
Attachment J.1 also provides PCGP's estimated fill quantities associated with rock and wood stream crossing restoration bioengineered BMPs, as outlined in the Stream Crossing Risk Analysis included in Attachment C.16.							
G. Total Fill Volumes and Dimensions							
Fill Impacts to Waters					Length (ft.)	Area (sq. ft or ac.)	Volume (c.y.)
Total Fill to Wetlands					Same as total removal volumes.		
Total Fill Below Ordinary High Water							
Total Fill Below Highest Measured Tide							
Total Fill Below High Tide Line							
Total Fill Below Mean High Water Tidal Elevation							
H. Removal Volumes and Dimensions (if more than 4 impact sites, include a summary table as an attachment)							
Wetland / Waterbody Name*	Removal Dimensions					Duration of Impact**	Material***
	Length (ft.)	Width (ft.)	Depth (ft.)	Area (sq. ft. or ac.)	Volume (c.y.)		
See Tables A.2-2 and A.2-3 in the 'Tables' section for removal and fill volumes and dimensions in wetlands and waterbodies.							Native material removed from pipeline trench will be used to backfill the trench once the pipeline is placed.
Appendix J also provides PCGP's estimated fill quantities associated with rock and wood stream crossing restoration bioengineered BMPs, as outlined in the Stream Crossing Risk Analysis included in Attachment C.16.							
I. Total Removal Volumes and Dimensions							
Removal Impacts to Waters					Length (ft.)	Area (sq. ft or ac.)	Volume (c.y.)
Total Removal to Wetlands					29,205.07	112.19 acres	48,675.07
Total Removal Below Ordinary High Water					3,222.22	15.85	9,518.98 (302) ¹ (769.5) ²
Total Removal Below Highest Measured Tide							
Total Removal Below High Tide Line							
Total Removal Below Mean High Water Tidal Elevation							
* If there is no official name for the wetland or waterway, create a unique name (such as "Wetland 1" or "Tributary A").							
** Indicate the days, months or years the fill or removal will remain. Enter "permanent" if applicable. For DSL, permanent removal or fill is defined as being in place for 24 months or longer.							
*** Example: soil, gravel, wood, concrete, pilings, rock etc.							
¹ 302 CY estimated fill associated with rock and wood Bioengineered BMPs as outlined in the Stream Crossing Risk Analysis and Addendum (see Attachment C.16). The estimated fill quantities for these BMPs is provided in Appendix J.1 and locations are provided in Table 2-1 in Attachment I.							
² The 769.5 cu. yds. are the fill estimate for the top 1-foot of the trench at certain waterbodies that may be backfilled with clean spawning gravels as required by FERC's Wetland and Waterbody Procedures (see V.C.1) which indicates: "Use clean gravel or native cobbles for the upper 1 foot of the trench backfill in all waterbodies that contain coldwater fisheries." These volumes are a subset of (included in) the total trench fill volumes for each waterbody in Table A.A-2 and are calculated as shown on Figure A.2-2 (provided with Table A.2-2). PCGP will backfill with clean spawning gravel in fish-bearing streams where gravel, cobble or existing rock substrates are present prior to construction. Where gravel, cobble or existing rock substrates are not present, the native streambed materials will be utilized for backfill.							

(7) ADDITIONAL INFORMATION

Are there any state or federally listed species on the project site?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Is the project site within designated or proposed critical habitat?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Is the project site within a national Wild and Scenic River ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
Is the project site within the 100-year floodplain ?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes to any of the above, explain in Block 4 and describe measures to minimize adverse effects to these resources in Block 5.			
Is the project site within the Territorial Sea Plan (TSP) Area ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, attach TSP review as a separate document for DSL.			
Is the project site within a designated Marine Reserve ?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, certain additional DSL restrictions will apply.			
Will the overall project involve construction dewatering or ground disturbance of one acre or more?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, you may need a 1200-C permit from the Oregon Department of Environmental Quality (DEQ).			
Is the fill or dredged material a carrier of contaminants from on-site or off- site spills?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
Has the fill or dredged material been physically and/or chemically tested?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Unknown
*If yes, explain in Block 4 and provide references to any physical/chemical testing report(s).			
Has a cultural resource (archaeological) survey been performed on the project area?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
* If yes, provide a copy of the survey with this application. Do not describe any resources in this document.			
Identify any other federal agency that is funding, authorizing or implementing the project.			
Agency Name	Contact Name	Phone Number	Most Recent Date of Contact
FERC is the lead federal agency.			
List other certificates or approvals/denials required or received from other federal, state or local agencies for work described in this application. For example, certain activities that require a Corps permit also require 401 Water Quality Certification from Oregon DEQ.			
Approving Agency	Certificate/ approval / denial description See Table 1.6-1 in the 'Tables' section for a list of permits and authorizations required for the Project.	Date Applied	
Other DSL and/or Corps Actions Associated with this Site (Check all that apply.)			
<input type="checkbox"/> Work proposed on or over lands owned by or leased from the Corps			
<input type="checkbox"/> State owned waterway	DSL Waterway Lease #		
<input type="checkbox"/> Other Corps or DSL Permits	Corps #	DSL #	
<input type="checkbox"/> Violation for Unauthorized Activity	Corps #	DSL #	
<input checked="" type="checkbox"/> Wetland and Waters Delineation	Corps #	DSL #	
<input checked="" type="checkbox"/> A wetland / waters delineation has been completed (if so, provide a copy with the application)			
<input checked="" type="checkbox"/> The Corps has approved the wetland / waters delineation within the last 5 years			
<input checked="" type="checkbox"/> DSL has approved the wetland / waters delineation within the last 5 years			

(8) IMPACTS, RESTORATION/REHABILITATION, COMPENSATORY MITIGATION**A. Describe unavoidable environmental impacts that are likely to result from the proposed project. Include permanent, temporary, direct, and indirect impacts.**

The Pipeline will not require any permanent wetland fill. However, approximately 0.91 acre of wetland type conversion impacts would occur where maintenance of the Pipeline's operational corridor would convert forested or scrub-shrub wetlands to a different wetland type to facilitate corrosion and leak surveys, as allowed by U.S. Department of Transportation (DOT) and FERC (see Section V.D.1 and VI.D.1 in FERC's Procedures included in Attachment A.6).

B. For temporary removal or fill or disturbance of vegetation in waterways, wetlands or riparian (i.e., streamside) areas, discuss how the site will be restored after construction.

Please see the Wetland and Waterbody Mitigation Plan included as Attachment I. Also see Section 10.0 (Restoration) in the ECRP in Attachment A.4.

Compensatory Mitigation**C. Proposed mitigation approach. Check all that apply:**

- | | | | |
|---|--|---|---|
| <input checked="" type="checkbox"/> Permittee-responsible Onsite Mitigation | <input checked="" type="checkbox"/> Permittee-responsible Offsite mitigation | <input type="checkbox"/> Mitigation Bank or in-lieu fee program | <input type="checkbox"/> Payment to Provide (not approved for use with Corps permits) |
|---|--|---|---|

D. Provide a brief description of mitigation approach and the rationale for choosing that approach. If you believe mitigation should not be required, explain why.

See Section 2.3.4.1 in Attachment C.7 and Table A.2-3 for a description of the wetland impacts associated with construction of the Pipeline. Section 2.3.4.2 in Attachment C.7 and the Wetland and Waterbody Mitigation Plan (see Attachment I) describe the measures that will be implemented to restore/rehabilitate all wetlands affected by the Pipeline.

To mitigate for the 0.91 acre of permanent wetland vegetation type conversion impacts, PCGP proposes to co-locate compensatory mitigation efforts with the LNG Terminal mitigation efforts at the former Kentuck Golf Course in Coos County (Kentuck Project). The Pipeline component of the Kentuck Project would be required to enhance a minimum of 2.73 acres of degraded emergent wetlands within the golf course to mixed forested and scrub-shrub wetlands based on a ratio of 3:1. The compensatory mitigation plan is in conformance with USACE and DSL compensatory wetland mitigation requirements. The proposed mitigation would improve hydrologic function within the wetland by removing existing levees and regrading the site to improve hydrology and micro-topography to support a variety of plant species and providing access and refugia to fish during high flow events. Impacts from pipeline construction would be primarily a result of conversion from a mixture of forested and shrub wetlands to a mixture of shrub and herbaceous wetlands. The compensatory wetland mitigation plan will convert existing, degraded pasture wetland within the former golf course to complex native forested wetland, essentially a reversal of the proposed Pipeline impacts. Approximately 9.14 acres of mitigation will be undertaken to achieve this goal, including 6.41 acres of voluntary habitat improvements (above the minimum mitigation requirements). The Compensatory Wetland Mitigation Plan is provided in Attachment J to Part 1 of the Removal-Fill Application.

As indicated in the Compensatory Wetland Mitigation Plan, Pipeline construction impacts to wetlands requiring mitigation consist of small impacts spread over a long distance (i.e., 0.91 acre over 229 miles) in multiple watersheds; therefore, it is not practical to provide local mitigation for each impact. The emphasis of mitigation planning turned to consolidating mitigation in a single location that would have a high likelihood of success (i.e., the Kentuck Project site). It is also important to note that the Pipeline impacts will result only in a partial loss of wetland functions, as opposed to a loss of acreage and all functions, because the wetlands will remain following construction, but with what is considered to be a lower functioning habitat type than existed before the Pipeline. These functional wetland impacts will be offset at the consolidated Kentuck Project site which will provide clear ecosystem benefits by restoring floodplain connection to Kentuck Creek, which will in turn benefit flood control, water quality, wildlife, and fish functions, including providing high flow refugia and food chain support that will directly benefit listed Coho salmon.

(8) IMPACTS, RESTORATION/REHABILITATION, COMPENSATORY MITIGATION**Mitigation Bank / In-Lieu Fee Information:**

Name of mitigation bank or in-lieu fee project: N/A

Type of credits to be purchased: N/A

If you are proposing permittee-responsible mitigation, have you prepared a compensatory mitigation plan?

 Yes. Submit the plan with this application and complete the remainder of this section.

(see Attachment J to Part 1 of the Removal-Fill Application)

 No. A mitigation plan will need to be submitted (for DSL, this plan is required for a complete application).**Mitigation Location Information (Fill out only if permittee-responsible mitigation is proposed)**

Mitigation Site Name/Legal Description Kentuck Project Site (Kentuck Golf Course)	Mitigation Site Address 5,500 feet northeast of the intersection of East Bay Road and Golf Course Lane. See Attachment J to Part 1 of the Removal-Fill Application.	Tax Lot # Tax Map: 25S12W06C Lot: 0010000400
County Coos	City North Bend	Latitude & Longitude (in DD.DDDD format) 43.42811526, -124.1762352
Township 25S	Range 12W	Section 6
		Quarter/Quarter

(9) ADJACENT PROPERTY OWNERS FOR PROJECT AND MITIGATION SITE

Pre-printed mailing labels <input checked="" type="checkbox"/> of adjacent property owners attached	Project Site Adjacent Property Owners	Mitigation Site Adjacent Property Owners
---	--	---

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

Contact Name
Address 1
Address 2
City, ST ZIP Code

**(10) CITY/COUNTY PLANNING DEPARTMENT LAND USE AFFIDAVIT
(TO BE COMPLETED BY LOCAL PLANNING OFFICIAL)**

I have reviewed the project described in this application and have determined that:

- This project is not regulated by the comprehensive plan and land use regulations.
- This project is consistent with the comprehensive plan and land use regulations.
- This project will be consistent with the comprehensive plan and land use regulations when the following local approval(s) are obtained:
- Conditional Use Approval
 - Development Permit
 - Other Permit (see comment section)
- This project is not consistent with the comprehensive plan. Consistency requires:
- Plan Amendment
 - Zone Change
 - Other Approval or Review (see comment section)

An application has has not been filed for local approvals checked above.

Local planning official name (print)	Title	City / County (circle one)
--------------------------------------	-------	----------------------------

Signature	Date
-----------	------

Comments:

(11) COASTAL ZONE CERTIFICATION

If the proposed activity described in your permit application is within the [Oregon coastal zone](#), the following certification is required before your application can be processed. A public notice will be issued with the certification statement, which will be forwarded to the Oregon Department of Land Conservation and Development (DLCD) for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program, contact DLCD at 635 Capitol Street NE, Suite 150, Salem, Oregon 97301 or call 503-373-0050.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

Print /Type Name	Title
DERIK VOWELS	CONSULTANT, SUPERVISOR, FEDERAL AND STATE APPROVALS
Signature	Date
	11/7/18

(12) SIGNATURES

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or DSL staff to enter into the above-described property to inspect the project location and to determine compliance with an authorization, if granted. I hereby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish supplemental information in support of this permit application. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that payment of the required state processing fee does not guarantee permit issuance.

To be considered complete, the fee must accompany the application to DSL. The fee is not required for submittal of an application to the Corps.

Fee Amount Enclosed	\$
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Applicant Signature

Print Name	Title
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Derik Vowels	Supervisor, State and Federal Approvals
--------------	---

Signature	Date
-----------	------

	November 7, 2018
---	------------------

Authorized Agent Signature

Print Name	Title
------------	-------

Carolyn Last	Principal
--------------	-----------

Signature	Date
-----------	------

	November 7, 2018
---	------------------

Landowner Signature(s)**Landowner of the Project Site (if different from applicant)**

Print Name	Title
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As required by FERC, PCGP must obtain an easement across all properties affected by the Pipeline (through negotiations or condemnation) prior to construction.

Signature	Date
-----------	------

Landowner of the Mitigation Site (if different from applicant)

Print Name	Title
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Signature	Date
-----------	------

Department of State Lands, Property Manager (to be completed by DSL)

If the project is located on [state-owned submerged and submersible lands](#), DSL staff will obtain a signature from the Land Management Division of DSL. A signature by DSL for activities proposed on state-owned submerged/submersible lands only grants the applicant consent to apply for a removal-fill permit. A signature for activities on state-owned submerged and submersible lands grants no other authority, express or implied and a separate proprietary authorization may be required.

Print Name	Title
------------	-------

Signature	Date
-----------	------

(13) ATTACHMENTS

- Drawings (items in bold are required)**
- Location map with roads identified**
 - U.S.G.S topographic map**
 - Tax lot map**
 - Site plan(s)**
 - Cross section drawing(s)**
 - Recent aerial photo**
 - Project photos
 - Erosion and Pollution Control Plan(s), if applicable
 - DSL/Corps Wetland Concurrence letter and map, if approved and applicable
- Pre-printed labels for adjacent property owners (Required if more than 5)
- Restoration plan or rehabilitation plan for temporary impacts
- Mitigation plan
- Wetland functional assessment and/or stream functional assessment
- Alternatives analysis
- Biological assessment (if requested by Corps project manager during pre-application coordination.)
- Stormwater management plan (may be required by the Corps or DEQ)
- Other:
-
-

Send Completed form to:

U.S. Army Corps of Engineers
ATTN: CENWP-OD-GP
PO Box 2946
Portland, OR 97208-2946
Phone: 503-808-4373

Counties:
Baker, Clackamas,
Clatsop, Columbia,
Gilliam, Grant, Hood
River, Jefferson, Lincoln,
Malheur, Marion, Morrow,
Multnomah, Polk,
Sherman, Tillamook,
Umatilla, Union,
Wallowa, Wasco,
Washington, Wheeler,
Yamhill

OR

U.S. Army Corps of Engineers
ATTN: CENWP-OD-GE
211 E. 7th AVE, Suite 105
Eugene, OR 97401-2722
Phone: 541-465-6868

Counties:
Benton, Coos, Crook,
Curry, Deschutes,
Douglas Jackson,
Josephine, Harney,
Klamath, Lake, Lane,
Linn

Send Completed form to:**DSL - West of the Cascades:**

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
Phone: 503-986-5200

OR

DSL - East of the Cascades:

Department of State Lands
1645 NE Forbes Road, Suite 112
Bend, Oregon 97701
Phone: 541-388-6112

Send all Fees to:

Department of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279

Pay by Credit Card Online:

<https://apps.oregon.gov/dsl/EPS/>



Oregon

Kate Brown, Governor

Department of State Lands

775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 986-5200
FAX (503) 378-4844
www.oregon.gov/dsl

April 10, 2019

RL600/60697

JORDAN COVE ENERGY PROJECT, L.P.
ATTN DERIK VOWELS
111 SW 5TH AVE, STE. 1100
PORTLAND OR 97204

Re: DSL Removal-Fill Permit Application No. 60697-RF
Jordan Cove Energy Project, Multiple Counties

Dear Mr. Vowels:

The Oregon Department of State Lands' (Department) 60-day public review period has closed for the above-referenced permit application. Public comments submitted and other investigative work by the Department have raised various issues for which the Department needs additional information.

Overview of Decision Process and Need for Additional Information

Specific applicable portions of the Department's Oregon Administrative Rules (OAR) in the narrative below in order to help Jordan Cove Energy Project, L.P. (Jordan Cove) understand the Department's permit decision process and why the additional information is needed.

OAR 141-085-0550 addresses the level of documentation used by the Department to make decisions:

- Section (4) provides that "The applicant is responsible for providing sufficient detail in the application to enable the Department to render the necessary determinations and decisions. The level of documentation may vary depending upon the degree of adverse impacts, level of public interest and other factors that increase the complexity of the project."
- Section (7) provides that "The Department may request additional information necessary to make an informed decision on whether or not to issue the authorization."

The Department analyzes a proposed project using the factors and determination criteria set forth in Oregon Revised Statute (ORS) 196.825 and OAR 141-085-0565. The applicant bears the burden of providing the Department with all information necessary for the Department to consider the factors and make the determinations.

- Section (1) of the OAR provides that "The Department will evaluate the information provided in the application, conduct its own investigation, and consider the comments submitted during the public review process to determine whether or not to issue an individual removal-fill permit."
- Section (2) of the OAR provides that "The Department may consider only standards and criteria in effect on the date the Department receives the complete application or renewal request." This application was deemed complete for public review and comment on

State Land Board

Kate Brown
Governor

Bev Clarno
Secretary of State

Tobias Read
State Treasurer

December 6, 2018. OAR 141 Division 85 contains the standards and criteria that will be considered throughout the review of this application.

- Section (3) of the OAR provides that "The Department will issue a permit if it determines the project described in the application:
 - (a) Has independent utility;
 - (b) Is consistent with the protection, conservation and best use of the water resources of this state as specified in ORS 196.600 to 196.990, and
 - (c) Would not unreasonably interfere with the paramount policy of this state to preserve the use of its waters for navigation, fishing and public recreation."

- Section (4) of the OAR provides that "In determining whether to issue a permit, the Department will consider all of the following:
 - (a) The public need for the proposed fill or removal and the social, economic or other public benefits likely to result from the proposed fill or removal. When the applicant for a permit is a public body, the Department may accept and rely upon the public body's findings as to local public need and local public benefit;
 - (b) The economic cost to the public if the proposed fill or removal is not accomplished;
 - (c) The availability of alternatives to the project for which the fill or removal is proposed;
 - (d) The availability of alternative sites for the proposed fill or removal;
 - (e) Whether the proposed fill or removal conforms to sound policies of conservation and would not interfere with public health and safety;
 - (f) Whether the proposed fill or removal is in conformance with existing public uses of the waters and with uses designated for adjacent land in an acknowledged comprehensive plan and land use regulations;
 - (g) Whether the proposed fill or removal is compatible with the acknowledged comprehensive plan and land use regulations for the area where the proposed fill or removal is to take place or can be conditioned on a future local approval to meet this criterion;
 - (h) Whether the proposed fill or removal is for stream bank protection; and
 - (i) Whether the applicant has provided all practicable mitigation to reduce the adverse effects of the proposed fill or removal in the manner set forth in ORS 196.600."

- Section (5) of the OAR provides that "The Department will issue a permit only upon the Department's determination that a fill or removal project is consistent with the protection, conservation and best use of the water resources of this state and would not unreasonably interfere with the preservation of the use of the waters of this state for navigation, fishing and public recreation. The Department will analyze a proposed project using the criteria set forth in the determinations and considerations in sections (3) and (4) above (OAR 141-085-0565). The applicant bears the burden of providing the Department with all information necessary to make this determination."

Summary of Substantive Public Comments

DSL has reviewed all the comments received concerning Jordan Cove application for a removal-fill permit. The Department's summary of the substantive comments (below) is not exhaustive. Jordan Cove should review and address the substantive comments that relate directly to the proposed removal and fill or that relate to the potential impacts of the proposed removal and fill. All substantive comments received are provided [here](#).

Jordan Cove failed to demonstrate the project is in the public interest, Jordan Cove failed to demonstrate a public need. (ORS 196.825(3)(a)): Comments received on this topic

stressed that the Department must affirmatively determine that the project would address a public need consistent with *Citizens for Resp. Devel. In the Dalles v. Walmart* 295 Or App 310 (2018). With a privately-sponsored project of this scale and complexity, the Department must consider public need in a transparent and comprehensive analysis that weighs all the relevant impacts and alleged benefits of the project.

Jordan Cove failed to demonstrate the project is consistent with the protection, conservation, and best use of Oregon's waters. (ORS 196.825(1)(a)): Commenters are concerned that the project would likely do unnecessary harm and damage to water quality in Oregon and suggest the applicants have failed to demonstrate that the project is consistent with the protection, conservation and best use of the water resources of this state. The proposed project will likely impair designated beneficial uses, threatening drinking water supplies and fish habitat. It will also likely further degrade stream segments in which water quality is already impaired for temperature, dissolved oxygen, pH, turbidity, mercury, and sedimentation.

The project does not conform to sound policies of conservation and will likely interfere with public health and safety (ORS 196.825(3)(e)): The Department received comments with concerns that the applicant has failed to demonstrate that the project will not interfere with public health and safety. Potential risks to public health and safety include natural hazards, such as floods, tsunamis, wildfires, landslides, and earthquakes, identified under Statewide Planning Goal 7. The potential for high-flow events that expose the pipeline or inadvertent drilling fluid releases (frac-outs) during construction at proposed stream crossings may result in increased risks to public health and safety. Failure at any of the major waterbody crossings claiming avoidance by using either Hydraulic Directional Drill (HDD) method, conventional bore or direct pipe method would have detrimental impacts to waters of the state and potentially contaminate state waters. Several risks to public health and safety were raised during public review that need to be addressed by the applicant, such as the list provided below. Please address these adverse impacts of this project:

- An accidental explosion of a fully loaded Liquefied Natural Gas (LNG) ship or at the terminal, including the worst-case scenario for the immediate area;
- How are the Federal Aviation Administration (FAA) presumed hazard determinations being addressed by Jordan Cove;
- Tsunami risks increasing from the project dredging activities;
- Improper facility siting, Society for International Gas Tanker and Terminal Operators (SIGTTO) standards not followed (i.e., on the outside bend of the navigation channel, near other terminal users, near population centers);
- Impacts on municipal drinking water sources, private wells, irrigation sources and agricultural uses;
- Increased wildfire risks as construction season coincides with the in-water work period which also coincides with fire season; and
- Impacts of massive scale clearing and grubbing with pipeline installation on water quality, land stability, erosion and turbidity of doing these activities during the rainy winter seasons, all water flows downhill.

The project would interfere with navigation, fishing, and public recreation: Comments received on this topic addressed that the Department must conduct a weighing of the public benefits of the project against interference with factors including navigation, fishing, and public recreation (See *Citizens for Resp. Devel. In the Dalles v. Walmart*, 295 Or App 310 (2018)). As part of this weighing of public benefits, the Oregon Legislature has clearly demonstrated that it

is the State's "paramount policy" to preserve Oregon waters for navigation, fishing, and public recreation. ORS 196.825(1).

The comments indicate that the applicant has failed to demonstrate that the project will not unreasonably interfere with navigation, fishing, and public recreation in this application.

Potential conflicts include but are not limited to:

- Crabbing, fishing and all types of recreational uses in and around Coos Bay;
- Safe bar passage issues/LNG tanker bar crossings only at high tides conflict with recreational fishers and the commercial fleets that also cross the bar at high slack tides for safety reasons should be evaluated;
- Exclusion zones required around LNG tankers while the LNG tanker is in transit will impact the recreating public crabbing via the ring method. This is reportedly the most common recreational crabbing method in Coos Bay. High slack tides are optimum for crabbing and if an LNG tanker must transit only at high tides, given the security and exclusion zones, there is interference with existing recreational uses within Coos Bay; and
- Impacts on the commercial fisheries uses of Coos Bay and adjacent ocean resources.

Jordan Cove failed to demonstrate independent utility (OAR 141-085-0565(3)(a)):

Commenters assert that the project is connected to the Coos Bay Channel Modification (CBCM) Project. The applicant would be the primary benefactor from the proposed widening and deepening of the federal navigation channel as part of the CBCM project or similar efforts to expand the navigation channel. Further, there are serious questions about the feasibility of LNG vessels transiting the federal navigation channel under the dredging currently proposed as part of this application. Oregon Department of Fish and Wildlife (ODFW) contends that the Jordan Cove Energy Project and Port of Coos Bay Channel Modification project are connected actions and should be evaluated that way. The applicant has failed to demonstrate that the project has independent utility as required under OAR 141-085-0565(3)(a).

Jordan Cove failed to demonstrate a comprehensive analysis of alternatives to the project (OAR 141-085-0550(5), ORS 196.825(3)(c) and (d)): Commenters outline that the applicant has failed to demonstrate a comprehensive analysis of alternatives to the project, and therefore, the Department does not have the information to consider the availability of alternatives both for the project and for proposed fill and removal sites. Also, the Department was not able to determine that the project is the practicable alternative with the least adverse impacts on state water resources. Comments detail that through a flawed, overly-narrow purpose and need statement, the resulting biased alternative analysis prevents the Department from considering a reasonable range of alternatives to the project.

Navigation Reliability Improvements (NRI) Dredging: Comments indicate that there is no documented need for the 590,000 cubic yards to dredge the four corners outside the existing Federal Navigation Channel (FNC). Comments also state that Jordan Cove can export 99.5% of the anticipated annual output of the LNG facility (7.8 million tons) without the NRI dredging, which leaves the question, is there a 'need' to excavate 590,000 cubic yards of material for a nominal gain in transport capacity to allow Jordan Cove to travel at higher wind speeds than the current channel configuration could safely allow. Comments further suggest this minor economic benefit to only Jordan Cove does not equate to a 'need' to impact trust resources of the State of Oregon. The adverse impacts are understated or not explained in terms of the salinity impacts and hydrologic changes that will result from widening the existing navigational channel. The potential tsunami run-up impacts are not well explained either, nor are any hydrodynamic changes that would likely result or any analysis on potential increases to bank erosion adjacent to the proposed NRI channel improvements. The need should be substantiated, and a robust alternatives analysis prepared to address these issues and justify

the dimensions and depths needed with supporting documentation in the form of simulation modelling showing that the current channel is insufficient for Jordan Cove.

Pile Dike-Rock Apron: Comments raised concerns that no alternatives were presented regarding the proposed 6,500 cubic yards (cy) of rock riprap proposed to protect the existing pile dike against erosion from the slip and access channel location, depth and dimensions. With no alternatives presented on the dimensions or design alignment of the slip and access channel, no reasonable range of alternatives can be considered. There is no discussion on impact avoidance, minimization, and/or mitigation to offset any adverse impacts to waters of the state. Please address:

- Why 6,500 cy?
- Why not more?
- Why not less?
- Why any at all?

Dredged Material Disposal (DMD) transfer of materials to APCO 1 & 2 from the NRI dredging: Comments received raised the following questions, please answer:

- How will the rock be excavated and transferred to the DMD site? Vague alternatives analysis presented, leaves more questions than answers.
- What types of equipment will be used to excavate the NRI's?
- Which works best in what type of materials (bedrock, rock, sand or silts), which has least environmental impacts depending on the material encountered?
- How will the rock be dredged? Different equipment?
- Can rock be transferred to a DMD site via slurry line as the application states? Inadequate discussion on alternatives, leaving the details to the contractor is insufficient.

Slip and Access Channel: Comments raised the concern of a lack of discernable alternative analysis for the precise dimensions and location of the slip and access channel. The slip and access channel are designed for a ship class of 217,000 cubic meters, yet the Coast Guard Waterway Suitability Analysis recommends allowing ships no larger than 148,000 cubic meters. Please answer the following questions and concerns:

- Why design a slip to accommodate a ship class that is not currently allowed nor physically capable of navigating into Coos Bay given the constraints of the Coos Bay bar and currently authorized limitations of the federal navigation channel?
- The application claims the stated depth needed for the slip and access channel is to maintain 'underkeel clearance' while an LNG ship is at dock. This is misleading as an LNG ship can only safely navigate the current channel at a high tide advantage, above 6ft tides to get through the channel to the slip before the tide recedes which would strand the vessel if it is not safely docked in the slip. Any LNG ship, 148,000 cubic meter class ship, would not be able to transit Coos Bay except periods of high tide, there would be no way for a ship to exit the slip at any lower tidal elevation as the ships draft would exceed navigational depth of the channel which could pose huge safety concern in the event of a tsunami.
- Water quality concerns from the 'sump effect' of having the proposed 45ft Mean Low Low Water (MLLW) deep slip and access adjacent to and on the outside bend of the 37ft MLLW navigation channel need to be addressed.
- What are the sedimentation impacts, salinity impacts, temperature and dissolved oxygen impacts that would likely result from a deep-water pocket created for the slip?

Questions were raised over whether the access channel dimensions can change, as no alternatives discussion exists, it is just one option, take it or leave it. Any reduction in the size of the slip or access channel would reduce water impacts and reduce the required mitigation. Any reduction in size or depth would also reduce adverse impacts associated with this project. The

need should be substantiated, and a robust alternatives analysis prepared to address these issues.

DMD Alternatives: Commenters would also like to know why Jordan Cove will move 300,000 cubic yards of sand to the Kentuck site when other alternatives exist that would have less impact than transferring a line all the way across Coos Bay to Kentuck slough. The log spiral bay could accommodate more than 300,000 cubic yards, it is much closer to the dredge sites and would have significantly less impacts than the Kentuck proposal, yet it is dismissed. Please explain more thoroughly the alternatives that were considered and why those alternatives were dismissed within the greater DMD plan.

APCO DMD Site: Commenters have concerns over the capacity of the APCO site. Does this site have the capacity for the initial dredging and maintenance dredging over the lifespan of this project? Commenters also have site stabilization and liquefaction concerns over a mountain of sand piled up adjacent to Coos Bay in an earthquake and tsunami zone. There is safety, engineering, project feasibility, and water resources concerns that must all be addressed.

The project does not conform with existing land use laws (ORS 196.825(3)(g)):

Commenters indicate that the applicant has failed to demonstrate that the project conforms with existing land uses designated in the applicable comprehensive plan and land use regulations. They also mentioned that the applicant has failed to provide the Department with the information necessary to make the determinations required by ORS 196.825(3)(g) that the applicant's proposed fill or removal is compatible with the requirements of the comprehensive plan and land use regulations for the area in which it will take place. Current, up-to-date Land Use Consistency Statements are required for all parts of this project in all jurisdictions with an explanation of the current status, pending or resolved local issues, processes, or appeals status.

Further, commenters are concerned the applicant has failed to obtain land use permits for the project in Coos Bay. Because of the reasons adopted by the Land Use Board of Appeals (LUBA) in remanding the prior land use application are directly related to the inconsistency of the proposed dredge and fill in wetlands and in the Coos Bay Estuary with the Coos Bay Estuary Management Plan, the project cannot be conditioned on a future land use approval to meet this criterion.

In January 2019, the Douglas County Circuit Court Judge reversed the Douglas County extensions from December 2016 and 2017 that approved the Pacific Connector Gas Pipeline as a conditional use. Because the pipeline will require a new application for conditional use permit and utility facility necessary for public service, the applicant has not met its burden to demonstrate to the Department that the project conforms to Douglas County's acknowledged comprehensive plan and land use regulations.

The comments received indicate that the applicant has not met their burden to demonstrate to the Department that the project conforms to Jackson County's acknowledged comprehensive plan and land use regulations.

Insufficient Mitigation-Kentuck Compensatory Wetland Mitigation (CWM) Site: Concerns were raised about the lack of a discernable alternative analysis on many components of the Kentuck mitigation proposal to see what alternatives were considered and on what basis were

rejected. The mitigation proposal itself is the largest wetland impact in this project proposal. Please answer the following questions:

- Why import 300,000 cubic yards of sand?
- Why not more or less materials?
- Why not use more suitable materials native to the area?
- Why sand vs. native cohesive clay soils for use as fill?
- What are the alternatives to move the sand to the site?
- Why were upland routes dismissed without reasonable justification?
 - Trucking the materials is a viable option with no impact to waters of the state.
- What other mitigation sites or options have you looked at addressing the following concern?
- The Kentucky site is already a freshwater wetland and has increased its functions in the past 10 years to the point that the current mitigation strategy might be inappropriate to offset functional losses. Please answer these questions as well:
 - Why is the dike so big, long, and wide?
 - Why is there no justification given to support dimensions of the proposed dike?
 - Why are there no alternatives are presented to evaluate the adverse effects of the dike and mitigation strategy?
 - Address the landowner concerns regarding the Kentucky Mitigation proposal and the Saltwater Intrusion impacts on adjacent lands.
 - Further address the concerns of flooding and impacting agricultural activities and existing farm uses.
 - Why is the pipeline proposed under a proposed mitigation site?
 - Where is the avoidance and/or impact minimization, especially given that each impact reduces the overall size of the mitigation project, therefore diminishing its potential function and values? Concerns were raised about the suitability of having a pipeline under the mitigation site that is supposed to be protected in perpetuity.

Insufficient Mitigation-Eelgrass CWM Site: Comments raised concerns about the lack of a discernable alternative analysis on many components of the eelgrass mitigation proposal. The CWM citing was found not to be in-kind or in proximity mitigation which would replace similar lost functions and values of the impact site. Disturbing existing mudflats and adjacent eelgrass beds is likely to have additional adverse impacts from construction. The proposal is inconsistent with ODFW Habitat Mitigation Policy. Alternatives should be considered, in consultation with ODFW, that favor impact avoidance to adjacent high value habitats (mudflats and adjacent eelgrass beds) and seek out appropriate in-kind, in proximity mitigation. The project impacts are to eelgrass beds adjacent to deep water habitats, while the proposed mitigation is near the airport runway and in shallow water habitats a considerable distance from deep water habitats. There are likely unforeseen FAA issues with the proximity of the mitigation site to the airport runway, this should be explored in detail with the FAA. The location of the eelgrass CWM site is situated in a portion of the Coos Bay Estuary classified as "52-Natural Aquatic" in the Coos Bay Estuary Management Plan where dredging is not allowed. This issue needs to be clarified by Coos County with respect to land use consistency.

Insufficient Mitigation-Stream Impacts: Comments assert that the project will impact many waterways' beneficial uses, water quantity and quality will be further impaired from construction of this project. Potential impacts include but are not limited to increased water temperatures, dissolved water oxygen, turbidity, etc. from riparian shade removal in 303(d) listed waterways and other waters. Disruption of fluvial processes, increased erosion and downstream

sedimentation and turbidity from construction activities, impacts on spawning and rearing habitats, impacts on fish migration and passage.

Many people have raised concerns that Federal Energy Regulatory Commission (FERC) procedures are vague and will not provide assurances that water quality/quantity standards will be protected. Stream risk analysis, alternative ways to avoid and minimize impacts for each water crossing are not possible on properties with denied access. How are any reasonable alternatives considered if access is denied and unattainable without a FERC Order granting condemnation authority? Alternatives are not fully explored or explained to avoid and minimize impacts at every opportunity.

ODFW Habitat Mitigation Policy Inconsistencies: Commenters expressed that the applicants should work with ODFW to appropriately categorize each wetland and waterway impact from start to end along the proposed pipeline route. Once the appropriate habitat category has been assigned in agreement with ODFW, appropriate mitigation can be discussed based on resources impacted. Currently, temporary impacts mitigation is insufficient and inconsistent with the ODFW Habitat Mitigation Policy for streams and wetlands crossed by the pipeline.

Fish Passage-Coastal Zone Management Act (CZMA) and Non-CZMA Streams:

Comments expressed concern that fish passage has not been addressed by the applicant. According to ODFW, applications for fish passage have not been submitted and this is critical to the Department for impact analysis determinations yet to be made. Fish passage applications may need to include a contingency method for crossing each waterway. For instance, if any of the HDD's fail, what is next, certainly not open trench, wet cut methods that are not currently being evaluated as alternative crossing methods under consideration.

Wetland Delineations/Concurrence: Public comments point out that some of the wetland delineation reports have either expired or are about to expire, see C4, C5, C9 and C10 of the application.

Additional Information Requested by the Department

Delineation-status for JCEP/PCGP: To allow adequate review time of the wetland delineation report in order to meet the decision deadline, please submit the following data requests by the dates requested.

- 1) By April 17, 2019: GIS shape files of the new routes and re-routes so DSL can finish the initial review and provide any additional review comments in time to address this summer (involving additional field work, if needed);
- 2) End of April 2019: Responses to the initial delineation review questions and delineation maps (prototype subset of each map series for completeness review);
- 3) June 7, 2019: Responses to GIS review questions;
- 4) Last week of June 2019: Site visits (possible); and
- 5) August 9, 2019: Everything due: responses to all remaining requests for information based on site visits, GIS review responses and follow-up review requests, all final delineation maps, and all supporting materials for the concurrence.

Bonding Requirements: Prior to any permit issuance, a performance bond should be negotiated and put in place for the Eelgrass and Kentuck CWM projects. Bonds are required for non-public agencies that have permanent impacts greater than 0.2 acre. Proposed financial instruments need to demonstrate consistency with OAR 141-085-0700.

Administrative Protections Required for Eelgrass and Kentuck CWM projects:

Administrative protection instruments need to demonstrate consistency with OAR 141-085-0695.

Oregon Department of State Lands, Land Management Issues: Any proposed uses or activities on, over, or under state owned lands requires Department proprietary authorizations.

Extensive Comments-Detailed response requested. The Department requests that the applicant respond to all substantive comments. Certain commenters provided extensive, detailed comments. The Department would like to call these comments to the applicant's attention to ensure that the applicant has time to sufficiently address them.

- Mike Graybill;
- Jan Hodder;
- Rich Nawa, KS Wild;
- Stacey Detwiler, Rogue Riverkeepers;
- Jared Margolis, Center for Biological Diversity;
- Jodi McCaffree, Citizens Against LNG;
- Walsh and Weathers, League of Womens Voters;
- Wim De Vriend;
- The Klamath Tribes, Dawn Winalski;
- Tonia Moro, Atty for McLaughlin, Deb Evans and Ron Schaaf;
- Regna Merritt, Oregon Physicians for Societal Responsibility;
- Oregon Women's Land Trust;
- Sarah Reif, ODFW;
- Margaret Corvi, CTLUSI;
- Deb Evans and Ron Schaaf;
- Maya Watts; and
- Steve Miller.

All comments received during the public review of this application were previously provided to Jordan Cove by the Department via [Dropbox](#) and should be responded to as well. Please submit any responses to the Department and copy the commenting party if contact information was provided.

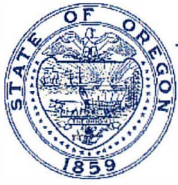
The Department asks that any responses be submitted in writing within 25 days of the date of this letter to allow adequate time for review prior to making a permit decision. If Jordan Cove wishes to provide a response that will take more than 25 days to prepare, please inform me as soon as possible of the anticipated submittal date.

The Department will make a permit decision on your application by September 20, 2019, unless Jordan Cove requests to extend that deadline. Please call me at (503) 986-5282 if you have any questions.

Sincerely,



Robert Lobdell
Aquatic Resource Coordinator
Aquatic Resource Management



Oregon

Kate Brown, Governor

Department of State Lands

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January 21, 2020*

State Land Board

Ms. Natalie Eades
 Jordan Cove LNG
 111 SW 5th Ave, Suite 1100
 Portland, OR 97204
 Via Email: NEades@pembina.com

Kate Brown
 Governor

Bev Clarno
 Secretary of State

Subject: Response to January 16, 2020, Extension for Time to Review Permit

Tobias Read
 State Treasurer

Dear Ms. Eades:

I am in receipt of your letter dated January 16, 2020, wherein you requested an extension from January 31, 2020, to March 31, 2020, for the Department to make a decision on the Jordan Cove Energy Project's (JCEP) removal-fill permit application number 60697-RF.

In your letter you cite the following factors as a need for the extension: 1) more time is needed to file JCEP's Clean Water Act Section 401 application with DEQ, which you say "will not be finalized until late this month;" and, 2) JCEP is awaiting comments from the Department's attorney on JCEP's draft bonding agreement and non-disclosure agreement regarding your commercial customers.

In the second paragraph of the letter you state that you are concerned the current deadline of January 31, 2020, "will not provide enough time to finalize the outstanding items noted above, *among others*, and subsequently allow the Department sufficient time to incorporate them into its review and permitting decision." [Emphasis added.]

You correctly cited OAR 141-085-0560(6)(b) in your letter requesting an extension: "The permit decision deadline may be extended beyond 90 calendar days when the applicant and the Department agree to an extension." In this case, the Department does not agree to an extension and is therefore denying your request. My reasons are set out below.

As you know, the present removal-fill permit application was filed with the Department on November 3, 2017. The Department determined the application was incomplete November 30, 2017, and agreed to extend deadline for resubmittal of a revised application to April 30, 2018. We subsequently agreed to extend the resubmittal deadline to May 18, 2018. We received a revised removal-fill permit application on May 10, 2018. On June 4, 2018, JCEP requested the Department suspend its review of the revised application and change the application status to "awaiting revision."

*A corrected copy was provided on January 22, 2019. The original incorrectly stated the date of the Jan. 16, 2020 conversation as Jan. 16, 2019. Additionally, mitigation plans are compensatory, not comprehensive. Those edits are reflected in this document.

On August 24, 2018, JCEP requested that the “awaiting revision” application status continue, and that the resubmittal deadline be extended to November 30, 2018. The Department agreed. On November 7, 2018, the Department received another revised removal-fill application. We conducted a completeness review and determined the application was sufficiently complete to be circulated for public review and comment. On December 6, 2018, the public comment period was opened and remained open until February 3, 2019.

During the public comment period, the Department held five public hearings around the state: Klamath Falls, Central Point, Canyonville, Coos Bay, and Salem. More than 2,000 people are estimated to have attended those hearings. The Department received more than 49,000 comments during the entire public comment period.

The Department was required to provide JCEP with a removal-fill permit application decision by March 5, 2019. Due to the volume of public comments, the Department requested an extension to September 20, 2019. JCEP agreed.

The Department completed its review of the public comments and sent our Public Review issues letter to JCEP on April 10, 2019. JCEP submitted its initial response to the April 10 letter on May 9, 2019. The Department met with JCEP on July 10, 2019, to review that response.

On September 4, 2019, the Department received JCEP responses to public comments. JCEP indicated that a second response to public comments would be forthcoming on October 20, 2019. We received only partial responses in several communications after October 20, 2019.

On September 13, 2019, JCEP requested an extension to January 31, 2020. The Department agreed by letter of the same date to the extension.

On October 7, 2019, DSL staff Bob Lobdell and I met with Harry Anderson and Mike Koski from Pembina to discuss concerns regarding delineation issues. We reviewed the letter I sent to Mayor Benetti and the Coos Bay City Council on October 7, 2019, indicating that a removal-fill permit for JCEP could not be issued without an affirmative Land Use Compatibility Statement (LUCS) from each of the local jurisdictions in which the removal-fill activity will occur. I also hand-delivered a letter to Mr. Koski regarding the items upon which the Department could hypothetically consider conditioning a removal-fill permit, as well as those items we could not. We also reviewed and discussed the decision deadline of January 31, 2020.

On November 12, 2019, the Department provided a letter to JCEP outlining the remaining issues to resolve public comments. On November 14, 2019, the Department met at length with JCEP and its representatives to discuss that letter.

On December 5, 2019, JCEP submitted a letter responding to the Department’s November 12, 2019, letter. The Department and JCEP representatives again met at length on December 12, 2019. I sent a letter to JCEP following the meeting summarizing what needed to be done to update information on the Joint Permit Application form. I requested those updates be provided by January 2, 2020. An email was

received January 3, 2020, that provided the Department with updated impact tables and figures but did not adequately address all outstanding issues.

On December 18, 2019, the Department received an email and letter attachment from you that did not satisfactorily answer the outstanding questions. The letter also contained incorrect assumptions about agreements between agencies regarding a mitigation plan the Department has not yet received.

Over the next several weeks, several emails provided only partial responses to outstanding questions.

On the evening of January 15, 2020, the Department received an extensive, very specific 18-page letter from the Oregon Department of Fish and Wildlife (ODFW) outlining several outstanding issues. ODFW states in their letter that "At this time, it is difficult for ODFW to provide an updated comprehensive review when the most current information has only been provided in a piece-meal fashion." The JCEP letter and email of December 18, 2019, stated that state agencies were in agreement on these issues; in contrast, the ODFW letter indicates that these issues have not been resolved.

On January 16, 2020, I received a call from Mike Koski. Mr. Koski outlined the request for an extension to March 31, 2020, indicating additional time was needed to finalize the Section 401 application to DEQ. Mr. Koski noted JCEP was unable to file the application on January 14, but they were working hard with DEQ staff and anticipated a mid-February submittal.

I subsequently contacted DEQ Director Richard Whitman for additional information regarding current status of the JCEP 401 application. Director Whitman indicated DEQ staff had been prepared to receive the application on January 14 and had been notified a short time before that JCEP was not ready to file. I also asked Director Whitman how long it would take for DEQ to review an application for completeness once it was received, and he said at least 4-6 weeks. Director Whitman provided additional information regarding his concerns in a follow-up email.

That brings us to the present letter of January 16, 2020, requesting an extension to March 31, 2020. In addition to indicating more time is needed for the Section 401 permit application, the letter indicates JCEP is awaiting the non-disclosure agreement (NDA) and draft bonding agreements from DSL counsel. Our counsel has indicated to me the letter of credit draft is acceptable, and that emails indicate your counsel was to provide the first draft of the NDA; he has not done so. There is still time for you to do that.

Please be aware the Department has not yet received requested critical information regarding the eel grass Compensatory Wetland Mitigation plan, the Kentuck Compensatory Wetland Mitigation issues raised by ODFW, the analysis of temporary impacts to wetlands and waters, the stream mitigation to resolve ODFW's comments, the protection instruments and bonding for the mitigation sites, and the updated LUCS from Coos Bay, North Bend and Coos County, among other issues. Mr. Koski indicated the LUCS had been secured and would be provided by mail; the Department has yet to receive them.

The Department has long worked with JCEP in establishing reasonable timelines for submission and review of the removal-fill permit application. My staff and I have clearly and regularly communicated

regarding the remaining information needed, making ourselves available for numerous phone calls and meetings and engaging in regular email correspondence.

I previously indicated in September and December the possibility of revisiting the January 31, 2020, decision timeline. However, the Department has not received timely and sufficient information to address all outstanding questions. Therefore, we will make a decision on January 31, 2020, based on the record in front of us.

Sincerely,



Vicki L. Walker, Director
Oregon Department of State Lands

Cc: Mike Koski, Pembina
Governor Kate Brown
Treasurer Tobias Read
Secretary of State Bev Clarno
Jason Miner, Natural Resource Policy Manager/Land Board Assistant, Office of Gov. Kate Brown
Sen. Betsy Johnson
Sen. Arnie Roblan
Rep. Caddy McKeown
Director Richard Whitman, Oregon Department of Environmental Quality
Director Jim Rue, Oregon Department of Land Conservation and Development
Director Curt Melcher, Oregon Department of Fish and Wildlife
Director Janine Benner, Oregon Department of Energy
Jesse Ratcliffe, Oregon Department of Justice



Jordan Cove LNG
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www.jordancovelng.com

January 23, 2020

Ms. Vicki Walker
Director, Department of State Lands
77 Summer St, NE
Suite 100
Salem, Oregon 97301

Subject: Withdrawal of Removal/Fill application – 60697-RF

Dear Director Walker:

Pursuant to OAR 141-085 Jordan Cove Energy Project, LP and Pacific Connector Gas Pipeline L.P. are hereby withdrawing the removal fill application filed with the Department of State Lands (“DSL” or the “Department”) on November 3, 2017 (60697 -RF) effective January 24, 2020.

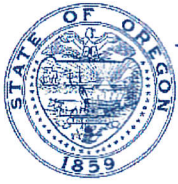
We understand that by withdrawing the application we are forfeiting the application fee submitted to the Department.

We appreciate the effort the Department has expended in reviewing our application to date. Should you have any questions or require further information, please let me know.

Regards,

A handwritten signature in cursive script that reads "Natalie Eades".

Natalie Eades
Manager, Environment & Regulatory
Jordan Cove Project



Oregon

Kate Brown, Governor

Department of State Lands

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January 30, 2020

Ms. Natalie Eades
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111 SW 5th Ave, Suite 1100
Portland, OR 97204
Via Email: NEades@pembina.com

State Land Board

Kate Brown
Governor

Bev Clarno
Secretary of State

Subject: Response to email January 24, 2020, regarding Wetland Delineation Report and Proprietary Applications

Tobias Read
State Treasurer

Dear Ms. Eades:

The Department of State Lands (Department or DSL) is in receipt of your January 23 email withdrawing the Jordan Cove Energy Project (JCEP) removal-fill application 60697-RF from further consideration.

As a follow up, I inquired by email dated January 24, 2020, whether JCEP wished to withdraw the remaining applications from review, or whether you wished them to remain active. To recap, the applications remaining with the Department for processing as of January 24, 2020 were:

Wetland Delineation Report review: WD2018-0281 (I incorrectly identified it as -2081 previously)

Proprietary applications for use of state-owned waterways:

- 56483-EA Stock Slough crossing
- 56492-EA Vogel Creek crossing
- 56494-EA Kentuck Slough crossing
- 56495-EA Coos River crossing
- 56517-EA T34S, R01W, Section 2 temporary use
- 56518-EA T34S, R01W, Section 2 temporary use
- 62041-EA Coos Bay crossing
- 62042-EA Coos Bay crossing
- 62168-EA Pile Dike Rock Apron
- 62173-EA Kentuck Outflow
- 62174-EA APCO site (bridge easement)
- 62176-RG Navigation Buoy

In response to my email inquiry on January 24, you replied the same day indicating the following: *"Please continue processing the Wetland Delineation Report review (WD 2018-*

2081). *Jordan Cove hereby withdraws its applications for proprietary easements as listed in your email below.*” As I mentioned above, the correct identification for the Wetland Delineation Report is WD2018-0281.

Pursuant to your direction on behalf of JCEP, the Department has now withdrawn all proprietary applications from further review.

The Department will continue its review of the Wetland Delineation Report for proposed re-route sections of the Pacific Connector Gas Pipeline (DSL file no. WD2018-0281).

To recap the history of this report, the Department originally received your Wetland Delineation Report for the proposed re-route sections on May 14, 2018. The purpose of this report was, and is, to obtain the Department’s concurrence on state-jurisdictional wetland and waterway boundaries within the study area as defined in the report. As you know, a DSL-concurred Wetland Delineation Report is one requirement for the state removal-fill permit process. However, DSL’s review of, and concurrence with, a Wetland Delineation Report can be done independently of a removal-fill permit application.

On September 10, 2018, the Department completed its initial review of this delineation report. Additional information needs were identified and sent to JCEP at that time. On April 30, 2019, the Department received JCEP’s first response to the identified needs. On July 16, 2019, the Department replied to JCEP identifying items that were still not sufficiently resolved in order to concur with the report. On January 20, 2020, the Department received JCEP’s second response to our comments.

Per your January 24, 2020 email request, the Department will continue with its review of the delineation report and, specifically, the “second response” materials we received on January 20. We anticipate completing our review of this additionally submitted material by approximately March 31, 2020. If this submittal adequately responds to the remaining information needs, then DSL concurrence with the report will be issued at that time. If it does not, the Department will identify what deficiencies remain.

Finally, and for clarity, I want to make sure you understand that when the Department does concur with this delineation report, it will be a partial concurrence. This means that for those parcels within the study area that you did not have legal access to, preliminary jurisdictional determinations (PJDs) will be made by the Department. Preliminary jurisdictional determinations are not sufficient for state removal-fill permitting purposes. At whatever time you may obtain legal access to those parcels, additional field work and subsequent DSL review will be required to convert those preliminary determinations to final determinations (JDs) and thus be suitable for permitting purposes.

Please feel free to contact me if you have any questions on this submittal.

Sincerely,



Vicki L. Walker, Director
Department of State Lands

Cc: Mike Koski, Pembina

Governor Kate Brown

Treasurer Tobias Read

Secretary of State Bev Clarno

Jason Miner, Natural Resource Policy Manager/Land Board Assistant, Office of Gov. Kate Brown

Sen. Betsy Johnson

Sen. Arnie Roblan

Rep. Caddy McKeown

Director Richard Whitman, Oregon Department of Environmental Quality

Director Jim Rue, Oregon Department of Land Conservation and Development

Director Curt Melcher, Oregon Department of Fish and Wildlife

Director Janine Benner, Oregon Department of Energy

Jesse Ratcliffe, Oregon Department of Justice

Oregon Department of State Lands**Timeline: Jordan Cove Energy Project Removal-Fill Permit Application**

Nov. 3, 2017: Jordan Cove LNG submitted a removal-fill permit application. DSL had 30 days to conduct a completeness review of the submitted materials.

Dec. 1, 2017: DSL concluded the completeness review and determined that the application was incomplete. Additional information was needed in a variety of areas, including but not limited to project purpose and need, impacts to recreation in the bay, fill dimensions and volumes, compensatory wetland mitigation, Oregon Department of Fish & Wildlife fish-passage requirements, and required signatures. Under Oregon removal-fill law, the applicant has 120 days to provide the information, or DSL may administratively close the application.

March 12, 2018: DSL agreed to extend the revised application submittal deadline to April 30, 2018, as requested by the applicant.

April 24, 2018: DSL agreed to extend the submittal deadline to May 18, 2018. Jordan Cove LNG requested the additional time to prepare a revised permit application to address the information deficiencies identified during DSL's completeness review.

May 10, 2018: DSL received a revised removal-fill permit application for the Jordan Cove Energy Project. DSL had 30 days to conduct a completeness review of the submitted materials.

June 4, 2018: Jordan Cove LNG requested that DSL suspend review of their removal-fill permit application and change its status to "awaiting revision." The Department agreed to the request.

Aug. 24, 2018: Jordan Cove LNG requested that the "awaiting revision" application status continue, and the resubmittal deadline be extended to November 30, 2018. The Department agreed to the request.

Nov. 7, 2018: DSL received a revised removal-fill permit application for the Jordan Cove Energy Project. DSL has until Dec. 6 to conduct a completeness review of the submitted materials.

Dec. 6, 2018: DSL determines the applicant has provided the information required for DSL to evaluate their removal-fill permit application. A 60-day public comment period opens, and five public hearings are scheduled.

April 10, 2019: DSL requested additional information from the applicant and indicated a permit decision deadline of Sept. 20, 2019.

Sept. 13, 2019: DSL extends the permit decision deadline to Jan. 31, 2020 at the request of the applicant.

Jan. 21, 2020: DSL denies the applicant's request for an extension of the permit decision deadline.

Jan. 24, 2020: Jordan Cove LNG withdraws the removal-fill permit application.

Oregon Department of State Lands**Draft Removal-Fill Permit Findings for the Jordan Cove Energy Project**

The Oregon Department of State Lands has provided the following DRAFT document in response to a public records request. The Department anticipated making a decision on Jan. 31, 2020 regarding the Jordan Cove Energy Project's removal-fill permit application; staff had begun drafting the permit findings. Jordan Cove withdrew its removal-fill permit application effective Jan. 24, 2020.

Does this document contain the Department's permit decision?

No. The document that follows is an incomplete draft. When writing removal-fill permit findings, the Department reviews information for each of the nine factors considered in making a permit decision and documents information related to each of those factors. *See below for a brief overview of the factors.*

Ultimately, the Department balances all information for all considerations and makes the determinations required by law – whether the project is consistent with the protection, conservation, and best uses of the water resources of the state; and whether the project would not unreasonably interfere with preservation of waters for navigation, fishing, or public recreation.

Because the considerations precede the determinations, the determinations had not yet been made.

How far along was the Department in drafting these permit findings?

Staff had begun putting information from the agency record into the Department Considerations section for the nine factors. The agency record includes information from the application, from the applicant, from the public review period, from other state agencies, etc.

Are any parts of the document final?

The document is an incomplete draft. Drafting of the Department Considerations section was in process.

Why is some text redacted?

The redacted text is exempt from disclosure pursuant to ORS 192.355(9)(a), which exempts records that are confidential or privileged under Oregon law. In this case, the redacted text is attorney-client privileged pursuant to ORS 40.225. The redacted text was drafted in furtherance of the rendition of professional legal services.

What are the factors considered in determining whether to issue a permit?

Briefly, the nine factors are 1. public need for and likely benefits from the proposed removal or fill; 2. cost to the public if the removal or fill doesn't occur; 3. availability of alternatives to the project; 4. availability of alternative sites; 5. whether proposed activity conforms to sound policies of conservation and would not interfere with public health and safety; 6. whether the proposed fill or removal conforms with existing public uses of waters and with uses designated for adjacent land in an acknowledged comprehensive plan and land-use regulations; 7. Whether the proposed fill or removal is compatible with the acknowledged comprehensive plan and land use regulations for the area where the proposed fill or removal is to take place or can be conditioned on a future local approval to meet this criterion; 8. Whether the proposed fill or removal is for streambank protection; 9. Whether the applicant has provided all practical mitigation to reduce the adverse effects of the proposed fill or removal.

Permit Findings for Application No. 60697-RF, Jordan Cove Energy Project L.P. and Pacific Connector Gas Pipeline L.P.

Department Considerations. In determining whether to issue a permit, the Department will consider all the following factors using all the information in the agency record:

a) Public need for the proposed fill or removal and the social, economic or other public benefits likely to result from the proposed removal or fill. When the applicant for a permit is a public body, the Department may accept and rely upon the public body's findings as to local public need and local public benefit;

[REDACTED]

[REDACTED]

[REDACTED]

The applicant and project proponents have provided information in the application and responses to public comments, supporting social, economic and other benefits to the public from the proposed fill and removal, and the project it facilitates, in the form of:

- Temporary construction jobs for the LNG terminal, associated facilities, and the pipeline (6500 jobs estimated during peak construction).
- Permanent jobs for the operation of the facility (215 permanent family-wage jobs)
- ECONorthwest report estimated additional spin off jobs within the communities for health, food services, retail, etc.
- 500 million dollars to the Community Enhancement Plan by directing eligible Enterprise Zone tax savings to local governments, benefitting Coos Bay, North Bend and Coos County residents.
- 60 million per year approximately in local taxes to Coos, Douglas, Jackson and Klamath Counties.
- 50 million annually approximately to Oregon in new taxes
- The project as planned is an approximately 10-billion-dollar private investment in Southern Oregon. The financial 'infusion' represents the public benefits.

Project opponents have provided comments indicating negative social and economic impacts of the proposed fill or removal and the project it facilitates in the form of:

- Eelgrass impacts are virtually un-mitigatable, the impacts are not satisfactorily addressed following the states hierarchy for mitigation, avoidance first, minimization second, and lastly look to mitigate adverse impacts from necessary activities resulting in fill and removal in waters of the state. Eelgrass is a highly sensitive very important estuarine resource that provides feeding areas and cover for a multitude of species including crab, Coho and chinook salmon juveniles, a number of rockfish species at times and the 'food chain' of invertebrates and other aquatic organisms that would be impacted by the project and some impacts from the proposed mitigation as well.
- Impacts from dredging the Navigation Reliability Improvements, side slope equilibrium issues after dredging and the direct impacts that would result to adjacent subtidal and intertidal resources and potentially impacting more eelgrass and mudflats that are not accounted for nor mitigated for in the application.
- Impacts from dredging the slip and access channel to eelgrass habitats and intertidal habitats. Impacts to juvenile crabs and aquatic invertebrates understated as habitat impacted at the access channel and slip is intertidal and eelgrass directly adjacent to deeper water which provides more diversity of use by a multitude of species.
- Navigational impacts to the public, impacts to fishing, crabbing, and recreational uses in and around Coos Bay will be impacted by the project.
- Comments indicate that out of town use of Coos Bay and for salmon fishing and crabbing provides significant economic and recreational opportunities that could be lost or significantly hindered by the project construction related impacts and operational impacts of the project.
- Potential impacts to archeological sites of historical significance to the local tribes from the NRI dredging, slip and access channel dredging, vibro-compaction of the upland sites to meet seismic standards, and potentially from the mitigation sites proposed in the bay and the kentuck sites, and possibly areas along the pipeline route.
- Out of kind eelgrass mitigation is not acceptable to the general public. As proposed the eelgrass mitigation is well away from any deep water and the functional and values impacted are not replaced with a different habitat type.
- Mudflats are also very important estuarine features that provide food resources. Any impact to mudflats requires adequate mitigation, current plan does not address these issues. The conversion of mudflats at the proposed eelgrass wetland mitigation site will result in a loss of mudflat. That loss has not been mitigated.
- Kentuck mitigation site is already a functioning wetland and it would be the single largest freshwater wetland impact, but those impacts are dismissed as part of the mitigation effort.
- Out of watershed mitigation issues by consolidating all freshwater wetland conversion along the pipeline to a single mitigation site in Coos Bay.

- Reduced livability and property values in the area due to construction and operational impacts from the project dredging, LNG terminal and associated facilities, and the properties near the pipeline along its entire route. Landowners have mentioned at all venues and commenting methodologies that their properties have been impacted already for over 10 years, some longer whose lands fall along the pipelines entire route.
- Objections to the use of eminent domain to take private properties along the pipeline route for profit of a Canadian gas company.
- Possible impacts to downstream municipal water supplies from construction disturbance along the pipeline corridor.
- Impacts to wells near the pipeline corridor.
- Impacts to irrigation sources and agricultural lands from pipeline construction activities.
- Impacts on thermal loading of streams from right of way clearing, in preparation for the pipeline installation construction.
- No reasonable assurance that the construction and operation of the project will comply with applicable state water quality standards.
- Impacts to fish habitat
- Impacts to 303d listed streams, further degradation of water quality.

[REDACTED]

[REDACTED]

b) economic cost to the public if R/F not accomplished;

[REDACTED]

[REDACTED]

c) the availability of alternatives to the project for which the fill or removal is proposed;

Jordan Cove explains that the analysis of the alternatives is grounded on the purpose and need for the project, determining a geographic area for potential alternative sites, evaluation against criteria to screen alternatives and identification of reasonable alternatives for the project. Public comments question since the Malin intersection of the Gas Transmission Northwest (GTN) and Ruby pipelines is a fixed element of the purpose and need statement, it requires justification on why that interconnect is the only possible start point for an export pipeline and LNG terminal proposal. This argument is used repeatedly to discount other reasonable alternatives from further consideration.

The Ruby and GTN pipeline interconnect was used previously by Jordan Cove Energy project when the original proposal was for importing LNG to markets in Southern Oregon and northern California. Any alternative site explored by Jordan Cove since that time uses the GTN/Ruby interconnect as a start point for the export pipeline. Anything north or south is discounted for distance and economical reasons but the source gas should dictate the origin or start point, not a fixed location without justification.

For example, if the majority of the gas is sourced from western Canada and a small portion from the Ruby pipeline, it would make more sense to be closer to the point of origin for an export proposal. Numerous public comments raise similar issues around the inadequacies of the alternatives analysis and the overly narrow, unjustified 'fixed elements' of the purpose and need statement as guiding criteria for the flawed alternatives analysis. The other 'fixed element' of the purpose and need statement is the required output of 7.8 Mtpa of LNG for export, this also requires justification which Jordan Cove failed to provide an adequate response. [REDACTED]

For the record, Jordan Cove Energy Project (JCEP) was submitted as a 2-part application: Part 1 is the LNG Terminal and Part 2 is the pipeline. JCEP is made up of two entities: Jordan Cove Energy Project, L.P. and Pacific Connector Gas Pipeline (PCGP), L.P. collectively referred to as JCEP. The applicant asserts that PCGP has already executed two precedent agreements with JCEP, as an anchor shipper, for 95.8% of pipeline capacity. The specific LNG export output volume (7.8 mTPA), is used to justify the purpose and need for the project.

The applicant explored other alternatives to the project. The project will provide natural gas from the U.S. Rocky Mountains and western Canada as an outlet for export to Asian markets. As a result, there are no domestic energy alternatives or energy conservation measures that would meet the projects purpose and need such as wind or solar.

System alternatives were explored that could make use of other existing or proposed LNG facilities to meet the stated purpose and need of the proposed project. Adoption of a system alternative could preclude the need to construct all or part of a project, although some modifications or additions to other existing systems would be required.

Jordan Cove explored existing and proposed LNG export terminals, the U.S. East Coast and Gulf Coast LNG export facilities, that are far removed from the Ruby GTN pipeline intersection. One existing LNG export terminal in West Coast of North America, the Kenai LNG plant located in Alaska, cannot be accessed though existing or practicable expansions of pipeline networks.

The Canadian West Coast proposed LNG terminals were explored, but Jordan Cove concludes that none are currently authorized to export U.S. sourced natural gas. Without authorization to export, the Canadian West Coast projects cannot meet the purpose and need, and are not discussed any further.

The applicant then explored LNG terminal site alternatives and based the alternatives analysis focused on characteristics that determine whether or not a proposed alternative site can meet the Projects purpose and need or is reasonable from a technical, cost and logistical perspective. The screening criteria used was 1) Land Availability, 2) Channel depth, 3) Navigational Accessibility, 4) LNG vessel transit distance and 5) Pipeline length and costs. Five sites that could meet the screening criteria were identified for further evaluation. Oregon sites-Coos Bay, Astoria, Wauna and Port Westward and Washington-Grays Harbor. All five site alternatives would require construction of new natural gas pipelines, and in four cases, modification and upgrades to existing transmission pipelines to access western Canadian and U.S. Rocky Mountain natural gas sources from the intersections of the GTN Pipeline and Ruby Pipeline near Malin, OR. The pipeline cost comparison result when applied to the five site alternatives shows that the cost of new pipeline to provide comparable access to western Canadian and U.S. Rocky Mountain gas is between 1.1 billion and 1.8 billion more than siting the LNG terminal in Coos Bay. If the start point was anything else besides the interconnect at the GTN and Ruby Pipelines, the alternatives analysis would yield different results. Environmental analysis was the next step in identifying the proposed LNG terminal location, the analysis explains that the main differences between the potential impacts for the various sites were in regards to the pipeline environmental impacts associated with each LNG terminal location. All other sites not close to the GTN and Ruby interconnect rationally did not fare well and were dismissed from further consideration. Based on the specific purpose and need statement, Coos Bay was determined to be the site that would meet the purpose and need for the project with the least environmental impacts.

Some commenters request further analysis of alternate routes and terminal sites, including Wauna, Oregon, and Humboldt Bay, California. To the extent alternative sites were feasible or practicable, they were analyzed in detail in the March 2019 DEIS. From the DEIS Section 3.3.2: "Three sites (Astoria, Port Westward, and Grays Harbor) would have a significantly greater number of residences located within 1 mile, while one site (Wauna) would have significantly fewer. Three sites (Wauna, Port Westward, and Grays Harbor) would have less impact on freshwater wetlands than the proposed site, while one site (Astoria) would have more. One site (Astoria) is estimated to require significantly more impact on estuarine and open water habitats than the proposed site. All four alternative sites would require at least 100 more miles of supply pipeline than the proposed site, ranging from an estimated 103 miles (Port Westward) to 170 miles (Astoria) of additional pipeline required, which would require an estimated 2,224 to 3,672 additional acres of disturbance for pipeline construction. When evaluating these potential impacts, we have not identified an alternative site that would result in a significant environmental advantage over the proposed site. Therefore, we conclude that none of the regional alternative sites would result in a significant environmental advantage over the proposed site in Coos Bay."

Humboldt Bay was analyzed as an alternative site in the DEIS Section 3.3.1, page 3-9: "California has 11 public ports. The closest deepwater port to Coos Bay in California is the Port of Humboldt Bay. The Port of Humboldt Bay is located approximately 185 miles south of Coos Bay and 225 miles north of San Francisco (the next closest deepwater port is in San Francisco bay). The Samoa Peninsula lies between the Pacific Ocean and Humboldt Bay and hosts several active and former marine facilities, berths, docks, and terminals. According to the 2018 Humboldt Bay Maritime Industrial Use Market Study, 948 acres of land have been designated for Coastal Dependent Industry (CDI) on the Samoa Peninsula including the approximately 344-acre Eureka Municipal Airport site which has waterfront access and is the largest single property on the peninsula.

It is unknown whether a combination of other CDI properties equaling approximately 200 acres is available. The channel system leading into and within Humboldt Bay varies in length, width, and depth. The Bar and Entrance Channel is approximately 8,500 feet long, 500 to 1,600 feet wide, and is authorized to a depth of 48 feet mean low level water (MLLW). The North Bay Channel which serves the Samoa Peninsula is 18,500 feet long, 400 feet wide, and is authorized to a depth of 38 feet MLLW. The distance by air from Malin, Oregon to Humboldt Bay is about 170 miles (the distance from Malin, Oregon to Coos Bay by air is also about 170 miles). We estimate the pipeline distance between these two points would be at least 200 miles, which is comparable to the proposed pipeline. An LNG terminal in Humboldt Bay would impact the environment in a manner similar to that of the proposed Project, including; permanent conversion of land use, dredging, turbidity, loss of wetlands, visual impacts, air quality and noise. Concerns at this location such as marine traffic restrictions, socioeconomic impacts, tsunamis, and public safety would also be the same as the proposed Project.

A natural gas transmission pipeline from Malin, Oregon to Humboldt Bay, California would traverse Klamath County, Oregon as well as Siskiyou and Humboldt Counties, California. The environment crossed by a pipeline from Malin to Humboldt Bay would be similar to that of the proposed route, including; mountainous terrain, several large rivers, three national forests, and BLM-managed lands. This pipeline route would also cross the ranges of over 20 federally-listed threatened and endangered species including NSO, MAMU, and salmon. Concerns with this pipeline route such as rural property values, socioeconomic impacts, and public safety would also be the same as the proposed Project. Based on the expected similar impacts of an LNG terminal in Humboldt Bay and the associated natural gas transmission pipeline from Malin, Oregon to Humboldt Bay, we conclude this alternative would not result in a significant environmental benefit when compared to the proposed action."

[REDACTED]

Commented [ME1]: [REDACTED]

d) The availability of alternative sites for the proposed fill or removal;

Jordan Cove used site specific evaluation criteria for potential LNG terminal sites along Coos Bay. The search area was confined to below the Hwy 101 bridge for navigational hazard reasons. The following site specific criteria used to select an LNG terminal site were 1) Environmental Impacts, 2) Parcel Size, 3) Land Availability, 4) Airport approach compatibility, 5) Safety Exclusion Zone and 6) Socio-Economic. Three potential sites in lower Coos Bay were evaluated with priority given to provide safe harbor for the LNG vessels that will call on the LNG terminal to meet US Coast Guard criteria. DB Western, Ingram Yard and South Dunes sites were evaluated using criteria stated above, the DB Western site is directly within the airport runway approach and does not meet land availability requirements and was dismissed. The key differentiating criteria that resulted in Ingram Yard being identified as the best Coos Bay site was the area of estuarine and wetland impacts when compared to the South Dunes site.

Commented [ME2]: [REDACTED]

The slip and access channel that connects the facility to the navigation channel was the chosen design configuration as opposed to a dock, trestle, or offshore structure design, none of which fit the safety criteria set by the Coast Guard. Other design alternatives were explored such as alternatives to the marine slip and access channel design, LNG storage tank designs, alternative sites to place the Southwest Oregon Regional Safety Center, alternatives for the workforce housing site, alternatives for the primary entrance to the facility, alternatives for electric power, liquefaction alternatives and dual mixed refrigerant alternatives or design alternatives.

Site layout alternatives were also explored for the access and utility corridors and the raising of the South Dunes site above tsunami elevations are discussed in the application. Dredged Materials Disposal plan contains an alternatives analysis on alternative disposal sites and supporting information. Other alternatives provided were in response to public comments such as the pile dike rock apron and the expanded alternatives analysis for the NRI dredging.

Due to the linear nature of a pipeline, it is impossible to avoid crossing wetlands and waterbodies along the 229 miles of the alignment. As detailed in the application, the preferred route was developed by considering construction requirements for a large diameter, high pressure, natural gas transmission pipeline. Constructability/integrity requirements were the primary consideration for routing the pipeline while minimizing potential impacts to sensitive resources such as the number of waterbody and wetland crossings and landowner encumbrances.

Based on the feasibility analysis, a cross-country route was selected which traverses ridgelines and watershed boundaries to ensure the safety, stability, and long-term integrity of the pipeline. By following ridgelines and watershed boundaries, the route potentially avoids some impacts to wetlands and waterbodies. Pipeline routing alternatives were provided in the application, though JCEP not having access to all properties does limit our impact analysis potential to speculative at best due to the lack of site specific information.

The pipeline portion of the project is still lacking a concurred wetland delineation as required for those properties they have access to along the pipeline alignment corridor.

[REDACTED]

There are also a number of properties with denied access, those properties for obvious reasons do not have delineation concurrence either.

[REDACTED]

e) Whether the proposed fill or removal conforms to sound policies of conservation and would not interfere with public health and safety;

Commented [ME3]: In addressing this we need to look to see if impact can be mitigated and if mitigation proposed is adequate.

The application proposed impacting the following waters of the state for the construction of a slip and access channel for an LNG Terminal, the associated facilities, and the 229 mile Pacific Connector Gas Pipeline across Coos, Douglas, Jackson, and Klamath Counties:

Estuarine impacts;

- Permanent impact to 3.08 acres of eelgrass beds (slip and access channel and pile dike rock apron)

- Permanent impact to 19.54 acres of mudflat, salt marsh and shallow subtidal areas (slip and access channel)
- Permanent impacts to 81.63 acres of deep subtidal habitats (NRI dredging and slip and access channel dredging).
- Total fill in estuary 39,483 cubic yards.
- Total removal in estuary 1,784,475 cubic yards.

Freshwater Wetland impacts;

- Permanent impact to 1.91 acres of dunal wetlands (LNG terminal and associated facilities)
- 39,273 cubic yards of fill
- 23 cubic yards of removal

Pipeline Impacts Wetlands and Waters:

- Pipeline will affect 342 waterbodies. Of the 342 waterbodies, 66 are perennial, 163 are intermittent, 100 are ditches, 9 are lakes or stock ponds, and 4 are estuarine crossings (2 HDD bores under Coos Bay and the Coos River Crossing).
- Pipeline will cross a total of 5.3 miles of wetlands. The construction right-of-way and temporary extra work areas will affect 112.19 acres of wetlands. 106.71 acres of palustrine emergent wetlands, 2.3 acres of palustrine scrub-shrub wetlands, and 2.55 acres of palustrine forested wetlands. Additionally 0.64 acres of palustrine unconsolidated bottom or aquatic bed wetlands will be disturbed by the pipeline.
- Permanent vegetation type conversion impacts will affect a total of 0.91 acres of wetlands, including 0.73 palustrine forested and 0.18 palustrine scrub-shrub wetlands.
- Approximately 9800 cubic yards of removal and fill (pipeline installation) in waters.
- Approximately 49,000 cubic yards of removal and fill (pipeline installation) in wetlands.

The November 7, 2018 application proposed several avoidance strategies and best management practices for the construction and operation of the facility to avoid and minimize impacts to waters of the state outlined below.

LNG Terminal and associated facilities:

- The LNG terminal access and utility corridor was sited to avoid most wetlands as possible given logistical constraints of raising site elevations above the tsunami inundation zones.
- The workforce housing site and Southern Oregon Regional Safety Center result in unavoidable impacts due to needing to raise the site to elevations above the tsunami inundation zone.

- Some wetlands at the terminal site were avoided by use of retaining walls. Others will be temporarily impacted during construction and restored when no longer needed.
- Temporary impacts at the APCO disposal sites for construction of a temporary pile support for bridge construction, no permanent impacts will result.
- There will be temporary and permanent fill into Coos Bay during the Marine Offloading Facility, the temporary fill will be removed during dredging of the access channel.
- All dredging is proposed to occur within the approved In-water work period
- Dredging pollution and control plans developed to minimize turbidity impacts during dredging.
- Trans-Pacific Parkway widening will result in 0.5 acres of estuarine impact. Sheet piling is proposed to isolate the work area from the bay.
- Dredged materials transfer lines will be placed on piling supports to avoid eelgrass areas between the NRI dredge sites and the APCO disposal site.
- Connection of the access channel and the slip to be excavated from uplands will be separated by a berm (ie. The existing shoreline) until such time the two are connected via dredging.
- 50 foot buffer will be maintained between the slip and the eastern edge of Henderson marsh (an adjacent 190 plus acre high value freshwater wetland).
- All piles driven into Coos Bay will be concrete or steel piling, no treated timbers will be used.
- All piles in fish-bearing waters will be driven 'in the dry' in order to minimize acoustic disturbances to fish and aquatic species.
- All equipment cleaned and inspected daily.
- Floating spill containment booms and absorbent booms will be maintained on-site during all phases of construction to facilitate cleanup in the case of accidental spills.
- A spill prevention, control, and containment plan will be developed and implemented.

Pacific Connector Gas Pipeline:

- Routing efforts to minimize wetland and waterbody crossings. The proposed route primarily follows ridgelines as it traverses the Coast, Klamath, and Cascade mountains and foothills. This ridgeline alignment provides the most stable landscape position for the pipeline and minimizes the number of waterbodies crossed.
- Incorporating FERC's Wetland and Waterbody Construction and Mitigation Procedures into the design minimizes the extent and duration of disturbance in wetlands and waterbodies.
- Locating temporary extra work areas a minimum of 50 feet from the edge of wetlands and waterbodies, where possible, to minimize impacts to wetland buffers and riparian zones as required by FERC's Wetland and Waterbody Procedures.

- Incorporating 5 HDD's to install the pipeline beneath the 1) Coos Bay estuary/2 HDD's; 2) Coos River; 3) Rogue River; and 4) Klamath River. In addition, a Direct Pipe crossing method has been incorporated to cross the South Umpqua River (mile post 71.27).
- Conventional bore will be used to cross the Medford Aquaduct, and 26 other canals, ditches, and drains which include all of the Bureau of Reclamation's jurisdictional facilities in the Klamath Basin.
- Crossing all streams flowing at the time of construction by dry open cut crossing procedures in the FERC manuals.
- Where clearing in wetlands outside the trench line and travel land, PCGP will cut, mow, or shear woody vegetation so that the roots are left intact.
- Sediment barriers will be intalled immediately after clearing and prior to initial ground disturbance.
- Sediment barriers will be properly maintained throughout construction and reinstalled as necessary.
- Where wetlands are adjacent to the construction right-of-way, sediment barriers will be installed to protect the wetlands.
- Sediment barriers will be removed after restoration is complete and revegetation has stabilized the disturbed areas.
- In wetlands where standing water or saturated soils occur or if equipment is causing rutting, timber mats will be used along with low ground pressure equipment.

The Department received thousands of comments that the construction or operation of the facility may lead to adverse effects to aquatic habitats, fishing or public health and safety. In summary they raised concerns about:

- Impacts to navigational safety, safe bar passage for commercial and recreational boaters, and to non-motorized boaters using lower Coos Bay are understated with no mitigation proposed.
- Impacts to fishing, scuba diving, and crabbing in Coos Bay waters, no mitigation proposed.
- Conflict between loaded LNG ships transiting at high tides, corresponding with optimal crabbing tides while currents are the slowest at 'slack tide'.
- Impacts to the dungeness crab fishery from the direct and indirect impacts of dredging (eelgrass beds, intertidal areas and subtidal areas) impacting all life stages of crab.
- Impacts to recreation and tourism, no mitigation proposed.
- JCEP eelgrass mitigation proposal relies on "best case scenario" for success of the mitigation effort without adequate documentation. ODFW is concerned about the excavated JCEP eelgrass mitigation basin filling in with sediment, and that the rate of sedimentation may not be conducive to survival, growth, and propogation of the planted eelgrass plants.
- ODFW recognizes that the ODSL mitigation ratio must be at 1.5:1 for creation of a new eelgrass bed at the proposed JCEP eelgrass mitigation site. However, the transplanting of eelgrass proposed by JCEP only achieves a

mitigation ratio of 1:1, which is insufficient to meet ODSL standards. The Applicant predicts that the transplanted eelgrass will survive, grow, and expand over a period of five years to fill out the excavated basin in order to achieve the required mitigation ratio of 1.5:1. The expectation by JCEP for the transplanted eelgrass to flourish has a great deal of uncertainty, and optimism by the applicant should not be considered as a guarantee to meet DSL's required mitigation ratio.

- ODFW recommends that the applicant increase the spatial extent of eelgrass transplants to achieve the mitigation ratio of 1.5:1 at the initiation of the planting (time-zero) rather proceed with the expectation that the required ratio will be met after a period of five years. The Applicant will not meet the ODSL mitigation policy standards unless the transplant activities begin with a ratio of 1.5:1.
- ODFW is concerned not only about sediment accretion rates but also there is concern over the lack of characterization or description of the expected underlying sediments that will be exposed by dredging. The underlying sediments may be compacted or anaerobic with relatively little interstitial space for the establishment of eelgrass roots/rhizomes and the movement of water. These expected characteristics of the underlying sediments are not conducive to survival and growth of transplanted eelgrass.
- The proposed mitigation actions for eelgrass should be designed to retain the full array of ecosystem services provided by eelgrass beds in the JCEP area. Planned mitigation activities should follow established in-kind, in-proximity standards established by ODFW.
- ODFW recommends a more detailed analysis of eelgrass mitigation sites that characterize the location, species composition, and abundance of the eelgrass and other submerged aquatic vegetation at the alternative sites. They further recommend JCEP provide a more detailed rationale for rejection of the alternative sites and acceptance of the proposed site. The existing JCEP Mitigation Plan is incomplete because it does not provide a full description of the steps that were taken to avoid adverse impacts to existing eelgrass beds in Coos Bay.
- The applicant does not document that serious consideration was given to avoidance of impacts to eelgrass beds.
- 5 years monitoring is insufficiently short time period to adequately evaluate long-term mitigation success.
- JCEP project description identifies permanent removal of eelgrass associated with the dredging and excavation of the access channel that will be constructed to provide ship access to the LNG terminal. Eelgrass beds that currently inhabit the intertidal and subtidal zones in the area of the proposed access channel will be dug up, salvaged and relocated into the intertidal zone at the Jordan Cove Embayment Site. The proposed mis-match in tidal elevation between eelgrass plants harvested from the access channel site (intertidal and subtidal) and the Jordan Cove transplant site (intertidal only) provides evidence that the transplants may face a high likelihood for failure.

- ODFW raised concerns over poor water quality issues with the shallow excavated basin design, this will likely cause water quality issues without design modification which is recommended. The proposed mitigation site should be designed to include a functional hydrodynamic connection to the primary tidal channel.
- Unconsolidated soft-sediment habitat is widespread in the Coos Bay estuary where it occurs extensively throughout the intertidal zone and sub-tidal zone along the bottoms, sides, and margins of primary and secondary tidal channels. Impacts from NRI dredging, the resulting side-slope equilibrium and the dredging of the slip and access channel will impact these habitats. Those unconsolidated soft-sediment tidal habitats provide the 'nursery' area for the bottom of the food chain and have implications to the estuary and its fishery. Crab and several species of clams are year round residents of these habitats as they are important feeding and rearing areas. When soft-sediment habitat is chronically disturbed and altered by dredging of the sub-tidal zone, there may be a permanent loss and impact to benthic invertebrate populations and a decline in the biodiversity of benthic communities.
- The JCEP Eelgrass Mitigation Plan does not adequately address the potential for loss of sediment adjacent to NRI areas 2-4, and does not give adequate consideration to loss or disturbance of the important eelgrass donor bed and reference bed located adjacent to NRI 4.
- ODFW recommended truncation of the in-water work period to protect the herring spawning for the Coos Bay dredging, not incorporated into project timelines by JCEP.
- The applicant has verbally committed to redesigning the Kentuck mitigation elevation plan to develop additional acreage that will be below elevation +5.5 NAVDD88 (the elevation threshold for saltmarsh development) on the site. This will offset loss of Category-2 Algae/Mud/Sand habitats that will be dredged and regraded at the eelgrass mitigation site south of the North Bend Airport runway. The exact acreage (6.81 acres + slope area) of grading/dredging at the eelgrass location has of yet not been finalized. ODFW will need updated Kentuck mitigation design plans and a complete eelgrass site dredging/grading plan in order to determine if the loss of the Category-2 Algae/Mud/Sand will be offset. ODFW recommends that the applicant include this information in a revised Compensatory Wetland Mitigation Plan.
- The Kentuck site is slated for disposal of 300,000 cubic-yards of dredge spoils from development of the JCEP access channel. ODFW will need to understand where fill proposed to be disposed of at Kentuck will be relocated in order to allow the Kentuck grading plan to produce the additional acres below elevation +5.5ft. There will also be a need to update the grading and erosion control plans for both the eelgrass mitigation site and Kentuck Mitigation site, which may have additional or different impacts to fish and wildlife.
- ODFW has reviewed the applicant's Comprehensive Mitigation Plan (submitted to the FERC Docket in September 2019; also see the FERC FEIS Sections 2.1.4 and 2.1.5), the proposed mitigation for permanent impacts to

streams and riparian habitats impacted by the pipeline. ODFW does not find the proposed mitigation meets the Fish and Wildlife Habitat Mitigation Policy's goal of no net loss of fish and wildlife habitat. Also, the mitigation actions are almost entirely on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands even though impacts will also occur on private lands. While ownership is not necessarily a requirement in the ODFW Fish and Wildlife Habitat Mitigation Policy, having mitigation be in-kind and in-proximity to the impacts are standards of the policy.

- Fish passage approvals within the CZMA mostly addressed with ODFW but not approved, two updated appendices are needed for final review according to ODFW.
- Fish passage plan for the non CZMA streams has not received by ODFW.
- The pipeline will cross 155 perennial streams. The pipeline right-of-way will impact a 75-foot wide corridor through riparian habitats. The excavation of the trench to install the 36" pipe will result in direct stream channel impacts at least 20 feet in width and bank to bank. A number of these stream locations are Essential Salmonid Habitat. Stream habitats often require several years post-disturbance for the channel bed, banks, and upslope to stabilize and recover at least minimal function. Normally in stream channel restoration projects, a minimum of three to five years is often needed moderate function recovery. It is ODFW's understanding that the applicant is developing Stream Function Assessment Method (SFAM) information for stream crossings. However, ODFW has not yet received this information and therefore cannot determine whether or how this information might affect mitigation plans.
- ODFW has noted that the PCGP applicant has not developed a plan to address:
 - The temporal loss of function to aquatic habitats and associated riparian forest (see ODFW Protest of BLM and USFS Plan Amendments, cited above and attached to this letter).
 - Consistency with the habitat categories and mitigation standards of the ODFW Fish and Wildlife Habitat Mitigation Policy,
 - SFAM evaluations for each crossing and how that might change compensatory mitigation,
 - Large Woody Debris that adequately offsets impacts. The PCGP Large Woody Debris Plan (included in the September 2019 Comprehensive Mitigation Plan) documented that up to four pieces of LWD will be placed where streams are rebuilt after trenching and installation of the 36" pipe. This is considered inadequate for restorative uplift to replace lost function (see ODFW protest of the BLM RMPA).
- ODFW has been reviewing the GIS files provided by the PCGP consultant for pipeline permanent and temporary impacts to freshwater wetland habitats. The specific impact acreages by type of wetland and ODFW Habitat Category have not been incorporated into the Compensatory Wetland Mitigation Plan, nor has the plan been assessed for its consistency with the ODFW Fish and Wildlife Habitat Mitigation Policy. ODFW acknowledges that permanent impacts will result in a limited quantity of permanent impacts (0.91) acres. However,

ODFW has substantive concern with temporal loss of function for the 112.19 acres of freshwater wetland that will be heavily damaged and then addressed through revegetation measures outlined in the applicant's Erosion Control and Revegetation Plan. It is ODFW's opinion that recovery of the functions and values in many of these freshwater wetland habitats will likely require 5 to 7 years, which is beyond DSL's 24-month definition of 'temporary' and is deserving of additional compensatory mitigation to address temporal loss of habitat for fish and wildlife.

- In-water Blasting Plan has not been coordinated with ODFW.
- Impacts to fish habitat, spawning areas in intermittent or perennial stream crossings and rearing habitat implications related to pipeline impacts.
- Impacts to tribal fishing, eelgrass beds, collection of first foods, potential historical fish weirs and other archeological issues, and long standing uses of the north spit and Coos Bay.
- Constuction of an LNG Terminal in an area likely subject to a Cascadia subduction earthquake event and resulting tsunami.
- Independent utility, JCEP funding the Port's Channel Modification project.
- NRI dredging to enable LNG vessels to navigagte at higher wind speeds is a safety issue.
- Long term maintenance dredging needs not being adequately addressed.
- Impacts to wells, municipal drinking sources.
- ODEQ's denial of the 401 water quality certification in May 2019. No reasonable assurance that the construction and operation of the project will comply with applicable State of Oregon water quality standards.
- Turbidity impacts to aquatic environments.
- 303d listed streams crossed by the pipeline, how will the water quality not be made worse?
- Contaminents related to dredging impacts and potential issues along some of the pipeline route.
- Loss of property values and livability near the pipeline.
- ODFW concerns for aquatic habitat function associated with horizontal directional drilling (HDD) risks. Primary risks are frac-out and subsequent drilling fluid 'mud' reaching the water column, drill bore site erosion and mobilization through precipitation, and drill bore hole impacts to pasture wetlands and stream adjacent habitats. ODFW recommended monetary bonds be retained at all the HDD sites on this project to cover mitigation costs
- Coos Bay East HDD feasibility anaysis presented with minimal information, frac outs would damage the aquatic environment and are not adequately analyzed. HDD contingency plan is inadequate to protect aquatic resources as proposed.
- HDD feasibility anaylsis for Coos Bay East was incomplete, adverse impacts to special aquatic sites expected without installing a casing on the Kentuck side of the alignment. The purpose of the casing is to surround and isolate the first 70 feet of the bore entrance hole down to competent material. The feasibility report states that further analysis is required yet not completed to

assure that the casing installation is possible to protect against inadvertent release of drilling fluids during the HDD process and pipeline installation.

- HDD fracout risk at the proposed Rogue River HDD is not adequately addressed and the HDD contingency plan is inadequate to protect critical aquatic resources at that location. This reach of the Rogue River where the pipeline would cross is just downstream of Trail Creek, and provides critical spawning habitat for endemic Rogue Basin spring Chinook.
- Geotechnical/Engineering concerns over liquefaction at the LNG Terminal Site.
- Geotechnical/Engineering concerns over stability of the APCO Dredged Material Disposal Site containment berms and potential for aquatic impacts to adjacent mudflats and eelgrass beds.
- Federal Aviation Administration (FAA) presumed hazards determinations not addressed by the applicant.
- LNG storage tank sizing-changing height to meet FAA requirements, changing dimensions would change the diameter and federal safety requirements.
- Temporary impacts not sufficient for mitigation along the pipeline route.
- Out of watershed mitigation for conversion impacts not appropriate.
- Impacts from noise, dust, diesel exhaust during construction.
- Increasing the risk of wildfires.
- Landslides, steep slopes, erosion concerns.
- Improper facility siting, not following SIGTTO standards.

f) Whether the proposed fill or removal is in conformance with existing public uses of the waters and with uses designated for adjacent land in an acknowledged comprehensive plan and land use regulations;

Commented [ME4]: Commerce, navigation, fishing and recreation.

Existing Public Uses: The proposed fill and removal to construct the Jordan Cove Energy Project will impact existing public uses in and around Coos Bay. Those public uses in Coos Bay are commercial navigation, commercial and recreational fishing, tribal subsistence fishing and public recreation.

Conformance with plan and regulations: Jordan Cove states that the area where the proposed removal-fill activities are to take place is currently zoned for industrial uses or designated as available for water-dependent industrial uses under the Coos Bay Estuary Management Plan (CBEMP). Limited areas require a Post Acknowledged Plan Amendment (PAPA). Current land use compatibility statements have not been received as promised by Jordan Cove for the City of Coos Bay, City of North Bend or Coos County. Existing land use to the west is Henderson marsh wetland complex. Land use to the north is BLM dunes recreational area, to the east is Roseburg Chip Facility (wood products export) industrial uses. To the south is open waters of the Coos Bay estuary underlain by State owned submerged lands. Current uses are navigation, fishing, and recreation.

[REDACTED]

[REDACTED]

g) Whether the proposed fill or removal is compatible with the acknowledged comprehensive plan and land use regulations for the area where the proposed fill or removal is to take place or can be conditioned on a future local approval to meet this criterion;

The Applicant has not provided the Department with all applicable land use compatibility statements as required.

[REDACTED]

h) Whether the proposed fill or removal is for stream-bank protection; and

The proposed fill or removal is not for stream-bank protection.

i) Whether the applicant has provided all practicable mitigation to reduce the adverse effects of the proposed fill or removal in the manner set forth in ORS 196.800

The Department of State Lands (DSL) requested the Oregon Department of Fish and Wildlife (ODFW) provides the following update on its ongoing technical review of the Jordan Cove Energy Project removal-fill application (DSL Application # APP0060697). These comments follow up on ODFW's original impact assessment provided as formal comment to DSL on February 3, 2019, as well as the multiple meetings and electronic correspondence between Jordan Cove LNG (the applicant), DSL, and ODFW that have occurred over the previous year.

In summary, there are some components of the Jordan Cove Energy Project removal-fill application that still do not meet the criteria and/or standards of ODFW statute and rule. Those components include:

- Fish Passage Authorizations (ORS 509.580 through .910 and OAR 635 Division 412)
- In-Water Blasting Permits (ORS 509.140)

- Avoidance, Minimization, and Mitigation of Impacts to Fish and Wildlife (ORS 496.012, ORS 496.171-182, OAR 635-415-0000 to -0025), particularly as it relates to:
 - In-Water Work Windows
 - Horizontal Directional Drilling
 - Estuarine impacts associated with dredging and construction of the terminal
 - Eelgrass mitigation plans
 - Kentuck mitigation plans
 - Pipeline Wetland/Waterway Mitigation.

Over the last year, the applicant has provided ODFW with several technical memoranda, maps, GIS data, and electronic correspondences that improve upon the original removal-fill application. At this time, it is difficult for ODFW to provide an updated comprehensive review when the most current information has only been provided in a piece-meal fashion. ODFW has requested that these various documents be integrated into a revised Compensatory Wetland Mitigation Plan, or perhaps organized into a few more specific topical plans (eelgrass mitigation, Kentuck Slough mitigation plan, stream/riparian restoration and mitigation plan, etc.) to help facilitate this review and to ensure the public and interested stakeholders are aware of this new information. It is ODFW's understanding that the applicant is actively preparing updated plans for the public record.

Horizontal Directional Drilling

ODFW continues to have concerns for aquatic habitat function associated with horizontal directional drilling (HDD) risks. The primary risks for aquatic habitats associated with HDD are considered to be: 1) frac-out and subsequent drilling fluid "mud" delivery to the water column; 2) drill bore site soil rutting/denigration and mobilization through precipitation to the waterway; 3) drill bore site impacts to pasture wetlands and stream-adjacent habitats.

HDD frac-outs are difficult to predict but can have significant impacts to local fish and wildlife populations depending on the time of year in which they occur. HDD risks to stream habitat function are primarily linked to the potential for frac-out, upland disturbance of soils with subsequent delivery of sediment to streams, and spills of fuels/hydraulic fluids. Release of drilling fluid ("mud") into waterways can result in heavy sediment plumes that potentially can result in embedment of spawning gravels, direct short-term reduction in the ability of fishes to pursue food items due to poor visibility, and direct impacts to gill filaments.

To address this risk, ODFW recommends that monetary bonds be retained at all the HDD sites on this project to cover mitigation costs associated with a frac-out event and the resulting fish/wildlife losses and habitat damages. The ODFW Fish and Wildlife Habitat Mitigation Policy states "the Department may recommend or require the posting of a bond, or other financial instrument acceptable to the Department, to cover the cost

of mitigation actions based on the nature, extent, and duration of the impact and/or the risk of the mitigation plan not achieving mitigation goals" (OAR 635-415-0020(6)).

HDD in Coos Bay:

In a meeting between the applicant and ODFW on January 3, 2020, the applicant noted that they will be revising the Coos Bay HDD plan to include: 1) that there will not be a need for dredging of equipment access channels to the drill bore site; 2) that the language will be adjusted in the HDD plan for the dual HDD with tie-in option. This revised written plan is necessary for ODFW to determine if the plan will sufficiently address concerns.

In the applicant's HDD plans, ODFW notes a limited number of geotech borings along the two-mile HDD line under Coos Bay. ODFW remains concerned that the frac-out risk may not have been adequately analyzed. This concern needs to be resolved prior to ODFW having enough information to determine if the proposed crossing strategy is considered a "reliable" method under OAR 635-415.

ODFW and the applicant are currently in discussions concerning the In-water work window (IWWW) timing for the Coos Bay HDD. ODFW recommends the standard October 1 to February 15 IWWW for drilling. In addition, ODFW has strongly encouraged the applicant to construct the preparatory bore site pads during drier months and to include access construction with rock base to prevent site rutting and sediment transport during wetter months. ODFW needs resolution of Coos Bay HDD construction timing prior to full assessment of the ability to meet the standards of the ODFW Fish and Wildlife Habitat Mitigation Policy.

Rogue River HDD Crossing:

ODFW is highly concerned with the potential for frac-out risk at the Rogue River HDD site. The project engineering/design plans identify the pipeline crossing for the Rogue River is at milepost 122.6. The geotech survey indicates the pipe will be 56ft below the surface of the lowest thalweg location of the Rogue River, which may provide substantive overburden protection. However, a release of drilling fluid through the riverine and streambank portions of the 4,200+ft HDD would deliver drilling fluids directly to active Rogue River flow.

- This reach of the Rogue River is just downstream from Trail Creek and provides critical spawning habitat for endemic Rogue Basin spring Chinook (*Oncorhynchus tshawytscha*). Construction of William Jess Dam/Lost Creek Reservoir reduced the amount of spawning habitat available for spring Chinook salmon on the Rogue River. Spring Chinook spawning habitat is now limited to approximately 30 miles of the river just downstream of a barrier dam at Cole Rivers Fish Hatchery. Spring fed Big Butte Creek is the only tributary of the Rogue that is used by spawning spring Chinook on an annual basis. Because of dam construction, habitat volume is considered a limiting

factor for the population in the Rogue Spring Chinook Salmon Conservation Plan (ODFW 2007).

Surveys conducted by ODFW during 2016-2018 found that, unlike some other rivers on the west coast, the Rogue spring Chinook population maintains a strong component of fish that are homozygous for the allele(s) that determine spring migration. Introgression with fall chinook genetic material is limited. Therefore, despite the limited habitat volume described above, the Rogue River maintains a genetically healthy population of spring Chinook. This knowledge has further increased the need to protect the ecological function of habitat that remains for this important population. A mistake here could have profound consequences.

HDD risks to stream habitat function are primarily linked to the potential for frac-out, upland disturbance of soils with subsequent delivery of sediment to streams, and spills of fuels/hydraulic fluids. Various versions of PCGP design plans have reported that HDD at this location can be done with low risk. ODFW acknowledges reading that assessment from the applicant but considers the recently submitted contingency plan (implemented if a frac-out were to take place) to be inadequate to address the risk of frac-out for spring Chinook in the Rogue River.

Avoidance, Minimization, and Mitigation of Fish and Wildlife Impacts

This section outlines the remaining resource issues associated with the removal-fill application for which the applicant has not fully demonstrated its ability to avoid, minimize, and mitigate its impacts to fish and wildlife and their habitats in accordance with the state's Wildlife Policy, the Food Fish Management Policy, and the ODFW Fish and Wildlife Habitat Mitigation Policy.

Dredging Impacts to the Coos Estuary Tidal Basin:

The JCEP will include dredging and removal of unconsolidated sediment from the intertidal and subtidal zones of the Coos estuary, and the removal of sediment will have substantial impacts to aquatic habitats and species. Direct impacts to estuarine habitats associated with removal of sediment from the navigation channel (NRI Areas 1-4), construction of the vessel slip, access channel, temporary material barge berth, the material offloading facility, and rock pile apron are expected to be long-lasting and substantial. In particular, the estuarine portion of the Jordan Cove LNG Facilities would include direct impacts to about 37 ac of estuarine habitat, including 2 ac of eelgrass habitat, 13 ac of intertidal unvegetated habitat, 4 ac of shallow subtidal habitat, and 18 ac of deep subtidal habitat. The JCEP also includes extensive dredging and excavation of four submerged areas of the sub-tidal zone in Coos Bay (total 40 ac) along the Federal Navigational Channel and vessel access route to improve navigation reliability for the LNG carriers.

Unconsolidated soft-sediment habitat is widespread in the Coos estuary tidal basin where it occurs extensively throughout the intertidal zone and sub-tidal zone along the

bottoms, sides, and margins of primary and secondary tidal channels (Cortright et al., 1987; Rumrill, 2003). Soft-sediment habitats provide a series of diverse, productive, and dynamic ecological functions in the estuary, including provision of habitat and forage areas for invertebrates, fish, birds, and marine mammals, as well as serving as an important source of detritus. Soft-sediments also play an important role in the microbial and biogeochemical transformations of organic materials and nutrient cycling, and they typically serve as a sink or reservoir for the deposition of water-borne particles. Diverse communities of motile, epifaunal, and infaunal invertebrates inhabit the soft-sediments, and the communities of crabs, shrimp, amphipods, polychaete worms, copepods, hydroids, anemones, clams, and other invertebrates are specifically adapted to survive, feed, grow, and reproduce themselves in the unconsolidated sediments (Simenstad 1983; Emmett et al., 2000). Microbial activity and deposition of organic matter associated with fine-grained sediments together support a complex food web that includes multiple resident (infaunal, epifaunal, motile) and transitory (seasonal, migratory) species.

Mixed communities of shellfish, such as Dungeness crab, red rock crab, bay shrimp, gaper clams, butter clams, littleneck clams, softshell clams, cockles, and many other species are year-round residents of the intertidal and sub-tidal areas of the Coos estuary. Some of these shellfish are motile (i.e., crabs and shrimp) and periodically move to different locations or migrate through the intertidal and sub-tidal zones, while others are stationary (i.e., bivalves) and remain largely in place over the duration of their adult lives. The mixed communities of living bivalves and the beds of their non-living shells (e.g., shell rubble or shell hash) are particularly important because they function to stabilize unconsolidated sediments and provide heterogeneous habitat for numerous species of adult and juvenile fishes, crabs, shrimp, amphipods, worms, and other estuarine organisms. Moreover, filter-feeding by dense populations of living clams can sometimes play an important role in the removal of phytoplankton and smaller particulate materials, thereby decreasing turbidity and increasing light penetration through the estuarine water column. Consequently, maintenance of suitable soft-sediment habitat is essential for survival of the moderately long-lived (life-span 10-15 years or longer) gaper, butter, and cockle clams, particularly in the sub-tidal zone. When soft-sediment habitat is chronically disturbed and altered by dredging of the subtidal zone, there may be a permanent loss and impact to benthic invertebrate populations and a decline in the biodiversity of benthic communities. Loss of some or all of these sub-tidal populations of bay clams has implications for both the ecological functioning of sub-tidal habitats and the ability of the bay clams to serve as broodstock to support the recreational and commercial shellfish fisheries in Coos Bay (D'Andrea 2012). It is expected that dredging and removal of the soft-sediments will likely have substantial and immediate local impacts on the sub-tidal populations of benthic invertebrates and shellfish, such as gaper clams, butter clams, and cockles. This may include the physical removal of the clams and their surrounding sediments, as well as a disruption of the mixed ecological communities of shellfish, mobile and infaunal invertebrates, and fish that make use of the sub-tidal habitats. The application states that dredging would directly remove benthic organisms (e.g., worms, clams, benthic shrimp, starfish, and vegetation) from the bay bottom within the access channel and

navigation channel modifications. Mobile organisms such as crabs, many shrimp, and fish could move away from the region during the process, although some will be entrained during dredging so that direct mortality or injury could occur.

JCEP acknowledges that dredging, removal, and disturbance of the soft-sediment habitats will directly remove benthic organisms from the bay bottom and estimate that recovery would occur in about one year for benthic resources particularly in the area of navigation channel modifications. The JCEP estimate of the rapid rate of community recovery is problematic, however, because the technical references cited to support the JCEP estimate are drawn from earlier investigations of dredging impacts that generally used a group small-bodied, rapidly-growing invertebrates (including amphipods, polychaete worms, small bivalves, etc. that have life-spans on the scale of months to a few years) as the focal species to provide metrics for the estimates of species and habitat recovery. These small opportunistic species are not representative of the large-bodied, long-lived bay clams that typically exhibit episodic recruitment and have life-spans on the scale of 10-20 years in the Oregon estuaries. Moreover, large-scale dredging modifications that include subsequent maintenance dredging every 5-10 years may not provide the opportunity for bay clams and other shellfish to recruit successfully and fully re-colonize after the repeated disturbance events. It is also likely that benthic food resources may also be impaired or lost for other estuarine species (i.e., forage fish, salmonids, crab) as a result of dredging actions. Consequently, dredging activities that significantly disturb and/or remove the mixed communities of long-lived bay clams from soft-sediment habitat in the sub-tidal zones of Coos Bay are expected to have longer-term impacts that extend well beyond a time period of many years.

The JCEP also includes dredging of four submerged areas (NRI Areas 1-4; removing about 700,000 cubic yards of material) that are located adjacent to the existing federally-authorized Coos Bay Navigation Channel. In particular, the JCEP will include dredging of four submerged areas that directly abut the current boundary of the Navigation Channel between RM 2 to RM 7. These dredging activities will modify and alter the physical morphology of the Navigation Channel by widening four turns to allow for more efficient transit of LNG carriers.

It is likely that dredging of the four submerged areas (NRI Areas 1-4) will have indirect impacts to side slopes and soft sediment habitats located adjacent and in close proximity to the dredged areas. For example, the JCEP will include significant dredging and removal of unconsolidated sediment from NRI Area 2 (RM 4.5), NRI Area 3 (RM 6), and NRI Area 4 (RM 7), coupled with erosion of sediment from the adjacent subtidal and intertidal areas. Technical review by the U.S. Army Corps of Engineers indicates that the banks of the dredged areas are intended to be stable, and that side slope equilibration may occur over about a 6-year period. Loss of sediment from these immediately adjacent areas, however, will likely be substantial (i.e., loss of 1-2 ft (30-60 cm) in depth over the first 3 years). Loss of the upper 30-60 cm of sediment from the side slopes located adjacent to the NRI dredged areas during the equilibration process is certainly not insignificant and may result in further impacts and loss of eelgrass, infaunal invertebrates, and degradation of the habitat for shellfish and fish. Loss of the

upper 30-60 cm of sediment from the side slope of NRI Area 4 is particularly alarming, because this side slope is located in the immediate vicinity of the important eelgrass donor bed and eelgrass reference bed identified as essential components of the proposed JCEP eelgrass mitigation activities. Potential loss or disturbance of the eelgrass donor bed and eelgrass reference area in the vicinity of NRI Area 4 puts the proposed JCEP eelgrass mitigation plan in jeopardy. The JCEP Eelgrass Mitigation Plan does not adequately address the potential for loss of sediment adjacent to NRI Areas 2-4 and does not give adequate consideration to loss or disturbance of the important eelgrass donor bed and reference bed located adjacent to NRI Area 4.

Construction of the Marine Terminal – Indirect Effects to Eelgrass Beds:

The JCEP project includes dredging and construction of a new access channel to connect the JCEP LNG Terminal to the Federal Navigation Channel at about RM 7.3. The access channel will be about 700 feet in length, and about 2,200 feet wide at confluence with the Navigation Channel, and about 780 feet wide at the Terminal. The access channel would be approximately 45 feet deep and would cover about 22 acres below the highest measured tide elevation of 10.3 feet (NAVD88). The proposed JCEP dredging activities will permanently destroy about 2 ac of established native eelgrass located in the intertidal and shallow subtidal zones of the Project area. Dredging in the intertidal and shallow subtidal zones within the JCEP area is expected to have significant deleterious effects on native eelgrass habitats and the species found therein. In addition to the direct removal of eelgrass at the JCEP dredging sites, it is likely that dredging operations carried out to implement the JCEP may also result in indirect impacts to adjacent eelgrass beds located in the vicinity of the JCEP area. For example, nearby eelgrass beds will likely experience periods of increased turbidity, sedimentation, and attenuated light levels resulting from dredging during construction and during subsequent periods of maintenance dredging. In this regard, the indirect effects of the JCEP to adjacent eelgrass beds have not been adequately addressed by the JCEP Comprehensive Wetland Mitigation Plan.

Eelgrass Mitigation Plan:

In order to offset the loss of 2 ac of eelgrass the JCEP includes a proposed eelgrass mitigation plan that relies on the “best case scenario” for full success by creating 6 ac of eelgrass (3:1 ratio) within a 9 ac site in the intertidal zone near the impact area. ODFW has noted several potential problematic issues associated with the proposed JCEP eelgrass mitigation plan that have not been fully considered and addressed by the applicant.

ODFW is concerned that the excavated JCEP mitigation basin may refill with sediment, and that the rate of sedimentation may not be conducive to survival, growth, and propagation of the planted eelgrass plants. For example, Mills and Fonseca (2003) conducted a series of field experiments to determine the susceptibility of eelgrass (*Zostera marina*) to burial by estuarine sediments. Results from the study demonstrate that eelgrass plants experience an increased likelihood of mortality and decreased

productivity under burial conditions, and that the threshold level of burial tolerance for *Z. marina* is extremely low. Burial of eelgrass to depths as low as 25% of the aboveground plant height (4 cm) substantially increase mortality of eelgrass, causing death of >75% of the plants. Moreover, the probability of eelgrass mortality reached 100% for burial depths of 50% (8 cm) to 75% (12 cm) of plant height, depending on the types of sediment (e.g., sand, silt, combined) in which the plants were buried. These empirical observations indicate that eelgrass can only tolerate rapid sedimentation events that cover less than half of its photosynthetic surfaces, and that small levels of rapid sedimentation are detrimental to survival of *Z. marina*.

Earlier research (Thom et al. 2018) has shown that eelgrass beds are typically limited by the availability of proper substrata, light, heat stress, and desiccation. Survival of the transplanted eelgrass within the excavated JCEP eelgrass mitigation site will be dependent upon several ecological factors, including characteristics of the excavated sediment, sedimentation rate, erosion, light availability, nutrient availability, grazing upon seeds, seedlings, and blades, and a suite of inherent physical factors (i.e., current velocities, wind fetch, slope, depth, seawater temperature, air temperature, humidity, desiccation, etc.). The proposed mitigation actions for eelgrass should be designed to retain the full array of ecosystem services provided by eelgrass beds in the JCEP area, and to achieve no-net loss of eelgrass over the entire lifespan of the JCEP operation in Coos Bay. In this regard, the planned mitigation activities should follow established in-kind, in-proximity standards established by the state of Oregon and require long-term monitoring and remedial replanting of eelgrass as needed to compensate for losses that may occur over the entire lifespan of the Project.

The applicant proposes to remove existing eelgrass in the Project area and to offset the loss of eelgrass habitat by excavation of an eelgrass mitigation area coupled with replanting of eelgrass taken from a nearby donor bed. The applicant proposes to monitor the effectiveness of the replanting effort for a period of only five years. It is important to note that failure of eelgrass replanting efforts is common in the Pacific northwest region (Thom et al., 2008), and that five years is an insufficiently short time period to adequately evaluate long-term mitigation success.

The applicant does not demonstrate that serious consideration has been given to avoidance of impacts to eelgrass beds. In a December 11, 2019 meeting with DSL, ODFW, and the US Army Corps of Engineers, the applicant reviewed a draft alternatives analysis that considered alternative sites for eelgrass transplant. ODFW has raised additional alternatives to the applicant since that meeting. However, a more thorough alternatives analysis has not been provided nor has the Compensatory Wetland Mitigation Plan been updated to include the December 2019 analysis. ODFW recommends a more detailed analysis of eelgrass mitigation sites that characterize the location, species composition, and abundance of the eelgrass and other submerged aquatic vegetation at the alternative sites and provide a more detailed rationale for rejection of the alternative sites and acceptance of the proposed site. The existing JCEP Mitigation Plan is incomplete because it does not provide a full description of the steps that were taken to avoid adverse impacts to existing eelgrass beds in Coos Bay.

Earlier attempts to mitigate for the damage or loss of eelgrass beds have met with limited success in Pacific Northwest estuaries. For example, Thom et al. (2008) conducted a review of 14 eelgrass mitigation and transplant projects. They concluded that it is sometimes possible to restore eelgrass under favorable site conditions and when the reason for the initial loss of eelgrass is understood and corrected. The authors also noted, however, that eelgrass restoration science is hampered by knowledge gaps, which reduce restoration success. The underlying mechanisms for recent eelgrass loss in the Pacific Northwest region are not obvious, which suggests that the scientific understanding of eelgrass biology and ecosystem conditions is currently inadequate to fully support environmental management actions (Thom et al. 2008).

Local complexities in hydrologic flow regimes are known to affect potential for success in eelgrass restoration efforts. These local complexities include considerations of the following:

- Habitat conditions created through excavation or filling are often ephemeral and subject to subsequent deposition/erosion that results in movement of conditions outside of the range of preferred variability for eelgrass.
- Flow regimes including severity of wave action and current speed contribute to the potential success of a site for eelgrass establishment and growth. Sites that are created through excavation or fill are an artificial modification of conditions that have formed through the geomorphological features that drive flow regimes. Factors such as water depth reflect deposition/erosion rates from water transported sediments. Excavation or filling to a specific elevation is attempting to alter the natural elevation conditions in relation to hydrologic conditions for many sites that might serve as potential mitigation. Consequently, the potential for success is limited for projects that modify water depth/elevation of the substrates for creating conditions appropriate for eelgrass mitigation unless the site chosen has substrate elevation that has been artificially created from previous disturbance or the conditions are dominated by factors other than hydrology.
- Use of eelgrass sites immediately adjacent to or within the mitigation area for obtaining plants/shoots results in impacts to these locations, potentially weakening the vigor of eelgrass at these locations, which is counter to goals.
- Excavation of locations adjacent to existing eelgrass beds can result in hydrologic changes such as erosion of surrounding substrates resulting in impacts to currently productive stands.
- The monitoring plan should be amended to include more robust methods such as diver or low tide visual count surveys with established known planting densities at time-0 and subsequent measurable surveys with quantifiable methods.
- Due to the potential for minimal success the eelgrass mitigation ratio is likely insufficient to offset impacts at the JCEP project impact location.

For all the reasons listed in the discussion above, ODFW recommends the eelgrass mitigation strategies be re-evaluated to favor avoidance.

Unresolved Issues related to Sedimentation, Hydrodynamic Connection of the Eelgrass Mitigation Site, Adaptive Management Plan, and Proposed Mitigation Ratio:

The applicant has generated several new technical reports and documents related to JCEP's development of a Compensatory Wetland Mitigation Plan and an Eelgrass Mitigation Site to offset impacts to eelgrass habitat from the construction and operation of the JCEP LNG terminal. The proposed project components include re-contouring of an existing un-vegetated sandbar located near the end of the airport runway to create an area of optimal eelgrass habitat, and then transplanting eelgrass from an adjacent donor site into the mitigation area.

ODFW has identified several issues regarding eelgrass impacts and mitigation raised by the proposed JCEP, including characterization of permanent and transitory impacts to existing eelgrass, and shortcomings inherent in the proposed Eelgrass Mitigation Plan. The most recent (2018) JCEP eelgrass surveys indicate that construction of the Access Channel and Rock Apron will result in displacement of 2.26 acres of eelgrass. This estimate is consistent with the JCEP application which identifies "anticipated impacts to at least 2.3 acres of eelgrass habitat in the Coos Bay estuary from the Jordan Cove LNG Project" but inconsistent with the FERC FEIS which identified impacts to only 2 ac of eelgrass.

The JCEP Project description identifies permanent removal of eelgrass associated with dredging and excavation of the access channel that will be constructed to provide ship access to the LNG terminal. Eelgrass beds that currently inhabit the intertidal and subtidal zones in the area of the proposed access channel will be dug up, salvaged and relocated into the intertidal zone at the Jordan Cove Embayment site.

It is not clear why eelgrass plants that currently inhabit the intertidal and subtidal zones (+2.0 to -10.0 ft MLLW) at the access channel site will be transplanted only into the intertidal zone at an elevation of +1.3 and -2.0 ft MLLW. The eelgrass plants salvaged from the intertidal zone will occupy a similar tidal elevation at the transplant site, whereas eelgrass plants that occupy the subtidal zone (where they are constantly submerged) will be placed into a new environment characterized by periodic exposure to air and desiccation. The proposed mismatch in tidal elevation between eelgrass plants harvested from the access channel site (intertidal and subtidal) and the Jordan Cove transplant site (intertidal only) provides evidence that the transplants may face a high likelihood for failure.

The JCEP Project Description proposes to excavate an existing sandy shoal located near the end of the North Bend airport runway to serve as an Eelgrass Mitigation Site. Specifically, the JCEP proposal is to "reduce and re-contour a 9.34-acre area of the intertidal shoal down to an average depth of 1.0 to -2.0 ft NAVD 88 (-0.28 to -1.28 ft

MLLW) to create 6.78 acres of optimal eelgrass habitat." The existing sandy shoal currently has an elevation in the intertidal zone that reaches about +2.7 ft MLLW, so the excavation will reduce the tidal elevation by about 1.7 to 4.7 ft and remove about 0.04 million cubic yards (MCY) of the shoal material to create the shallow tidal basin that will serve as the mitigation area. The proposal is to re-contour the shoal material and create 6.78 acres of "Optimal Eelgrass Habitat" at a tidal elevation of -0.28 to -1.28 ft MLLW. The rationale for designation of the narrow tidal range of -0.28 to -1.28 ft MLLW as optimal eelgrass habitat is poorly developed. More specifically, Thom et al. (2003) shows that eelgrass clearly occupies a more extended tidal range of +3.0 to -1.6 ft MLLW in Coos Bay. The rationale provided by JCEP for designation of only a portion of the tidal elevation range as "optimal" for eelgrass at the proposed mitigation site is not clear.

The JCEP project description states that "an evaluation of both eelgrass distribution and depth indicates that the principal limiting factor for eelgrass in the general vicinity of the Eelgrass Mitigation Site is elevation." However, JCEP fails to point out that eelgrass can (and does) currently exist in Coos Bay at sites that have a tidal elevation of +2.7 ft MLLW, and that eelgrass is largely missing from the sandy shoal habitat at this tidal elevation at the proposed Eelgrass Mitigation Site. Earlier research (Thom et al. 2018) has shown that eelgrass beds are typically limited by the availability of proper substrata, light, heat stress, and desiccation. The virtual absence of eelgrass currently at the proposed Eelgrass Mitigation Site is likely due to a combination of ecological factors other than simply tidal elevation.

The JCEP includes excavation of about 0.04 million cubic yards (MCY) of the shoal material to create a shallow circular tidal basin that will retain estuarine water and serve as the primary site for eelgrass mitigation activities. Concern has been repeatedly raised about the likelihood for poor water quality conditions (including low dissolved oxygen concentrations and elevated temperature) and trapping of decaying drift algae and other organic materials within the shallow excavated basin. JCEP does not provide any technical analysis nor rationale for the shape of the shallow excavated tidal basin, nor any explanation about the time frame that is expected for the newly excavated basin to re-fill with sediments. It will be beneficial for the excavated mitigation basin to include channels that have a substantial hydrodynamic connection to the primary tidal channel in an effort to enhance tidal flushing and help ensure adequate water quality conditions to support eelgrass, invertebrates, and fish within the excavated basin.

The proposed eelgrass mitigation site should be designed to include a functional hydrodynamic connection to the primary tidal channel. The supplementary technical report generated by JCEP (Section 3.2.2; page 18) indicates that "the proposed grading boundary of the Site may be re-contoured from the current design to allow drainage from the Site so it does not become a shallow bowl that retains water at minus low tides." However, the proposed short channel (excavated at -1.3 ft MLLW) that extends to deeper water is not clearly identified, and further clarification is needed to illustrate the expected directional pathways for water, sediment, and debris to enter and exit the excavated mitigation basin during flood and ebb tides. It is not clear at this point where

the short channel will be located, and whether the short channel will persist over time at the project site. Bathymetry maps should be revised and updated for the proposed JCEP Eelgrass Mitigation Site to include the "short channel" at -1.3 ft MLLW to make a hydrodynamic connection to adjacent channels to improve flushing of the excavated shallow basin.

ODFW is concerned that the excavated JCEP mitigation basin may refill with sediment, and that the rate of sedimentation may not be conducive to survival, growth, and propagation of the planted eelgrass plants. For example, Mills and Fonseca (2003) conducted a series of field experiments to determine the susceptibility of eelgrass (*Zostera marina*) to burial by estuarine sediments. Results from the study demonstrate that eelgrass plants experience an increased likelihood of mortality and decreased productivity under burial conditions, and that the threshold level of burial tolerance for *Z. marina* is extremely low. Burial of eelgrass to depths as low as 25% of the aboveground plant height (4 cm) substantially increase mortality of eelgrass, causing death of >75% of the plants. Moreover, the probability of eelgrass mortality reached 100% for burial depths of 50% (8 cm) to 75% (12 cm) of plant height, depending on the types of sediment (e.g., sand, silt, combined) in which the plants were buried. These empirical observations indicate that eelgrass can only tolerate rapid sedimentation events that cover less than half of its photosynthetic surfaces, and that small levels of rapid sedimentation are detrimental to survival of *Z. marina*.

The methods proposed by the applicant to detect sedimentation within the excavated mitigation basin have a coarse depth resolution of + 4 inches (10 cm). These proposed methods are insufficient to detect the finer-scale measurement of local sedimentation (i.e., 2-4 cm) that can result in damage and loss of eelgrass plants.

Existing sediments at the sandy shoal that is proposed for excavation at the Eelgrass Mitigation Site currently consist of medium to coarse sand, and the site is characterized by wind chop during high tides. The JCEP includes excavation of about 0.04 million cubic yards (MCY) of the intertidal shoal material down to an average depth of -0.28 to -1.28 ft MLLW to create the 6.78 ac shallow tidal basin. The project description, however, does not include a detailed description or characterization of the underlying sediments that will be exposed by the dredging and excavation work. The characteristics of the underlying sediment are important, because these underlying sediments will provide the foundation for transplanted eelgrass plants. It is likely that the characteristics of the underlying sediment differ substantially from the surface sediment, and that the underlying sediment may be compacted and anaerobic with relatively little interstitial space for the establishment of eelgrass roots/rhizomes and the movement of water. These expected characteristics of the underlying sediment are not conducive to survival and growth of the transplanted eelgrass. The project description points out that the dredging work and excavation will occur about 1-year before transplants of eelgrass from a donor area, and it is expected that the excavated tidal basin will naturally receive transported sediment from the greater Coos estuary. Moreover, the expected rate of sediment accretion is not identified by the JCEP Project Description, nor the time frame when the excavated tidal basin is expected to fill with transported sediment. Further

technical analysis is required to characterize the underlying sediments and to identify the rate of sediment accretion that is expected within the excavated eelgrass mitigation site.

The JCEP should include establishment of a series of experimental test plots to determine the likelihood of success for eelgrass plants transplanted into the excavated Eelgrass Mitigation Site. These replicated test plots should be constructed in a manner that mimics the excavated elevations within the proposed shallow tidal basin and should also be carried out in a manner to evaluate the success/failure of the proposed transplant techniques. The test plots should be established 1-2 years in advance of the excavation and dredging activities and should be evaluated on a quarterly basis to determine standard metrics for the survival, growth, cluster coalescence, and seed production by the eelgrass plants. For example, Thom et al. (2018) recently used test plantings as one of several criteria to evaluate the likelihood for success at numerous potential eelgrass restoration sites in Puget Sound. Results and information derived from the test plots indicated that fine-scale data are needed to improve the predictive capability of proposed restoration, enhancement, and mitigation activities. The technical approach outlined by Thom et al. (2018) provides a clear roadmap and analytical process to identify and evaluate potential eelgrass mitigation sites and increase the overall likelihood for project success.

The JCEP monitoring activities and adaptive management plan make progress toward identification of contingencies that may be encountered if the transplanted eelgrass fails to become established or fails to grow and expand as expected over the timeframe for the Project. The adaptive management plan, however, has not yet identified a series of quantitative thresholds or metrics for sedimentation rates that will be used to trigger corrective or remedial adaptive management actions (such as re-planting, re-dredging, or abandonment of the excavated site). In addition, JCEP has not yet identified a suitable alternate site located elsewhere in Coos Bay that can be used for the mitigation work if the primary eelgrass mitigation basin becomes unworkable.

ODFW recognizes that the ODSL mitigation ratio must be at 1.5:1 for creation of a new eelgrass bed at the proposed JCEP eelgrass mitigation site. However, the transplanting of eelgrass proposed by JCEP only achieves a mitigation ratio of 1:1, which is insufficient to meet ODSL standards. The Applicant predicts that the transplanted eelgrass will survive, grow, and expand over a period of five years to fill out the excavated basin in order to achieve the required mitigation ratio of 1.5:1. The expectation by JCEP for the transplanted eelgrass to flourish has a great deal of uncertainty, and optimism by the applicant should not be considered as a guarantee to meet DSL's required mitigation ratio.

ODFW recommends that the applicant increase the spatial extent of eelgrass transplants to achieve the mitigation ratio of 1.5:1 at the initiation of the planting (time-zero) rather proceed with the expectation that the required ration will be met after a period of five years. The Applicant will not meet the ODSL mitigation policy standards unless the transplant activities begin with a ratio of 1.5:1.

Kentuck Slough Mitigation Plan:

ODFW has requested, but has not yet received, a long-term management plan for the Kentuck mitigation site, including:

- Long-term protection and stewardship strategies to ensure the mitigation site will be durable for the life of the project's impacts
- Long-term water management strategies for the Kentuck Creek water control structure.

Without this information, ODFW does not consider the Compensatory Wetland Mitigation Plan complete, in accordance with the ODFW Fish and Wildlife Habitat Mitigation Policy.

The applicant has verbally committed to redesigning the Kentuck mitigation elevation plan to develop additional acreage that will be below elevation +5.5 NAVDD88 (the elevation threshold for saltmarsh development) on the site. This will offset loss of Category-2 Algae/Mud/Sand habitats that will be dredged and regraded at the eelgrass mitigation site south of the North Bend Airport runway. The exact acreage (6.81 acres + slope area) of grading/dredging at the eelgrass location has of yet not been finalized. ODFW will need updated Kentuck mitigation design plans and a complete eelgrass site dredging/grading plan in order to determine if the loss of the Category-2 Algae/Mud/Sand will be offset. ODFW recommends that the applicant include this information in a revised Compensatory Wetland Mitigation Plan.

The Kentuck site is slated for disposal of 300,000 cubic-yards of dredge spoils from development of the JCEP access channel. ODFW will need to understand where fill proposed to be disposed of at Kentuck will be relocated in order to allow the Kentuck grading plan to produce the additional acres below elevation +5.5ft. There will also be a need to update the grading and erosion control plans for both the eelgrass mitigation site and Kentuck Mitigation site, which may have additional or different impacts to fish and wildlife.

Pipeline Mitigation, Generally:

ODFW has reviewed the applicant's Comprehensive Mitigation Plan (submitted to the FERC Docket in September 2019; also see the FERC FEIS Sections 2.1.4 and 2.1.5), the proposed mitigation for permanent impacts to streams and riparian habitats impacted by the pipeline. ODFW does not find the proposed mitigation meets the Fish and Wildlife Habitat Mitigation Policy's goal of no net loss of fish and wildlife habitat. Also, the mitigation actions are almost entirely on U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands even though impacts will also occur on private lands. While ownership is not necessarily a requirement in the ODFW Fish and Wildlife Habitat Mitigation Policy, having mitigation be in-kind and in-proximity to the impacts are standards of the policy.

For a fuller discussion of ODFW's concerns, please see ODFW's recent Protest of the BLM Proposed RMP Amendments (DOI-BLM-ORWA-M000-2017-0007-EIS) dated December 20, 2019 and Protest of the USFS Proposed Forest Plan Amendments (#28132) to the Umpqua, Rogue River-Siskiyou, and Fremont-Winema National Forests dated January 6, 2020. Both of these protests have been provided as attachments to this letter, for your reference.

Since the project's inception, ODFW has recommended the applicant crosswalk the federal land compensatory mitigation plans with the standards in the ODFW mitigation policy to ultimately ensure that fish and wildlife impacts are avoided, minimized, and mitigated across all land ownerships (see ODFW's comments on page 80 of Oregon State Agency Comments on FERC's Draft Environmental Impact Statement for Docket Nos. CP-17-494-000 and CP17-495-000 dated July 3, 2019). As of the date of this letter, this crosswalk has not been included in the FEIS or in the DSL removal-fill application. Therefore, ODFW does not have the information it needs to ensure the project's impacts will be offset to the standards of its Fish and Wildlife Habitat Mitigation Policy.

Freshwater wetland impacts:

ODFW has been reviewing the GIS files provided by the PCGP consultant for pipeline permanent and temporary impacts to freshwater wetland habitats. The specific impact acreages by type of wetland and ODFW Habitat Category have not been incorporated into the Compensatory Wetland Mitigation Plan, nor has the plan been assessed for its consistency with the ODFW Fish and Habitat Mitigation Policy. ODFW acknowledges that permanent impacts will result in a limited quantity of permanent impacts (0.91) acres. However, ODFW has substantive concern with temporal loss of function for the 112.19 acres of freshwater wetland that will be heavily damaged and then addressed through revegetation measures outlined in the applicant's Erosion Control and Revegetation Plan. It is ODFW's opinion that recovery of the functions and values in many of these freshwater wetland habitats will likely require 5 to 7 years, which is beyond DSL's 24-month definition of 'temporary' and is deserving of additional compensatory mitigation to address temporal loss of habitat for fish and wildlife.

Stream/riparian impacts:

The pipeline will cross 155 perennial streams. The pipeline right-of-way will impact a 75-foot wide corridor through riparian habitats. The excavation of the trench to install the 36" pipe will result in direct stream channel impacts at least 20 feet in width and bank to bank. A number of these stream locations are Essential Salmonid Habitat. Stream habitats often require several years post-disturbance for the channel bed, banks, and upslope to stabilize and recover at least minimal function. Normally in stream channel restoration projects, a minimum of three to five years is often needed moderate function recovery. It is ODFW's understanding that the applicant is developing Stream Function Assessment Method (SFAM) information for stream crossings. However, ODFW has not

yet received this information and therefore cannot determine whether or how this information might affect mitigation plans.

ODFW has noted that the PCGP applicant has not developed a plan to address:

- The temporal loss of function to aquatic habitats and associated riparian forest (see ODFW Protest of BLM and USFS Plan Amendments, cited above and attached to this letter).
- Consistency with the habitat categories and mitigation standards of the ODFW Fish and Wildlife Habitat Mitigation Policy,
- SFAM evaluations for each crossing and how that might change compensatory mitigation,
- Large Woody Debris that adequately offsets impacts. The PCGP Large Woody Debris Plan (included in the September 2019 Comprehensive Mitigation Plan) documented that up to four pieces of LWD will be placed where streams are rebuilt after trenching and installation of the 36" pipe. This is considered inadequate for restorative uplift to replace lost function (see ODFW protest of the BLM RMPA).
- Specific mitigation proposals previously submitted by ODFW. There were several mitigation proposals submitted in 2015 by ODFW local and headquarters staff that specifically address offsetting impacts of the Project to stream and riparian habitats. These were resubmitted in the July 3, 2019 State of Oregon Comments on the 2019 FERC DEIS.

Department Determinations.

a) Had independent utility;

The Port has proposed a long-term project to improve the Port's facilities and allow larger vessels to utilize the Port's facilities. It will also allow the Port to expand its capabilities and attract new business to the area. However, the Port's channel expansion project is not required for the LNG Terminal JCEP proposes to construct and operate. Furthermore, the independent utility of the Project is acknowledged by the U.S. Coast Guard (USCG) letter of authorization, dated November 7, 2018, which supports the Applicants' position that the Project does not require further Port modification or expansion

b) Is consistent with the protection, conservation and best use of the water resources of this state as specified in ORS 196.600 to 196.990; and

c) Would not unreasonably interfere with the paramount policy of this state to preserve the use of its waters for navigation, fishing and public recreation.



Oregon

Kate Brown., Governor

APPENDIX 8.A.

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**RE: Comprehensive Plan Amendment 187-18-000153: Jordan Cove Energy Project
Estuary Navigation and Reliability Improvements**

To the Council:

The Oregon Department of Fish & Wildlife (ODFW) submits these comments for the hearing scheduled for August 27, 2019 to Land Use application 187-18-000153, the proposed Comprehensive Plan text amendment and Coos Bay Estuary Management Plan map changes in designation from 52-NA (52-Natural Aquatic) to DDNC-DA (Development Aquatic):

LAND USE DESIGNATION and MAP CHANGES--

The JCEP proposes to excavate an existing sandy shoal located near the end of the airport runway to serve as an eelgrass mitigation site. The proposed eelgrass mitigation site is currently zoned as 52-NA within the Coos Bay Estuary Management Plan (CBEMP). The JCEP proposes to change the current CBEMP zoning from 52-NA (Natural Aquatic) to DDNC-DA (Development Aquatic) which is a required step to allow the proposed dredging to occur.

According to the CBEMP, Natural Aquatic (NA) areas are managed for resource protection, preservation, and restoration. Designation of an area as NA places restrictions on the intensity and types of uses and activities allowed within them. In Coos Bay, Natural Aquatic areas include tidal marshes, mud-sand flats, seagrass and algae beds that, because of a combination of factors such as size, biological productivity and habitat value, play a major role in the functioning of the estuarine ecosystem. Natural Aquatic areas also include ecologically important subtidal areas.

In contrast, the CBEMP states that Development Aquatic (DA) areas are managed for navigation and other water-dependent uses, consistent with the need to minimize damage to the estuarine system. Some water-related and other uses may be allowed, as specified in each respective unit. Development Aquatic areas include areas suitable for deep or shallow-draft navigation (including shipping and access channels or turning basins), sites and mining or mineral extraction areas, and areas adjacent to developed or developable shorelines which may need to be altered to provide navigational access or create new land areas for water-dependent uses.

The proposed conversion of the area currently zoned 52-NA to DDNC-DA is inconsistent with the original intent of the NA designation, which specifically identifies areas that are managed for resource protection, preservation, and restoration. Moreover, the proposed conversion of the area currently zoned 52-NA to DDNC-DA is also inconsistent with the intent of the DA designation, which specifically identifies areas managed for navigation and other water-dependent uses, such as areas suitable for

deep or shallow-draft navigation, sites and mining or mineral extraction areas, and areas adjacent to developed or developable shorelines.

IN-WATER WORK WINDOW and HERRING SPAWNING--

Truncating the end of the In-Water Work Window from February 15 to February 1 would reduce the potential for dredge impacts and siltation to the herring spawn/egg masses which are typically deposited about mid-February in Coos Bay. In Oregon, the herring spawning season typically occurs from mid-February to mid-March, and they deposit their transparent adhesive egg masses in shallow water and estuaries on eelgrass, seaweed, and other benthic structures. Following spawning, the eggs hatch after about 2 weeks, and the small transparent larvae develop in the water column for a period of about 3 months until they complete metamorphosis and take on the final shape and form of adults.

Populations of Pacific herring are preyed upon by a wide variety of fish, birds and marine mammals in the Coos estuary where they contribute to the overall health of the estuary and support local fishery resources. Many species of fishes rely on Pacific herring as a significant component of their diet, including salmon, halibut and a wide array of groundfish. These fish support substantial commercial fisheries and popular recreational fisheries in Oregon estuaries and the nearshore Pacific Ocean. In addition, herring spawn (benthic egg masses) and their planktonic larvae also provide a highly abundant seasonally available food source for seabirds and various species of fish present in estuaries, including juvenile salmon and several species of groundfish.

In Oregon, Pacific herring are identified as an Oregon Nearshore Strategy species. The Oregon Nearshore Strategy is a strategic document that establishes priorities for ODFW's nearshore marine resources as part of the Oregon Conservation Strategy. Nearshore Strategy species are key species in greatest need of management attention.

IMPACTS OF DREDGING ON FISH AND WILDLIFE RESOURCES IN THE COOS BAY ESTUARY--

ODFW recommends the City of Coos Bay consider the impacts of the proposed Navigational Reliability Improvements on fish, wildlife, and habitat resources in the Coos Bay estuary. The State of Oregon provided comments to the Federal Energy Regulatory Commission's Draft Environmental Impact Statement for the Jordan Cove Energy Project and Pacific Connector Gas Pipeline (Docket # CP17-494-000 and CP17-495-000; July 3, 2019). Please refer to ODFW's review of the impacts of dredging on estuarine habitats and communities, and impacts to eelgrass (pp. 68-72 in State of Oregon Comments, attached to this letter).

Respectfully Submitted,



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Cc:

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